



Central Creek shows orientation of the Fairbanks-Chena assemblage, Central Creek area, (photograph taken 6/18/2023 by Evan Tweiker).

EXPLANATION OF MAP SYMBOLS

Linework is solid where location is accurate, long-dashed where location is approximate, and short-dashed where location is inferred. Question marks indicate the existence or identity of the feature is questionable.

CONTACTS AND FAULTS

- CONTACT
- FAULT — sense of movement indeterminate
- LOW-ANGLE FAULT (UNKNOWN SENSE OF SLIP) — half-circles on hanging wall
- NORMAL FAULT — ball and bar on hanging wall
- FAULT — located by electromagnetic survey

PLANAR FEATURES

- SMALL MINOR INCLINED DIKE — showing strike and dip
- SMALL MINOR VERTICAL DIKE — showing strike
- SMALL MINOR DIKE — showing strike, dip unknown or inconsistent
- SMALL MINOR VERTICAL JOINT — showing strike
- SMALL MINOR INCLINED JOINT — showing strike and dip
- VERTICAL METAMORPHIC or TECTONIC FOLIATION — showing strike
- INCLINED METAMORPHIC or TECTONIC FOLIATION — showing strike and dip
- HORIZONTAL METAMORPHIC or TECTONIC FOLIATION — showing strike
- INCLINED GNEISSIC LAYERING — showing strike and dip
- INCLINED FLOW BANDING or FOLIATION IN IGNEOUS ROCK — showing strike and dip
- INCLINED CLEAVAGE — showing strike and dip

