

DESCRIPTION OF MAP UNITS
(Note: applies to sheets 1 and 2)

Qal Alluvial deposits (Holocene)—Unconsolidated silt, sand, and gravel largely confined to stream bottoms and adjacent flood plains. May include local lacustrine and paludal deposits. Unit ranges from 0 to 5 m-thick.

Qt Talus deposits (Holocene)—Angular rock debris at base of steep slopes, composed entirely of Columbia River basalt.

Qls Landslide deposits (Holocene to Pleistocene)—Mainly Columbia River basalt and lesser pre-Columbia River basalt (Eocene to early Miocene-age) marine sediments displaced by gravity movement.

Qol Older alluvial deposits (Pleistocene)—Includes poorly to moderately indurated siltstones, sandstones, and conglomerates that comprise older alluvial terrace/fan deposits and poorly indurated glacial/alluvial clays and silts deposited by the catastrophic Missoula Floods. Units ranges from 0 to > 30 m thick.

QTs Fluvial sediments (Pleistocene to late Pliocene)—Deeply weathered Cascadian sands and gravels; majority of clasts is andesite with lesser amounts of Cascadian basalt. This unit occurs as a stream terrace remnant above Battle Creek on the Turner 7.5 minute quadrangle. This deposit is believed to be correlative with stream terrace deposits found along the North Santiam River on the Stayton 7.5-minute quadrangle (Tolan and Beeson, unpublished mapping).

Tfr Fern Ridge Formation (Pliocene to late Miocene)—Within the map boundaries dominantly consists of siliceous, Cascadian-derived, moderately to deeply weathered, interbedded, volcanoclastic fluvial deposits, with lesser debris flow deposits and tuffs. This unit conformably overlies units of the Columbia River Basalt Group. Thayer (1933, 1938) originally named this unit the "Fern Ridge Tuffs" for fluvial conglomerates, debris flows, tuffs and breccias that conformably overlie the "Stayton Lavas" (Columbia River basalt) in this region. These same deposits were later renamed the "Sardine Formation" by Peck and others (1984) and mapped by the authors as Sardine Formation on the Stayton NE 7.5 minute quadrangle (Tolan and others, 1999). We now reassess these deposits to the Fern Ridge Formation.

**Columbia River Basalt Group
Frenchman Springs Member, Wanapum Basalt**

Tsh Basalt of Sand Hollow (middle Miocene)—Consists of a single entablature/columnar-jointed flow within the map area. Fresh exposures are dark gray to black; weathered entablature typically forms rounded outcrops that are hackly in appearance. In hand sample, it is commonly glassy to fine-grained, occasionally diktytaxitic, and sparsely plagioclase phyrlic with glomerocrysts < 2 cm in size. Sand Hollow flow can be distinguished from the older Basalt of Silver Falls on the combined basis of stratigraphic position, lithology, and geochemical composition (see Beeson and others, 1985, 1989). Unit thickness is highly variable, ranging from 0 to > 20 m. Areal extent of this unit is limited and represents the distal-most ends of this flood basalt flow in western Oregon.

Tsf Basalt of Silver Falls (middle Miocene)—Consists of a single flow within the map area. This flow typically displays a blocky to columnar jointing style. Fresh exposures are dark gray to black; weathered surfaces are commonly reddish brown to black. The flow is typically coarse-grained, abundantly microphyric, diktytaxitic, and sparsely plagioclase phyrlic with phenocrysts < 3 cm in size. This unit can be distinguished from the younger Sand Hollow flow on the combined basis of stratigraphic position, lithology and geochemical composition (see Beeson and others, 1985, 1989). Unit thickness is highly variable, ranging from < 20 m to > 30 m-thick. This Silver Falls flow commonly overlies a sedimentary interbed that consists of fluvial sandstones/siltstones. This interbed ranges from < 0.3 m to > 3 m in thickness; it is not shown here as a separate map unit due to its relative thinness. Numerous springs emanate from the Silver Falls/Sentinel Bluffs contact in the map area.

