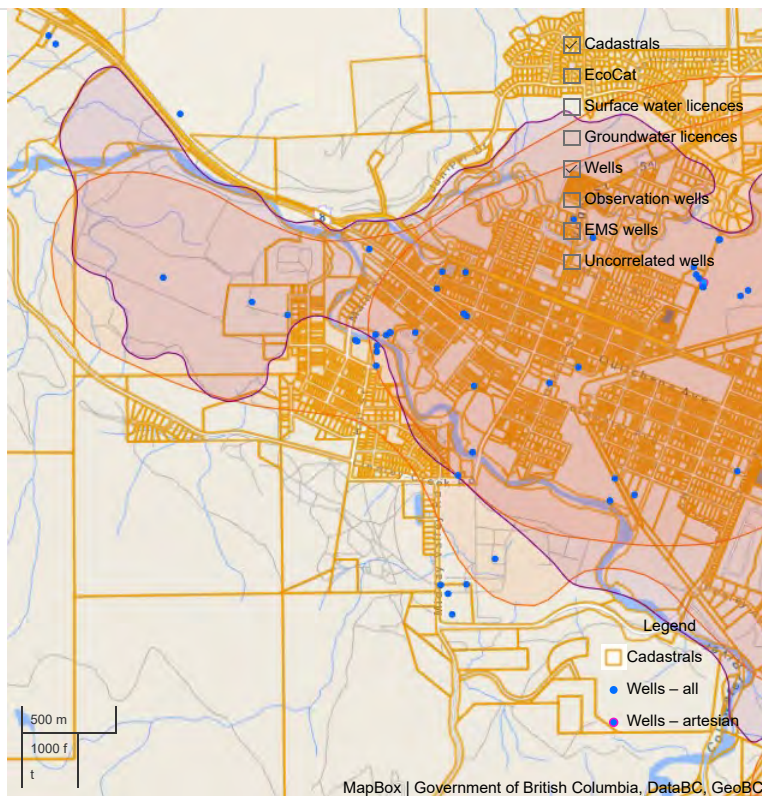


## Aquifer 74 Summary

|                                 |                                                          |
|---------------------------------|----------------------------------------------------------|
| <b>Aquifer number</b>           | 74                                                       |
| <b>Year of mapping</b>          | 2018                                                     |
| <b>Aquifer name</b>             | Upper Merritt                                            |
| <b>Litho stratigraphic unit</b> |                                                          |
| <b>Descriptive location</b>     | Merritt                                                  |
| <b>Vulnerability</b>            | High                                                     |
| <b>Material type</b>            | Sand and Gravel                                          |
| <b>Subtype</b>                  | Unconfined sand and gravel aquifer - small stream system |
| <b>Quality concerns</b>         | Isolated                                                 |
| <b>Productivity</b>             | High                                                     |
| <b>Size (km<sup>2</sup>)</b>    | 7.0                                                      |
| <b>Calculated well density</b>  | High                                                     |



## Well Information

|                                                                  |                             |
|------------------------------------------------------------------|-----------------------------|
| <b>Number of wells correlated to the aquifer</b>                 | 16                          |
| <b>Number of uncorrelated wells within mapped aquifer extent</b> | 24                          |
| <b>Artesian wells</b>                                            | 0 artesian wells in aquifer |

Well info last updated 2/2/2021

## Documentation

### Factsheets

- AQ\_00074\_Aquifer\_Factsheet.pdf

### Other Documents

- AQ\_00074\_Aquifer\_Mapping\_Report.pdf

## Licensing Information

The licensing summaries should be considered estimates. Due to complexities in the structure of the licensing data, reported values should be confirmed through the [e-licensing portal \(https://j200.gov.bc.ca/pub/ams/Default.aspx?PossessionPresentation=AMSPublic&PossessionObjectDef=o\\_ATIS\\_DocumentSearch&PossessionMenuName=WS\\_Main\)](https://j200.gov.bc.ca/pub/ams/Default.aspx?PossessionPresentation=AMSPublic&PossessionObjectDef=o_ATIS_DocumentSearch&PossessionMenuName=WS_Main).

**Number of groundwater licences** 0

**Water withdrawal volume (annual)** No information available.

Licensing information is obtained from the [Water Rights Licence - Public data layer \(https://catalogue.data.gov.bc.ca/dataset/water-rights-licences-public\)](https://catalogue.data.gov.bc.ca/dataset/water-rights-licences-public).

Unique licenses are counted once for each aquifer that they are associated with.

The total licensed volume is counted once for each licence (the total volume may be shared between wells if there are multiple wells in a licence). In cases where specific volumes are licensed for multiple purposes, individual volumes are summed.

## Knowledge Indicators

**Advanced mapping** No information available.

**Artesian advisory** No information available.

**Observation wells** Active

- [296 \(https://governmentofbc.maps.arcgis.com/apps/webappviewer/index.html?id=b53cb0bf3f6848e79d66ff09b74f00d&find=OBS\\_WELL\\_296\)](https://governmentofbc.maps.arcgis.com/apps/webappviewer/index.html?id=b53cb0bf3f6848e79d66ff09b74f00d&find=OBS_WELL_296) Water Level Analysis: [Stable or Increasing \(http://www.env.gov.bc.ca/soe/indicators/water/groundwater-levels.html\)](http://www.env.gov.bc.ca/soe/indicators/water/groundwater-levels.html)

**Numerical model** No information available.

**Pumping stress index** ◦ [Stress Index Report \(https://services6.arcgis.com/ubm4tcTYICKBpist/arcgis/rest/services/Aquifer\\_180613\\_NA/FeatureServer/0/739/attachments/739\)](https://services6.arcgis.com/ubm4tcTYICKBpist/arcgis/rest/services/Aquifer_180613_NA/FeatureServer/0/739/attachments/739)

**Water budget** ◦ [Review of Ground Water/Surface Water Interactions Within the City of Merritt \(https://a100.gov.bc.ca/pub/aacat/public/viewReport.do?reportId=17457\)](https://a100.gov.bc.ca/pub/aacat/public/viewReport.do?reportId=17457)

**Water quality information** 5 wells with an EMS ID

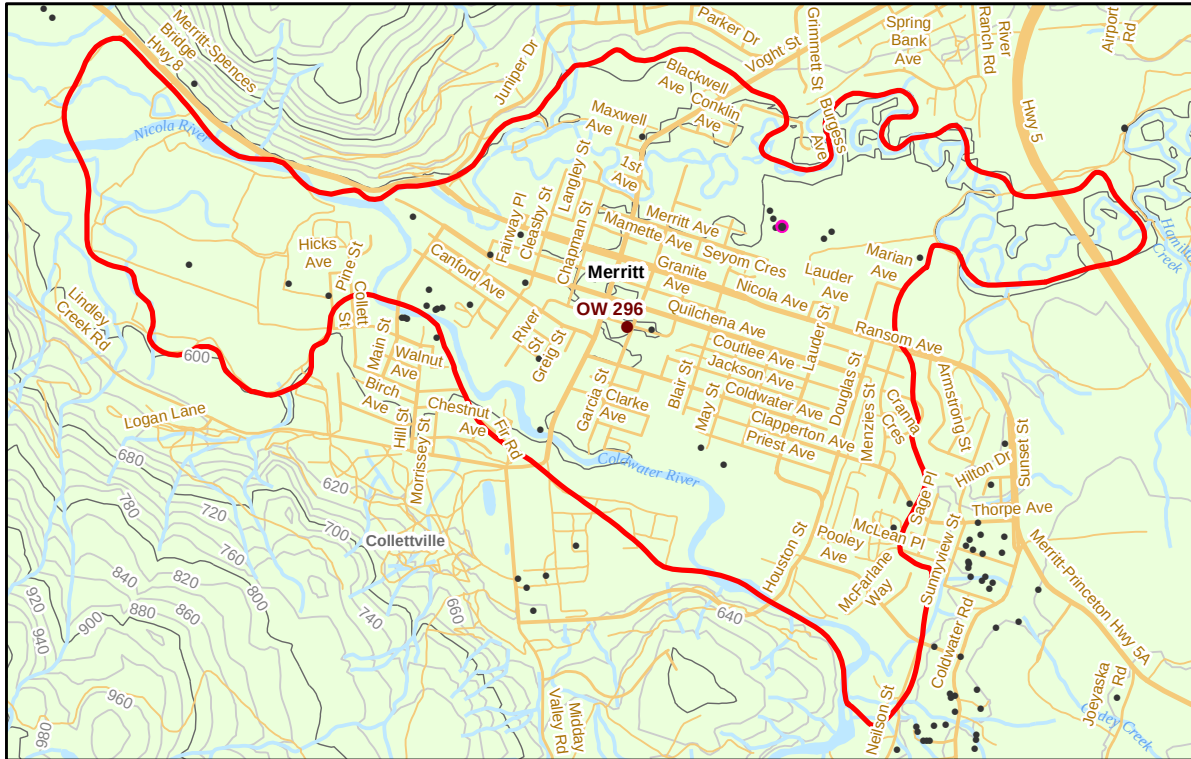
**Hydraulically connected (screening level)** More likely

**Groundwater Surface Water Interactions** No information available.

**Other information** No information available.

# Aquifer #74

## Upper Merritt



**Legend**

- Registered Water Well - Artesian
- Registered Water Well
- Active Observation Well
- Aquifer Boundary

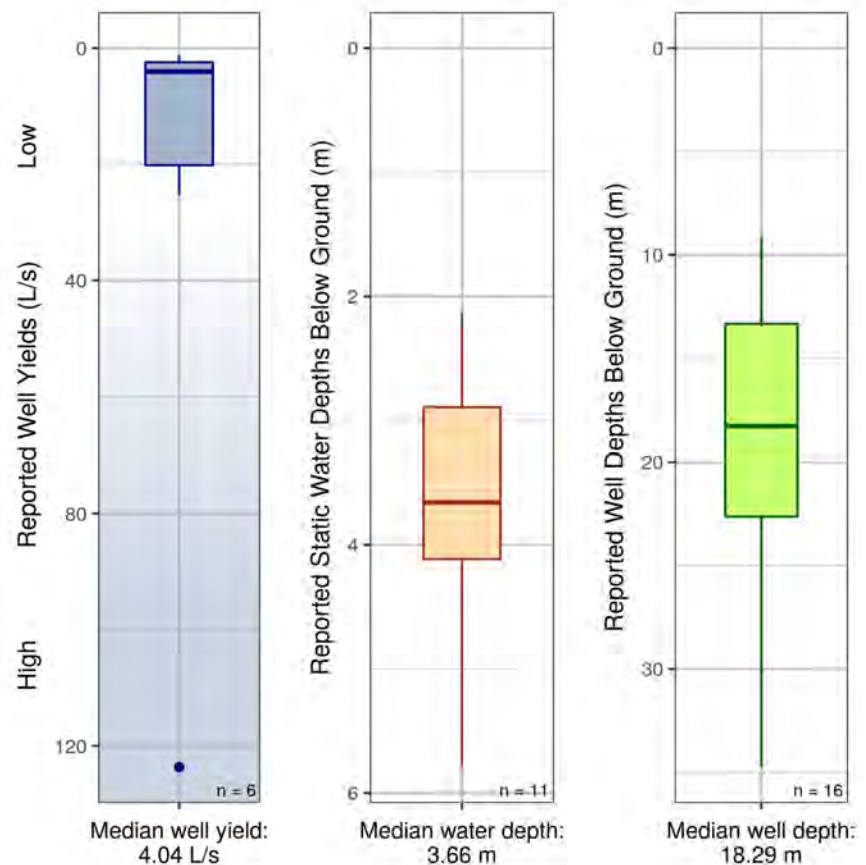


### Aquifer Description (Mapping Report - 2018):

Predominantly unconfined fluvial or glacio-fluvial sand and gravel Aquifers found along lower order (< 3-4) streams in confined valleys with relatively undeveloped floodplains, where aquifer thickness and lateral extent are more limited (subtype = 1c).

