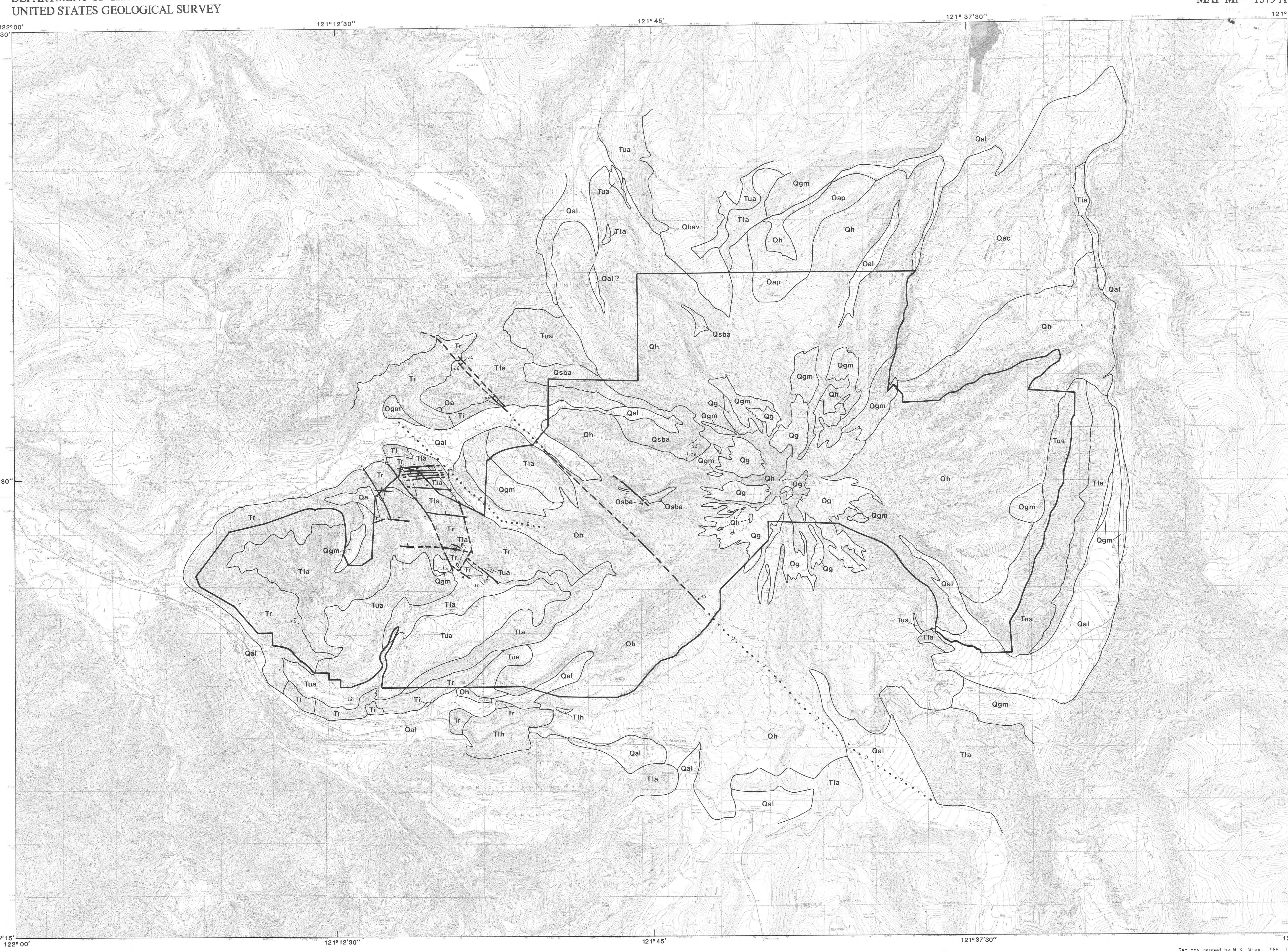
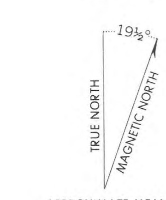
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF –1379-A



Base from U.S. Geological Survey 1:24,000 Badger Lake, Bull Run Lake, Cathedral Ridge, Dog River, Government Camp, Hickman Butte, Mount Hood South, Rhododendron, 1962