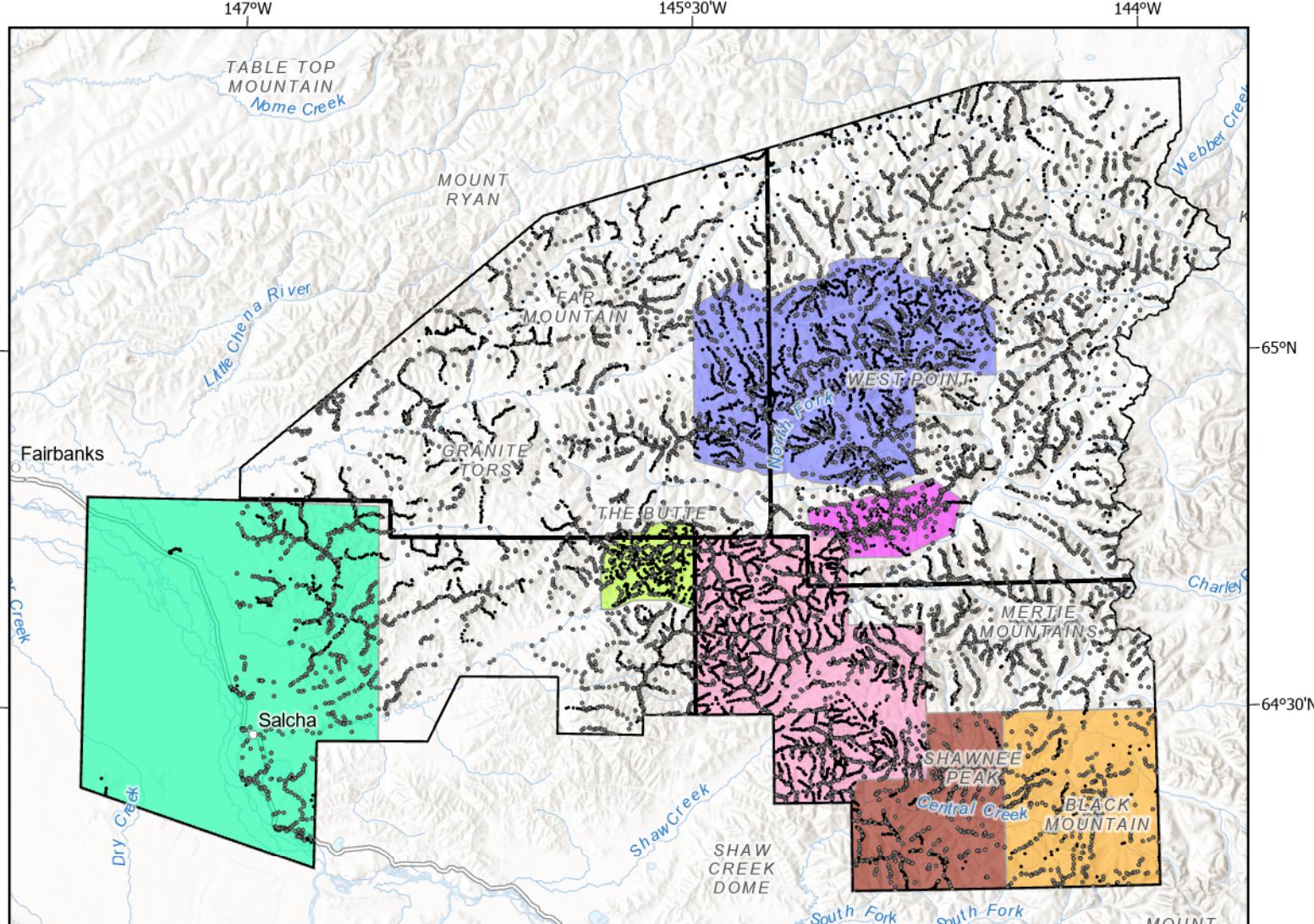
LINEAR FEATURES

- INCLINED GENERIC LINEATION — showing trend and plunge
- INCLINED ALIGNED-MINERAL LINEATION — showing trend and plunge
- INCLINED, SMALL MINOR FOLD HINGE — showing trend and plunge

MISCELLANEOUS MAP SYMBOLS

- CROSS SECTION LINE
- SYNFORM — showing approximate hinge trend
- ANTIFORM — showing approximate hinge trace
- Lake George amphibolite confirmed by microprobe
- Fairbanks-Chena amphibolite confirmed by microprobe
- GEOCHRONOLOGY SAMPLE LOCALITY (Buchanan, Barrera and others, 2023 and Buchanan, Gavel and others, 2025)
- MAP UNIT POINT - Dikes or other localized map unit with observations too small to draw at map scale, colored and labeled the same as map units above.

FIELD STATIONS AND SUPPLEMENTARY DATA SOURCE MAPS COMPILED



- DGGGS FIELD STATION LOCALITY
- USGS FIELD STATION LOCALITY (Weber and Foster, 1964-2000; Day and others, 2008)
- Sims and others (2026)
- Day and others (2007)
- Smith and others (1994)
- Day and others (2003)
- Weldon and others (2004)
- Lessard and others (2022)
- Southworth (1985)

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Buchanan, J.W., Barrera, M.L., Monbrefandeh, J.A., Truskowski, C.M., and Newberry, R.J., 2025, LA ICP-MS uranium lead zircon data from samples in the Chena and Stone project areas, Alaska Division of Geological & Geophysical Surveys Data File 2025-25, 4 p. <https://doi.org/10.14509/32116>

Buchanan, J.W., Gavel, M.M., Barrera, M.L., Regan, S.P., and Newberry, R.J., 2025, LA ICP-MS uranium lead geochronologic data of zircon from igneous and meta-igneous rocks in the Chena project area, Circle, Big Delta, and Eagle quadrangles, Alaska: Alaska Division of Geological & Geophysical Surveys Data File 2025-14, 4 p. <https://doi.org/10.14509/32116>

Day, W.C., Abushoff, N., Roberts, F., Smith, M., Gamba, R.M., Henning, M.W., Gough, L.P., and Morath, L.C., 2003, Geologic map of the Big Delta B-2 Quadrangle, east-central Alaska. U.S. Geological Survey Geologic Investigation Series Map 2788, 1 sheet, scale 1:63,960.

Day, W.C., O'Neill, J.M., Abushoff, N., Green, G.N., Salas, R.W., and Gough, L.P., 2007, Geologic map of the Big Delta B-1 Quadrangle, east-central Alaska. U.S. Geological Survey Scientific Investigation Map 2975, 1 sheet, scale 1:63,960.

Day, W.C., and O'Neill, J.M., 2008, Geologic field notes, petrochemical analyses, and field photographs of outcrops and rock samples from the Big Delta B-1 Quadrangle, east-central Alaska. U.S. Geological Survey Open File Report 2008-111, 14 p.

