

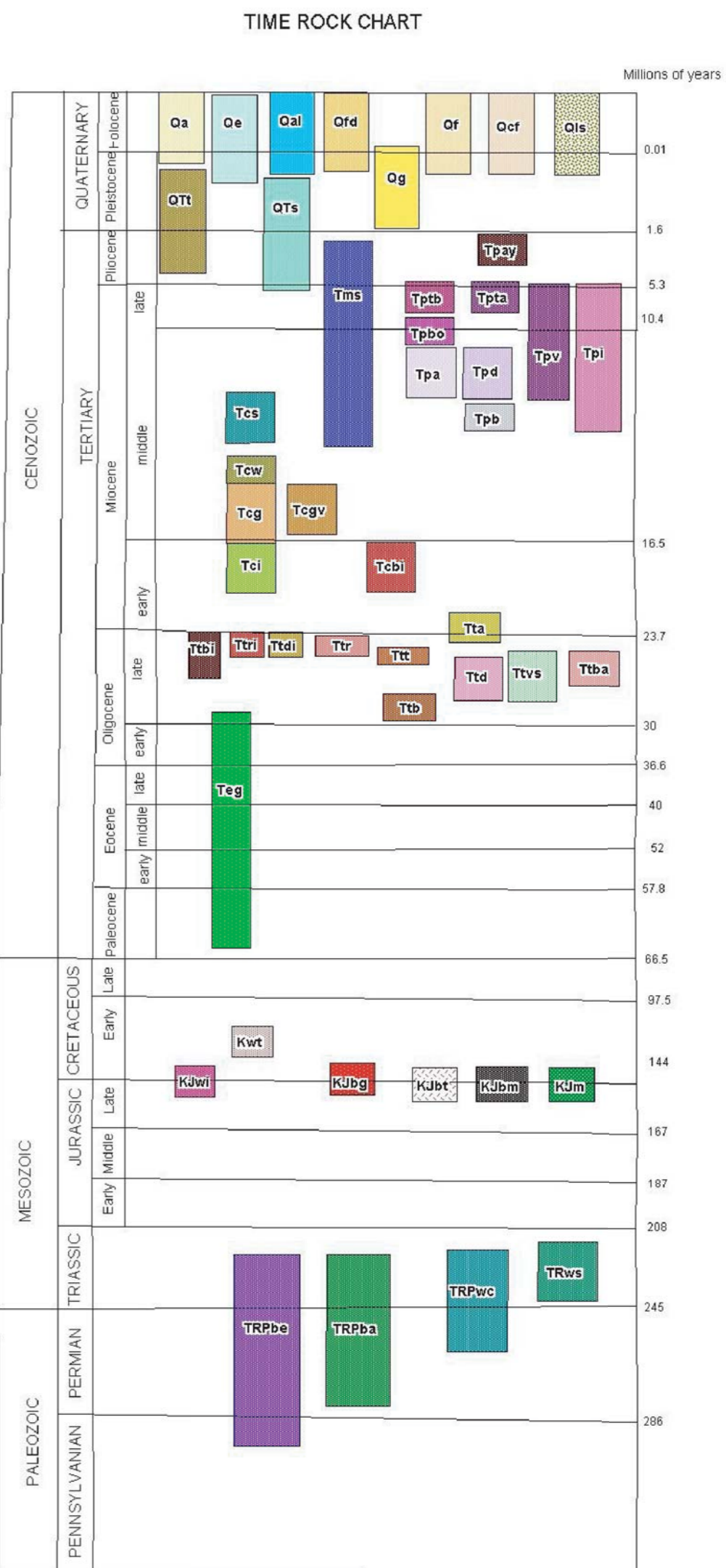