APPROXIMATE MEAN DECLINATION, 1982

SCALE 1:62 500

1 ½ 0 1 2 3 4 5 MILES

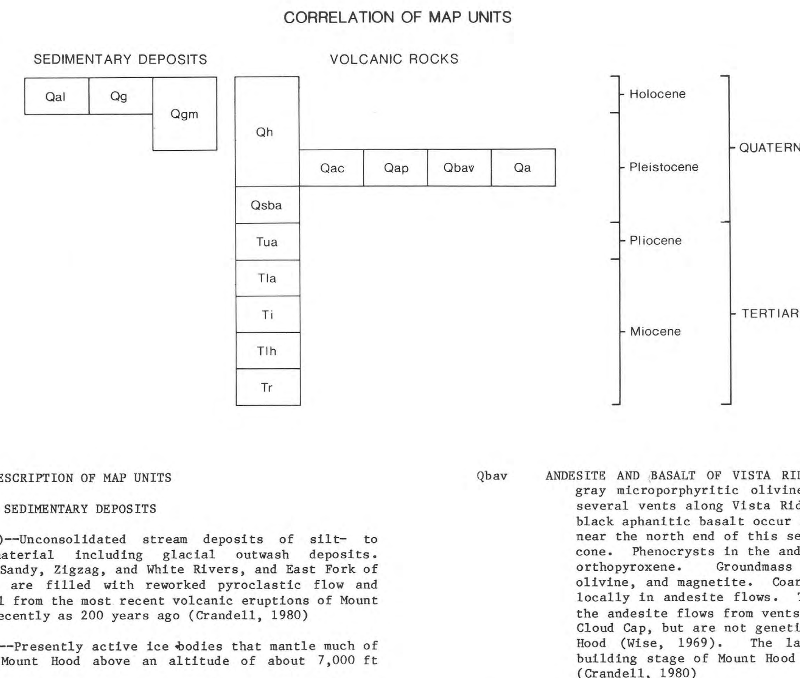
1 .5 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

AREA OF MAP

Geology mapped by W.S. Wise, 1968, 1969; T.E.C. Keith, M.H. Beeson, K.E. Bargar, 1979, 1980; H.J. Meyer, J. Hook, M.W. Gannet, 1980.

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

SEDIMENTARY DEPOSITS

Qal ALLUVIUM (HOLOCENE)--Unconsolidated stream deposits of silt- to boulder-size material including glacial outwash deposits. Valleys of the Sandy, Zigzag, and White Rivers, and East Fork of the Hood River are filled with reworked pyroclastic flow and mudflow material from the most recent volcanic eruptions of Mount Hood, some as recently as 200 years ago (Crandell, 1980)

Qg GLACIERS (HOLOCENE)--Presently active ice bodies that mantle much of the summit of Mount Hood above an altitude of about 7,000 ft (2,134 m)

Qgm GLACIAL MORAINES (HOLOCENE AND PLEISTOCENE)--Unsorted and poorly indurated glacial deposits. Morainal deposits on Mount Hood above an altitude of about 6,500 ft (2,000 m) are associated with presently active glaciers. Moraines on Zigzag Mountain and southeast of Mount Hood along Bluegrass Ridge were deposited during Fraser Glaciation between 10,000 and 29,000 years B.P. (Crandell, 1980). Patches of pre-Fraser and Fraser moraines, too small to be included at this map scale, have been used by Crandell (1980) to date lava flows on the north flank of Mount Hood