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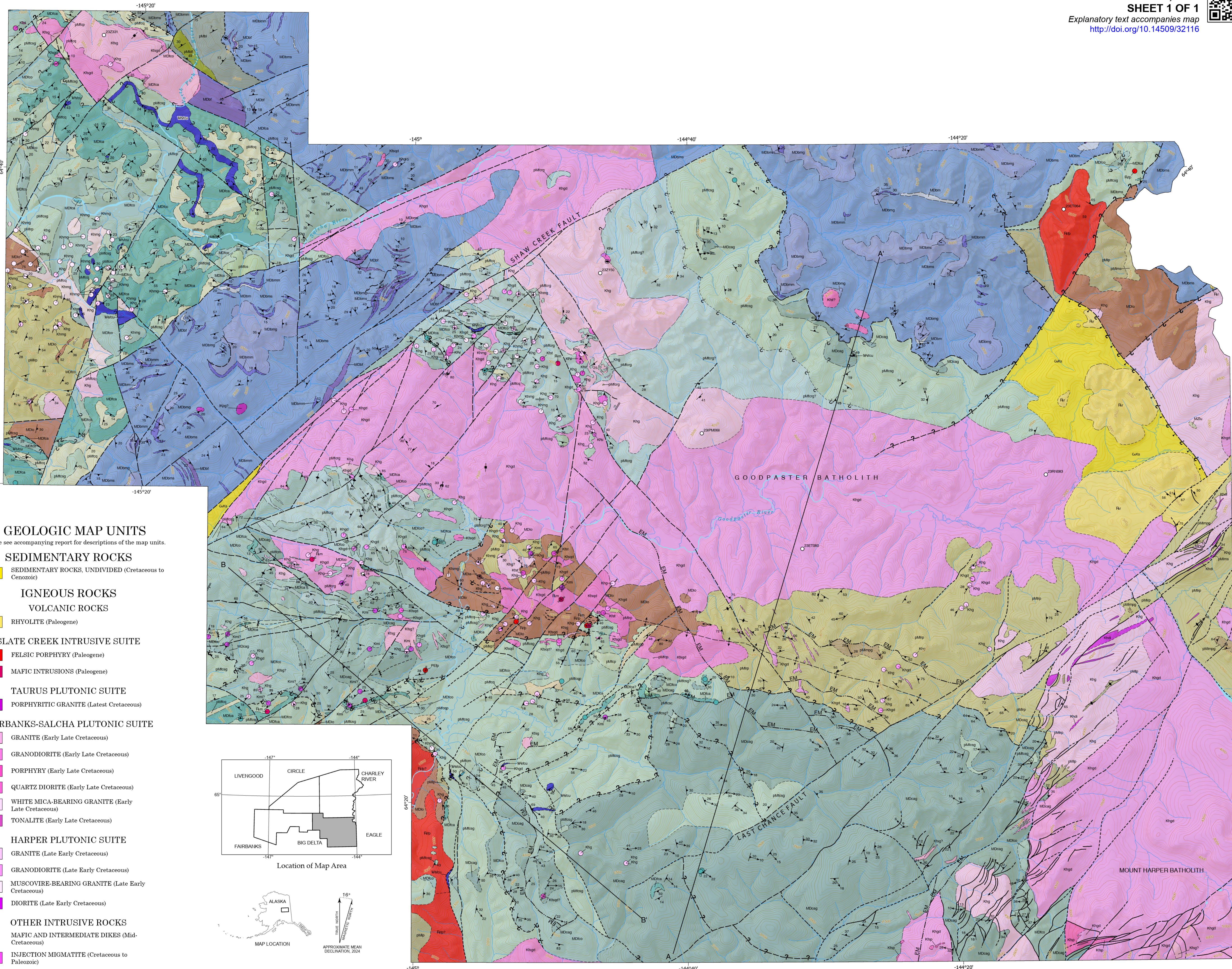
Sims, N.E., Tape, C., Ruppert, N.A., West, M.E., 2026, Earthquake Catalog for the Fairbanks Region of Central Alaska, 2014-2024, Based on Wadsworth Cross Correlation. Geoscientific Research Letters, v. 97, no. 1, p.1-20. <https://doi.org/10.178509/20260042>

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Southworth, D.D., 1985, Geologic and petrochemical investigations, Nail Ridge area, northwest Big Delta Quadrangle, Alaska. Alaska Division of Geological & Geophysical Surveys Public Data File 85-38, 19 p., 1 sheet, scale 1:49,000. <https://doi.org/10.14509/1131>

Weber, F.R., and Foster, H.L., 1964-2000, Unpublished field station locations, archived rock samples, and field notebooks from the Big Delta Quadrangle, east-central Alaska. U.S. Geological Survey.