Tig Basalt of Ginkgo (middle Miocene)—One flow is present in the map area. This flow occurs both as an intracanyon flow and as a sheet flow along the margins of the ancestral Columbia River channel. Where it occurs as a sheet flow it typically displays a blocky to columnar jointing, whereas, the intracanyon portion typically displays entablature, columnar-jointing pattern. Fresh exposures are dark gray to black; weathered surfaces are brownish-red to dark gray (sheet flow) to gray-black (intracanyon flow). Hand samples from blocky to columnar jointed sheet flow are medium grained, sparsely plagioclase microphyric and abundantly phyrlic with large (0.5 to > 2 cm in size) plagioclase glomerocrysts. Hand samples from entablature/columnar-jointed intracanyon flow are glassy to fine grained, sparsely plagioclase microphyric and abundantly phyrlic with large (0.5 to > 2 cm in size) plagioclase glomerocrysts. The Ginkgo flow is distinguished from both younger Frenchman Springs flows and older Grande Ronde Basalt flows on the combined basis of stratigraphic position, geochemical composition, lithology, and paleomagnetic polarity. Thickness of this flow is highly variable, ranging from < 10 m to > 60 m thick. In the Marion area and south (Turner Quadrangle), a 5 to > 20 m-thick pillow lava/hyaloclastic complex is found associated with the Ginkgo flow. This pillow lava/hyaloclastic complex is interpreted to have been formed when the Ginkgo intracanyon flow (ancestral Columbia River channel) dammed and advanced up a major tributary (ancestral Willamette River) to the ancestral Columbia River (Beeson and Tolan, 1996).

Grande Ronde Basalt

Tgsb Sentinel Bluffs member (middle Miocene)—This unit is represented by a single flow in the map area. This flow typically displays blocky to columnar jointing and rarely displays an entablature/columnar jointing pattern. Fresh exposures are light to dark gray; weathered surfaces are greenish gray to dark gray. Hand samples are fine- to medium-grained, very sparsely plagioclase microphyric, and rarely plagioclase phyrlic with small (< 0.3 cm in size) tabular plagioclase phenocrysts. The Sentinel Bluffs flow is distinguished from both the younger Frenchman Springs flows and older Grande Ronde units on the combined basis of stratigraphic position, geochemical composition, lithology, and paleomagnetic polarity (see Reidel and others, 1989, Beeson and others, 1989). Unit thickness within the map area is variable, ranging from < 10 m to > 25 m in thickness.

Tgww Winter Water member (middle Miocene)—This unit consists of up to two flows within the map area. Both flows typically display entablature/columnar jointing style. Fresh exposures are dark gray to black; weathered surfaces are greenish gray to grayish black. Both flows are commonly glassy to fine-grained, microphyric, phyrlic to abundantly phyrlic with small (< 0.3 cm) plagioclase glomerocrysts that often display a distinctive radial or spoke-shaped habit. Distribution of plagioclase glomerocrysts is often uneven and they tend to be less abundant in the basal portion of the flows. Winter Water flows are distinguished from other Grande Ronde units on the combined basis of stratigraphic position, lithology, geochemical composition, and paleomagnetic polarity (see Reidel and others, 1989 and Beeson and others, 1989). Unit thickness within the map area is variable, ranging from 0 to > 40 m-thick.

Tgo Orley Member (middle Miocene)—Oldest Columbia River Basalt Group unit exposed at the surface in the map area. Unit consists of at least three flows that typically display entablature/columnar jointing and rarely a columnar jointing pattern. Fresh exposures are dark gray to black; weathered surfaces are greenish gray to dark gray. Orley flows are commonly glassy to very fine-grained and aphyric. This unit is distinguished from other Grande Ronde units on the combined basis of stratigraphic position, lithology, geochemical composition, and paleomagnetic polarity. Unit thickness is variable, ranging from 0 to > 60 m-thick.

Tms Marine sediments, undifferentiated (lower Miocene? to Eocene?)—Poorly to moderately indurated, variably fossiliferous, bedded marine sandstones, siltstones, shales, and claystones with lesser conglomerates. Inferred to be Scott Mills Formation by Miller and Orr (1986, 1988). Identified as Eugene Formation on a compilation map by Walker and Durcan (1989). This unit is > 200 m-thick within the map area.