VOLCANIC ROCKS

Qh LAVAS OF MOUNT HOOD (HOLOCENE AND PLEISTOCENE)--Undifferentiated lava flows and pyroclastic rocks of Mount Hood. The cone is built up of approximately 70 percent olivine and pyroxene andesite flows and 30 percent interlayered pyroclastic flows (Wise, 1968, 1969; White, 1979). Hornblende dacite tephra and mudflows mantle the older lava flows. A plug of hornblende dacite is exposed in the crater area. Olivine andesite flows are medium-gray porphyritic rocks containing subhedral to anhedral phenocrysts of andesine, augite, hypersthene, and olivine (commonly rimmed with hypersthene) in a holocrystalline groundmass composed mostly of plagioclase laths, anhedral augite, and minor hypersthene and magnetite. Pyroxene andesite flows are medium-gray porphyritic rocks with subhedral to anhedral phenocrysts of hypersthene, augite, and andesine in a holocrystalline groundmass composed mostly of plagioclase laths and anhedral augite with minor hypersthene, magnetite, hematite, and, locally, α-cristobalite. Light-gray to pink porphyritic hornblende dacite pyroclastic material has phenocrysts of dark-reddish-brown to black hornblende, hypersthene, andesine, and locally minor augite. The groundmass is holocrystalline and composed of plagioclase, α-cristobalite, hypersthene, augite, magnetite, hematite, and locally minor sanidine. The relations of the lavas forming Mount Hood are revealed by exposures in deeply dissected stream and glacial valleys on the flanks of the volcano. Many flows are only about 3 m thick or less, and have somewhat irregular distribution since they flowed as somewhat viscous material down the slopes of the volcano. Intracanyon flow sequences, such as Barrett Spur on the north side of Mount Hood and Mississippi Head on the southwest side, may be as thick as 200 m and consist of several 20- to 50-m-thick flows. The summit area of the volcano consists of fumarolically altered coarse andesitic vent breccia. At the west edge of the summit, andesite flows from an older vent are exposed. The central part of the summit area is unstable because of alteration and the loose brecciated nature of the rock. The main vent of the volcano must have been slightly to the north of the present summit at some time. Minerals typical of fumarolic alteration and deposition, such as native sulfur, opal, α- and β-cristobalite, and Fe oxides-hydroxides, coat fractures and fill pore spaces in the summit andesites (Beeson and others, 1980). Fumarolic activity in the area of the hornblende dacite dome (Crater Rock) that was emplaced during volcanic activity about 200 years B.P. is altering the dacite composing the dome and depositing red, yellow, and white incrustations. Temperatures of presently active vents are as high as 91°C, which is above boiling for the altitude (10,150 ft (3,171 m)) (Nehring and others, 1981). The absence of reversed remanent magnetism in the lavas of Mount Hood (White, 1979) indicates that the volcano began erupting not more than 730,000 years B.P. (Mankinen and Dalrymple, 1979). Main cone-building activity had ceased by about 29,000 years B.P., but pyroclastic and mudflow activity has continued to the present time (Crandell, 1980)

Qac ANDESITE OF CLOUD CAP (PLEISTOCENE)--Medium- to dark-gray olivine andesite flows that erupted from a vent at Cloud Cap. A sequence of five flows having an accumulated thickness of approximately 500 ft (150 m) extends northeastward from the Cloud Cap vent (Wise, 1969). Most are porphyritic; some are aphanitic. The andesite flows are chemically similar to those from satellitic vents to the west at The Pinnacle (Qap) and Vista Ridge (Qbav), but are not genetically related to the lavas of Mount Hood (Wise, 1969). The activity at Cloud Cap followed the main cone-building stage of Mount Hood but preceded the Fraser Glaciation (29,000 years B.P.) (Crandell, 1980)

Qap ANDESITE OF THE PINNACLE (PLEISTOCENE)--Medium- to dark-gray olivine andesite with phenocrysts of plagioclase, olivine (with opaque iron oxide rims) and orthopyroxene in a groundmass of plagioclase and magnetite. Three flows that extend northward from a vent at The Pinnacle have an accumulated thickness of approximately 150 m (Wise, 1969). These lavas are chemically similar to those from Cloud Cap vent to the east and Vista Ridge vent to the west, but are not genetically related to the lavas of Mount Hood (Wise, 1969). Activity at The Pinnacle followed the main cone-building stage of Mount Hood, but part of The Pinnacle vent may be covered by some of the youngest of the lavas of Mount Hood. Activity at The Pinnacle had ceased by the beginning of the Fraser Glaciation (Crandell, 1980)

Qbav ANDESITE AND BASALT OF VISTA RIDGE (PLEISTOCENE)--Medium- to dark-gray microporphyritic olivine andesite flows were erupted from several vents along Vista Ridge. Minor amounts of dark-gray to black aphanitic basalt occur locally as vent breccia. Red Hill, near the north end of this series of vents, is a basaltic cinder cone. Phenocrysts in the andesite are plagioclase, olivine, and orthopyroxene. Groundmass consists mostly of plagioclase, olivine, and magnetite. Coarse-grained gabbroic xenoliths occur locally in andesite flows. The lavas are chemically similar to the andesite flows from vents to the east at The Pinnacle and at Cloud Cap, but are not genetically related to the lavas of Mount Hood (Wise, 1969). The lavas erupted after the main cone-building stage of Mount Hood but prior to the Fraser Glaciation (Crandell, 1980)