#### Aquifer Details

|                                      |                                                               |
|--------------------------------------|---------------------------------------------------------------|
| Region                               | Thompson-Okanagan                                             |
| Water District                       | Nicola                                                        |
| Aquifer Area                         | 7 km <sup>2</sup>                                             |
| No. Wells Correlated to Aquifer      | 16                                                            |
| Vulnerability to Contamination       | High                                                          |
| Productivity                         | High                                                          |
| Aquifer Classification               | IA                                                            |
| Hydraulic Connectivity <sup>1</sup>  | Likely                                                        |
| Aquifer Stress Index                 | Method not applicable - low modelled groundwater availability |
| No. Water Licences Issued to Wells   | Unknown                                                       |
| Observation Wells (Active, Inactive) | 296                                                           |



<sup>1</sup> Based on broad regional assessment

**Disclaimer:** Use of information from Aquifer factsheets (accessed by BC government website) is subject to limitation of liability provisions (further described on that website). That information is provided by the BC government as a public service on an "as is" basis, without warranty of any kind, whether express or implied, and its use is at your own risk. Under no circumstances will the BC government, or its staff, agents and contractors, be responsible or liable to any person or business entity, for any direct, indirect, special, incidental, consequential or any other loss or damages to any person or business entity based on this factsheet or any use of information from it.

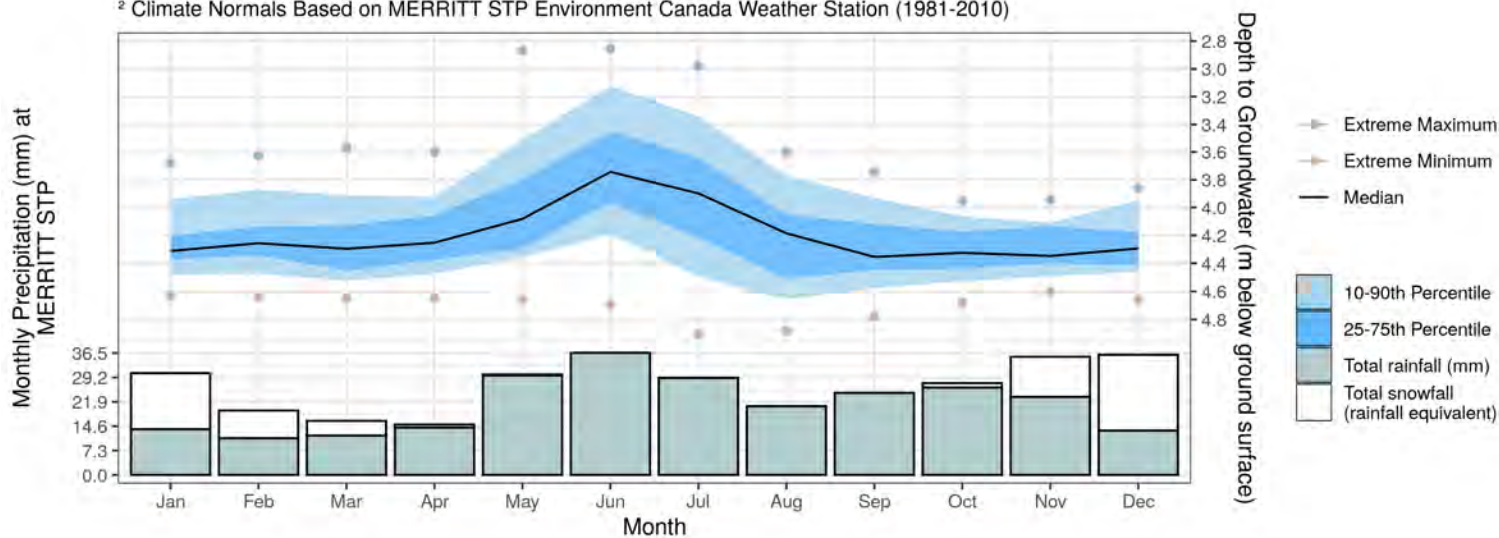
Detailed methods for all figures are described in the companion document (Aquifer Factsheet - Companion Document.pdf).

Factsheet generated: 2020-08-06. Aquifers online: <https://apps.nrs.gov.bc.ca/gwells/aquifers>.

## Monthly Groundwater Level<sup>1</sup> with Precipitation from Climate Normals<sup>2</sup>

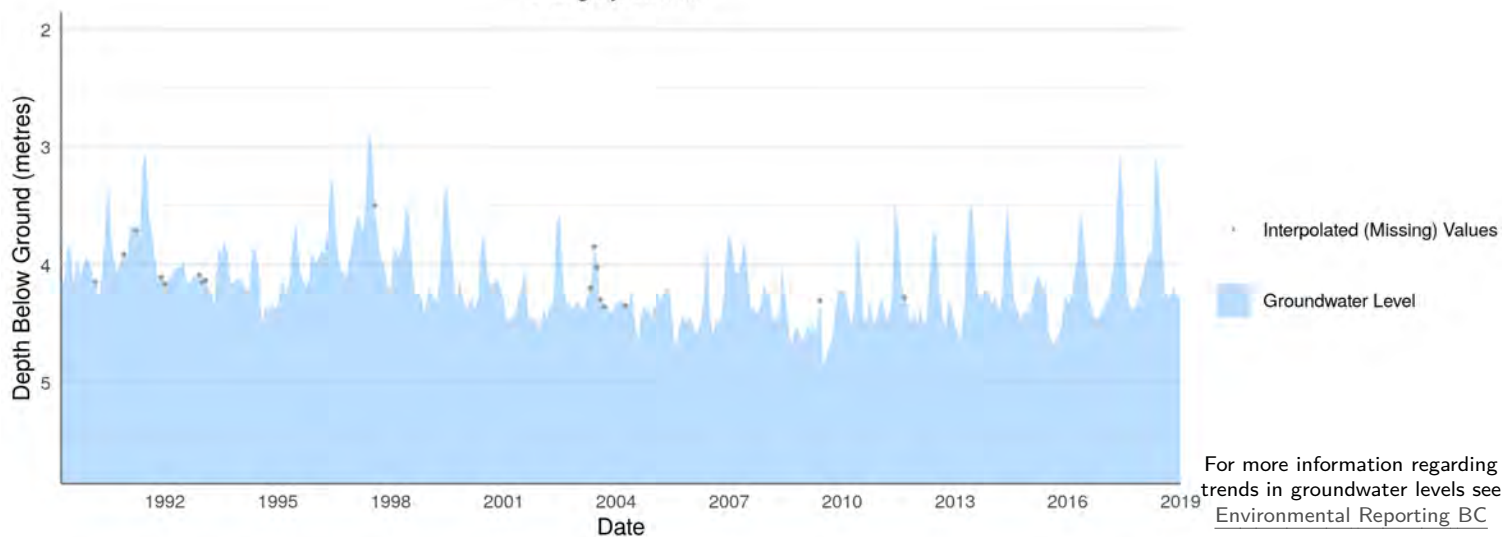
<sup>1</sup> Full Monthly Water Level Summary (31 years of data; 1989-2020)

<sup>2</sup> Climate Normals Based on MERRITT STP Environment Canada Weather Station (1981-2010)



## Groundwater Levels and Long-term Trend

Category: Stable



For more information regarding trends in groundwater levels see [Environmental Reporting BC](#)

## Piper Plot

No summary at this point

Graph not available  
(insufficient chemistry data)

## **AQUIFER CLASSIFICATION WORKSHEET**

**DATE:** March 2018

**AQUIFER REFERENCE NUMBER:** 0074

**DESCRIPTIVE LOCATION OF AQUIFER:** Upper Merritt Aquifer

**NTS MAP SHEET:** 092I017

**BCGS MAP SHEET:** 092I016.2.2.4, 092I.016.2.2.2, 092I.017.1.1.3, 092.017.1.1.1, 092.007.3.3.3, 092.007.3.3.4, 092I.017.1.1.2, 092I.017.1.1.4

**AUTHOR:** Golder Associates Ltd. - Nick Gorski, MSc / Kevin Bennett, PEng

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**CLASSIFICATION:** IA

**RANKING:** 15

**Aquifer Size:** 7.0 km<sup>2</sup>

**Aquifer Boundaries:** The Upper Merritt Aquifer is an unconfined aquifer comprised of modern alluvial sand and gravel deposits associated with the Nicola and Coldwater Rivers near their confluence in the Merritt area. The aquifer boundary is predominantly based on morphology, whereby the aquifer boundary is coincident with the floodplain limits of the Nicola and Coldwater Rivers and the associated topographic change, as the shallow sand and gravel deposits are generally not observed in the limited wells outside of this boundary. Changes in topography and morphology also mark the assumed limits of the Lower Merritt Aquifer in the valleys to the northwest and south. In the valley to the east, at the outflow of the Nicola River from Merritt, the aquifer boundary is assumed to be where the floodplain deposits become more constrained by the valley walls. Subsurface data in this location is sparse but there is an assumed degree of interconnectivity with permeable deposits as the valley widens to the east.

**Aquifer Sub-type:** 1c - Predominantly unconfined fluvial or glacio-fluvial sand and gravel aquifers found along lower order (< 3-4) streams in confined valleys with relatively undeveloped floodplains, where aquifer thickness and lateral extent are more limited.

**Observation Wells:** Observation Well #296 – Merritt (Garcia Road at Library)

**Geologic Formation (overlying materials):** None.

**Geologic Formation (aquifer):** Modern alluvial sand and gravel deposits.

**Confined / Partially Confined / Unconfined:** Unconfined

**Vulnerability:** High. Largely unconfined, high permeability sand and gravel deposits and depth to static water level is generally shallow (0-15m). Based on this, the vulnerability of the aquifer is considered high.

**Productivity:** High (Geomean – 5.4 L/s). Wells completed in the Upper Merritt Aquifer generally have high yields. Estimated hydraulic conductivity is on the order of 0.001 m/sec to 0.002 m/sec (Bennett K. and Caverly, 2009). Four municipal supply wells with rated capacities between 60 to 125 L/s are completed in the unconfined aquifer (Merritt, 2015). Pumping tests completed in 2012 at the Colletville and Vought Park #2 wells indicated specific capacities of 27.1 L/s/m and 9.22 L/s/m, respectively (Western Water, 2012).

**Depth to Water:** Shallow (Average – 4.0 m bgs). Depth to water ranges from 2.1 to 5.6 m below ground surface. Water levels were reported to be approximately 4.5 m below ground surface at OBS Well # 296 in 2016.

