

Nova Scotia Department of Energy and Mines
Geoscience and Mines Branch - Geological Survey

Open File Map ME 2020-001

Uranium in Groundwater
from Bedrock Aquifers in Nova Scotia

G. W. Kennedy

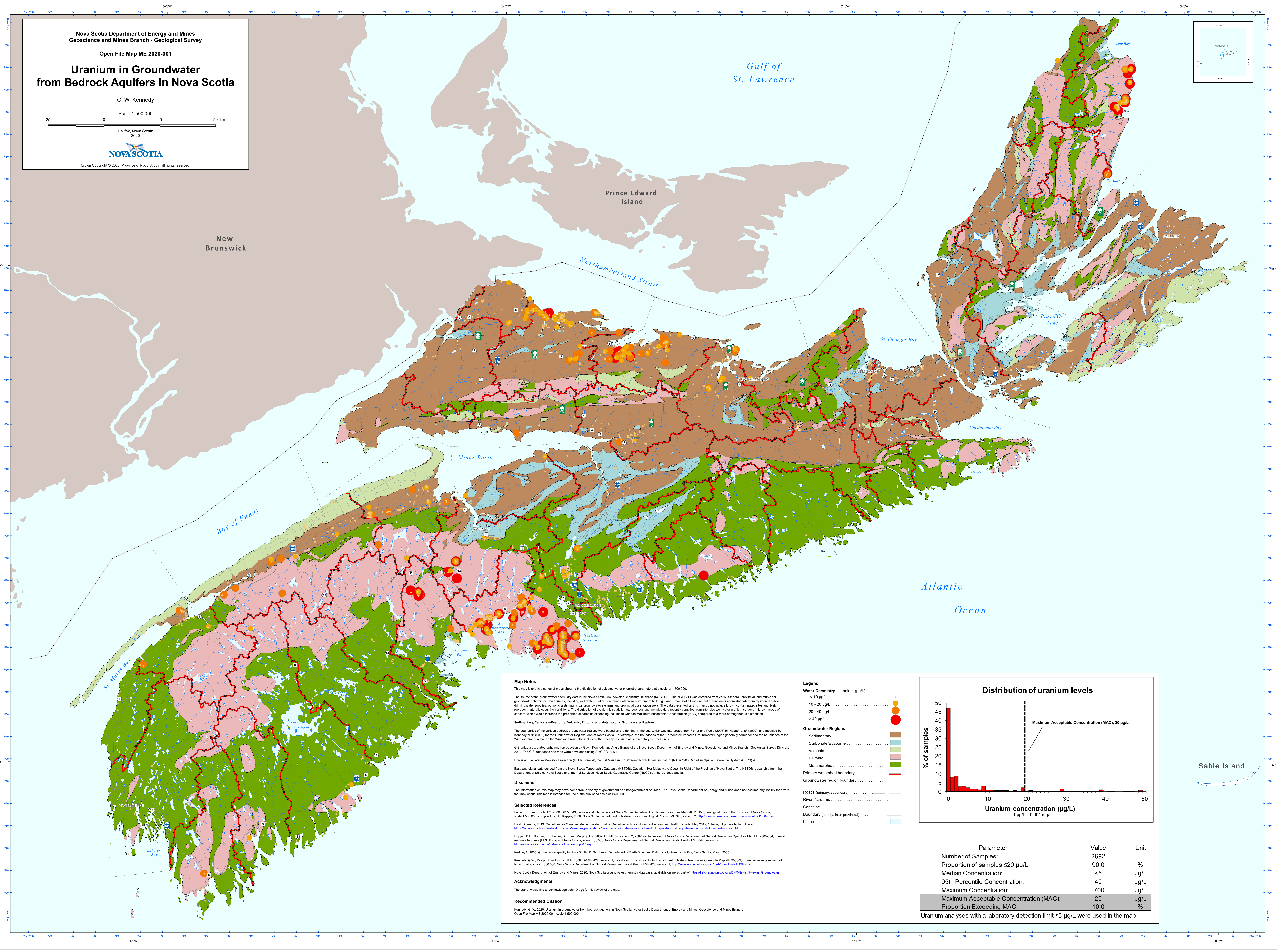
Scale 1:500 000

Halifax, Nova Scotia
2020

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250050

02550



Map Notes

This map is one in a series of maps showing the distribution of selected water chemistry parameters at a scale of 1:500 000.

