

REGIONAL-SCALE DRIFT PROSPECTING SURVEYS

NTS MAP AREA 82E
Jackman, W. (2010): QUEST-South regional geochemical data, southern British Columbia. *Geoscience BC*, Report 2010-13, 153 pages.

NTS MAP AREA 82L
Paulen, R.C., Bobrowsky, P.T., Lett, R.E., Jackman, W., Bichler, A.J. and Wingerter, C. (2000): Till geochemistry of the Shuswap Highlands area, B.C. (parts of NTS 82M/4, 82L/13, and 92P/9); *BC Ministry of Energy, Mines, and Petroleum Resources*, Open File 2000-18, 26 pages.

Jackman, W. (2010): QUEST-South regional geochemical data, southern British Columbia. *Geoscience BC*, Report 2010-13, 153 pages.

NTS MAP AREA 82M
Bobrowsky, P.T., Leboe, E.R., Dixon-Warren, A. and Ledwon, A. (1997): Eagle Bay Project: till geochemistry of the Adams Plateau (82M/4) and North Barriere Lake (82M/5) map areas, in *Geological Fieldwork 1996, BC Ministry of Energy, Mines, and Petroleum Resources*, Paper 1997-1, pages 413-421.

Bobrowsky, P.T., Leboe, E.R., Dixon-Warren, A., Ledwon, A., MacDougall, D. and Sibbick, S.J. (1997): Till geochemistry of the Adams Plateau-North Barriere Lake area (NTS 82M/4 and 5); *BC Ministry of Energy, Mines, and Petroleum Resources*, Open File 1997-09, 27 pages.

Paulen, R.C., Bobrowsky, P.T., Lett, R.E., Jackman, W., Bichler, A.J. and Wingerter, C. (2000): Till geochemistry of the Shuswap Highlands area, B.C. (parts of NTS 82M/3, 82L/13, and 92P/9); *BC Ministry of Energy, Mines, and Petroleum Resources*, Open File 2000-18, 26 pages.

NTS MAP AREA 92H
Jackman, W. (2010): QUEST-South regional geochemical data, southern British Columbia. *Geoscience BC*, Report 2010-13, 153 pages.

NTS MAP AREA 92I
Jackman, W. (2010): QUEST-South regional geochemical data, southern British Columbia. *Geoscience BC*, Report 2010-13, 153 pages.

NTS MAP AREA 92L
Bobrowsky, P.T. and Meldrum, D. (1994): Preliminary drift exploration studies, northern Vancouver Island (92L/6, 92L/11); in *Geological Fieldwork 1993, BC Ministry of Energy, Mines and Petroleum Resources*, Paper 1994-1, pages 87-99.

Bobrowsky, P.T. and Sibbick, S.J. (1996): Till geochemistry of northern Vancouver Island area (NTS 92L/5, 6W, 11W, 12); *BC Ministry of Energy, Mines and Petroleum Resources*, Open File 1996-07, 201 pages.

Bobrowsky, P.T., Best, M., Dunn, C.E., Huntley, D.H., Lowe, C., Roberts, M., Seemann, D.A. and Sibbick, S.J. (1995): Integrated drift exploration studies on northern Vancouver Island (92L/1); in *Geological Fieldwork 1994, BC Ministry of Energy, Mines and Petroleum Resources*, Paper 1995-1, pages 413-421.

Huntley, D.H. and Bobrowsky, P.T. (1995): Surficial geology and drift exploration: Mahatta Creek Map Area (92L/5); in *Geological Fieldwork 1994, BC Ministry of Energy, Mines and Petroleum Resources*, Paper 1995-1, pages 35-45.

Kerr, D.E., Sibbick, S.J. and Jackman, W. (1992): Till geochemistry of the Quatsino map area (92L/12); *BC Ministry of Energy, Mines and Petroleum Resources*, Open File 1992-21, 14 pages.

NTS MAP AREA 92O
Plouffe, A. and Ballantyne, S.B. (1994): Regional till geochemistry, Mount Tallow and Elkin Creek areas, British Columbia (92O/5 and O1/2); *Geological Survey of Canada*, Open File 2009, 62 pages.

NTS MAP AREA 92P
Bobrowsky, P.T., Paulen, R.C., Little, E., Prebble, A., Ledwon, A. and Lett, R.E. (1998): Till geochemistry of the Louis Creek-Chua Chua Creek area (NTS 92P/1E and 92P/9E); *BC Ministry of Energy, Mines and Petroleum Resources*, Open File 1998-06, data spreadsheet.