**Direction of Groundwater Flow:** Groundwater flow direction is assumed to be from nearby topographic highs towards the topographic lows and surface water features in the valley, namely the Nicola River and Coldwater River. The Coldwater River is a losing reach as it flows through Merritt (Bennett and Caverly, 2009). The Nicola River is inferred to be gaining reach between Nicola Lake and the confluence with the Coldwater River (Golder, 2015). Natural river losses from the Nicola River to underlying aquifers is inferred to be zero in Merritt (Golder 2015).

**Recharge:** The major source of recharge to the aquifer is infiltration from river loss from the Coldwater River as it flows through Merritt (Bennett and Caverly, 2009). Other sources of recharge likely include infiltration of precipitation and inflows from upstream aquifers in the alluvial sediments.

**Domestic Well Density:** Light – < 4 wells/km<sup>2</sup>.

**Type of Known Water Use:** Drinking water (municipal water supply/domestic), irrigation.

**Reliance on Source:** Primary. The Vought Park #1 and #2, Fairley Park and Colletville municipal wells are completed in the Upper Merritt Aquifer.

**Conflicts between Users:** No documented conflicts.

**Quantity Concerns:** No documented concerns.

**Quality Concerns:** Isolated. The municipal water supply wells are rated as Groundwater Under Direct Influence from Surface Water (GWUDI). Isolated occurrences of detectable total coliforms were reported between 2006-2012 (Western Water, 2012). In general, quality of water is high with no documented water quality concerns in recent years.

**Comments:** None.

**Water Budget:** None. Groundwater budgets are currently planned (as of 2018).

**Groundwater Model(s):** None. Numerical or analytical groundwater modelling is currently planned for 2018.

## **References:**

- Bennett K. and Caverly, A. 2009. Review of Ground Water/Surface Water Interaction within the City of Merritt. Province of B.C, Ministry of the Environment, Water Stewardship and Bio. Environmental Stewardship.
- Berardinucci J. and K. Ronneseth, 2002. *Guide to Using the BC Aquifer Classification Maps for the Protection and Management of Groundwater*. BC Ministry of Water, Land and Air Protection, Water Air and Climate Change Branch, Water Protection Section.
- Bobrowsky P., Cathro, M. and Paulen, R. 2001. Quaternary Geology Reconnaissance Studies 92I/2 and 7. British Columbia Geological Survey, Geological Fieldwork 2001. Paper 2002-1.
- CDN Water Management Consultants Inc. 2008. *Surface and Groundwater Supply and Interaction Study – Phase 1 and Phase 2 WUMP-2006-S02*. Prepared for the Nicola Watershed Community Round Table.
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- EBA Engineering Consultants Ltd. 2002. Aquifer Protection Plan City of Merritt, Merritt, BC. Produced for the City of Merritt. EBA file No. 0805-5875017.
- Fulton, R.J. 1975. Quaternary Geology and Geomorphology, Nicola-Vernon Area, British Columbia. Geological Survey of Canada, Memoir 380.
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- Hy-Geo Consulting, Hodge Hydrogeology Consulting, and Azar & Associates. 2009. Provincial Observation Well Network Review British Columbia. Prepared for the BC Ministry of Environment Water Stewardship Division.
- Kalyn, D. 1988. Construction and Testing of Observation Well No. 296 Merritt, British Columbia. B.C. MoE Water Management Branch. Contract No. 84.
- Kosakiski G.T. and Hamilton, R.E. 1982. Water Requirements for the Fisheries Resource of the Nicola River, B.C. Department of Fisheries and Oceans. Canadian Manuscript Report of Fisheries and Aquatic Sciences No. 1680.
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- Opus DaytonKnight. 2012. Merritt Water Utility Master Plan. Prepared for the City of Merritt.
- Pacific Hydrology Consultants Ltd. 1984. Construction and Testing Production Well No. 2. Prepared for Lower Nicola Waterworks District.
- Rathfelder, K.M. 2016. *Modelling Tools for Estimating Effects of Groundwater Pumping on Surface Waters*. Province of B.C., Ministry of Environment, Water Science Series WSS2016-09.

Summit Environmental Consultant Ltd. 2007. Nicola River Watershed, Present and Future Water Demand Study. Presented for the Nicola Watershed Community Round Table.

Van der Gulik, T., Neilsen, D., Fretwell, R., Petersen, A. and Tam, S. 2013. Agriculture Water Demand Model - Report for the Nicola Watershed. Prepared for the B.C. Ministry of Agriculture and B.C. Agricultural Council.

Wei, M., D. M. Allen, A. P. Kohut, S. Grasby, K. Ronneseth, and B. Turner. 2009. Understanding the Types of Aquifers in the Canadian Cordillera Hydrogeologic Region to Better Manage and Protect Groundwater. Streamline Watershed Management Bulletin, FORREX Forum for Research and Extension in Natural Resources.

Western Water Associates Ltd. 2012. Well Assessment and Asset Evaluation: City of Merritt, B.C. Prepared for the City of Merritt.

### **AQUIFER CLASSIFICATION AND RANKING**

| <b><u>Ranking Component:</u></b> | <b><u>Ranking Value</u></b> |
|----------------------------------|-----------------------------|
|----------------------------------|-----------------------------|

|               |   |
|---------------|---|
| Productivity: | 3 |
|---------------|---|

|                |   |
|----------------|---|
| Vulnerability: | 3 |
|----------------|---|

|       |   |
|-------|---|
| Size: | 2 |
|-------|---|

|         |   |
|---------|---|
| Demand: | 3 |
|---------|---|

|              |   |
|--------------|---|
| Type of Use: | 3 |
|--------------|---|

|                   |   |
|-------------------|---|
| Quality Concerns: | 1 |
|-------------------|---|

|                    |   |
|--------------------|---|
| Quantity Concerns: | 0 |
|--------------------|---|

---

|               |           |
|---------------|-----------|
| <b>Total:</b> | <b>15</b> |
|---------------|-----------|

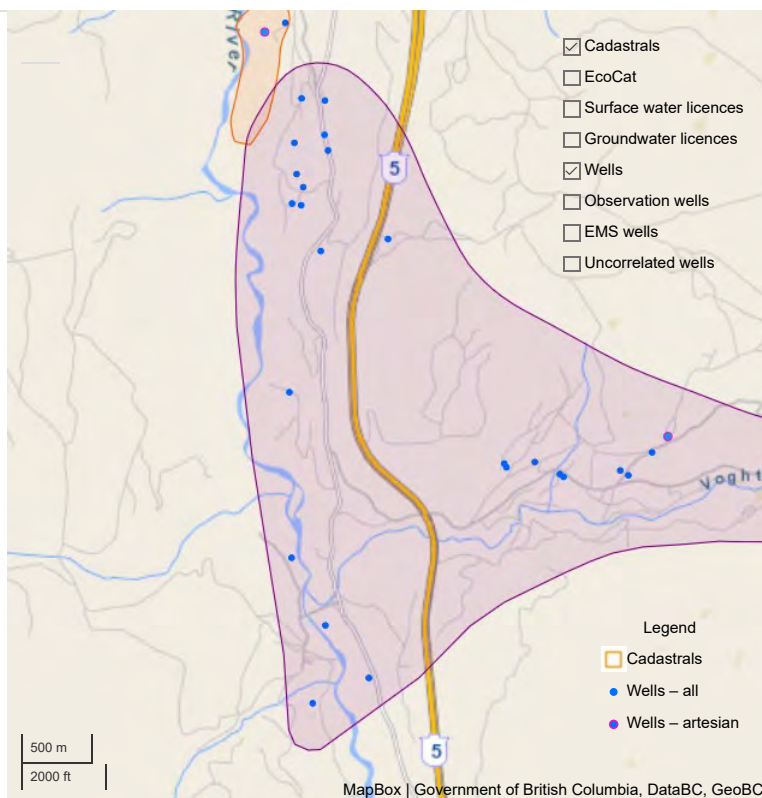
### **Statistical Summary of Well Data for Aquifer**

Total number of wells available for statistical analysis: 10

|                 | Depth to<br>Bedrock<br>(m bgs) | Well<br>Depth<br>(m bgs) | Depth to<br>Water<br>(m bgs) | Reported Est.<br>Well Yield<br>(L/s) | Est. Thickness of<br>Confining Materials<br>(m) |
|-----------------|--------------------------------|--------------------------|------------------------------|--------------------------------------|-------------------------------------------------|
| Number of Wells | NA                             | 10                       | 7                            | 4                                    | NA                                              |
| Minimum         | NA                             | 11.6                     | 2.1                          | 2.2                                  | NA                                              |
| Maximum         | NA                             | 30.5                     | 5.8                          | 25.2                                 | NA                                              |
| Median          | NA                             | 18.3                     | 4.0                          | 4.0                                  | NA                                              |
| Average         | NA                             | 20.1                     | 4.0                          | 8.9                                  | NA                                              |
| Geometric Mean  | NA                             | 19.2                     | 3.8                          | 5.4                                  | NA                                              |

## Aquifer 1165 Summary

|                                 |                               |
|---------------------------------|-------------------------------|
| <b>Aquifer number</b>           | 1165                          |
| <b>Year of mapping</b>          | 2018                          |
| <b>Aquifer name</b>             | Kingsvale                     |
| <b>Litho stratigraphic unit</b> |                               |
| <b>Descriptive location</b>     | Coldwater River Valley        |
| <b>Vulnerability</b>            | Low                           |
| <b>Material type</b>            | Bedrock                       |
| <b>Subtype</b>                  | Fractured crystalline bedrock |
| <b>Quality concerns</b>         |                               |
| <b>Productivity</b>             | Low                           |
| <b>Size (km<sup>2</sup>)</b>    | 9.7                           |
| <b>Calculated well density</b>  | Low                           |



## Well Information

|                                                                  |                             |
|------------------------------------------------------------------|-----------------------------|
| <b>Number of wells correlated to the aquifer</b>                 | 17                          |
| <b>Number of uncorrelated wells within mapped aquifer extent</b> | 11                          |
| <b>Artesian wells</b>                                            | 1 artesian wells in aquifer |

Well info last updated 2/2/2021

## Documentation

### Factsheets

- AQ\_01165\_Aquifer\_Factsheet.pdf

### Other Documents

- AQ\_01165\_Aquifer\_Mapping\_Report.pdf

## Licensing Information

The licensing summaries should be considered estimates. Due to complexities in the structure of the licensing data, reported values should be confirmed through the [e-licensing portal \(https://j200.gov.bc.ca/pub/ams/Default.aspx?PossessionPresentation=AMSPublic&PossessionObjectDef=o\\_ATIS\\_DocumentSearch&PossessionMenuName=WS\\_Main\)](https://j200.gov.bc.ca/pub/ams/Default.aspx?PossessionPresentation=AMSPublic&PossessionObjectDef=o_ATIS_DocumentSearch&PossessionMenuName=WS_Main).

**Number of groundwater licences** 0

**Water withdrawal volume (annual)** No information available.

Licensing information is obtained from the [Water Rights Licence - Public data layer \(https://catalogue.data.gov.bc.ca/dataset/water-rights-licences-public\)](https://catalogue.data.gov.bc.ca/dataset/water-rights-licences-public).

Unique licenses are counted once for each aquifer that they are associated with.

The total licensed volume is counted once for each licence (the total volume may be shared between wells if there are multiple wells in a licence). In cases where specific volumes are licensed for multiple purposes, individual volumes are summed.