Qa UNDIFFERENTIATED ANDESITES FROM SATELLITIC VENTS (PLEISTOCENE)--Medium- to dark-gray microporphyritic olivine andesite flows erupted from vents on Zigzag and Last Chance Mountains. Phenocrysts consist of plagioclase, olivine, and hypersthene; holocrystalline groundmass is composed of plagioclase, augite, magnetite, and hematite. These flows are petrographically similar to andesite flows from vents at Cloud Cap, The Pinnacle, and Vista Ridge. They appear to be later than the Pliocene flows; however, they are not in contact with lavas from Mount Hood

Qsba SANDY GLACIER VOLCANO (PLEISTOCENE)--Black to dark-gray olivine basalt flows, pyroxene andesite and hornblende andesite flows, and interlayered tuffs and breccias. Weathered rocks are orange brown. Phenocrysts are commonly labradorite, olivine, and hypersthene and locally augite and hornblende (with opaque iron oxide rims). Groundmass of much of the fresh rock is glassy; crystalline groundmass consists of plagioclase laths, olivine, clinopyroxene, and magnetite. Phenocrysts of plagioclase and hornblende from hornblende andesite outcrops along the upper part of Sandy River are as long as 5 mm. Chemical compositions of flows from the Sandy Glacier volcano range from basalt erupted during the earlier stages of activity to andesite erupted during the later stages (Wise, 1969). Outcrops of the Sandy Glacier volcano occur on the west side of Mount Hood mainly at the head of Muddy Fork, and in the upper part of Sandy River. Partly palagonitized buff- to orange-weathered olivine basalt tuffs and breccias exposed in Ladd Creek may be part of the Sandy Glacier volcano. The main vent of Sandy Glacier volcano was probably located near the head of Muddy Fork. Andesite dikes striking about N. 40° W. and dipping steeply southwest crop out at the head of Muddy Fork. Flows making up the cone dip about 20° to 30° to the east and southeast under Mount Hood. Wise (1969) determined a whole-rock K-Ar age for Sandy Glacier volcano of 3.2 ± 0.3 m.y. (million years) (Pliocene). A microporphyritic holocrystalline andesite sample collected during this study gave a K-Ar age of 1.29 ± 0.05 m.y. (Pleistocene) (J. Markman and J. Donnelly-Nolan, written commun., 1981). The younger age more nearly agrees with observed geologic field relations which indicate that the Sandy Glacier volcano is younger than the Pliocene lava flows

Tua UPPER ANDESITE FLOWS (PLIOCENE)--Medium-gray microporphyritic olivine andesite flows from several vent areas. Phenocrysts are olivine (commonly with hypersthene rims), plagioclase (An_{45}), hypersthene, and augite. Phenocryst size is usually 0.5 to 1 mm long, but may be as long as 2 mm. Groundmass is holocrystalline and composed of plagioclase (andesine), augite, magnetite, and, locally, hematite. Minor glass is locally present as microblebs in the groundmass. Chemical analyses of numerous upper andesite flows suggest that the vents are not genetically related to each other (Wise, 1969). Vent areas for upper andesite flows on the north and west sides of Mount Hood are partly covered by younger volcanic rocks of Mount Hood and coextruded andesites from satellitic vents at Vista Ridge and The Pinnacle. Vent area for the flows on Zigzag Mountain is probably at the east end of Zigzag Mountain. Vent area for flows on Bluegrass Ridge on the east side of Mount Hood is either Badger Butte (not shown on map), an eruptive center approximately 1.5 mi (2 km) southeast of Bluegrass Ridge, or it is covered by the lavas of the east flank of Mount Hood. The upper andesite flows cap ridges and overlie lower andesite flows but do not appear to have been so faulted and altered as the lower andesite flows. Wise (1969) reported K-Ar ages of 3.0 ± 0.2 and 4.1 ± 0.6 m.y. on an andesite flow from Lookout Mountain on the east side of Mount Hood and on a pyroxene andesite flow from Gunsight Butte southeast of Mount Hood, respectively. Both ages are within the range of 2 to 5 m.y. for the Pliocene (Geologic Names Committee, U. S. Geological Survey, written commun., 1980). Volcanism was probably sporadically continuous throughout much of the Pliocene