Weldon, M.B., Newberry, R.J., Athey, J.E., and Szumigala, D.J., 2004, Bedrock geologic map of the Salscha River-Pago area, Big Delta Quadrangle, Alaska: Alaska Division of Geological & Geophysical Surveys Report of Investigation 2004-1B, 19 p., 1 sheet, scale 1:63,960. <https://doi.org/10.14509/2509>



GEOLOGIC MAP UNITS

Please see accompanying report for descriptions of the map units.

SEDIMENTARY ROCKS

SEDIMENTARY ROCKS, UNDIVIDED (Cretaceous to Cenozoic)

IGNEOUS ROCKS

VOLCANIC ROCKS

RHYOLITE (Paleogene)

SLATE CREEK INTRUSIVE SUITE

FELSIC PORPHYRY (Paleogene)

MAFIC INTRUSIONS (Paleogene)

TAURUS PLUTONIC SUITE

PORPHYRITIC GRANITE (Latest Cretaceous)

FAIRBANKS-SALCHA PLUTONIC SUITE

GRANITE (Early Late Cretaceous)

GRANODIORITE (Early Late Cretaceous)

PORPHYRY (Early Late Cretaceous)

QUARTZ DIORITE (Early Late Cretaceous)

WHITE MICA-BEARING GRANITE (Early Late Cretaceous)

TONALITE (Early Late Cretaceous)

HARPER PLUTONIC SUITE

GRANITE (Late Early Cretaceous)

GRANODIORITE (Late Early Cretaceous)

MUSCOVITE-BEARING GRANITE (Late Early Cretaceous)

DIORITE (Late Early Cretaceous)

OTHER INTRUSIVE ROCKS

MAFIC AND INTERMEDIATE DIKES (Old-Cretaceous)

INJECTION MIGMATITE (Cretaceous to Paleozoic)

METAMORPHIC ROCKS

BUTTE ASSEMBLAGE

MARBLE, DOLOSTONE, AND CALC-SCHIST (Mississippian to Devonian)

METAFELSIC ROCKS (Mississippian to Devonian)

METAMAFIC ROCKS (Mississippian to Devonian)

METACONGLOMERATE (Mississippian to Devonian)

METAGRIT (Mississippian to Devonian)

METASEDIMENTARY ROCKS (Mississippian to Devonian)

BLACKSHELL ASSEMBLAGE

METAFELSIC ROCKS (Mississippian to Devonian)

CARBONACEOUS ROCKS (Pre-Mississippian)

FAIRBANKS-CHENA ASSEMBLAGE

META-ULTRAMAFIC ROCKS (Triassic? to Paleocene)

CENTRAL CREEK AUGEN ORTHOGNEISS (Early Mississippian to Late Devonian)

AMPHIBOLITE (Mississippian to Devonian)

ORTHOGNEISS (Mississippian to Devonian)

MARBLE (Pre-Mississippian)

PARAGNEISS (Pre-Mississippian)

QUARTZITE (Pre-Mississippian)

QUARTZITE AND PARAGNEISS (Pre-Mississippian)

SCHIST (Pre-Mississippian)

SCHIST AND GNEISS (Pre-Mississippian)

SCHIST, CALC-SILICATE, AND CARBONATE ROCKS (Pre-Mississippian)

RECRYSTALLIZED GNEISS AND SCHIST (Pre-Mississippian)

LAKE GEORGE ASSEMBLAGE

AMPHIBOLITE (Early Mississippian to Late Devonian)

ORTHOGNEISS (Early Mississippian to Late Devonian)

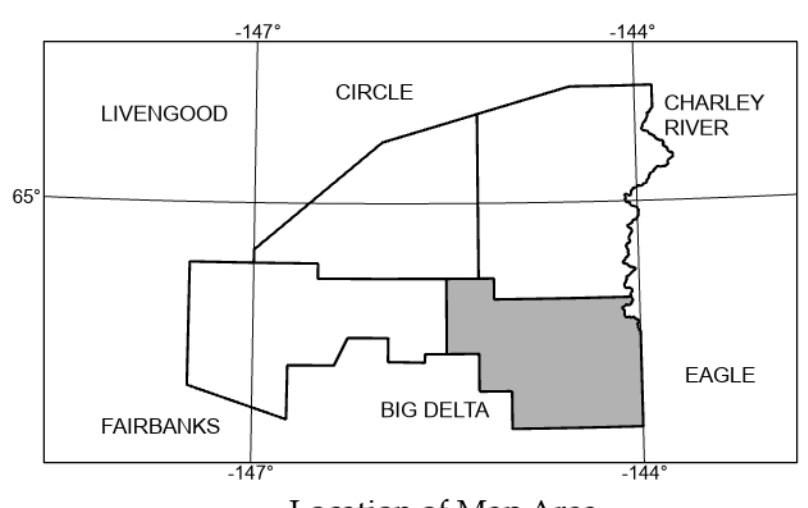
METASEDIMENTARY ROCKS (Pre-Mississippian)