## Knowledge Indicators

**Advanced mapping** No information available.

**Artesian advisory** No information available.

**Observation wells** No information available.

**Numerical model** No information available.

**Pumping stress index** No information available.

**Water budget** No information available.

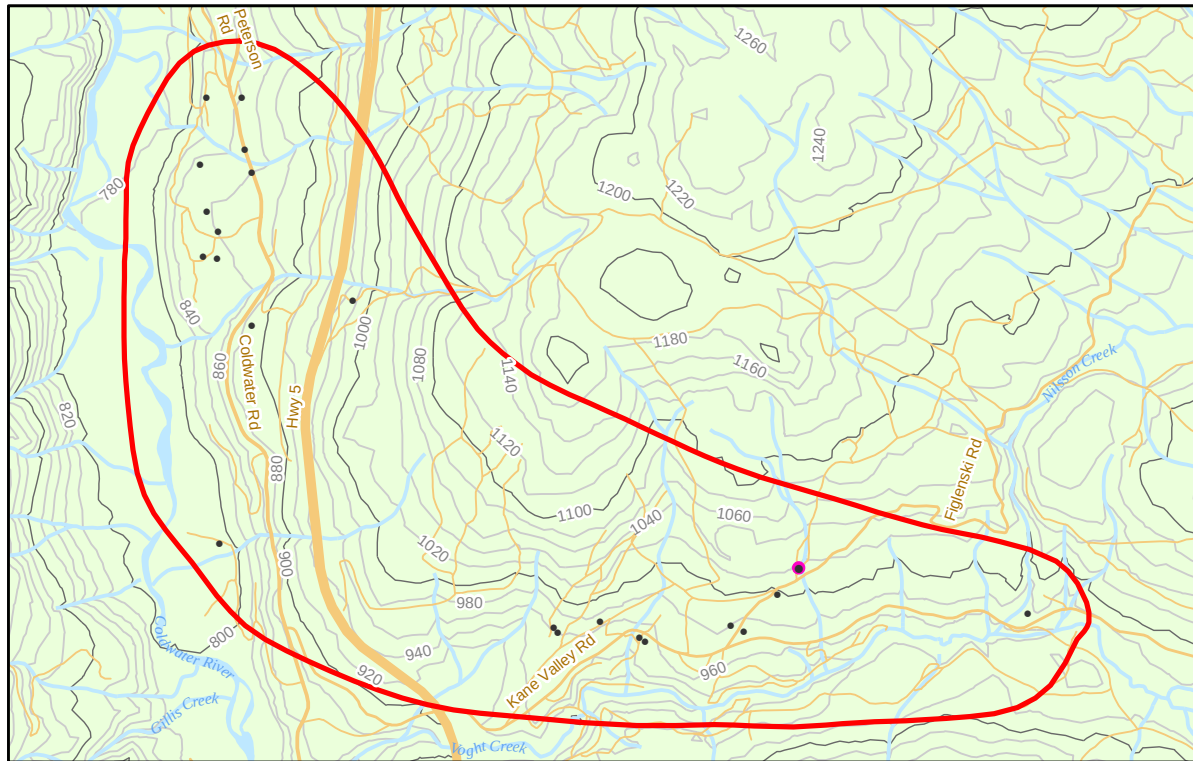
**Water quality information** 0 wells with an EMS ID

**Hydraulically connected (screening level)** Less likely

**Groundwater** No information available.

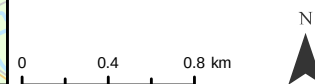
**Surface Water Interactions**

**Other information** No information available.



**Legend**

- Registered Water Well - Artesian
- Registered Water Well
- Aquifer Boundary



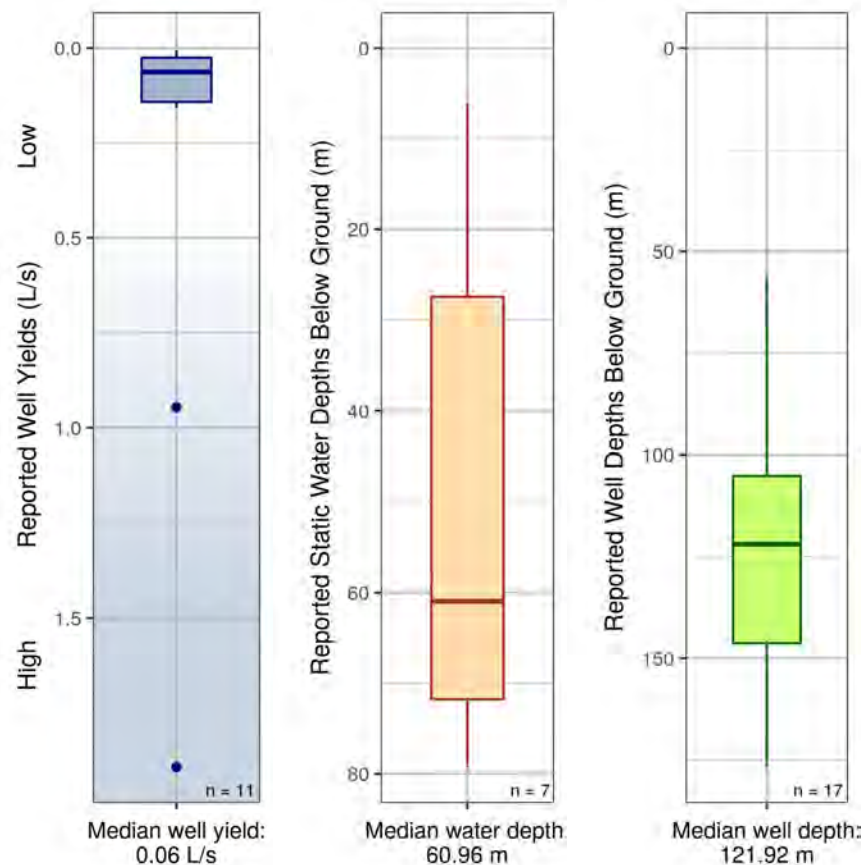
### Aquifer Description (Mapping Report - 2018):

Fractured crystalline (igneous intrusive or meta-morphic, meta-sedimentary, meta-volcanic, volcanic) rock aquifer (subtype = 6b).

#### Aquifer Details

|                                      |                   |
|--------------------------------------|-------------------|
| Region                               | Thompson-Okanagan |
| Water District                       | Nicola            |
| Aquifer Area                         | 7 km <sup>2</sup> |
| No. Wells Correlated to Aquifer      | 17                |
| Vulnerability to Contamination       | Low               |
| Productivity                         | Low               |
| Aquifer Classification               | IIIC              |
| Hydraulic Connectivity <sup>1</sup>  | Not Likely        |
| Aquifer Stress Index                 | Unknown           |
| No. Water Licences Issued to Wells   | Unknown           |
| Observation Wells (Active, Inactive) | None              |

<sup>1</sup> Based on broad regional assessment



**Disclaimer:** Use of information from Aquifer factsheets (accessed by BC government website) is subject to limitation of liability provisions (further described on that website). That information is provided by the BC government as a public service on an "as is" basis, without warranty of any kind, whether express or implied, and its use is at your own risk. Under no circumstances will the BC government, or its staff, agents and contractors, be responsible or liable to any person or business entity, for any direct, indirect, special, incidental, consequential or any other loss or damages to any person or business entity based on this factsheet or any use of information from it.

Detailed methods for all figures are described in the companion document ([Aquifer Factsheet - Companion Document.pdf](#)).

Factsheet generated: 2020-08-06. Aquifers online: <https://apps.nrs.gov.bc.ca/gwells/aquifers>.

## **AQUIFER CLASSIFICATION WORKSHEET**

**DATE:** March 2018

**AQUIFER REFERENCE NUMBER:** 1165

**DESCRIPTIVE LOCATION OF AQUIFER:** Kingsvale Aquifer

**NTS MAP SHEET:** 092H096

**BCGS MAP SHEET:** 092H.096.1.4.2, 092H.096.1.2.4, 092H.096.2.1.3

**AUTHOR:** Golder Associates Ltd. - Nick Gorski, MSc / Kevin Bennett, PEng

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**CLASSIFICATION:** II C

**RANKING:** 8

**Aquifer Size:** 7.4 km<sup>2</sup>

**Aquifer Boundaries:** The Kingsvale Aquifer is a bedrock aquifer located in a sparsely populated area of the Coldwater River Valley system near the community of Kingsvale. Due to limited information and sparse local population, the aquifer is delineated based on the area of development and usage and encompasses small communities and properties along the main roads in the area.

**Aquifer Sub-type:** 6b – Fractured crystalline (igneous intrusive or metamorphic, meta-sedimentary, meta-volcanic volcanic) rock aquifer

**Observation Wells:** None

**Geologic Formation (overlying materials):** The Kingsvale Aquifer is overlain by undifferentiated morainal deposits of granular and clay till. The surficial expression of these glacial drift deposits generally reflects the smooth underlying bedrock and lacks the drumlinoid or rigid surficial expression seen elsewhere in the Nicola region. Well logs indicate a stony and clayey nature of the overburden till material that overlies the bedrock aquifer.

**Geologic Formation (aquifer):** Triassic aged fractured granitic intrusion of the Coastal Intrusions Group. Fulton (1975) noted the common occurrence of granitic intrusions within the Nicola Group volcanic throughout the region. Evidence of the metamorphism is suggested by the argillite strings noted in a well record to at the northern portion of the development.

**Confined / Partially Confined / Unconfined:** Confined / Partially Confined. Groundwater levels for wells completed in the Kingsvale Aquifer are variable, with some reported water levels above the bedrock – overburden interface and some groundwater levels within the bedrock. The rock is generally directly overlain by thicker layers of low permeability material that can act as a confining layer.

**Vulnerability:** Low. The bedrock of the Kingsvale Aquifer is generally directly overlain by 10-50 meters of till and fine-grained, low permeability material.

**Productivity:** Low – (Geomean – 0.2 L/s). Wells completed in the Kingsvale Aquifer are generally very low yielding, with well yields dependent on the degree of fracturing within the

rock mass intersected by each individual well. Some dry boreholes or relatively productive wells are observed depending on the permeability of local rock intersected.

**Depth to Water:** Moderately Deep to Deep (Average 49.3 m bgs). In general, groundwater levels are moderately deep (30 – 60m) to deep (> 60m) within the rock. However, isolated occurrences of moderately shallow groundwater levels above the bedrock – overburden interface are present. No flowing artesian conditions are reported in the aquifer but the potential for flowing artesian conditions exists due to the presence of steep topographic relief.

**Direction of Groundwater Flow:** The general direction of groundwater flow is interpreted to be from local topographic highs in the aquifer area to local valley features / topographic lows, with outflows ultimately reporting to the Coldwater River. Local scale groundwater flow direction within the bedrock is expected to be controlled by the presence and distribution of permeable features and structures within the rock.

**Recharge:** The major likely source of recharge to the aquifer is via precipitation to local topographic highs and subsequent infiltration into the bedrock.

**Domestic Well Density:** Light – < 4 wells/km<sup>2</sup>. The average well density for the Kingsvale Aquifer area is low, with most wells concentrated in Kingsvale and along roadways in the area.

**Type of Known Water Use:** Drinking water (domestic).

**Reliance on Source:** Domestic wells completed in the Kingsvale Aquifer are the sole primary domestic water source for associated users.

**Conflicts between Users:** No documented conflicts.

**Quantity Concerns:** Isolated concerns. No water quantity concerns are documented, however, the aquifer yield is very low, with several noted dry holes and wells that have been hydraulically fractured to improve productivity.