Tla LOWER ANDESITE FLOWS (MIOCENE)--Light- to medium-gray olivine and two-pyroxene andesite flows with interlayered tuffs and breccias. Locally, andesites are red brown owing to oxidation of iron in mafic phenocrysts. Phenocrysts are andesine, olivine, hypersthene, and augite; groundmass is usually holocrystalline and composed of plagioclase, augite, hematite, and magnetite. Flows at the base of the unit, overlying the Rhododendron Formation in the vicinity of Zigzag and Last Chance Mountains, are distinctively coarse porphyritic andesite with phenocrysts of plagioclase (andesine) and hypersthene as long as 10 mm. Unless the distinctive coarse porphyritic hypersthene andesite can be found at the base of the unit, other lower andesite flows cannot be easily distinguished from andesite flows in the upper part of the underlying Rhododendron Formation. On the basis of rock distribution and rock chemistry, Wise (1969) determined that the lower andesite flows were derived from several different vents. The distinctive coarse porphyritic hypersthene andesite flows on Zigzag Mountain and similar flows north and northwest of Mount Hood are probably associated with the Tertiary (upper Miocene) intrusive rocks (Ti), or vents, on Zigzag Mountain and to the north. The lower andesite flows southeast and east of Mount Hood are chemically different from those on the west side and have a vent area just southeast of the map area at Gunsight Butte (Wise, 1969). The flows are fractured and faulted, and low-temperature iron oxidation along these breaks stained the rocks reddish to orange brown. Faults in the Cast Creek and Short Creek areas on the north side of Zigzag Mountain offset both the lower andesite flows and underlying Rhododendron Formation and contain local quartz-pyrite-limonite veins. The lower andesite flows are assigned a late Miocene age on the basis of three K-Ar age determinations from Wise (1969), and on the stratigraphic relation with the underlying Rhododendron Formation. On the east side of Mount Hood, Wise (1969) determined a K-Ar age of 7.0 ± 0.8 m.y. on an andesite flow at Polallie Creek. From the west side of Mount Hood, a K-Ar age of 5.8 ± 0.8 m.y. was determined from an andesite flow in the upper Clear Fork area, and an age of 5.5 ± 0.7 m.y. from an andesite flow on Zigzag Mountain (Wise, 1969). Volcanism was probably sporadically continuous throughout late Miocene time

Ti INTRUSIVE ROCKS (MIOCENE)--Medium-gray andesite plugs containing phenocrysts of plagioclase, olivine, augite, and hypersthene in a holocrystalline groundmass of plagioclase, augite, hematite, and magnetite. Propylitic alteration has produced epidote, chlorite, and iron hydroxide replacement of primary minerals and local zeolitic alteration at contacts. Andesite is commonly red brown from alteration and iron oxidation. The plugs intrude volcaniclastic beds and lava flows of the Rhododendron Formation on the northern and southern sides of Zigzag Mountain and appear to have been feeder vents for the chemically similar lower andesite flows of late Miocene age (Wise, 1969)

Tlh QUARTZ DIORITE OF LAUREL HILL (MIOCENE)--Dark- to medium-greenish-gray medium-grained quartz diorite and quartz monzonite. Made up largely of plagioclase and hornblende phenocrysts in groundmass of plagioclase, orthoclase, quartz, hornblende, and magnetite (and ilmenite?). Pervasive propylitic alteration has resulted in partial to locally complete replacement of feldspars and mafic minerals by actinolite, chlorite, epidote, hematite, clays minerals, and zeolites. The quartz diorite crops out on the south side of Zigzag Mountain just south of the Wilderness boundary. Two geothermal drill holes on the south side of Zigzag Mountain have penetrated the quartz diorite; in one drill hole, the quartz diorite is overlain by a lower andesite flow (Covert and Meyer, 1979). Wise (1969) indicated that the 11.6 ± 1.2 m.y. K-Ar age that he obtained on the intrusion, is older than geologic relations indicate. Bickerman (1970) obtained two additional K-Ar ages of 8.4 ± 0.6 and 8.0 ± 0.6 m.y. on the intrusion. A dike cutting the intrusion was dated by Bickerman (1970) as 5.0 ± 1.0 m.y.