The source of the groundwater chemistry data is the Nova Scotia Groundwater Chemistry Database (NSGCD). The NSGCD was compiled from various federal, provincial, and municipal groundwater chemistry data sources, including well water quality monitoring data from government buildings, and Nova Scotia Environment groundwater chemistry data from registered public drinking water supplies, pumping tests, municipal groundwater systems and provincial observation wells. The data presented on this map do not include known contaminated areas and likely represent naturally occurring conditions. The distribution of the data is spatially heterogeneous and includes data recently compiled from intensive well-water uranium surveys in known areas of concern, which would increase the proportion of samples exceeding the Health Canada Maximum Acceptable Concentration (MAC) compared to a more homogeneous distribution.

Sedimentary, Carbonate/Evaporite, Volcanic, Plutonic and Metamorphic Groundwater Regions

The boundaries of the various bedrock groundwater regions were based on the dominant lithology, which was interpreted from Fisher and Poole (2006) by Hopper et al. (2002), and modified by Kennedy et al. (2008) for the Groundwater Regions Map of Nova Scotia. For example, the boundaries of the Carbonate/Evaporite Groundwater Region generally correspond to the boundaries of the Windsor Group, although the Windsor Group also includes other rock types, such as sedimentary bedrock units.

GIS databases, cartography and reproduction by Gavin Kennedy and Angie Barras of the Nova Scotia Department of Energy and Mines, Geoscience and Mines Branch - Geological Survey Division, 2020. The GIS databases and map were developed using ArcGIS 10.5.1.

Universal Transverse Mercator Projection (UTM), Zone 20, Central Meridian 63°00' West, North American Datum (NAD) 1983 Canadian Spatial Reference System (CSRS) 98.

Base and digital data derived from the Nova Scotia Topographic Database (NSTDB). Copyright Her Majesty the Queen in Right of the Province of Nova Scotia. The NSTDB is available from the Department of Service Nova Scotia and Internal Services, Nova Scotia Geomatics Centre (NSGC), Amherst, Nova Scotia.

Disclaimer

The information on this map may have come from a variety of government and non-government sources. The Nova Scotia Department of Energy and Mines does not assume any liability for errors that may occur. This map is intended for use at the published scale of 1:500 000.

Selected References

Fisher, B.E. and Poole, J.C. 2006. DP ME 23, version 2, digital version of Nova Scotia Department of Natural Resources Map ME 2003-1, geological map of the Province of Nova Scotia, scale 1:500 000, compiled by J.D. Keppie, 2000. Nova Scotia Department of Natural Resources, Digital Product ME 043, version 2. <http://www.novascotia.ca/natme/download/dp43.pdf>

Health Canada, 2019. Guidelines for Canadian drinking water quality: Guideline technical document – uranium. Health Canada, May 2019, Ottawa, 81 p.; available online at <https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidelines-canadian-drinking-water-quality-guideline-technical-document-uranium.html>

Hopper, D.B., Bonner, F.J., Fisher, B.E., and Murphy, A.N. 2002. DP ME 37, version 2, 2002, digital version of Nova Scotia Department of Natural Resources Open File Map ME 2000-004, mineral resource land use (MRLU) maps of Nova Scotia, scale 1:50 000. Nova Scotia Department of Natural Resources, Digital Product ME 047, version 2. <http://www.novascotia.ca/natme/download/dp47.pdf>

Keddie, A. 2006. Groundwater quality in Nova Scotia. B. Sc. thesis, Department of Earth Sciences, Dalhousie University, Halifax, Nova Scotia, March 2006.

Kennedy, G.W., Drage, J. and Fisher, B.E. 2008. DP ME 428, version 1, digital version of Nova Scotia Department of Natural Resources Open File Map ME 2008-3, groundwater regions map of Nova Scotia, scale 1:500 000. Nova Scotia Department of Natural Resources, Digital Product ME 428, version 1. <http://www.novascotia.ca/natme/download/dp428.pdf>

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Acknowledgments

The author would like to acknowledge John Drage for his review of the map.

Recommended Citation

Kennedy, G. W. 2020. Uranium in groundwater from bedrock aquifers in Nova Scotia. Nova Scotia Department of Energy and Mines, Geoscience and Mines Branch, Open File Map ME 2020-001, scale 1:500 000.