**Quality Concerns:** No known concerns.

**Comments:** None.

**Water Budget:** None.

**Groundwater Model(s):** None.

## **References:**

Berardinucci J. and K. Ronneseth, 2002. *Guide to Using the BC Aquifer Classification Maps for the Protection and Management of Groundwater*. BC Ministry of Water, Land and Air Protection, Water Air and Climate Change Branch, Water Protection Section.

Bobrowsky P., Cathro, M. and Paulen, R. 2001. Quaternary Geology Reconnaissance Studies 92I/2 and 7. British Columbia Geological Survey, Geological Fieldwork 2001. Paper 2002-1.

Cockfield, W.E. 1961. Geology and Mineral Deposits of Nicola Map-Area. British Columbia, Geological Survey of Canada, Department of Mines and Technical Surveys, Memoir 249.

Fulton, R.J. 1975. Quaternary Geology and Geomorphology, Nicola-Vernon Area, British Columbia. Geological Survey of Canada, Memoir 380.

Hy-Geo Consulting, Hodge Hydrogeology Consulting, and Azar & Associates. 2009. Provincial Observation Well Network Review British Columbia. Prepared for the BC Ministry of Environment Water Stewardship Division.

Preto, V.A. 1979. Bulletin 69: Geology of the Nicola Group Between Merritt and Princeton. Ministry of Energy, Mines and Petroleum Resources.

Wei, M., D. M. Allen, A. P. Kohut, S. Grasby, K. Ronneseth, and B. Turner. 2009. Understanding the Types of Aquifers in the Canadian Cordillera Hydrogeologic Region to Better Manage and Protect Groundwater. Streamline Watershed Management Bulletin, FORREX Forum for Research and Extension in Natural Resources.

### **AQUIFER CLASSIFICATION AND RANKING**

| <b><u>Ranking Component:</u></b> | <b><u>Ranking Value</u></b> |
|----------------------------------|-----------------------------|
|----------------------------------|-----------------------------|

|               |   |
|---------------|---|
| Productivity: | 1 |
|---------------|---|

|                |   |
|----------------|---|
| Vulnerability: | 1 |
|----------------|---|

|       |   |
|-------|---|
| Size: | 2 |
|-------|---|

|         |   |
|---------|---|
| Demand: | 1 |
|---------|---|

|              |   |
|--------------|---|
| Type of Use: | 2 |
|--------------|---|

|                   |   |
|-------------------|---|
| Quality Concerns: | 0 |
|-------------------|---|

|                    |   |
|--------------------|---|
| Quantity Concerns: | 1 |
|--------------------|---|

---

|        |   |
|--------|---|
| Total: | 8 |
|--------|---|

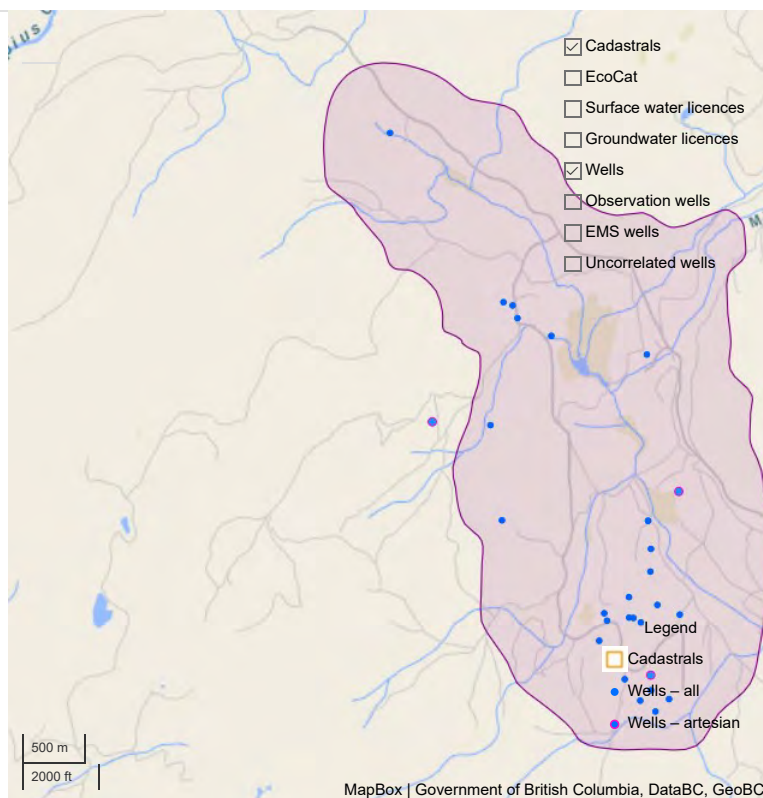
### **Statistical Summary of Well Data for Aquifer**

Total number of wells available for statistical analysis: 17

|                 | Depth to<br>Bedrock<br>(m bgs) | Well<br>Depth<br>(m bgs) | Depth to<br>Water<br>(m bgs) | Reported Est.<br>Well Yield<br>(L/s) | Est. Thickness of<br>Confining Materials<br>(m) |
|-----------------|--------------------------------|--------------------------|------------------------------|--------------------------------------|-------------------------------------------------|
| Number of Wells | 17                             | 17                       | 7                            | 9                                    | 15                                              |
| Minimum         | 3.4                            | 56.08                    | 6.1                          | 0.1                                  | 5.5                                             |
| Maximum         | 64.0                           | 176.78                   | 79.3                         | 1.9                                  | 55.8                                            |
| Median          | 25.3                           | 121.92                   | 61.0                         | 0.1                                  | 29.1                                            |
| Average         | 28.7                           | 119.32                   | 49.3                         | 0.4                                  | 28.0                                            |
| Geometric Mean  | 21.6                           | 114.14                   | 36.8                         | 0.2                                  | 22.9                                            |

## Aquifer 1166 Summary

|                                 |                               |
|---------------------------------|-------------------------------|
| <b>Aquifer number</b>           | 1166                          |
| <b>Year of mapping</b>          | 2018                          |
| <b>Aquifer name</b>             | Paul's Basin                  |
| <b>Litho stratigraphic unit</b> | Nicola Group Volcanics        |
| <b>Descriptive location</b>     | Midday Creek Valley           |
| <b>Vulnerability</b>            | Moderate                      |
| <b>Material type</b>            | Bedrock                       |
| <b>Subtype</b>                  | Fractured crystalline bedrock |
| <b>Quality concerns</b>         |                               |
| <b>Productivity</b>             | Moderate                      |
| <b>Size (km<sup>2</sup>)</b>    | 11.0                          |
| <b>Calculated well density</b>  | Moderate                      |



## Well Information

|                                                                  |                             |
|------------------------------------------------------------------|-----------------------------|
| <b>Number of wells correlated to the aquifer</b>                 | 14                          |
| <b>Number of uncorrelated wells within mapped aquifer extent</b> | 16                          |
| <b>Artesian wells</b>                                            | 1 artesian wells in aquifer |

Well info last updated 2/2/2021

## Documentation

### Factsheets

- AQ\_01166\_Aquifer\_Factsheet.pdf

### Other Documents

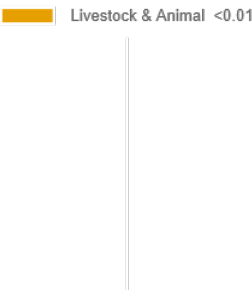
- AQ\_01166\_Aquifer\_Mapping\_Report.pdf

# Licensing Information

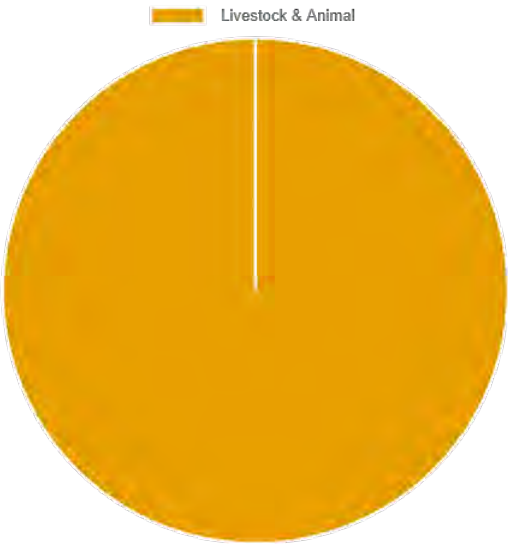
The licensing summaries should be considered estimates. Due to complexities in the structure of the licensing data, reported values should be confirmed through the [e-licensing portal \(https://j200.gov.bc.ca/pub/ams/Default.aspx?PossessionPresentation=AMSPublic&PossessionObjectDef=0\\_ATIS\\_DocumentSearch&PossessionMenuName=WS\\_Main\)](https://j200.gov.bc.ca/pub/ams/Default.aspx?PossessionPresentation=AMSPublic&PossessionObjectDef=0_ATIS_DocumentSearch&PossessionMenuName=WS_Main).

|                                  |                   |
|----------------------------------|-------------------|
| Number of groundwater licences   | 1                 |
| Water withdrawal volume (annual) | 1600 cubic metres |

Licensed volume by purpose (millions of cubic meters)



Number of licences by purpose



| Licence Number | Well Tag Numbers In Licence |
|----------------|-----------------------------|
|----------------|-----------------------------|

|        |       |
|--------|-------|
| 500956 | 57573 |
|--------|-------|

*Licence info last updated 2/9/2021*

Licensing information is obtained from the [Water Rights Licence - Public data layer \(https://catalogue.data.gov.bc.ca/dataset/water-rights-licences-public\)](https://catalogue.data.gov.bc.ca/dataset/water-rights-licences-public).

Unique licenses are counted once for each aquifer that they are associated with.

The total licensed volume is counted once for each licence (the total volume may be shared between wells if there are multiple wells in a licence). In cases where specific volumes are licensed for multiple purposes, individual volumes are summed.