Tr RHODODENDRON FORMATION (MIOCENE)--Varicolored volcaniclastic rocks and andesite lava flows. The lower part of the unit is composed mostly of mudflows and pyroclastic debris. Hornblende andesite and hypersthene andesite flows, about 3 m thick, are abundant at the top of the unit. The volcaniclastic rocks are usually gray, greenish, and greenish gray; purple rocks are conspicuous locally. Lava flows are medium gray, greenish gray, dark brown, and reddish brown. Volcaniclastic rocks consist of epiclastic siltstone, sandstone, and conglomerate of reworked volcanic material; pyroclastic tuff, mudflows, and volcanic breccia; and volcanic debris of indeterminate, probably mixed, origin. Hypersthene andesite and hornblende andesite are the most common clast constituents where volcanic rocks type can be determined. Pumice fragments are abundant in tuffs, especially those that crop out along the north side of Zigzag Mountain. Abundant small plagioclase (andesine) phenocrysts are characteristically prominent on outcrop surfaces. Phenocrysts are most commonly olivine, hypersthene, augite, and andesite. Groundmass consists mostly of plagioclase, augite, and magnetite. Virtually all of the volcaniclastic rocks of the Rhododendron Formation have been affected by low-temperature hydrothermal alteration. Laumontite, mordenite, stilbite, heulandite, montmorillonite, celadonite, and expanding chlorite are common alteration minerals. Tuffs of Rhododendron Formation in the Burnt Lake-Lost Creek area are affected by local propylitic alteration resulting in deposition of pyrite, quartz, and epidote. Propylitic alteration of the Rhododendron Formation near the contact with the west edge of the quartz diorite of Laurel Hill has produced secondary quartz, epidote, chlorite, pyrite, and zeolites. There is little alteration of the holocrystalline andesite flows in the upper part of the Rhododendron Formation. The Rhododendron Formation crops out along the south, west, and north sides of Zigzag Mountain. Barnes and Butler (1930) described the Rhododendron Formation from bluff exposures at the type locality (N ½ sec. 2, T. 3 S., R. 7 E. and SE ¼ sec. 35, T. 2 S., R. 7 E.) on the south side of Zigzag Mountain near the town of Rhododendron. Maximum thickness here is 1,400 ft (415 m); however, Old Maid Flat drill hole 1-2 on the north side of Zigzag Mountain penetrated more than 2,000 ft (600 m) of Rhododendron Formation (Covert and Meyer, 1979). Wise (1969) suggests that possible vent centers for the tuffs and lava flows are covered by lavas of Mount Hood. The thick tuff section in the Burnt Lake area on Zigzag Mountain may be close to, or an actual vent area for, Rhododendron volcanism. The formation thins rapidly to the north, east, and south (Wise, 1969). Fossil plants and pollens from the Rhododendron Formation (Wolfe, 1962) and stratigraphic relations in the Portland Hills area (not on map) west of Mount Hood (Trimble, 1963) indicate a late Miocene age for the Rhododendron Formation. This assignment is supported by a K-Ar date of 7 ± 2 m.y. determined by Wise (1969) on hornblende from a hornblende andesite of the Rhododendron Formation in Cast Creek on the north side of Zigzag Mountain. One of a series of andesite flows that overlie the Rhododendron Formation on Zigzag Mountain has been dated by the K-Ar method as 5.5 ± 0.7 m.y. (Wise, 1969). In and immediately adjacent to the Wilderness area, the Rhododendron rests upon middle Miocene basalt flows of the Columbia River Basalt Group (Beeson and Moran, 1979; H. J. Meyer, written commun., 1980). Although the Columbia River Basalt Group does not crop out within the Wilderness, drill holes in Old Maid Flat on the north side of Zigzag Mountain have penetrated the Rhododendron Formation resting on the Columbia River Basalt Group (Beeson and Moran, 1979; Covert and Meyer, 1979)

CONTACT--Approximately located

80 FAULT, SHOWING DIP--Dashed where approximately located; dotted where uncertain. Ball and bar on downthrown side

10 STRIKE AND DIP OF LAVA FLOWS AND BEDDING IN VOLCANICLASTIC LAYERS

BOUNDARY OF MOUNT HOOD WILDERNESS

Studies Related to Wilderness

The Wilderness Act (Public Law 88-577, September 3, 1964) and related acts require the U. S. Geological Survey and the U. S. Bureau of Mines to Survey certain areas on Federal Lands to determine their mineral resource potential. Results must be made available to the public and be submitted to the Administration and the Congress. These maps and reports present the results of a geologic and mineral survey of the Mount Hood Wilderness, Clackamas and Hood River Counties, Oregon.

