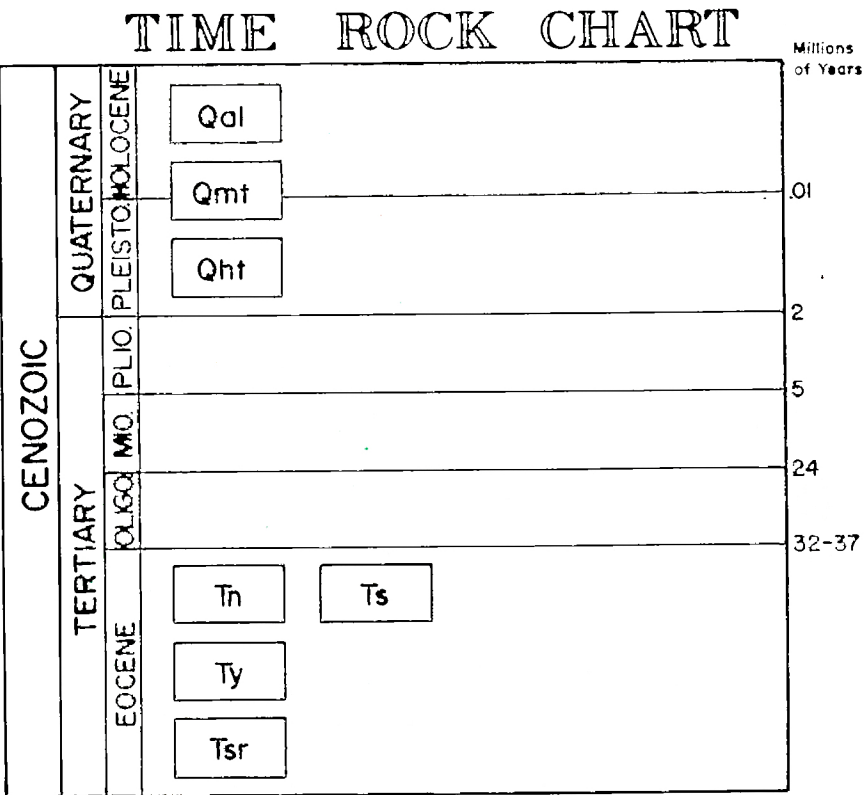
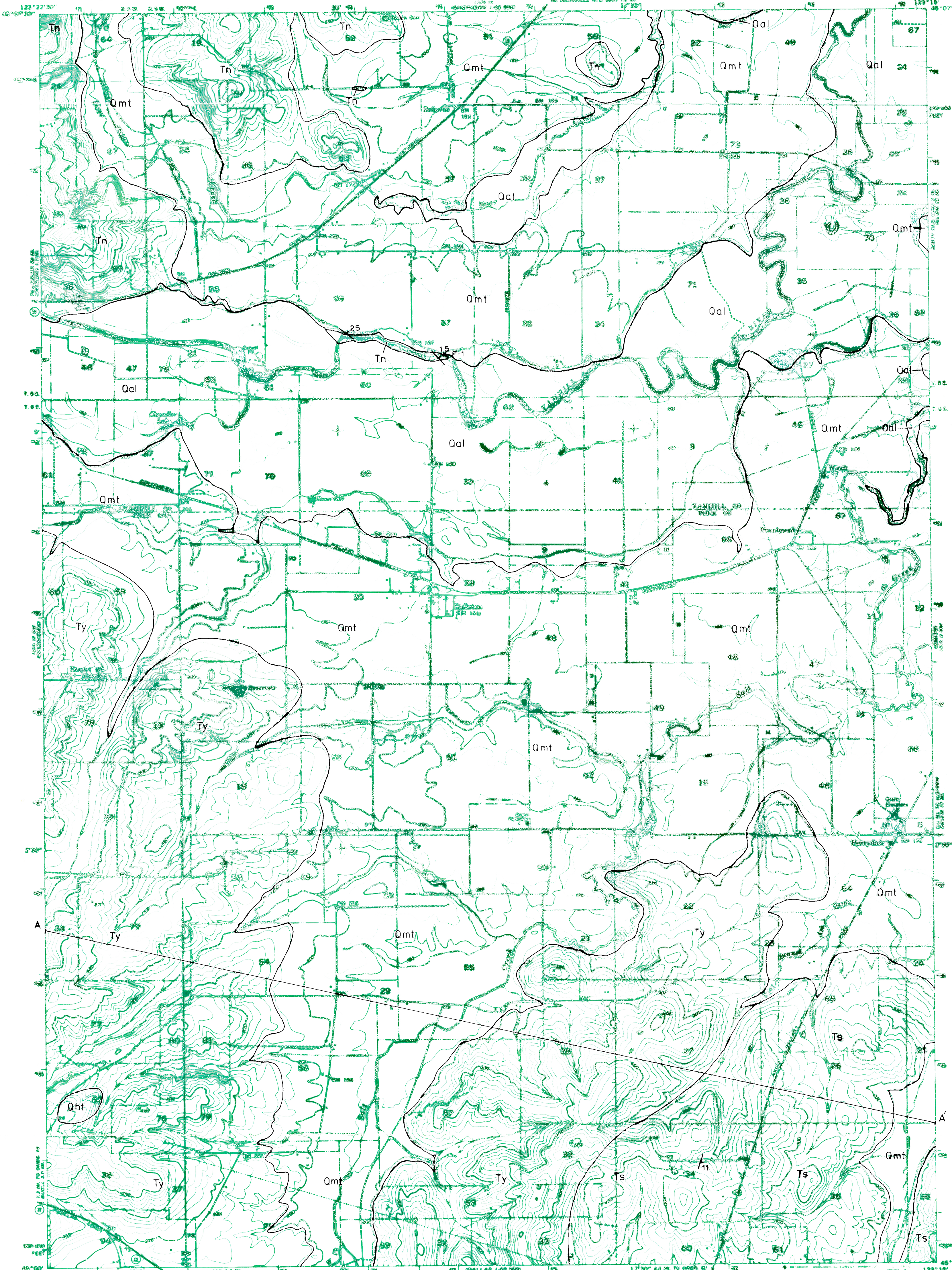