## Knowledge Indicators

|                         |                           |
|-------------------------|---------------------------|
| <b>Advanced mapping</b> | No information available. |
|-------------------------|---------------------------|

|                          |                           |
|--------------------------|---------------------------|
| <b>Artesian advisory</b> | No information available. |
|--------------------------|---------------------------|

|                          |                           |
|--------------------------|---------------------------|
| <b>Observation wells</b> | No information available. |
|--------------------------|---------------------------|

|                        |                           |
|------------------------|---------------------------|
| <b>Numerical model</b> | No information available. |
|------------------------|---------------------------|

|                             |                           |
|-----------------------------|---------------------------|
| <b>Pumping stress index</b> | No information available. |
|-----------------------------|---------------------------|

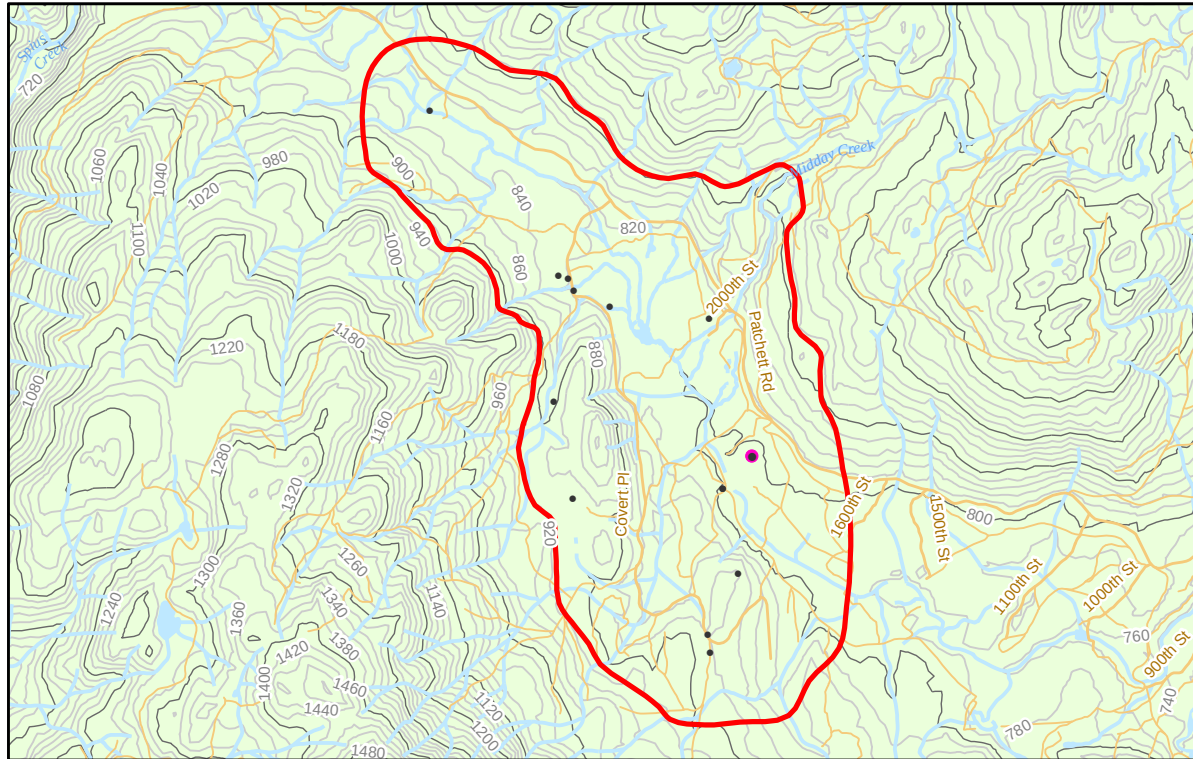
|                     |                           |
|---------------------|---------------------------|
| <b>Water budget</b> | No information available. |
|---------------------|---------------------------|

|                                  |                        |
|----------------------------------|------------------------|
| <b>Water quality information</b> | 0 wells with an EMS ID |
|----------------------------------|------------------------|

|                                                  |             |
|--------------------------------------------------|-------------|
| <b>Hydraulically connected (screening level)</b> | Less likely |
|--------------------------------------------------|-------------|

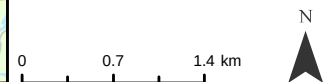
|                                               |                           |
|-----------------------------------------------|---------------------------|
| <b>Groundwater Surface Water Interactions</b> | No information available. |
|-----------------------------------------------|---------------------------|

|                          |                           |
|--------------------------|---------------------------|
| <b>Other information</b> | No information available. |
|--------------------------|---------------------------|



### Legend

- Registered Water Well - Artesian
- Registered Water Well
- Aquifer Boundary



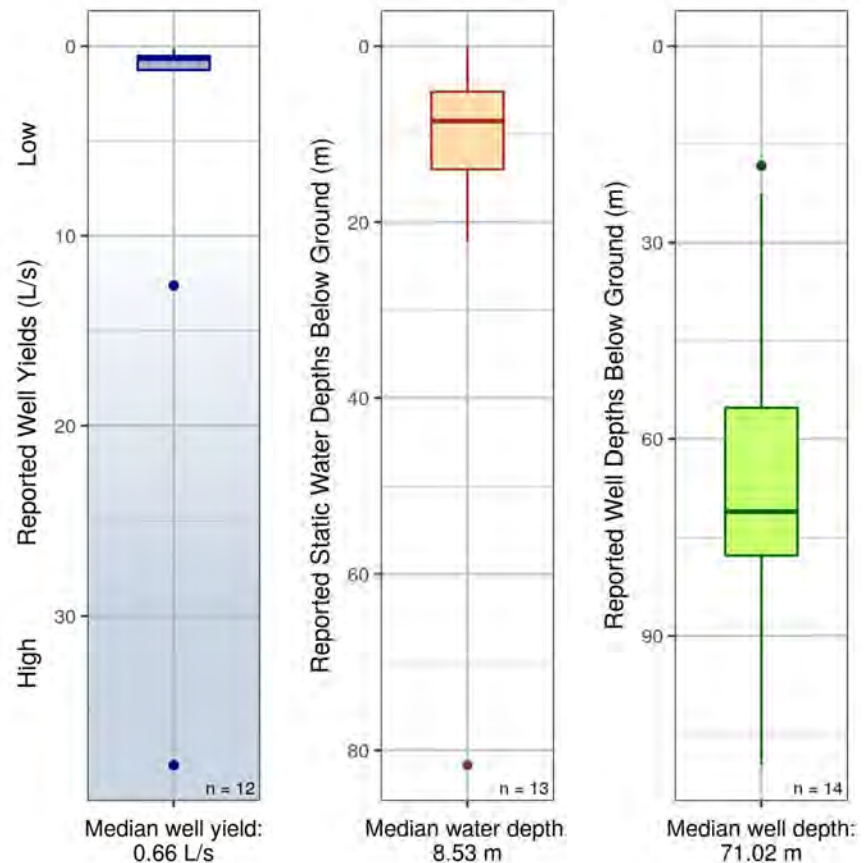
### Aquifer Description (Mapping Report - 2018):

Fractured crystalline (igneous intrusive or meta-morphic, meta-sedimentary, meta-volcanic, volcanic) rock aquifer (subtype = 6b).

#### Aquifer Details

|                                      |                    |
|--------------------------------------|--------------------|
| Region                               | Thompson-Okanagan  |
| Water District                       | Nicola             |
| Aquifer Area                         | 11 km <sup>2</sup> |
| No. Wells Correlated to Aquifer      | 14                 |
| Vulnerability to Contamination       | Moderate           |
| Productivity                         | Moderate           |
| Aquifer Classification               | IIB                |
| Hydraulic Connectivity <sup>1</sup>  | Not Likely         |
| Aquifer Stress Index                 | Unknown            |
| No. Water Licences Issued to Wells   | 1                  |
| Observation Wells (Active, Inactive) | None               |

<sup>1</sup> Based on broad regional assessment



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Detailed methods for all figures are described in the companion document (Aquifer Factsheet - Companion Document.pdf).

Factsheet generated: 2020-08-06. Aquifers online: <https://apps.nrs.gov.bc.ca/gwells/aquifers>.

## **AQUIFER CLASSIFICATION WORKSHEET**

**DATE:** March 2018

**AQUIFER REFERENCE NUMBER:** 1166

**DESCRIPTIVE LOCATION OF AQUIFER:** Paul's Basin Aquifer

**NTS MAP SHEET:** 092I005, 092I006, 092H095 & 092H096

**BCGS MAP SHEET:** 092I.005.2.2.4, 092I.005.2.2.2, 092I.006.1.1.3, 092I.006.1.1.1, 092H.095.4.4.4, 092H.096.3.3.3, 092H.096.3.3.1

**AUTHOR:** Golder Associates Ltd. - Nick Gorski, MSc / Kevin Bennett, PEng

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**CLASSIFICATION:** II B

**RANKING:** 10

**Aquifer Size:** 11.0 km<sup>2</sup>

**Aquifer Boundaries:** The Paul's Basin Aquifer is a bedrock aquifer located in a sparsely populated area in Middy Creek Valley. Due to limited information and sparse local population, the aquifer is delineated based on the area of development and usage and encompasses small residences and properties along the main roads in the area. The aquifer is delineated laterally within the basin just below the 920 m elevation, comprising the area where many of the wells are completed.

**Aquifer Sub-type:** 6b – Fractured crystalline (igneous intrusive or metamorphic, meta-sedimentary, meta-volcanic volcanic) rock aquifer

**Observation Wells:** None

**Geologic Formation (overlying materials):** The Paul's Basin Aquifer is overlain by undifferentiated morainal deposits of granular and clay material, including some permeable glaciofluvial / fluvial sediments associated with Middy Creek.

**Geologic Formation (aquifer):** Nicola Group volcanics.

**Confined / Partially Confined / Unconfined:** Confined.

**Vulnerability:** Moderate. The bedrock of the Paul's Basin Aquifer is generally directly overlain by 10-30 meters of fine-grained, low permeability material but is likely to not be confined throughout due to permeable sediments associated with Middy Creek. The top of the aquifer is generally shallow to moderately shallow (0-30 m).

**Productivity:** Moderate – (Geomean – 1.3 L/s)). Wells completed in the Paul's Basin Aquifer are generally moderate yielding, with well yields dependent on the degree of fracturing within the rock mass intersected by each individual well. Some dry boreholes or relatively productive wells are observed depending on the permeability of local rock intersected.

**Depth to Water:** Shallow (Average 19.9 m gbs). In general, groundwater levels are shallow (0-15m) with groundwater levels generally present above the bedrock – overburden interface. Flowing artesian conditions is reported in the aquifer at a Coldwater Indian Band well.

**Direction of Groundwater Flow:** The general direction of groundwater flow is interpreted to be from local topographic highs in the aquifer area to local valley features / topographic lows, namely the Middy Creek. Local scale groundwater flow direction within the bedrock is expected to be controlled by the presence and distribution of permeable features and structures within the rock.

**Recharge:** The major likely source of recharge to the aquifer is via precipitation to local topographic highs and subsequent infiltration into the bedrock.

**Domestic Well Density:** Light – < 4 wells/km<sup>2</sup>. The average well density for the Paul's Basin Aquifer area is low, with most wells concentrated along roadways in the area.

**Type of Known Water Use:** Drinking water (community well / domestic).

**Reliance on Source:** Domestic wells completed in the Paul's Basin Aquifer are the sole primary domestic water source for associated users.

**Conflicts between Users:** No documented conflicts.

**Quantity Concerns:** No known concerns.

**Quality Concerns:** No known concerns.

**Comments:** None.

**Water Budget:** None.

**Groundwater Model(s):** None.

## **References:**

- Berardinucci J. and K. Ronneseth, 2002. *Guide to Using the BC Aquifer Classification Maps for the Protection and Management of Groundwater*. BC Ministry of Water, Land and Air Protection, Water Air and Climate Change Branch, Water Protection Section.
- Bobrowsky P., Cathro, M. and Paulen, R. 2001. Quaternary Geology Reconnaissance Studies 92I/2 and 7. British Columbia Geological Survey, Geological Fieldwork 2001. Paper 2002-1.
- Cockfield, W.E. 1961. Geology and Mineral Deposits of Nicola Map-Area. British Columbia, Geological Survey of Canada, Department of Mines and Technical Surveys, Memoir 249.
- Fulton, R.J. 1975. Quaternary Geology and Geomorphology, Nicola-Vernon Area, British Columbia. Geological Survey of Canada, Memoir 380.
- Hy-Geo Consulting, Hodge Hydrogeology Consulting, and Azar & Associates. 2009. Provincial Observation Well Network Review British Columbia. Prepared for the BC Ministry of Environment Water Stewardship Division.