SUMMARY OF THE GEOLOGY OF THE MOUNT HOOD WILDERNESS, OREGON

The Mount Hood Wilderness lies along the crest of the Cascade Range in Clackamas and Hood River Counties, Oreg. Mount Hood is a Quaternary stratovolcano, still potentially active (Crandell, 1980), which rises conspicuously to an altitude of 11,234 ft (3,425 m) above the surrounding ridges which have an average altitude of approximately 4,000 ft (1,220 m). The glacier- and snow-covered volcano is easily visible and accessible from Oregon's largest city of Portland, 50 mi (80 km) west, and is a year-round recreation area for local and touring skiers, hikers, and campers. The Wilderness covers 47,100 acres (19,061 ha) and includes the east, north, and west flanks and the summit area of the volcano. Zigzag Mountain comprises the western part of the Wilderness and rises from an altitude of about 2,000 ft (610 m) to 4,971 ft (1,515 m) at the highest point. The Wilderness lies within parts of seven 7-1/2-minute quadrangles: Bull Run Lake, Cathedral Ridge, Dog River, Rhododendron, Mount Hood South, Government Camp, and Badger Lake.

All rocks in the Wilderness are of Tertiary and Quaternary age. The oldest exposed rocks are late Miocene volcaniclastic rocks and andesitic lava flows of the Rhododendron Formation, which rest upon middle Miocene rocks of the Columbia River Basalt Group exposed just outside the map area and penetrated by geothermal drill holes (Beeson and Moran, 1979; Covert and Meyer, 1979). Volcanic activity has probably occurred sporadically from Miocene time to the present.

Late Miocene andesite plugs intrude, and flows overlie, the Miocene Rhododendron Formation. The quartz diorite of Laurel Hill probably was emplaced during late Miocene time, and drill-hole data indicate that it is a larger body than surface outcrops might indicate. The intrusion may be related to other quartz diorite intrusions to the southeast and southwest. The intrusion partly underlies the south edge of Zigzag Mountain and may have pushed the mountain upward, causing fracturing and block faulting before the upper andesite flows were emplaced during Pliocene time. Upper andesite flows were extruded from several centers and flowed over early Miocene andesite lava flows of late Miocene age. Petrographically, the andesite flows are all very similar.

The Sandy Glacier volcano of Pleistocene age is exposed on the west side of Mount Hood where it has been partly eroded by glaciation. The well-developed cone is composed of basalt and andesite flows that dip east and southeast under Mount Hood. Geophysical evidence indicates that several Pleistocene volcanoes may have been buried by Mount Hood (G. Flanagan and D.L. Williams, written commun., 1981).

