

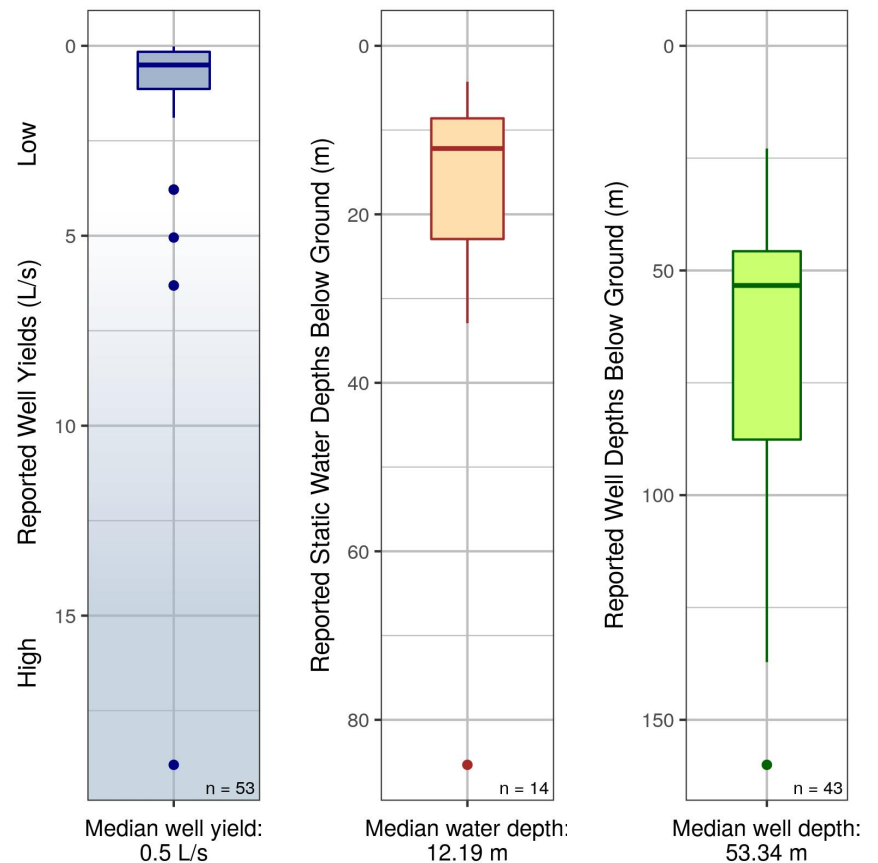
Aquifer Description (Mapping Report - 2012):

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

Aquifer Details

Region	South Coast
Water District	Vancouver
Aquifer Area	14.5 km ²
No. Wells Correlated to Aquifer	57
Vulnerability to Contamination	High
Productivity	Moderate
Aquifer Classification	IIA
Hydraulic Connectivity ¹	Not Likely
Aquifer Stress Index	Less stressed
No. Water Licences Issued to Wells	Unknown
Observation Wells (Active, Inactive)	None

¹ 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 Factsheet - Companion Document

Updated 2018-12-06

The purpose of this companion document is to provide more detailed information related to the terms, analytical methods, and data sources used to produce the Aquifer factsheets.

Disclaimer

The information in this Factsheet has been prepared from information currently available to the BC government. As available information is limited in nature, this Factsheet only provides a broad overview of information about the aquifer and is not intended to provide a comprehensive description of the aquifer. The Factsheet is being provided as a public service on an “as is” basis and without any warranty as to the fitness or suitability of the information in it for any particular purpose. The information in this Factsheet has not been tested or verified by the BC government. Consequently, this Factsheet should not be relied upon as providing complete or specific information or advice for use in responding to or assessing particular sites or circumstances.

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Aquifer Description (based on Subtype)

The aquifer description is a generic description based on the subtype classification of the aquifer assigned at the time of mapping. A complete list of Aquifer subtype code descriptions can be found on the [BC Government ground water website](#).

<https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/groundwater-wells/aquifers/aquifer-subtype-code-description>

Water District

British Columbia is divided into named and described water districts. A complete list of the Water Districts is provided in the [Water Sustainability Act](#).

http://www.bclaws.ca/civix/document/id/complete/statreg/38_2016

No. of Wells Correlated to Aquifers

The number of wells correlated to an aquifer represents the number of wells that were identified as being completed within the aquifer at the time of mapping. There are several reasons why wells appearing within the aquifer polygon may not be correlated to the aquifer including: a) the well was constructed after the time of mapping, b) no lithological information provided on the well log, or c) the well was completed either below or above the identified aquifer unit.

Vulnerability, Productivity and Aquifer classification

Values are determined at the time of mapping according to the BC Aquifer Classification system, which are described in [The Guide to using the BC Aquifer Classification Maps – For the Protection and Management of Groundwater](#). The guide presents a detailed description of the BC Aquifer Classification System, as well as the methodologies employed in classifying the aquifer, and discussions on some of the limitations of the data. This should help the reader to better understand the criteria used to identify, delineate and classify an aquifer. The classification component characterizes the aquifer based on the level of development of the groundwater resource (the water supply available relative to the amount of demand placed on that water supply) at the time of mapping, and also based on the vulnerability of the aquifer to contamination.

http://www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater/aquifers/reports/aquifer_maps.pdf

Hydraulic Connectivity

The likelihood of hydraulic connectivity is inferred based on aquifer sub-type. The determination is based on a desktop assessment and has not been field tested or verified. The guidance document [Determining the Likelihood of Hydraulic Connection](#) provides detailed information related to the methodologies and assumptions underlying the assessment.

http://a100.gov.bc.ca/appsdata/acat/documents/r50832/HydraulicConnectMW3_1474311684426_4310694949.pdf

BC Aquifer Stress Index

The aquifer stress index uses the groundwater footprint and aquifer-scale estimates of withdrawal, recharge and the groundwater contribution to environmental flows. A description of the data sources and the methods and limitations is available on the BC Aquifer Stress index website.