Preto, V.A. 1979. Bulletin 69: Geology of the Nicola Group Between Merritt and Princeton. Ministry of Energy, Mines and Petroleum Resources.

Wei, M., D. M. Allen, A. P. Kohut, S. Grasby, K. Ronneseth, and B. Turner. 2009. Understanding the Types of Aquifers in the Canadian Cordillera Hydrogeologic Region to Better Manage and Protect Groundwater. Streamline Watershed Management Bulletin, FORREX Forum for Research and Extension in Natural Resources.

### **AQUIFER CLASSIFICATION AND RANKING**

| <b><u>Ranking Component:</u></b> | <b><u>Ranking Value</u></b> |
|----------------------------------|-----------------------------|
|----------------------------------|-----------------------------|

|               |   |
|---------------|---|
| Productivity: | 2 |
|---------------|---|

|                |   |
|----------------|---|
| Vulnerability: | 2 |
|----------------|---|

|       |   |
|-------|---|
| Size: | 2 |
|-------|---|

|         |   |
|---------|---|
| Demand: | 2 |
|---------|---|

|              |   |
|--------------|---|
| Type of Use: | 2 |
|--------------|---|

|                   |   |
|-------------------|---|
| Quality Concerns: | 0 |
|-------------------|---|

|                    |   |
|--------------------|---|
| Quantity Concerns: | 0 |
|--------------------|---|

---

|               |           |
|---------------|-----------|
| <b>Total:</b> | <b>10</b> |
|---------------|-----------|

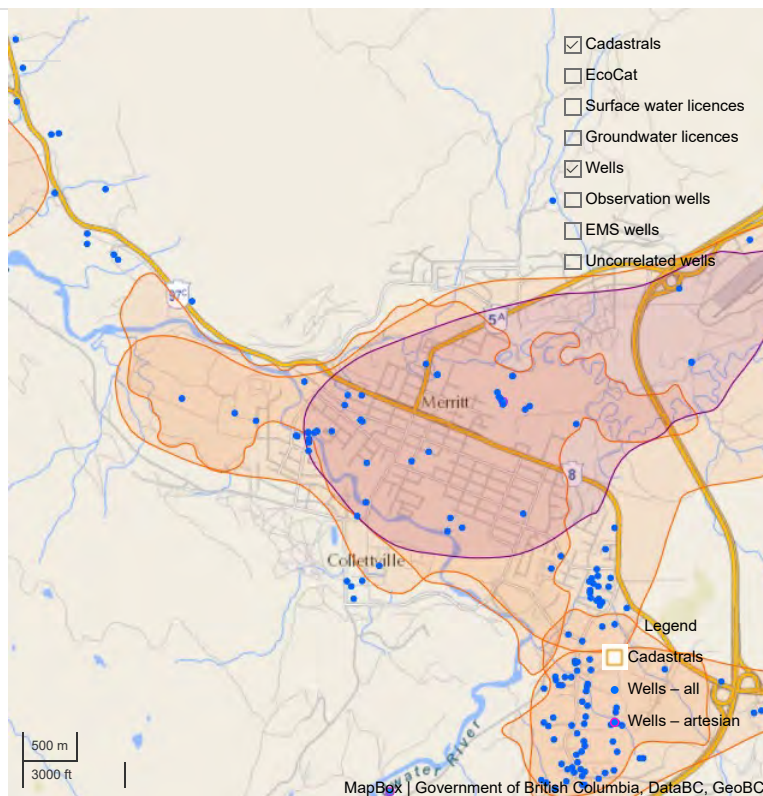
### **Statistical Summary of Well Data for Aquifer**

Total number of wells available for statistical analysis: 9

|                 | Depth to<br>Bedrock<br>(m bgs) | Well<br>Depth<br>(m bgs) | Depth to<br>Water<br>(m bgs) | Reported Est.<br>Well Yield<br>(L/s) | Est. Thickness of<br>Confining Materials<br>(m) |
|-----------------|--------------------------------|--------------------------|------------------------------|--------------------------------------|-------------------------------------------------|
| Number of Wells | 9                              | 9                        | 9                            | 9                                    | 9                                               |
| Minimum         | 0.3                            | 61.0                     | 5.2                          | 0.1                                  | 0                                               |
| Maximum         | 86.3                           | 109.7                    | 81.7                         | 37.9                                 | 32.6                                            |
| Median          | 10.1                           | 73.2                     | 14.0                         | 0.6                                  | 10.1                                            |
| Average         | 19.2                           | 77.9                     | 19.9                         | 8.9                                  | 10.8                                            |
| Geometric Mean  | 7.1                            | 76.7                     | 13.6                         | 1.3                                  | 6.0                                             |

## Aquifer 1167 Summary

|                                 |                                    |
|---------------------------------|------------------------------------|
| <b>Aquifer number</b>           | 1167                               |
| <b>Year of mapping</b>          | 2018                               |
| <b>Aquifer name</b>             | Lower Merritt                      |
| <b>Litho stratigraphic unit</b> |                                    |
| <b>Descriptive location</b>     | Lower Merritt                      |
| <b>Vulnerability</b>            | Low                                |
| <b>Material type</b>            | Sand and Gravel                    |
| <b>Subtype</b>                  | Confined sand and gravel - glacial |
| <b>Quality concerns</b>         | Isolated                           |
| <b>Productivity</b>             | High                               |
| <b>Size (km<sup>2</sup>)</b>    | 6.8                                |
| <b>Calculated well density</b>  | Moderate                           |



## Well Information

|                                                                  |                             |
|------------------------------------------------------------------|-----------------------------|
| <b>Number of wells correlated to the aquifer</b>                 | 5                           |
| <b>Number of uncorrelated wells within mapped aquifer extent</b> | 22                          |
| <b>Artesian wells</b>                                            | 0 artesian wells in aquifer |

Well info last updated 2/2/2021

## Documentation

### Factsheets

- AQ\_01167\_Aquifer\_Factsheet.pdf

### Other Documents

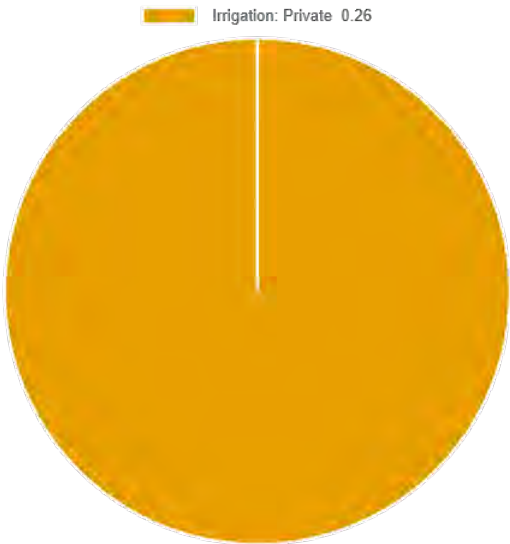
- AQ\_01167\_Aquifer\_Mapping\_Report.pdf

# Licensing Information

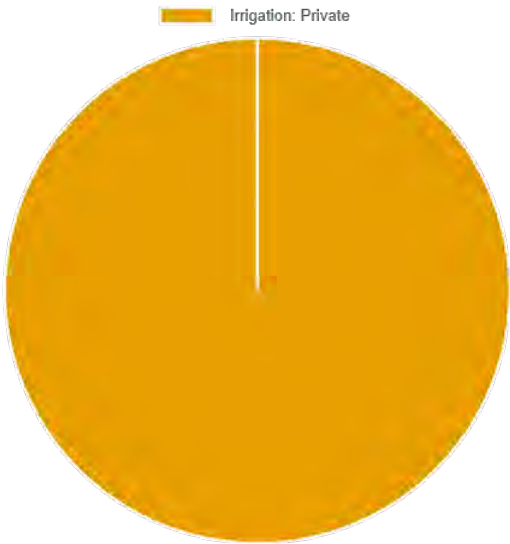
The licensing summaries should be considered estimates. Due to complexities in the structure of the licensing data, reported values should be confirmed through the [e-licensing portal \(https://j200.gov.bc.ca/pub/ams/Default.aspx?PossessionPresentation=AMSPublic&PossessionObjectDef=o\\_ATIS\\_DocumentSearch&PossessionMenuName=WS\\_Main\)](https://j200.gov.bc.ca/pub/ams/Default.aspx?PossessionPresentation=AMSPublic&PossessionObjectDef=o_ATIS_DocumentSearch&PossessionMenuName=WS_Main).

|                                  |                     |
|----------------------------------|---------------------|
| Number of groundwater licences   | 1                   |
| Water withdrawal volume (annual) | 261267 cubic metres |

Licensed volume by purpose (millions of cubic meters)



Number of licences by purpose



| Licence Number | Well Tag Numbers In Licence |
|----------------|-----------------------------|
| 500554         | 114307                      |

*Licence info last updated 2/9/2021*

Licensing information is obtained from the [Water Rights Licence - Public data layer \(https://catalogue.data.gov.bc.ca/dataset/water-rights-licences-public\)](https://catalogue.data.gov.bc.ca/dataset/water-rights-licences-public).

Unique licenses are counted once for each aquifer that they are associated with.

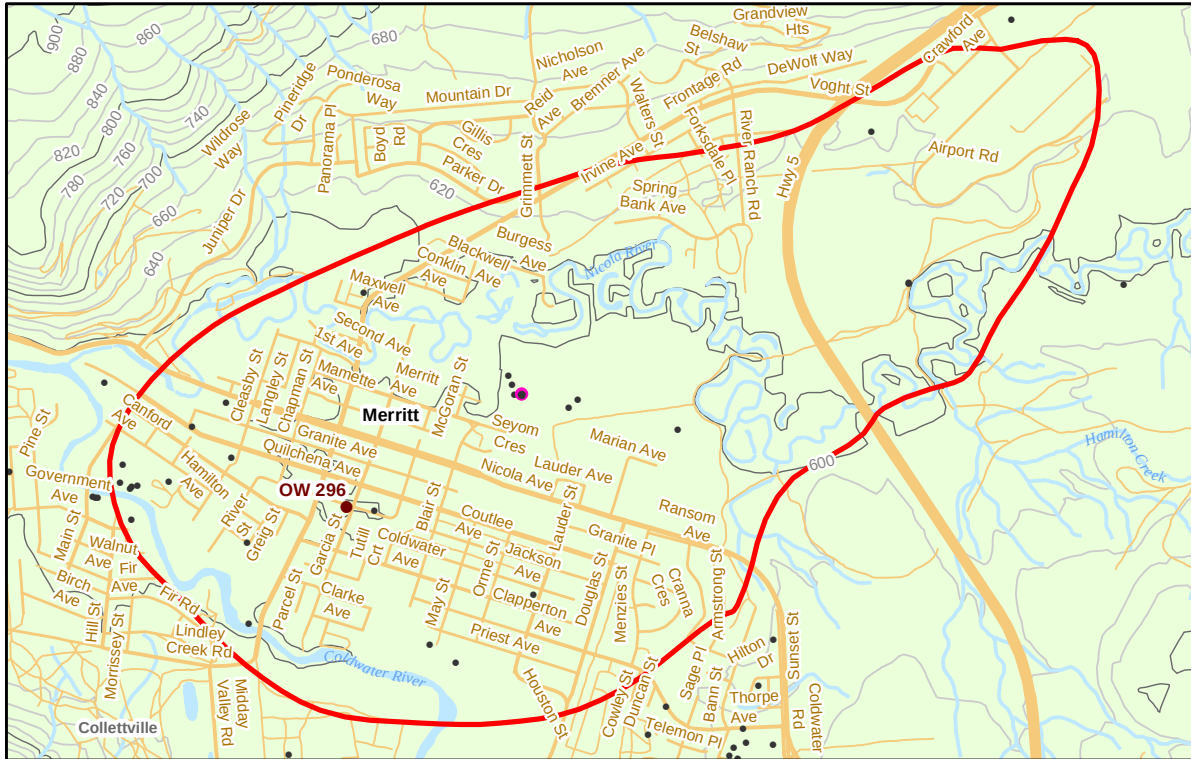
The total licensed volume is counted once for each licence (the total volume may be shared between wells if there are multiple wells in a licence). In cases where specific volumes are licensed for multiple purposes, individual volumes are summed.

