

WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
Raymond Lasmanis , State Geologist

GEOLOGIC MAP OF THE WEST HALF OF THE YAKIMA QUADRANGLE, WASHINGTON

Compiled by
TIMOTHY J. WALSH

WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES

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WASHINGTON STATE DEPARTMENT OF
Natural Resources

Brian Boyle - Commissioner of Public Lands
Art Stearns - Supervisor

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INTRODUCTION

This map is one of a series of 1:100,000-scale geologic maps compiled by staff geologists of the Division of Geology and Earth Resources and used as source maps for the southwest quadrant of the geologic map of Washington (Walsh and others, in press). Other maps in the series are available or will be available for all 1:100,000-scale quadrangles within the southwest quadrant, that is, south of 47°15' north latitude and west of 120°30' west longitude.

The 1:100,000-scale maps in this series that have been released to date are:

Korosec, M. A., compiler, 1987, Geologic map of the Mount Adams quadrangle, Washington: Washington Division of Geology and Earth Resources Open File Report 87-5, 41 p., 1 pl., scale 1:100,000

Korosec, M. A., compiler, 1987, Geologic map of the Hood River quadrangle, Washington and Oregon: Washington Division of Geology and Earth Resources Open File Report 87-6, 42 p., 1 pl., scale 1:100,000

Logan, R. L., compiler, 1987, Geologic map of the Chehalis River and Westport quadrangles, Washington: Washington Division of Geology and Earth Resources Open File Report 87-8, 18 p., 1 pl., scale 1:100,000

Logan, R. L., compiler, 1987, Geologic map of the south half of the Shelton and the south half of the Copalis Beach quadrangles, Washington: Washington Division of Geology and Earth Resources Open File Report 87-9, 17 p., 1 pl., scale 1:100,000

Phillips, W. M., compiler, 1987, Geologic map of the Mount St. Helens quadrangle, Washington and Oregon: Washington Division of Geology and Earth Resources Open File Report 87-4, 63 p., 1 pl., scale 1:100,000

Phillips, W. M., compiler, 1987, Geologic map of the Vancouver quadrangle, Washington and Oregon: Washington Division of Geology and Earth Resources Open File Report 87-10, 32 p., 1 pl., scale 1:100,000

- Phillips, W. M.; Walsh, T. J., compiler, 1987, Geologic map of the northwest part of the Goldendale quadrangle, Washington: Washington Division of Geology and Earth Resources Open File Report 87-13, 9 p., 1 pl., scale 1:100,000
- Schasse, H. W., compiler, 1987, Geologic map of the Centralia quadrangle, Washington: Washington Division of Geology and Earth Resources Open File Report 87-11, 27 p., 1 pl., scale 1:100,000
- Schasse, H. W., compiler, 1987, Geologic map of the Mount Rainier quadrangle, Washington: Washington Division of Geology and Earth Resources Open File Report 87-16, 43 p., 1 pl., scale 1:100,000
- Walsh, T. J., compiler, 1986, Geologic map of the west half of the Toppenish quadrangle, Washington: Washington Division of Geology and Earth Resources Open File Report 86-3, 8 p., 1 pl., scale 1:100,000
- Walsh, T. J., compiler 1986, Geologic map of the west half of the Yakima quadrangle, Washington: Washington Division of Geology and Earth Resources Open File Report 86-4, 12 p., 1 pl., scale 1:100,000
- Walsh, T. J., compiler, 1987, Geologic map of the Astoria and Ilwaco quadrangles, Washington and Oregon: Washington Division of Geology and Earth Resources Open File Report 87-2, 30 p., 1 pl., scale 1:100,000
- Walsh, T. J., compiler, 1987, Geologic map of the south half of the Tacoma quadrangle, Washington: Washington Division of Geology and Earth Resources Open File Report 87-3, 12 p., 1 pl., scale 1:100,000