Contact—Approximately located; dotted where concealed

Fault—Dashed where approximately located; dotted where concealed. Ball and bar on the downthrown side

Syncline—Dashed where approximately located. Showing crestline and direction of plunge

Monocline—Dashed where approximately located. Showing crestline and direction of plunge

Strike and dip of beds

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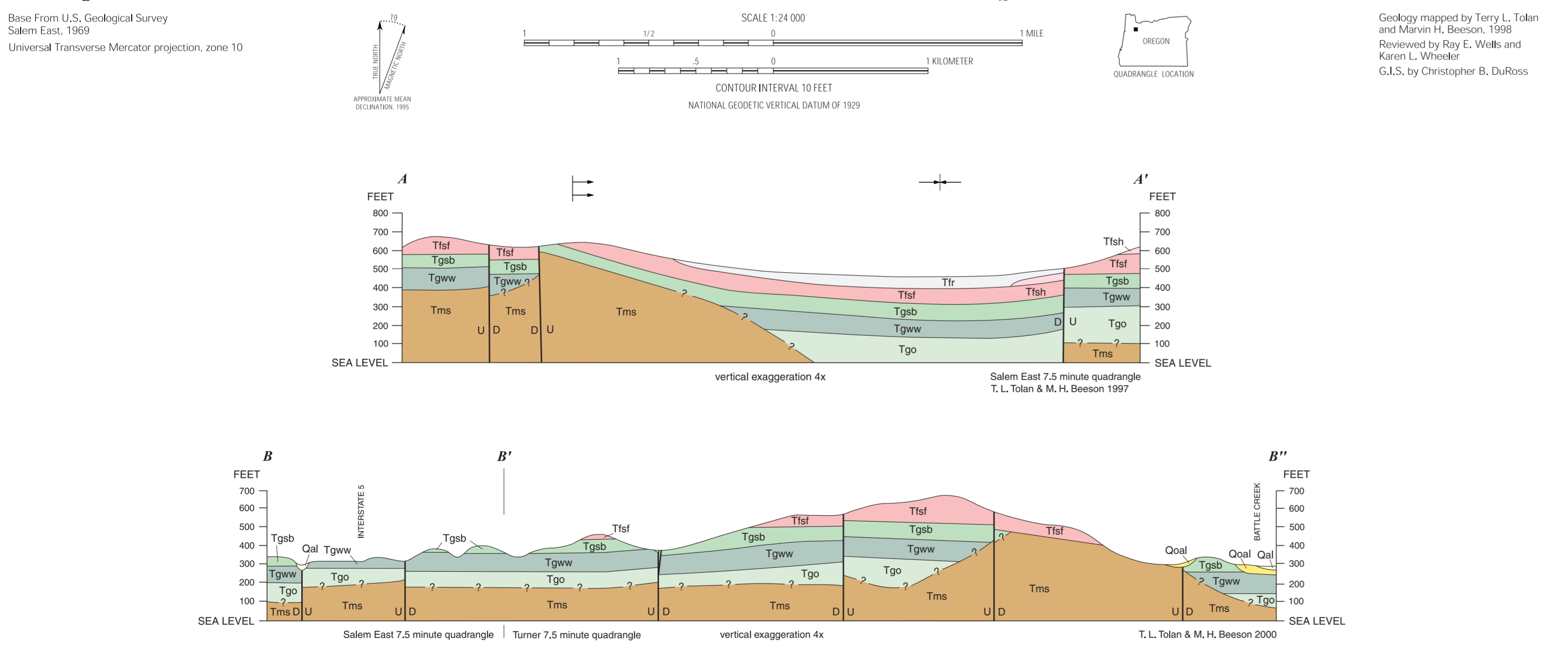
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GEOLOGIC MAP AND DATABASE OF THE SALEM EAST 7.5 MINUTE QUADRANGLE AND TURNER 7.5 MINUTE QUADRANGLES, MARION COUNTY, OREGON: A DIGITAL DATABASE

By
Terry L. Tolan and Marvin H. Beeson
Digital database by Christopher B. DuRoss
2000

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