Paulen, R.C., Bobrowsky, P.T., Lett, R.E., Jackman, W., Bichler, A.J. and Wingerter, C. (2000): Till geochemistry of the Chu Chua-Clearwater area, B.C. (parts of NTS 92P/8 and 92P/9); *BC Ministry of Energy, Mines and Petroleum Resources*, Open File 2000-17, 25 pages.

Paulen, R.C., Bobrowsky, P.T., Lett, R.E., Jackman, W., Bichler, A.J. and Wingerter, C. (2000): Till geochemistry of the Shuswap Highlands area, B.C. (parts of NTS 92M/3, 82L/13 and 92P/9); *BC Ministry of Energy, Mines and Petroleum Resources*, Open File 2000-18, 26 pages.

Plouffe, A., Bednarski, J.M., Huscroft, C.A. and McCuaig, S.J. (2009): Gold grain content of till in the Bonaparte Lake map area, south central British Columbia (NTS 92P); *Geological Survey of Canada*, Open File 6047, 32 pages.

Plouffe, A., Bednarski, J.M., Huscroft, C.A., Anderson, R.G. and McCuaig, S.J. (in press): Late Wisconsinan glacial history in the Bonaparte Lake map area, south central British Columbia: implications for glacial transport and mineral exploration; *Canadian Journal of Earth Sciences*, v. 45.

Plouffe, A., Bednarski, J.M., Huscroft, C.A., Anderson, R.G. and McCuaig, S.J. (2010): Glacial sediments geochemistry of the Bonaparte Lake map area (NTS 92P), south central British Columbia; *Geological Survey of Canada*, Open File 6440, CD-ROM.

NTS MAP AREA 93B
Ferbey, T. (2009): Till geochemical exploration targets, Redstone and Coombs Lake map areas (NTS 93B/4 and 05); central British Columbia; *BC Ministry of Energy, Mines and Petroleum Resources*, Open File 2009-9, 52 pages.

NTS MAP AREA 93C
Lett, R.E., Cook, S.J. and Levson, V.M. (2006): Till Geochemistry of the Chilanko Forks, Chezaud, Cusko River and Till Mountain area, British Columbia (NTS 93C/1, C/B, C/9, C/16); *BC Ministry of Energy, Mines and Petroleum Resources*, GeoFile 2006-1, 272 pages.

NTS MAP AREA 93E
Ferbey, T. (2010): Till Geochemistry of the Nadina River map area (093E/15); *BC Ministry of Energy, Mines and Petroleum Resources*, Open File 2010-7, *Geoscience BC*, Report 2010-10, 56 pages.

NTS MAP AREA 93F
Levson, V.M., Giles, T.R., Cook, S.J. and Jackman, W. (1994): Till geochemistry of the Fawnie Creek area (93F/03); *BC Ministry of Energy, Mines and Petroleum Resources*, Open File 1994-18, 40 pages.

Levson, V.M. and Mate, D.J. (2002): Till Geochemistry of the Telchuck Lake and Manilla map areas (NTS 93F/5 and F/12); *BC Ministry of Energy, Mines and Petroleum Resources*, Open File 2002-11, 27 pages.

Plouffe, A. and Williams, S.P. (1998): Regional till geochemistry, gold and palinifer elements, northern British Columbia; *Geological Survey of Canada*, Open File 3687, 1,400 000-scale mapsheet.

Plouffe, A. and Williams, S.P. (2001): Quaternary geology data: Manson River (93N), Fort Fraser (93K) and Nechoha River (93F), central British Columbia; *Geological Survey of Canada*, Open File 2270, CD-ROM.

Plouffe, A., Levson, V.M. and Mate, D.J. (2001): Till geochemistry of the Nechoha River map area (NTS 93F), central British Columbia; *Geological Survey of Canada*, Open File 4166, 66 pages.

Weary, G.F., Levson, V.M. and Broster, B.E. (1997): Till geochemistry of the Chedakuf Creek map area (93F/7), British Columbia; *BC Ministry of Energy, Mines and Petroleum Resources*, Open File 1997-11, 97 pages.

NTS MAP AREA 93H
Bobrowsky, P.T. and Bichler, A. (2001): Till Geochemistry of the Wells-Stony Lake Area, B.C. (NTS 93H/4N and 93H/5S); *BC Ministry of Energy, Mines and Petroleum Resources*, Open File 2001-10, 32 pages.