DESCRIPTION OF MAP UNITS
WEST HALF OF THE YAKIMA QUADRANGLE, WASHINGTON

Qa1

Alluvium - Stream deposits of silt, sand and gravel; largely confined to valley bottoms; locally includes lacustrine, paludal, and eolian deposits in depressions; in sidestream facies of Waitt (1979) gravel is mostly basaltic in composition; in mainstream facies of Waitt (1979) gravels are of mixed lithologies

Qt

Terraced Deposits - Stream deposits of silt, sand, and gravel of diverse composition; largely confined to Yakima River drainage system; poorly indurated and moderately to slightly weathered clasts; hatchures point to lower level

Qaf

Alluvial Fan Deposits - Sand and gravel of diverse composition with basalt clasts dominant in larger sizes; cone-shaped with little or no caliche development; surface relatively undissected

Qls

Landslide Deposits - Clay, silt, sand, and gravel; unstratified and poorly sorted; surface commonly hummocky; deposited by rotational-translational slides and flows

Qlo

Eolian Deposits - Silt and fine sand; pale orange to brown; locally contains multiple caliche and tephra beds

Qafo

Older Alluvial Fan Deposits - Sand and gravel; semiconsolidated fanglomerate; primarily basalt clasts cemented by iron-stained clays; most fan surfaces dissected and capped by well-developed caliche

Qf

Catastrophic Flood Slackwater Sediments - Silt, with minor amounts of sand and gravel; rhythmically bedded and graded; deposited by lower energy slackwater floods or surges of catastrophic floods; locally contains clastic dikes, tephra beds, and ice-rafted fragments

Qvti

Tieton Andesite (Pleistocene) - One hypersthene-augite andesite flow erupted from vents southwest of the Yakima Quadrangle; partly filled deep canyon eroded by Tieton River into Grande Ronde Basalt and Fives Peak Formation and advanced downstream as far as the mouth of Cowiche Canyon, (Russell, 1893, Smith, 1903; Warren, 1941; Becraft, 1950); remnants remarkably columnar in places; Pleistocene as indicated by K-Ar age of 1.0 ± 0.1 m.y. (S. M. Farooqui, oral commun., in Swanson, 1978) and by fact that flow surface near Cowiche Canyon is little modified by erosion.

QTg

Older Gravel Remnants - Coarse sand and gravel; alluvial fan and terrace remnants; dominantly basalt clasts; slightly to moderately weathered contains local fine sand and silt lenses; associated with steep slopes of anticlinal ridges; age uncertain, but may be in part correlative with Thorp Gravel

Ttg

Thorp Gravel - Coarse sand and gravel; moderately to highly weathered and poorly indurated stream terraced deposits related to Yakima River drainage; locally contains mainstream facies of mixed lithologies and basalt-dominated sidestream facies; base of unit commonly unconformable near ridges and conformable in basins with underlying Ellensburg units

Columbia River Basalt Group

Yakima Basalt Subgroup

Saddle Mountains Basalt

Tsp

Pomona Flow, Pomona Member - Fresh surfaces are gray to blue black; weathers gray; fine grained; abundantly to slightly phyric with white to colorless plagioclase microphenocrysts, sparse plagioclase glomerocrysts, and sparse olivine phenocrysts; invasive contacts common in pumicite of Ellensburg Formation; well-developed entablature with fanning columns; Pomona chemical type (Wright and others, 1973); reversed magnetic polarity (Rietman, 1966; Choiniere and Swanson, 1979); K-Ar age about 12 m.y. (McKee and others, 1977); single flow in map area; generally equivalent to the Wenas basalt of Smith (1903)

Tsa

Huntzinger Flow(s) of Mackin (1961), Asotin Member - Fresh exposures blue black; weathers gray; fine-grained, sparsely plagioclase-phyric flow of Asotin chemical type (Swanson and others, 1979a); normal magnetic polarity; single intracanyon flow follows ancient river channel along Yakima Ridge east of mapped area

Tsw

Wahluke Flow, Wilbur Creek Member - Fresh exposures black to blue black; weathers gray black; fine grained, aphyric with plagioclase microphenocrysts and rare phenocrysts; flow of Wilbur Creek chemical type (Swanson and others, 1979a); normal magnetic polarity; single intracanyon flow follows ancient river channel along Yakima Ridge east of mapped area