## Knowledge Indicators

|                                                  |                           |
|--------------------------------------------------|---------------------------|
| <b>Advanced mapping</b>                          | No information available. |
| <b>Artesian advisory</b>                         | No information available. |
| <b>Observation wells</b>                         | No information available. |
| <b>Numerical model</b>                           | No information available. |
| <b>Pumping stress index</b>                      | No information available. |
| <b>Water budget</b>                              | No information available. |
| <b>Water quality information</b>                 | 1 wells with an EMS ID    |
| <b>Hydraulically connected (screening level)</b> | Less likely               |
| <b>Groundwater Surface Water Interactions</b>    | No information available. |
| <b>Other information</b>                         | No information available. |

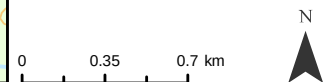
# Aquifer #1167

## Lower Merritt



**Legend**

- Registered Water Well - Artesian
- Registered Water Well
- Active Observation Well
- Aquifer Boundary



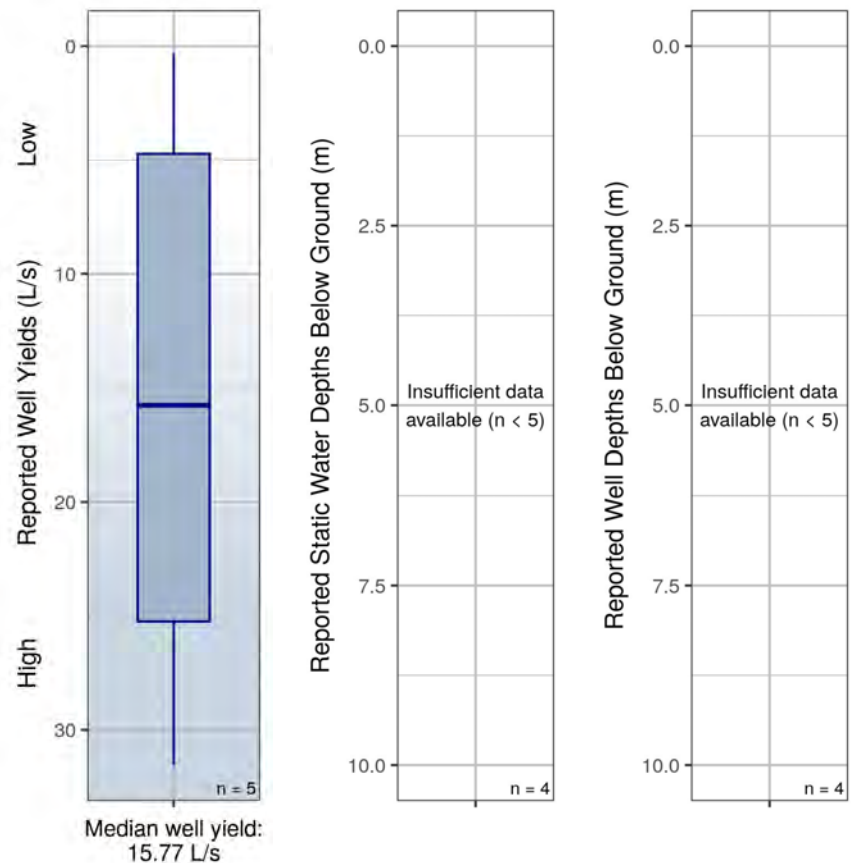
### Aquifer Description (Mapping Report - 2018):

Confined Glacio-fluvial sand and gravel aquifers underneath till, in between till layers, or underlying glacio-lacustrine deposits (subtype = 4b).

#### Aquifer Details

|                                      |                     |
|--------------------------------------|---------------------|
| Region                               | Thompson-Okanagan   |
| Water District                       | Nicola              |
| Aquifer Area                         | 6.8 km <sup>2</sup> |
| No. Wells Correlated to Aquifer      | 5                   |
| Vulnerability to Contamination       | Low                 |
| Productivity                         | High                |
| Aquifer Classification               | IIC                 |
| Hydraulic Connectivity <sup>1</sup>  | Not Likely          |
| Aquifer Stress Index                 | Unknown             |
| No. Water Licences Issued to Wells   | 1                   |
| Observation Wells (Active, Inactive) | None                |

<sup>1</sup> Based on broad regional assessment



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Detailed methods for all figures are described in the companion document ([Aquifer Factsheet - Companion Document.pdf](#)).

Factsheet generated: 2020-08-06. Aquifers online: <https://apps.nrs.gov.bc.ca/gwells/aquifers>.

## **AQUIFER CLASSIFICATION WORKSHEET**

**DATE:** March 2018

**AQUIFER REFERENCE NUMBER:** 1167

**DESCRIPTIVE LOCATION OF AQUIFER:** Lower Merritt Aquifer

**NTS MAP SHEET:** 092I017

**BCGS MAP SHEET:** 092I.017.1.1.1, 092I.017.1.1.3, 092.017.1.1.4, 092.017.1.1.2, 092.017.1.2.3

**AUTHOR:** Golder Associates Ltd. - Nick Gorski, MSc / Kevin Bennett, PEng

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**CLASSIFICATION:** II C

**RANKING:** 11

**Aquifer Size:** 6.8 km<sup>2</sup>

**Aquifer Boundaries:** The Lower Merritt Aquifer is a confined glaciofluvial sand and gravel aquifer which is the third and deepest known aquifer in the Merritt basin, first observed between 75 to 95 meters below local ground surface. The aquifer is poorly defined and understood only from the lithology of five deep wells in the Merritt area in addition to its inferred existence from three other deep wells at similar completion depths but with no lithological information. From these deep wells, intervals of up to 70 meters of coarse material (predominantly gravel) are observed, overlain by and separated from the Middle Merritt Aquifer by 10-25 meters of finer-grained silts and clays. The thickness of the deposit suggests a larger-scale, more regional deposition that would be laterally extensive in the Merritt basin but this is hypothetical and undetermined at this time. As a result, the lateral boundaries are mapped roughly to the margins of the Merritt Basin but these extents are subject to revision and reinterpretation as additional data becomes available. Flowing artesian wells are noted to occur in the Lower Merritt Aquifer.

**Aquifer Sub-type:** 4b - Confined glaciofluvial sand and gravel aquifers underneath till, in between till layers, or underlying glacio-lacustrine deposits.

**Observation Wells:** None

**Geologic Formation (overlying materials):** Directly overlain by 0 to 25 meters of fine-grained glaciolacustrine deposits.

**Geologic Formation (aquifer):** Glaciofluvial sand and gravel deposits either associated with the early stratified unit of the Kamloops Drift or with earlier Okanagan Center Drift

**Confined / Partially Confined / Unconfined:** Confined

**Vulnerability:** Low. The Lower Merritt Aquifer is directly overlain and separated from the Middle Merritt Aquifer by 10-25 m of fine grained, low permeability material.

**Productivity:** High – (Geomean – 3.0 L/s) Wells completed in the confined Lower Merritt Aquifer are highly productive. The Kengard municipal well is rated to pump at 50 L/sec (City of Merritt, 2015). An

irrigation well in the vicinity of the Kengard Municipal well has head pressures above local ground surface.

**Depth to Water:** Shallow (Average – 11.7 m bgs). Hydraulic heads are within close proximity to surface and an irrigation well in the vicinity of the Kengard production well has measured hydraulic head pressure above ground surface (flowing artesian). No other flowing artesian conditions are reported, however the potential exists in the aquifer and have been historically documented.

**Direction of Groundwater Flow:** Data is sparse but groundwater flow direction is assumed to be from nearby topographic highs and then ultimately upwards towards the topographic lows and surface water features in the basin, mediated by overlying deposits.

**Recharge:** Recharge is assumed to be predominantly via mountain block recharge from the surrounding highlands.

**Domestic Well Density:** Light – < 4 wells/km<sup>2</sup>.

**Type of Known Water Use:** Drinking water (municipal), irrigation. The Kengard production well for the City of Merritt is completed in the confined Lower Merritt Aquifer.

**Reliance on Source:** Primary.

**Conflicts between Users:** No documented conflicts.

**Quantity Concerns:** No documented concerns.

**Quality Concerns:** Isolated. Manganese and total dissolved solids have been reported to exceed the aesthetic objectives at the Kengard production well (Western Water, 2012).

**Comments:** None.

**Water Budget:** None.

**Groundwater Model(s):** None.

## **References:**

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### **AQUIFER CLASSIFICATION AND RANKING**

| <b><u>Ranking Component:</u></b> | <b><u>Ranking Value</u></b> |
|----------------------------------|-----------------------------|
|----------------------------------|-----------------------------|

|               |   |
|---------------|---|
| Productivity: | 3 |
|---------------|---|

|                |   |
|----------------|---|
| Vulnerability: | 1 |
|----------------|---|

|       |   |
|-------|---|
| Size: | 2 |
|-------|---|

|         |   |
|---------|---|
| Demand: | 2 |
|---------|---|

|              |   |
|--------------|---|
| Type of Use: | 3 |
|--------------|---|

|                   |   |
|-------------------|---|
| Quality Concerns: | 0 |
|-------------------|---|

|                    |   |
|--------------------|---|
| Quantity Concerns: | 0 |
|--------------------|---|

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|               |           |
|---------------|-----------|
| <b>Total:</b> | <b>11</b> |
|---------------|-----------|

### **Statistical Summary of Well Data for Aquifer**

Total number of wells available for statistical analysis: 5

|                 | Depth to<br>Bedrock<br>(m bgs) | Well<br>Depth<br>(m bgs) | Depth to<br>Water<br>(m bgs) | Reported Est.<br>Well Yield<br>(L/s) | Est. Thickness of<br>Confining Materials<br>(m) |
|-----------------|--------------------------------|--------------------------|------------------------------|--------------------------------------|-------------------------------------------------|
| Number of Wells | NA                             | 5                        | 4                            | 5                                    | 5                                               |
| Minimum         | NA                             | 93.0                     | 1.8                          | 0.3                                  | 12.2                                            |
| Maximum         | NA                             | 166.1                    | 19.8                         | 31.5                                 | 24.4                                            |
| Median          | NA                             | 109.7                    | 12.6                         | 4.7                                  | 23.2                                            |
| Average         | NA                             | 121.1                    | 11.7                         | 10.5                                 | 20.9                                            |
| Geometric Mean  | NA                             | 118.5                    | 7.9                          | 3.0                                  | 20.3                                            |