



Note: This map accompanies the YGS Open File 2023-01 report, which should be referred to for a complete description of surficial geology and aggregate potential mapping methodology.

AGGREGATE POTENTIAL MAPPING SUMMARY

Aggregate potential analysis was completed based on the most recent surficial geology mapping available (YGS Open File 2023-01) to identify potential near-surface aggregate resources. This analysis focussed specifically on the gravel size class, and did not include sand, boulder or bedrock quarrying potential. The model inputs included surficial material type, texture, surface expression, and relative proportions of the two most dominant surficial geology components mapped within each surficial geology polygon.

The analysis followed a similar approach to that outlined by Crommler (2021), with modifications for ranking specific combinations of surficial materials, textures and surface expressions, which are more likely to contain high-quality aggregate resources. Weights were applied to incorporate relative abundance of gravel indicated in the material texture, and the relative thickness of the deposit (e.g., veneers were weighted less than thicker surface expressions).

The highest ranked materials are glaciofluvial materials, followed by inactive fluvial materials and hummocky moraine deposits. Despite their high potential material suitability, active fluvial materials are ranked low, as they are assumed impractical for development due to high-water tables and environmental concerns. Organic, bedrock, and fine-grained lacustrine and eolian materials are also ranked low. Colluvial and other residual deposits are generally ranked moderate with weightings applied based on texture and surface expression. Rankings for anthropogenic materials vary according to the nature of the materials.

Aggregate potential is lowered where the presence of permafrost is indicated, or if a deposit is buried and would require surface stripping. Where larger deposits are present, the relative cost of stripping or thawing may be low, so the aggregate potential scores should be viewed as subjective in this respect.

A more detailed description of the aggregate potential modelling methodology is provided in the accompanying open file report.

Only the 'high' and 'moderately high' aggregate potential classes are shown on this map, as they are considered the only potentially viable aggregate resources. Lower classes would likely require a significant amount of washing and/or screening to recover any useful granular resources. Sikes may also provide small, but high-quality aggregate resources.

This map serves as a general guide to aggregate potential only, as it is based solely on the characteristics of the mapped surficial geology, which may vary significantly within a polygon, and for which limited field verification has occurred. Site-specific field investigations such as test pitting and/or drilling would be required to determine thickness, volume, and exact composition. The analysis does not take into account factors that may limit the feasibility of extraction, including existing land tenure, municipal zoning, topographic constraints, presence of mass movements, or proximity to roads, communities or water features.

LEGEND

- High aggregate potential: surficial materials typically consist of well-sorted gravel with some sand, minimal silt and clay, and minor to no constraints from permafrost or overburden.
- Moderately high aggregate potential: (a) good aggregate materials, as described above, but may be thinner and/or have a greater sand content, and/or constrained by significant overburden or permafrost, or (b) gravel is mixed with some silt and/or clay, but is not subject to significant constraints from permafrost or overburden.

REFERENCES

Crommler, D.C., 2021. Aggregate potential mapping centred on Yukon communities and highway corridors. Yukon Geological Survey, Open File 2021-3, 6 p plus appendices.

RECOMMENDED CITATION

Lipovsky, P.S., 2023. Greater Whitehorse aggregate potential map, Sheet 11 (1:25 000 scale). In: Surficial geology and geochemicals of the greater Whitehorse area. Yukon Geological Survey, Open File 2023-01, 67 pages plus appendices.

Any revisions or additional geological information known to the user would be welcomed by the Yukon Geological Survey.

Paper copies of this map may be obtained from Yukon Geological Survey, Energy, Mines and Resources, Government of Yukon, Room 102-300 Main St., Whitehorse, Yukon, Y1A 2B5. E-mail: geology@gnw.gc.ca

Geospatial data and PDF files of this map may be downloaded free of charge from the Yukon Geological Survey publications database: <https://yukon.ca/en/science-and-natural-resources/geology>

SYMBOLS

- ground observation site
- gravel pit, active or recently active
- gravel pit, historical
- water
- stream
- highway
- major road
- local road
- other road
- gravel pit
- Whitehorse city limits
- legal survey parcel
- First Nation Settlement Land
- water bodies

Whitehorse city limits
NTS mapsheet
study area
THIS MAP

ONE THOUSAND METRE GRID
Universal Transverse Mercator Projection
North American Datum 1983
Zone 11

1 in July 2013 Aster Mosaic background shown within Whitehorse city limits. 15 m CCMA (Natural Resources Canada) Mosaic background shown outside city limits.

1:50 000 scale topographic base data produced by CENTRE FOR TOPOGRAPHIC INFORMATION, NATURAL RESOURCES CANADA

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SCALE 1:25 000

0 1 kilometres

Yukon Geological Survey
Energy, Mines and Resources
Government of Yukon

Open File 2023-1
Sheet 11
Greater Whitehorse aggregate potential map
1:25 000 scale

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Yukon