Wanapum Basalt

Twp

Priest Rapids Member - Fresh exposures are gray-black; weathers rusty brown; medium- to coarse-grained; very sparsely phyric, with rare plagioclase and olivine phenocrysts; well-developed colonnade with 0.5-1.5-m-diameter columns; Rosalia chemical type (Swanson and others, 1979a); reversed magnetic polarity; one flow in map area

Twr

Roza Member - Fresh exposures gray black; weathers reddish-brown; fine- to medium-grained, with plagioclase phenocrysts and glomerocrysts generally 0.5-1.0 cm.; phenocrysts commonly a few hundred per square meter surface area; well-developed colonnade with columns as much as 1 m in diameter; Frenchman Springs or Roza chemical type (Wright and others, 1973); transitional magnetic polarity

Twf

Frenchman Springs Member, Undivided - Fresh exposures are gray to black; gray to reddish-brown on weathered surfaces; medium to coarse grained; highly to very sparsely plagioclase-phyric flows of Frenchman Springs chemical type (Wright and others, 1973); normal magnetic polarity (Rietman, 1966); thin sedimentary interbeds common; one to three flows in map area; lower flows commonly pillowed at base

Tw

Wanapum Basalt, Undivided - Consists of Frenchman Springs, Roza, and Priest Rapids Members where map scale does not permit separation

Grande Ronde Basalt

Unnamed basalt flows, nonporphyritic to very sparsely plagioclase-phyric, generally fine grained and petrographically nondistinct; chemical composition varies within a broad field named Grande Ronde chemical type (formerly called Yakima chemical type by Wright and others, 1973); divided into magnetostratigraphic units on the basis of dominant magnetic polarity (Swanson and others, 1979a);

Tgn2 Upper flows of normal polarity

Tgr2 Flows of reversed polarity

Tgn1 Lower flows of normal polarity

Tel

Ellensburg Formation, Undivided - Gravel, sand, silt, and clay; white to light red brown; weakly to moderately indurated fluvial and lahatic deposits; dominated by pumiceous dacitic, andesitic, and basaltic clasts; grades downward into thin units of fluvial sand and clay, locally pebbly sand, with mixed volcanic clasts and locally hyaloclastic units; base defined as top of locally lowermost flow of Columbia River Basalt Group, but unit includes all conformably underlying sediments of similar lithology beyond edge of lowermost flow of Columbia River Basalt Group; top of unit defined as below Thorp Gravel or other Pliocene(?) - Pleistocene units; intertongues to east with flows of Yakima Basalt Subgroup