Aquifers are classified as:

- More stressed (highly certain) if ALL results suggest aquifer stress
- More stressed (less certain) if SOME results suggest aquifer stress
- Less stressed if NONE of the results suggest aquifer stress
- Methods not applicable where data is not available or for confined aquifers

<http://governmentofbc.maps.arcgis.com/home/webmap/viewer.html?webmap=6c137fb01a364ee699440a28619e45c2>

Reported Well Yield

Reported well yields are based on the estimates recorded by the driller at the time of well construction. It is only an estimate and is not necessarily based on measured values. As defined in [The Guide to using the BC Aquifer Classification Maps – For the Protection and Management of Groundwater](#), estimated yields are categorized as follows:

- < 0.3 L/s are considered “Low” yield
- 0.3 - 3.0 L/s are considered “Medium” yield
- > 3.0 L/s are considered “High” yield

http://www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater/aquifers/reports/aquifer_maps.pdf

Reported Static Water Depth

Water depth is reported in meters below ground surface and represents the water level measured by the driller at the time of well construction.

Reported Well Depth

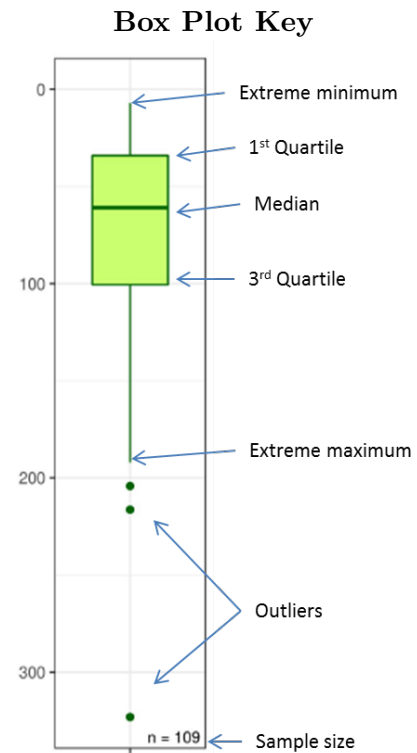
The well depth is reported in meters below ground surface as measured by the driller at the time of well construction.

Summary Box Plots for Well Yield, Static Water Depth and Well Depth

The boxplots provide a summary of the available information for wells correlated to the aquifer.

- n = the number of wells included in the summary
- upper 'hinge' = first quartile
- lower 'hinge' = third quartile
- crossbar = median
- whisker = maximum and minimum values (within interquartile range)
- points = outliers (defined as 1.5 x interquartile range)

Note: Data not plotted when $n < 5$



Water Level Summary and Precipitation Summary Plot

The Water Level Summary Plots are based on data collected through the Provincial Groundwater Observation Well Network.

<https://catalogue.data.gov.bc.ca/dataset/57c55f10-cf8e-40bb-aae0-2eff311f1685>

The dataset comprises daily mean water levels collected from all provincial observation wells. Historically, the water level data was collected at varying frequencies and with measurement frequencies that have changed over the years. To summarize the data, the median values were calculated for any month that has more than one reading. The median and percentile values plotted on the graph were then calculated based on monthly values for all years available. Monthly water level summaries were produced for observation wells with a minimum of 10 years of data. "Preliminary" plots are provided for data sets with between 5 and 10 years of data. The extreme Minimum and Maximum values represent the highest and lowest values ever recorded for a particular month.

The Precipitation Summary Plots are based on the [Canadian Climate Normals \(1981-2010\) dataset accessible from the Environment Canada website](#). The nearest climate station at similar elevation to the aquifer (and typically within a maximum distance of 10km) was selected as representative.

http://climate.weather.gc.ca/climate_normals

Trend Analysis

The trend analysis was conducted by Environmental Reporting BC. A full description of the methods used for the trends analysis are available on the [State of The Environment website](#).

<http://www.env.gov.bc.ca/soe/indicators/water/groundwater-levels.html>

Piper Plot

A piper diagram is a graphical representation of the chemistry of a water sample. The cations (calcium, magnesium and sodium plus potassium) and anions (sulfate, chloride and carbonate plus hydrogen carbonate) are shown on separate ternary plots and then projected onto the diamond. Water samples shown on the Piperplot can be grouped into hydrochemical facies which provides insight into the flow path and chemical alteration of a sample.

The chemistry results presented in the Piper plot data were obtained from the Environmental Monitoring System (EMS) web reporting site (<https://a100.gov.bc.ca/pub/ems>) using the R package “rems” (<https://github.com/bcgov/rems/blob/master/README.Rmd>) and converted to a format compatible with the groundwater software program Aquachem (Waterloo Hydrogeologic, 2014). Chemistry results were screened for data quality by assessing the charge balance error. Only samples with a charge balance error of less than 10% were included on the piper plot.

Reference

Waterloo Hydrogeologic (2014). AquaChem Water Quality Analysis & Geochemical Modeling v.2014.2.