NTS MAP AREA 93J
Ward, B.C., Leybourne, M.I. and Sacco, D.N. (2011): Drift prospecting within the Quest Project area, central British Columbia (NTS 093J); potential for porphyry copper-gold, volcanogenic massive sulphide mineralization and gold-copper veins, in *Geoscience BC: Summary of Activities 2010*, *Geoscience BC*, Report 2011-1, pages 73-86.

NTS MAP AREA 93K
Plouffe, A. (1995): Geochemistry, lithology, mineralogy, and visible gold grain content of till in the Manson River and Fort Fraser map areas, central British Columbia (NTS 93K and N); *Geological Survey of Canada*, Open File 3194, 119 pages.

Plouffe, A. (2000): Quaternary geology of the Fort Fraser and Manson River map areas, central British Columbia; *Geological Survey of Canada*, Bulletin 554, 62 pages.

Plouffe, A. and Ballantyne, S.B. (1993): Regional till geochemistry, Manson River and Fort Fraser area, British Columbia (93K, 93N), silt plus clay and clay size fractions; *Geological Survey of Canada*, Open File 2593, 210 pages.

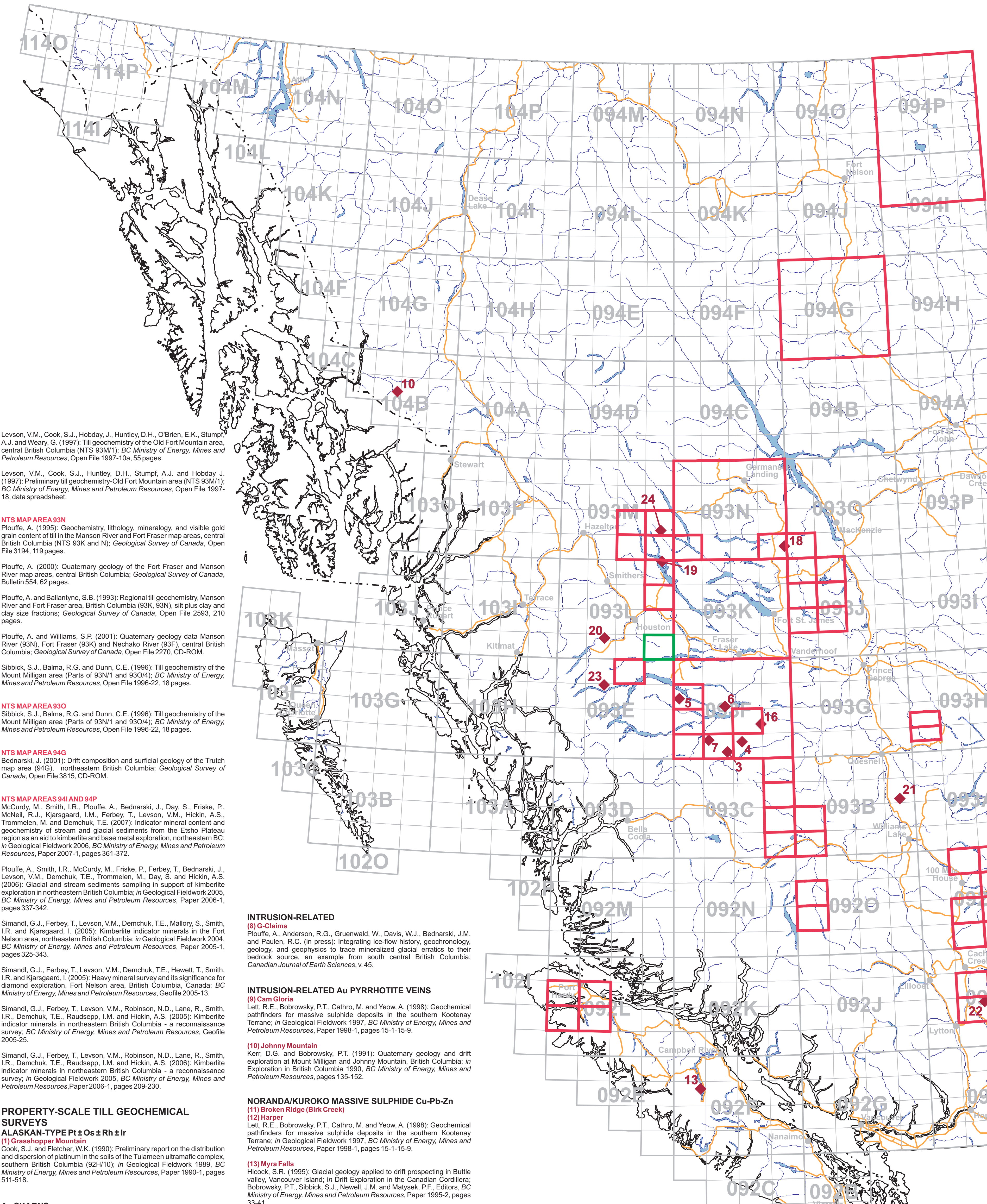
Plouffe, A. and Williams, S.P. (2001): Quaternary geology data Manson River (93N), Fort Fraser (93K) and Nechoha River (93F), central British Columbia; *Geological Survey of Canada*, Open File 2270, CD-ROM.