PRELIMINARY GEOLOGIC MAP OF THE BALLSTON QUADRANGLE, OREGON

1982



DESCRIPTION OF MAP UNITS

Qal

Qmt

Qht

Ts

Tn

Ty

Tsr

**SURFICIAL DEPOSITS (HOLOCENE AND PLEISTOCENE)**--Age ranges of individual units overlap.

**Alluvium and lower terrace deposits**--Mostly poorly sorted, unconsolidated deposits of clay, silt, sand, and fine to very coarse gravel; includes recent alluvial terrace deposits along the South Yamhill River and its tributaries. 0-50 ft thick.

**Middle terrace deposits**--Poorly sorted, semiconsolidated deposits of clay, silt, sand, and fine to very coarse gravel; may include thin deposits of light-brown, massive to faintly bedded silt called Willamette Silt by Baldwin and others (1955); includes recent alluvial deposits along Deer Creek and Salt Creek. 0-100 ft thick.

**High terrace deposits**--Weathered, poorly sorted, semiconsolidated deposits of gray to reddish-brown clay, silt, sand, and fine to coarse basaltic gravel; individual basaltic pebbles and cobbles have thick weathering rinds; gravels are tentatively assigned an early to middle Pleistocene age, rest on an undeformed erosional surface at 400-500 ft elevation, and were derived from the Siletz River Volcanics to the south. 0-25 ft thick.

BEDROCK GEOLOGIC UNITS

**Spencer Formation (upper Eocene)**: Light-gray to yellowish-brown, very fine- to medium-grained, well-sorted, thinly laminated to thin-bedded to massive bedded, cross-bedded, micaceous, calcareous, lithic, arkosic, littoral, tuffaceous sandstones; interbedded with dark-gray to yellowish, sandy, micaceous, tuffaceous siltstones, shales, and mudstones; carbonaceous material consisting of leaves and stems is common. South of quadrangle, unit contains nonmarine beds. Weathered outcrops of massive, fine- to medium-grained sands are generally friable, ranging in color from gray to yellowish-brown. Foraminiferal assemblages are assigned by McKilliams (1968, 1973) and McKel (1980) to the upper Narizian Stage of Mallory (1959). Unconformable above the Yamhill Formation. About 800 ft thick.

**Nasturca Formation (upper Eocene)**: Light-brown to light-gray tuffaceous siltstone and shale, with minor light-gray tuffaceous, feldspathic, cross-bedded sandstone near the base. Contains interbedded basalt flows, pillows, pillow breccia, breccias, and tuff; porphyritic basalt feeder dikes are locally present. Unconformable above the Yamhill Formation. Foraminiferal faunas were assigned to the upper Narizian Stage of Mallory (1959) by McKilliams (1968, 1973), and molluscan faunas were referred to the upper Eocene (Tejon Stage) by Baldwin and others (1955) and McKilliams (1960). At least 2,000 ft thick.

**Yamhill Formation (middle and upper Eocene)**: Medium- to dark-gray, massive to faintly bedded, micaceous, carbonaceous, tuffaceous shale and siltstone, with locally interbedded medium-gray to greenish-gray calcareous, fossiliferous, basaltic sandstone; minor limestone concretions. Foraminiferal assemblages were assigned to the Narizian Stage of Mallory (1959) by McKilliams (1968, 1973) and McKel (1980; 1982, written communication), and molluscan faunas were assigned to the late Eocene by Baldwin and others (1955). As much as 3,000 ft thick.

**Siletz River Volcanics (lower and middle Eocene)**: Dark- greenish-gray, aphanitic to porphyritic, vesicular basalt flows and pillow basalt, flow breccia, and tuff breccia, with interbedded red to green calcareous sandy tuff; contains medium- to dark-gray, calcareous, tuffaceous shale, siltstone, and sandstone at top of section. Foraminiferal assemblages were assigned to the Ulatian and Penutian Stages of Mallory (1959) by McKilliams (1968, 1973). MacLeod (1969) and McKel (1980). Foraminifera are assigned to the Capay Stage of Weaver and others (1964) by Baldwin (1964) and MacLeod (1969). Shown only in cross section. Total thickness unknown but probably exceeds 12,000 ft locally in the central Coast Range.

GEOLOGIC SYMBOLS

CONTACT - Approximately located and inferred; contacts exposed only along streams and roads.

STRIKE AND DIP OF BEDS

F-I FOSIL LOCALITY - Mega-fossil locality from Baldwin and others (1955)

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Base map by U.S. Geological Survey  
Control by USGS, USGS, USGS, and State of Oregon  
Topography from aerial photographs by photogrammetric methods  
Aerial photographs taken 1954. Field check 1955  
Projection: 1927 North American datum  
10,000-foot grid based on Oregon coordinate system, north zone  
1000-meter Universal Transverse Mercator grid lines, zone 10, shown  
Map prepared by Oregon Dept. of Geology and Mineral Industries

SCALE 1:24,000

CONTOUR INTERVAL 20 FEET  
SORTED LINES REPRESENT 10-FOOT CONTOURS  
DARTON IS MEAN SEA LEVEL

Geology by M.E. Brownfield,  
1981

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Geologic Cross Section