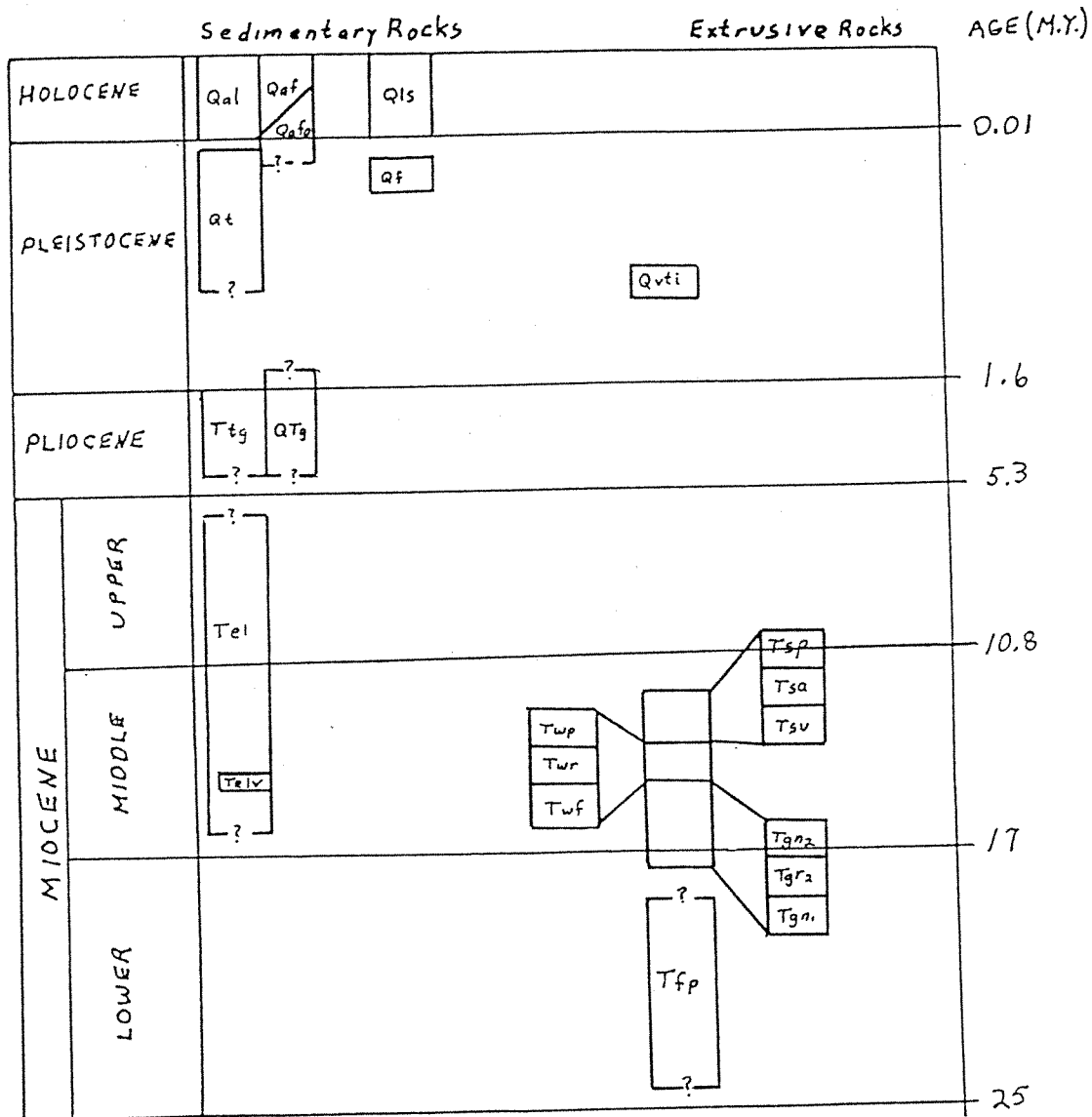
Telv

Vantage Member - Clay, silt, and coarse sand; white to tan; weakly to moderately indurated fluvial deposits; dominated by dacitic and andesitic grains and local pumiceous clasts; stratigraphic position defined by overlying Wanapum Basalt and underlying Grande Ronde Basalt (Bentley and Campbell, 1983a)