NTS MAP AREA 93L
Ferbey, T., Levson, V.M. and Lett, R.E. (2009): Till geochemical exploration targets, Babine porphyry copper belt, central British Columbia; *BC Ministry of Energy, Mines and Petroleum Resources*, Open File 2009-4, *Geoscience BC*, Report 2009-10, 36 pages.

Levson, V.M. (2002): Quaternary geology and till geochemistry of the Babine Porphyry Copper Belt, British Columbia (NTS 93L/9, 16, M/1, 2, 7, 8); *BC Ministry of Energy, Mines and Petroleum Resources*, Bulletin 110, 278 pages.

NTS MAP AREA 93M
Ferbey, T., Levson, V.M. and Lett, R.E. (2009): Till geochemical exploration targets, Babine porphyry copper belt, central British Columbia; *BC Ministry of Energy, Mines and Petroleum Resources*, Open File 2009-4, *Geoscience BC*, Report 2009-10, 36 pages.

Levson, V.M. (2002): Quaternary geology and till geochemistry of the Babine Porphyry Copper Belt, British Columbia (NTS 93L/9, 16, M/1, 2, 7, 8); *BC Ministry of Energy, Mines and Petroleum Resources*, Bulletin 110, 278 pages.



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REGIONAL TO PROPERTY-SCALE DRIFT PROSPECTING SURVEYS IN BRITISH COLUMBIA

Compiled by T. Ferbey (PGeo)



DRIFT PROSPECTING DATA

- Published regional-scale drift prospecting data (references are listed by NTS mapsheet)
- ◆ Published property-scale till geochemistry data (references are listed by label number)
- Regional-scale till geochemistry survey in progress

INTRODUCTION

Presented here is a geographically referenced list of drift prospecting surveys that have been conducted in British Columbia. A list of topical studies and special volumes that are relevant to drift prospecting in British Columbia have also been included. These studies and geochemical data will be of interest to explorators and researchers who are assessing the effectiveness of drift prospecting surveys in the context of their own exploration or research program, who are preparing to design and implement their own survey, or who have generated geochemical data on drift samples and are looking for data from orientation surveys for context and comparison.

To be included here, drift prospecting reports and (or) geochemical data must be published and publicly available and have used basal till or glacioluvial gravels as sample media. These reports and data can be viewed and downloaded from the following websites:

British Columbia Geological Survey
www.emr.gov.bc.ca/Mining/Geoscience/PublicationsCatalogue/Pages/default.aspx

Geological Survey of Canada
ess.nrcan.gc.ca/esic/geoscan_e.php
gdr.nrcan.gc.ca/mirage/index_e.php

Geochemical surveys that used B-horizon soils, lacustrine sediments, or stream sediments as sample media are not included here.

Regional-scale studies listed used geochemical determinations on basal till samples to assess the base and precious metal potential of a particular region. The exception to this is work that was conducted in northeast British Columbia that used glacioluvial

gravels, and to a lesser extent basal till samples, to assess this region's diamond potential. Property-scale surveys were designed to characterise the dispersal of mineralization in basal till from known mineralized bedrock sources. References for property-scale surveys are organized by the mineral deposit type they were conducted over or around. Data from these detailed studies are important as they provide a basis for comparing regional-scale geochemical data to that from known mineralized sources. This comparison is important in assessing which basal till samples in a regional-scale program could be considered elevated and worthy of follow-up work. Till geochemical surveys that are currently in progress are also included here. References for this work will be provided as the surveys are completed.