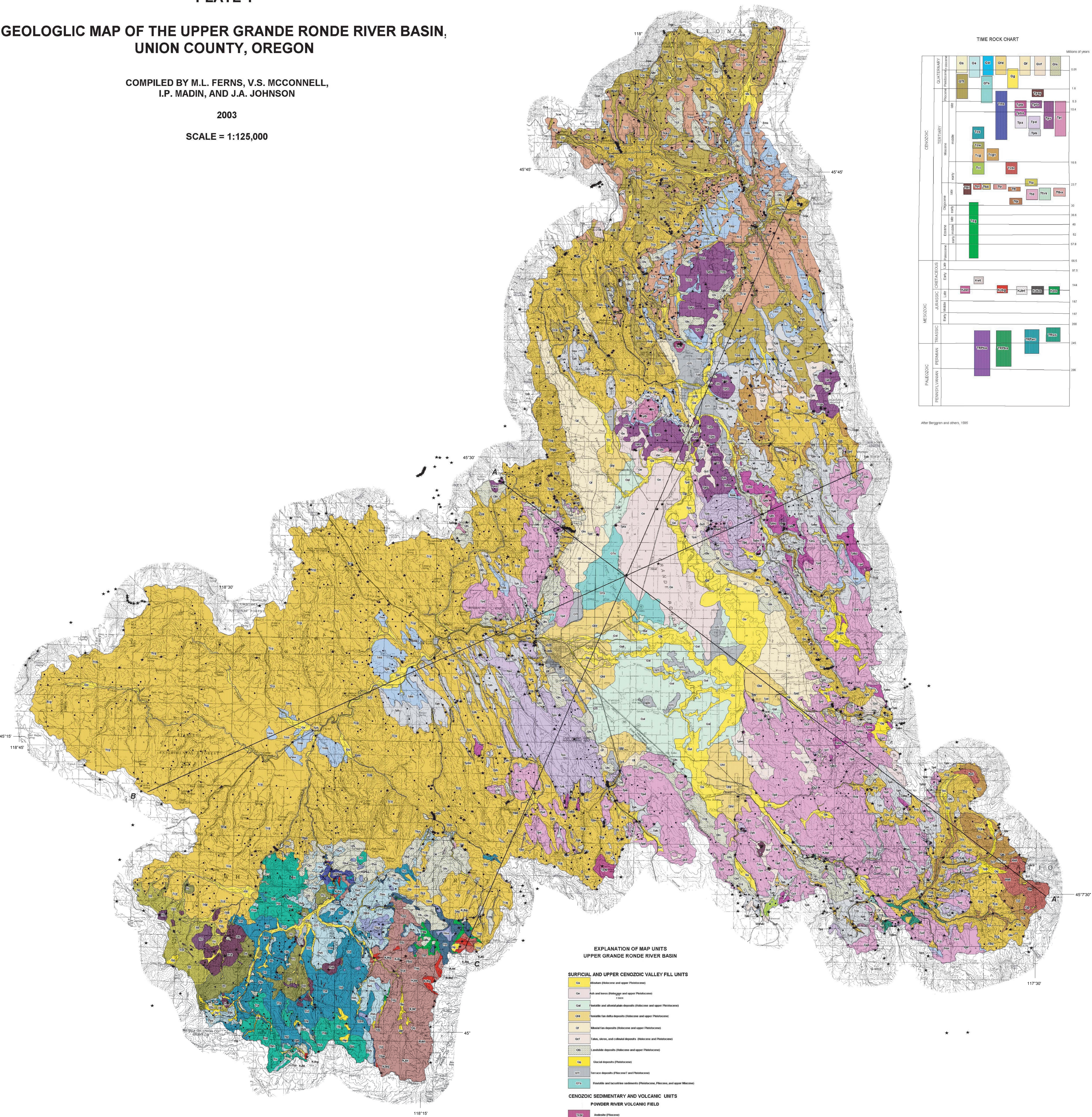
PLATE 1