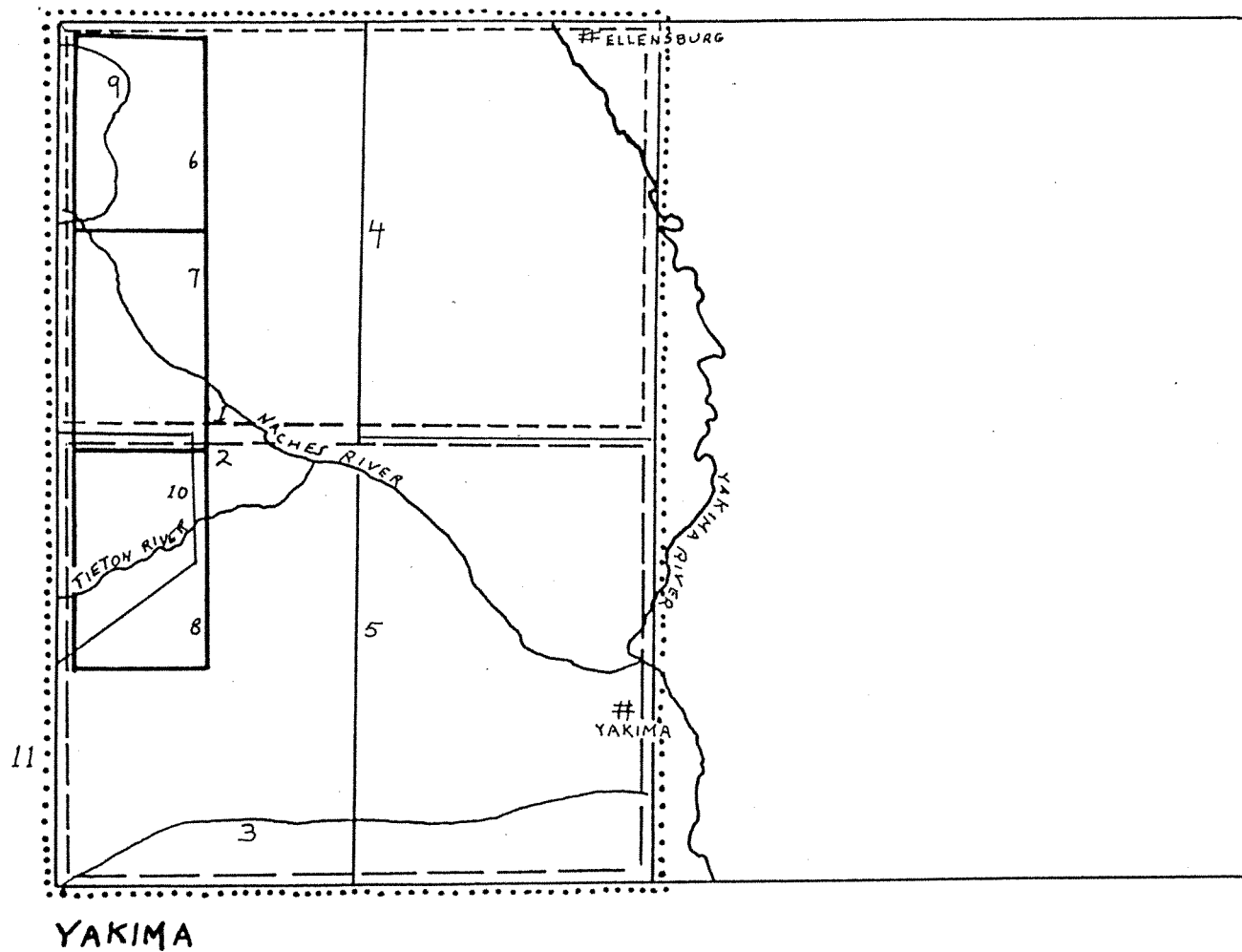
Tfp

Fifes Peak Formation - Basaltic andesite, andesite, and less numerous rhyolite flows, tuffs, breccias, and laharic deposits. In mapped area, includes three volcanoes, Tieton volcano of Swanson (1966), about 9 miles west of Tieton, an unnamed volcano south of and underlying Tieton volcano (Swanson 1966; 1978), and an unnamed volcano northwest of Cleman Mountain; each has a radial swarm of andesite and basaltic andesite dikes; K-Ar ages range from about 16 m.y. ago to about 25 m.y. ago (Hartman, 1973)

Unit descriptions modified from Bentley and Campbell (1983a, 1983b), and Swanson (1978)



Correlation Chart



1. Bentley, 1977 Map a
2. Bentley, 1977 Map b
3. Bentley and others, 1980
4. Bentley and Campbell, 1983 a
5. Bentley and Campbell, 1983 b
6. Campbell, in press, Map a
7. Campbell, in press, Map b
8. Campbell, in press, Map c
9. Carlin, 1985
10. Swanson, 1978
11. Swanson and others, 1979 b

Source of Data Map

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Map a: Manastash Lake quadrangle, scale 1:24,000. Map b: Nile quadrangle, scale 1:24,000 Map c: Weddle Canyon quadrangle, scale 1:24,000
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