Also included here is a list of references for studies that may not necessarily have been conducted in British Columbia but that are relevant to drift prospecting surveys regardless of the glaciated region or country they are to be conducted in. These studies have a topical, rather than geographic, focus and can provide invaluable insight into the design, implementation, and interpretation of drift prospecting surveys. References are also presented for the five most recently published volumes on drift prospecting. Papers within these volumes also have a topical focus and can provide important background information on the subtleties of drift prospecting programs, which can vary from one physiographic region to another, using theory and data from case studies. For example, preparation for any drift prospecting program in the Canadian Cordillera would be incomplete without a thorough review of Levson (2001).

This map and list of references is intended to provide a way of quickly identifying drift prospecting studies and data that are either geographically or topically of interest to those working in British Columbia. Any omission in the reference list or on the map should be brought to the attention of the compiler. This publication will be updated on an annual basis.

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REFERENCES

Levson, V.M. (2001): Regional till geochemical surveys in the Canadian Cordillera: sample media, methods and anomaly evaluation; in *Drift Exploration in Glaciated Terrain*, McClenaghan, M.B., Bobrowsky, P.T., Hall, G.E.M. and Cook, S.J., Editors, *Geological Society of London, Special Publication 165*, pages 43-68.

INTRUSION-RELATED

(8) G-Claims

Plouffe, A., Anderson, R.G., Gruenwald, W., Davis, W.J., Bednarski, J.M. and Paulen, R.C. (in press): Integrating ice-flow history, geochemistry, geology, and geophysics to trace mineralized glacial erratics to their bedrock sources, an example from south central British Columbia; *Canadian Journal of Earth Sciences*, v.45.

INTRUSION-RELATED Au PYRRHOTITE VEINS

(6) Cam Gloria

Lett, R.E., Bobrowsky, P.T., Cathro, M. and Yeow, A. (1998): Geochemical pathfinders for massive sulphide deposits in the southern Kootenay Terrane, in *Geological Fieldwork 1997, BC Ministry of Energy, Mines and Petroleum Resources*, Paper 1998-1, pages 15-11-5-9.

(10) Johnny Mountain

Kerr, D.G. and Bobrowsky, P.T. (1991): Quaternary geology and drift exploration at Mount Milligan and Johnny Mountain, British Columbia; in *Exploration in British Columbia 1990, BC Ministry of Energy, Mines and Petroleum Resources*, pages 135-152.

NORANDA/KUROKO MASSIVE SULPHIDE Cu-Pb-Zn

(11) Broken Ridge (Birk Creek)

(12) Harper

Lett, R.E., Bobrowsky, P.T., Cathro, M. and Yeow, A. (1998): Geochemical pathfinders for massive sulphide deposits in the southern Kootenay Terrane, in *Geological Fieldwork 1997, BC Ministry of Energy, Mines and Petroleum Resources*, Paper 1998-1, pages 15-11-5-9.

(13) Myra Falls

Hiscox, S.R. (1995): Glacial geology applied to drift prospecting in Battle valley, Vancouver Island; in *Drift Exploration in the Canadian Cordillera*, Bobrowsky, P.T., Sibbick, S.J., Newell, J.M. and Matyssek, P.F., Editors, *BC Ministry of Energy, Mines and Petroleum Resources*, Paper 1995-2, pages 39-41.

(14) Rea

(15) Samatousm

Lett, R.E., Jackman, W. and Yeow, A. (1999): Detailed geochemical exploration techniques for base and precious metals in the Kootenay Terrane (92/13, L/14, M/4, M/5, P/1); in *Geological Fieldwork 1998, BC Ministry of Energy, Mines and Petroleum Resources*, Paper 1999-1, pages 297-306.

Sibbick, S.J. and Kerr, D.E. (1995): Till geochemistry of the Mount Milligan area, north-central British Columbia; recommendations for drift-exploration for porphyry Cu-Au mineralization; in *Drift Exploration in the Canadian Cordillera*, Bobrowsky, P.T., Sibbick, S.J., Newell, J.M. and Matyssek, P.F., Editors, *Geological Association of Canada, GAC Short Course Notes 18*, pages 145-151.

Ferbey, T. and Levson, V.M. (2001): Ice flow history and surficial geochemistry, Huckleberry Mine Area: a drift exploration case study; *BC Ministry of Energy, Mines and Petroleum Resources*, GeoFile 2001-2, 145-151.

Ferbey, T. and Levson, V.M. (2009): The influence of ice flow reversals on the vertical and horizontal distribution of trace elements in tills, Huckleberry Mine area, west-central British Columbia; in *Application of Till and Stream Sediment Heavy Mineral and Geochemical Methods to Mineral Exploration in Western and Northern Canada*, Paulen, R.C. and McMartin, I., Editors, *Geological Association of Canada, GAC Short Course Notes 18*, pages 145-151.