GEOLOGIC MAP OF THE UPPER GRANDE RONDE RIVER BASIN,
UNION COUNTY, OREGON

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I.P. MADIN, AND J.A. JOHNSON

2003

SCALE = 1:125,000



After Berggren and others, 1985

EXPLANATION OF MAP UNITS
UPPER GRANDE RONDE RIVER BASIN

SURFICIAL AND UPPER CENOZOIC VALLEY FILL UNITS

- Qa Alluvium (Holocene and upper Pleistocene)
- Qb Sand and gravel (Holocene and upper Pleistocene)
- Qc Sandstone and siltstone (Holocene and upper Pleistocene)
- Qd Sandstone and siltstone (Holocene and upper Pleistocene)
- Qe Sandstone and siltstone (Holocene and upper Pleistocene)
- Qf Sandstone and siltstone (Holocene and upper Pleistocene)
- Qg Sandstone and siltstone (Holocene and upper Pleistocene)
- Qh Sandstone and siltstone (Holocene and upper Pleistocene)
- Qi Sandstone and siltstone (Holocene and upper Pleistocene)
- Qj Sandstone and siltstone (Holocene and upper Pleistocene)
- Qk Sandstone and siltstone (Holocene and upper Pleistocene)
- Ql Sandstone and siltstone (Holocene and upper Pleistocene)
- Qm Sandstone and siltstone (Holocene and upper Pleistocene)
- Qn Sandstone and siltstone (Holocene and upper Pleistocene)
- Qo Sandstone and siltstone (Holocene and upper Pleistocene)
- Qp Sandstone and siltstone (Holocene and upper Pleistocene)
- Qq Sandstone and siltstone (Holocene and upper Pleistocene)
- Qr Sandstone and siltstone (Holocene and upper Pleistocene)
- Qs Sandstone and siltstone (Holocene and upper Pleistocene)
- Qt Sandstone and siltstone (Holocene and upper Pleistocene)
- Qu Sandstone and siltstone (Holocene and upper Pleistocene)
- Qv Sandstone and siltstone (Holocene and upper Pleistocene)
- Qw Sandstone and siltstone (Holocene and upper Pleistocene)
- Qx Sandstone and siltstone (Holocene and upper Pleistocene)
- Qy Sandstone and siltstone (Holocene and upper Pleistocene)
- Qz Sandstone and siltstone (Holocene and upper Pleistocene)

CENOZOIC SEDIMENTARY AND VOLCANIC UNITS

- POWDER RIVER VOLCANIC FIELD
 - Qa Andesite (Holocene)
 - Qb Andesite (Holocene)
 - Qc Andesite (Holocene)
 - Qd Andesite (Holocene)
 - Qe Andesite (Holocene)
 - Qf Andesite (Holocene)
 - Qg Andesite (Holocene)
 - Qh Andesite (Holocene)
 - Qi Andesite (Holocene)
 - Qj Andesite (Holocene)
 - Qk Andesite (Holocene)
 - Ql Andesite (Holocene)
 - Qm Andesite (Holocene)
 - Qn Andesite (Holocene)
 - Qo Andesite (Holocene)
 - Qp Andesite (Holocene)
 - Qq Andesite (Holocene)
 - Qr Andesite (Holocene)
 - Qs Andesite (Holocene)
 - Qt Andesite (Holocene)
 - Qu Andesite (Holocene)
 - Qv Andesite (Holocene)
 - Qw Andesite (Holocene)
 - Qx Andesite (Holocene)
 - Qy Andesite (Holocene)
 - Qz Andesite (Holocene)
- COLUMBIA RIVER BASALT GROUP
 - Qa Basalt (Holocene)
 - Qb Basalt (Holocene)
 - Qc Basalt (Holocene)
 - Qd Basalt (Holocene)
 - Qe Basalt (Holocene)
 - Qf Basalt (Holocene)
 - Qg Basalt (Holocene)
 - Qh Basalt (Holocene)
 - Qi Basalt (Holocene)
 - Qj Basalt (Holocene)
 - Qk Basalt (Holocene)
 - Ql Basalt (Holocene)
 - Qm Basalt (Holocene)
 - Qn Basalt (Holocene)
 - Qo Basalt (Holocene)
 - Qp Basalt (Holocene)
 - Qq Basalt (Holocene)
 - Qr Basalt (Holocene)
 - Qs Basalt (Holocene)
 - Qt Basalt (Holocene)
 - Qu Basalt (Holocene)
 - Qv Basalt (Holocene)
 - Qw Basalt (Holocene)
 - Qx Basalt (Holocene)
 - Qy Basalt (Holocene)
 - Qz Basalt (Holocene)
- TOWER MOUNTAIN VOLCANIC FIELD (LOWER MIOCENE AND OLIGOCENE)
 - Qa Andesite (Lower Miocene and upper Oligocene)
 - Qb Andesite (Lower Miocene and upper Oligocene)
 - Qc Andesite (Lower Miocene and upper Oligocene)
 - Qd Andesite (Lower Miocene and upper Oligocene)
 - Qe Andesite (Lower Miocene and upper Oligocene)
 - Qf Andesite (Lower Miocene and upper Oligocene)
 - Qg Andesite (Lower Miocene and upper Oligocene)
 - Qh Andesite (Lower Miocene and upper Oligocene)
 - Qi Andesite (Lower Miocene and upper Oligocene)
 - Qj Andesite (Lower Miocene and upper Oligocene)
 - Qk Andesite (Lower Miocene and upper Oligocene)
 - Ql Andesite (Lower Miocene and upper Oligocene)
 - Qm Andesite (Lower Miocene and upper Oligocene)
 - Qn Andesite (Lower Miocene and upper Oligocene)
 - Qo Andesite (Lower Miocene and upper Oligocene)
 - Qp Andesite (Lower Miocene and upper Oligocene)
 - Qq Andesite (Lower Miocene and upper Oligocene)
 - Qr Andesite (Lower Miocene and upper Oligocene)
 - Qs Andesite (Lower Miocene and upper Oligocene)
 - Qt Andesite (Lower Miocene and upper Oligocene)
 - Qu Andesite (Lower Miocene and upper Oligocene)
 - Qv Andesite (Lower Miocene and upper Oligocene)
 - Qw Andesite (Lower Miocene and upper Oligocene)
 - Qx Andesite (Lower Miocene and upper Oligocene)
 - Qy Andesite (Lower Miocene and upper Oligocene)
 - Qz Andesite (Lower Miocene and upper Oligocene)