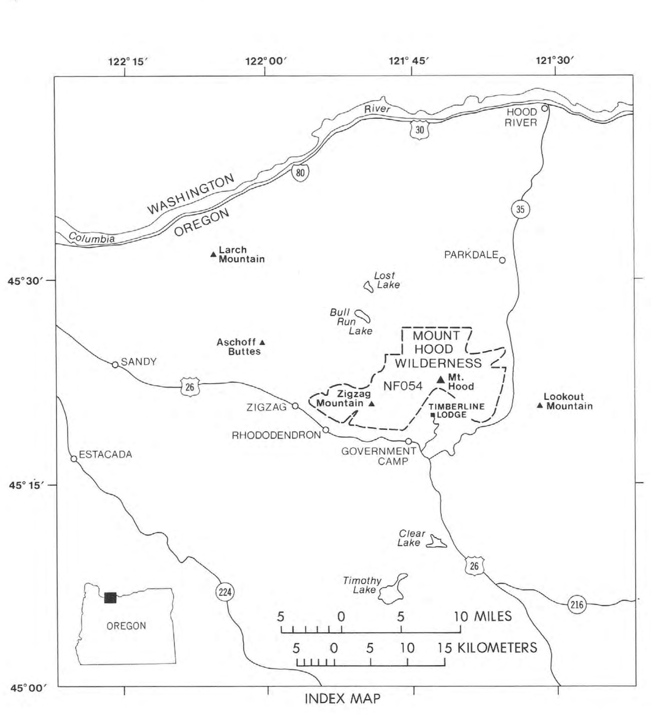
Construction of the present cone of Mount Hood began approximately 730,000 years B.P. when andesitic lava flows poured out over the Pliocene and Pleistocene volcanic rocks. The huge cone continued to grow to at least its present height, and probably higher (Crandell, 1980), until about 29,000 years B.P., which was the beginning of the Fraser Glaciation. Andesite flows then ceased, and after the glaciers retreated about 15,000 years B.P., volcanic activity was characterized by pyroclastic eruptions of hornblende dacite, dome extrusion, and mudflows. The three major eruptive periods during this time have been designated by Crandell (1980) as Polallie, 12,000 to 15,000 years B.P.; Timberline, 1,500 to 1,800 years B.P.; and Old Maid, 200 to 300 years B.P. Crater Rock, just south of the summit of Mount Hood, is a hornblende dacite dome that was emplaced during the Old Maid event. Fumarolic activity has been continuous around the dome since emplacement. Minor eruptive activity was reported in 1859 and 1865 (Crandell, 1980) and may have deposited local thin ash layers on the slopes of Mount Hood.

The general structural pattern in the Mount Hood area is typical of the Cascade Range (Venkatakrishnan and others, 1980). The fracture pattern is generally east-northeast and north-northwest. Miocene lava flows are more fractured than the Pliocene and younger rocks. The rocks on Zigzag Mountain appear particularly to reflect the regional structural pattern, although that area may have been affected by local uplift during emplacement of the quartz diorite of Laurel Hill and possible associated intrusions that have not yet been exposed by erosion.

On the south side of Mount Hood, a N. 45° W.-trending fault that dips steeply to the northeast has been active since the Old Maid eruptive event, 200 to 300 years B.P., as shown by displacement of the block and ash flow on the east side of Zigzag Canyon just above timberline. A parallel fault along Lost Creek is buried beneath block and ash material from Mount Hood and is possibly responsible for, or associated with, quartz veins and propylitic alteration in the lower andesite flows. Evidence from outside the map area shows that the volcano forming Mount Hood appears to occupy a north-south-trending graben (Beeson and Moran, 1979).

Seismic activity in the vicinity of Mount Hood is presently being continuously monitored. Studies by Westhusing (1973) showed mostly shallow 5-10 km depth) shocks that had epicenters near the center of the volcano. In a 16-day study, he recorded 53 near events, all of which he attributed to tectonic, rather than volcanic, origin. Green, Weaver, and Iyer (1979) reported on a seismic network of 16 stations, operational between November 1977 and December 1978, during which time 10 local events were recorded, the most intense of which had a magnitude of 3.4. Three of these events were located within 3 km south of Mount Hood, and seven were on the mountain. In July 1980, a microearthquake swarm occurred on Mount Hood (Rite and Iyer, 1981). The volcano has since stabilized to the previous level of activity--about one locatable earthquake per month (Rite and Iyer, 1981).

A minor amount of gold is reported to have been produced several miles southwest of the Wilderness in the Still Creek-Cheeney Creek area (Callagan and Buddington, 1938). With the exception of a few unproductive claims in the vicinity of Lost Creek on the north side of Zigzag Mountain and Laurel Hill on the south side, no mining activity has been noted in the Wilderness (Douglas Causey, written commun., 1980). Considerable interest has been generated regarding the geothermal energy potential of Mount Hood since the area was designated a KGRA (Known Geothermal Resources Area) in 1970, and several exploratory geothermal and heat-flow holes have been drilled in areas adjacent to the Wilderness (Covert and Meyers, 1979; Hull and Riccio, 1979; Robison and others, 1981a, 1981b).



INDEX MAP

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GEOLOGIC MAP OF THE MOUNT HOOD WILDERNESS, CLACKAMAS AND HOOD RIVER COUNTIES, OREGON

By

T.E.C. Keith, M.H. Beeson, and K.E. Bargar

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