Levson, V.M. and Stumpf, A.J. (1998): Glacial controls on geochemical transport distance and direction in north-central British Columbia: implications for exploration; in *Cordillera Revisited: Recent Developments in Cordilleran Geology, Tectonics and Mineral Deposits*, Mustard, P. and Gareau S., Editors, *Geological Association of Canada, Cordilleran Section Short Course Notes*, pages 68-75.

Stumpf, A.J., Broster, B.E. and Levson, V.M. (1997): Evaluating the use of till geochemistry to define buried mineral targets: a case study from the Bell Mine area (93 L/16, M/1); in *Geological Fieldwork 1996, BC Ministry of Energy, Mines and Petroleum Resources*, Paper 1997-1, pages 457-466.

Lett, R.E. (2001): Geochemical signatures around massive sulphide deposits in southern British Columbia, Canada; in *Drift Exploration in Glaciated Terrain*, McClenaghan, M.B., Brorowsky, P., Hall, G.E.M. and Cook, S.J., Editors, *Geological Society of London, Special Publication 185*, pages 301-321.

(20) Copper Star
Ferbey, T. and Levson, V.M. (2010): Evidence of westward glacial dispersal along a till geochemical transect of the Copper Star Cu-Mo-Au occurrence, west-central British Columbia; *BC Ministry of Energy, Mines, and Petroleum Resources*, Open File 2010-04, 21 pages.

(21) Gibraltar
Plouffe, A., and Anderson, R.G. and Dunn, C.E. (2011): Till composition and biogeochemistry near a porphyry Cu-Mo deposit: Gibraltar Mine, British Columbia; in *Geological Survey of Canada*, Open File 6755, 25 pages.

(22) Highland Valley
Bobrowsky, P.T., Kerr, D.E., Sibbick, S.J. and Newman, K. (1993): Drift exploration studies, Valley Copper Pit, Highland Valley Copper Mine, British Columbia (92/16, 7, 10 and 11); in *Geological Fieldwork 1992, BC Ministry of Energy, Mines and Petroleum Resources*, Paper 1993-1, pages 427-437.

(23) Huckleberry
Ferbey, T. and Levson, V.M. (2001): Quaternary geology and till geochemistry of the Huckleberry Mine area, in *Geological Fieldwork 2001, BC Ministry of Energy, Mines, and Petroleum Resources*, Paper 2001-1, pages 397-410.

(17) Galaxy
Kerr, D.E., Sibbick, S.J. and Belk, G.D. (1993): Preliminary results of glacial dispersion studies on the Galaxy property, Kamloops, B.C. (92/19); in *Geological Fieldwork 1992, BC Ministry of Energy, Mines and Petroleum Resources*, Paper 1993-1, pages 439-443.

WSKARNS

(2) Bunker Hill

Koffyberg, A. (2008): Assessment report on the heavy mineral stream sediment, silt stream sediment, rock, till and soil sampling programs, Bunker Hill property, submitted by Clarke Gold Inc. and Bio-Gold Resources Inc., *BC Ministry of Energy, Mines and Petroleum Resources*, AR30828,694 pages.

McMartin, I. and McClenaghan, M.B. (2001): Till geochemistry and sampling techniques in glaciated shield terrain: a review, in *Drift Exploration in Glaciated Terrain*, McClenaghan, M.B., Brorowsky, P., Hall, G.E.M. and Cook, S.J., Editors, *Geological Society of London, Special Publication 185*, pages 19-43.

McMartin, I. and Paulen, R.C. (2009): Ice flow indicators and the importance of ice flow mapping for drift prospecting; in *Application of Till and Stream Sediment Heavy Mineral and Geochemical Methods to Mineral Exploration in Western and Northern Canada*, GAC Short Course Notes 18, pages 11-26.

Paulen, R.C. (2001): Glacial transport and secondary hydromorphic metal mobilization: examples from the southern interior of British Columbia; in *Drift Exploration in Glaciated Terrain*, McClenaghan, M.B., Brorowsky, P., Hall, G.E.M. and Cook, S.J., Editors, *Geological Society of London, Special Publication 185*, pages 323-337.

Paulen, R.C. and Lett, R.E. (2005): Till geochemistry - a viable tool for polymetallic mineral exploration in British Columbia's southern interior; *BC Ministry of Energy, Mines and Petroleum Resources*, GeoFile 2005-18, 19 pages.