Legend

Water Chemistry - Uranium (µg/L)

- < 10 µg/L
- 10 - 20 µg/L
- 20 - 40 µg/L
- > 40 µg/L

Groundwater Regions

- Sedimentary
- Carbonate/Evaporite
- Volcanic
- Plutonic
- Metamorphic

Primary watershed boundary

Groundwater region boundary

Roads (primary, secondary)

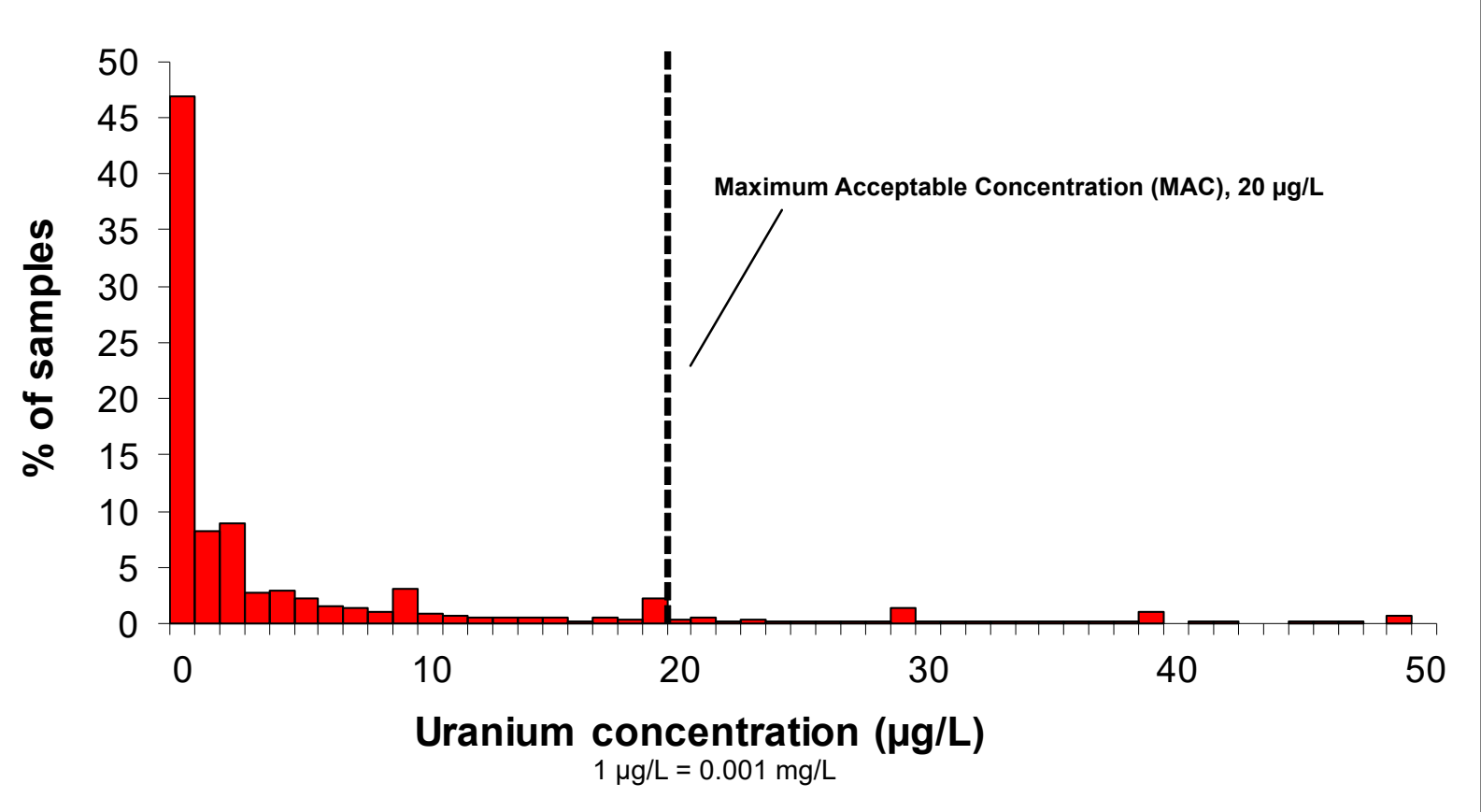
Rivers/streams

Coastline

Boundary (county, inter-provincial)

Lakes

Distribution of uranium levels



Parameter	Value	Unit
Number of Samples:	2692	-
Proportion of samples ≤20 µg/L:	90.0	%
Median Concentration:	<5	µg/L
95th Percentile Concentration:	40	µg/L
Maximum Concentration:	700	µg/L
Maximum Acceptable Concentration (MAC):	20	µg/L
Proportion Exceeding MAC:	10.0	%

Uranium analyses with a laboratory detection limit ≤5 µg/L were used in the map