PARAGNEISS (Pre-Mississippian)

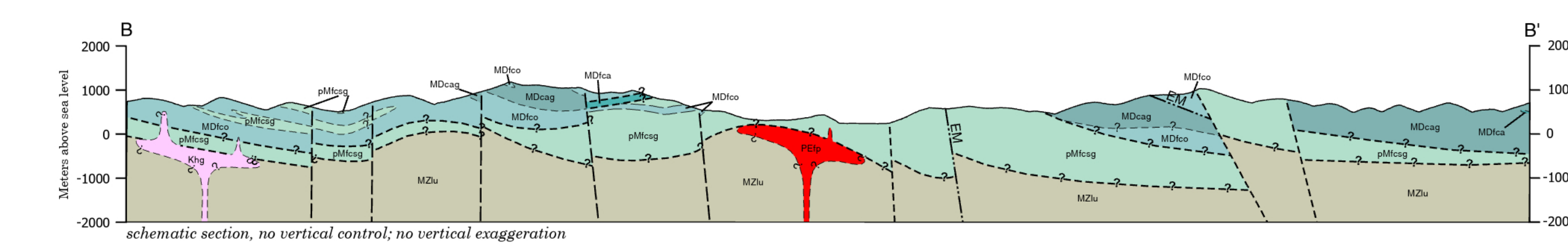
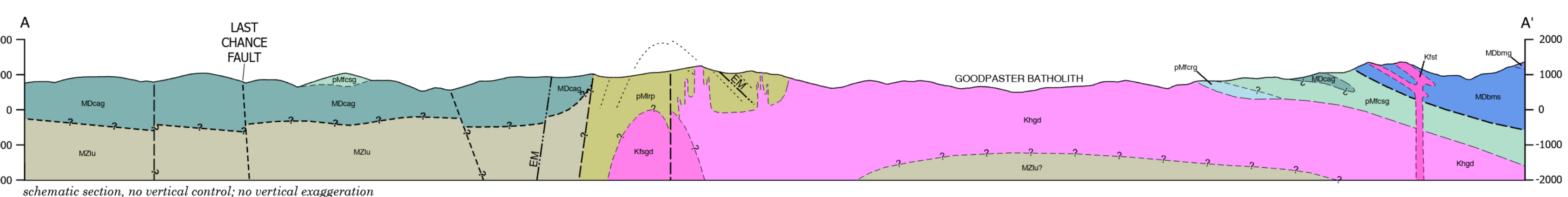
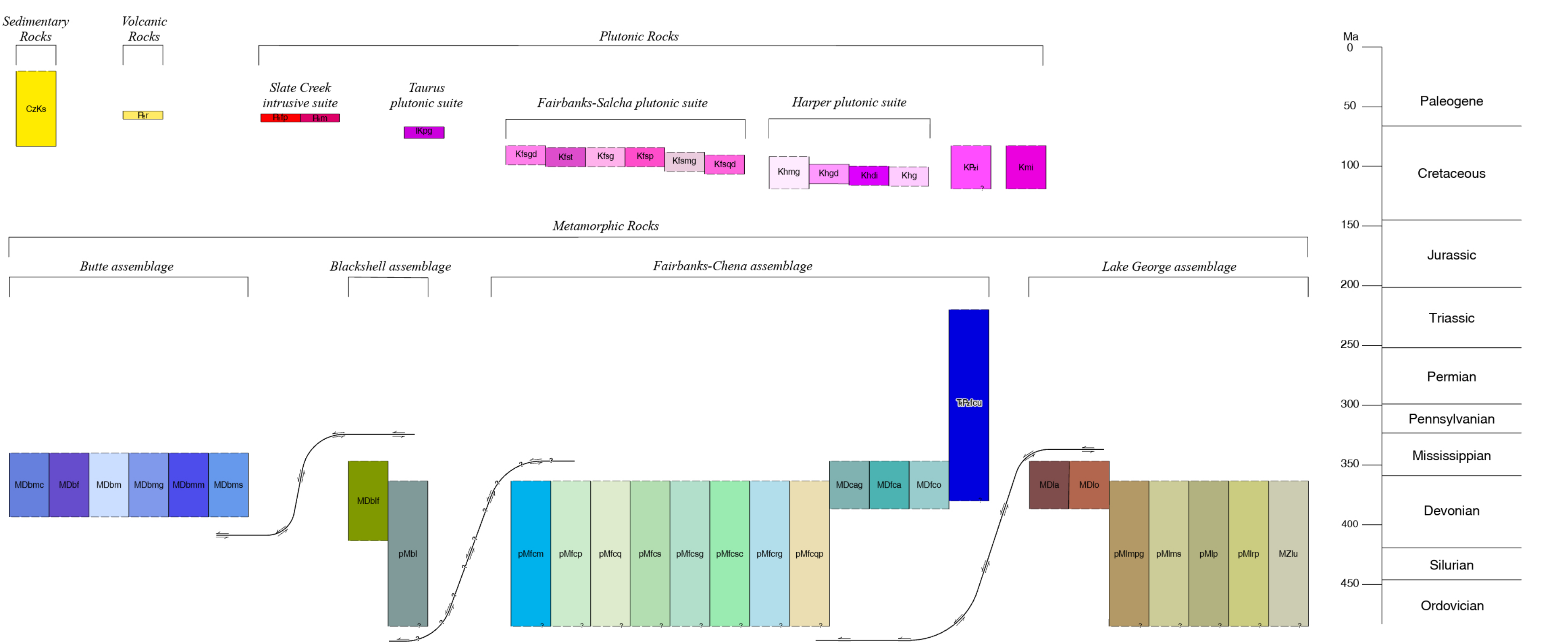
RECRYSTALLIZED PARAGNEISS (Pre-Mississippian)