MESOZOIC INTRUSIVE ROCKS

- Qa Andesite (Lower Miocene and upper Oligocene)
- Qb Andesite (Lower Miocene and upper Oligocene)
- Qc Andesite (Lower Miocene and upper Oligocene)
- Qd Andesite (Lower Miocene and upper Oligocene)
- Qe Andesite (Lower Miocene and upper Oligocene)
- Qf Andesite (Lower Miocene and upper Oligocene)
- Qg Andesite (Lower Miocene and upper Oligocene)
- Qh Andesite (Lower Miocene and upper Oligocene)
- Qi Andesite (Lower Miocene and upper Oligocene)
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- Qk Andesite (Lower Miocene and upper Oligocene)
- Ql Andesite (Lower Miocene and upper Oligocene)
- Qm Andesite (Lower Miocene and upper Oligocene)
- Qn Andesite (Lower Miocene and upper Oligocene)
- Qo Andesite (Lower Miocene and upper Oligocene)
- Qp Andesite (Lower Miocene and upper Oligocene)
- Qq Andesite (Lower Miocene and upper Oligocene)
- Qr Andesite (Lower Miocene and upper Oligocene)
- Qs Andesite (Lower Miocene and upper Oligocene)
- Qt Andesite (Lower Miocene and upper Oligocene)
- Qu Andesite (Lower Miocene and upper Oligocene)
- Qv Andesite (Lower Miocene and upper Oligocene)
- Qw Andesite (Lower Miocene and upper Oligocene)
- Qx Andesite (Lower Miocene and upper Oligocene)
- Qy Andesite (Lower Miocene and upper Oligocene)
- Qz Andesite (Lower Miocene and upper Oligocene)

MESOZOIC AND PALEOZOIC UNITS (TRIASSIC, PERMIAN, AND PENNSYLVANIAN)

- Qa Andesite (Lower Miocene and upper Oligocene)
- Qb Andesite (Lower Miocene and upper Oligocene)
- Qc Andesite (Lower Miocene and upper Oligocene)
- Qd Andesite (Lower Miocene and upper Oligocene)
- Qe Andesite (Lower Miocene and upper Oligocene)
- Qf Andesite (Lower Miocene and upper Oligocene)
- Qg Andesite (Lower Miocene and upper Oligocene)
- Qh Andesite (Lower Miocene and upper Oligocene)
- Qi Andesite (Lower Miocene and upper Oligocene)
- Qj Andesite (Lower Miocene and upper Oligocene)
- Qk Andesite (Lower Miocene and upper Oligocene)
- Ql Andesite (Lower Miocene and upper Oligocene)
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- Qo Andesite (Lower Miocene and upper Oligocene)
- Qp Andesite (Lower Miocene and upper Oligocene)
- Qq Andesite (Lower Miocene and upper Oligocene)
- Qr Andesite (Lower Miocene and upper Oligocene)
- Qs Andesite (Lower Miocene and upper Oligocene)
- Qt Andesite (Lower Miocene and upper Oligocene)
- Qu Andesite (Lower Miocene and upper Oligocene)
- Qv Andesite (Lower Miocene and upper Oligocene)
- Qw Andesite (Lower Miocene and upper Oligocene)
- Qx Andesite (Lower Miocene and upper Oligocene)
- Qy Andesite (Lower Miocene and upper Oligocene)
- Qz Andesite (Lower Miocene and upper Oligocene)

Triassic, full on downflow side; dashed where inferred, dotted where conjectured

Quaternary, full on downflow side; dashed where inferred, dotted where conjectured