MIGMATITE AND PARAGNEISS (Pre-Mississippian)

LAKE GEORGE ASSEMBLAGE, UNDIVIDED (Mississippian to Proterozoic)



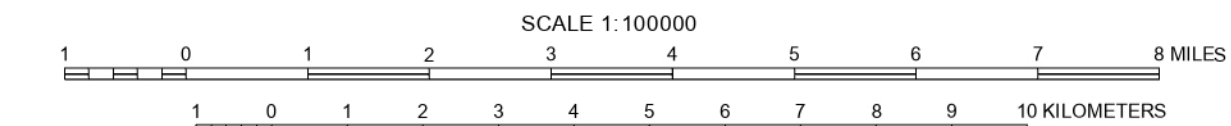
CORRELATION OF MAP UNITS



Bedrock Geologic Map of the Upper Goodpaster River Area, Big Delta Quadrangle, Alaska

by  
Evan Tweiker<sup>1</sup>, R.J. Newberry<sup>1</sup>, K.R. Wilson<sup>1</sup>, D.J. Szumigala<sup>1</sup>, I.P. Muller<sup>2</sup>, and C.M. Truskowski<sup>1</sup>

2026



CONTOUR INTERVAL 100 FEET  
VERTICAL DATUM NAVD83

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**Topographic base map from:**  
Shaded-relief base map and topographic lines created from:  
U.S. Geological Survey IFSAAR Digital Terrain Model (2010)  
Hydrology from:  
U.S. Geological Survey National Hydrologic Dataset (2017)  
**Projection:**  
Universal Transverse Mercator Zone 6N  
**Datum:**  
North American Datum of 1983  
**Geologic field investigations by:**  
A.D. Wildland, Evan Tweiker, R.J. Newberry, T.J. Naibert, D.J. Szumigala, and (2022)  
A.D. Wildland, D.A. Harvey, Evan Tweiker, J.W. Buchanan, I.P. Muller, M.L. Barrera, M.M. Gavel, R.A. Ketchum, R.J. Newberry, S.P. Rogan, T.J. Naibert, D.J. Szumigala (2023)  
**Geologic interpretation by:**  
Evan Tweiker, R.J. Newberry, K.R. Wilson (2023-2026)  
**Geologic GIS data layers created by:**  
T.J. Naibert, C.M. Truskowski (2023-2026)  
**Cartographic review by:**  
A.E. Macpherson (2026)  
**Geographic review by:**  
C.M. Truskowski, E. Tweiker, T.J. Naibert (2025-2026)  
**Peer review by:**  
M.B. Weldon (2026)