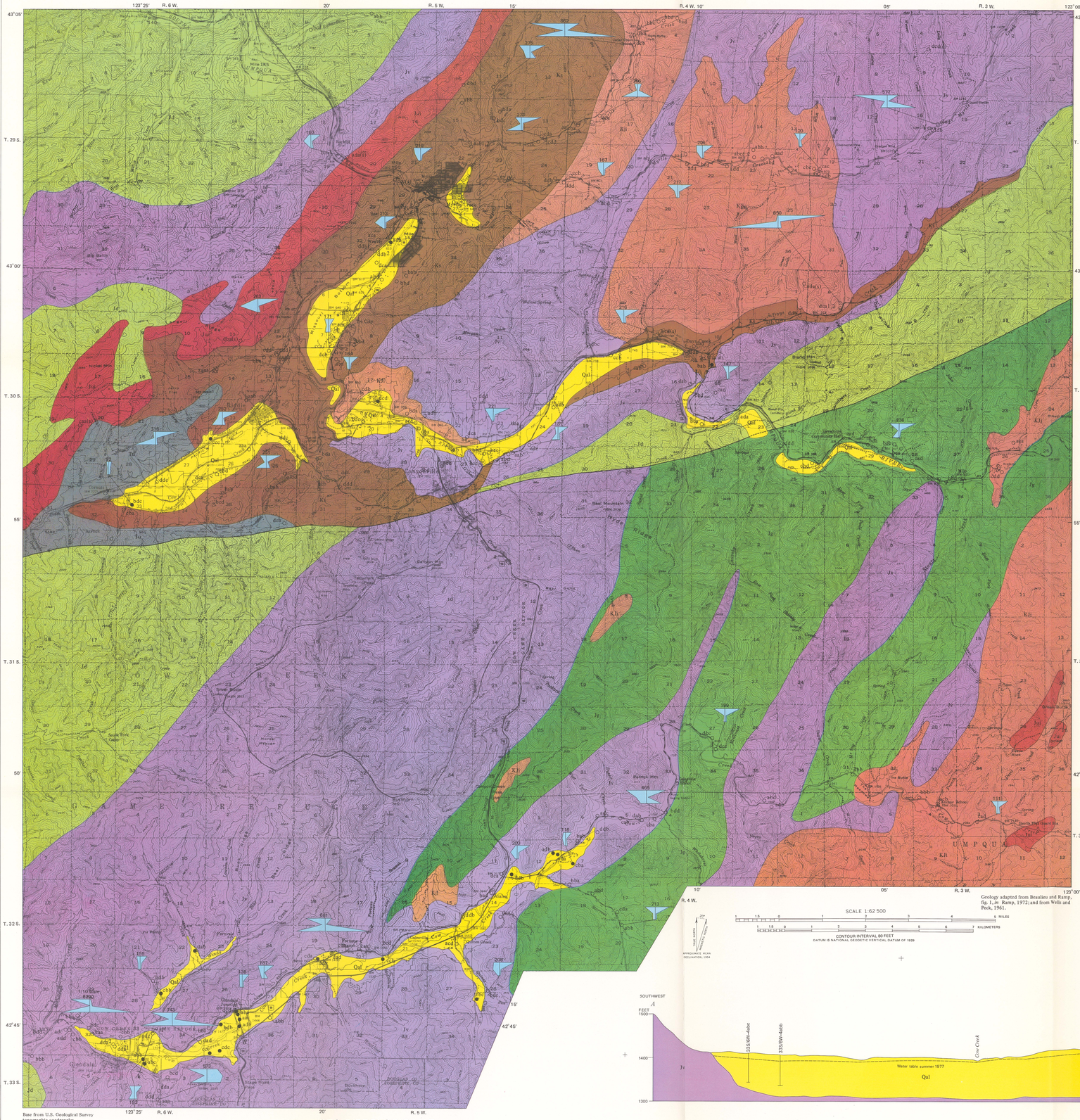


GEOHYDROLOGIC MAP

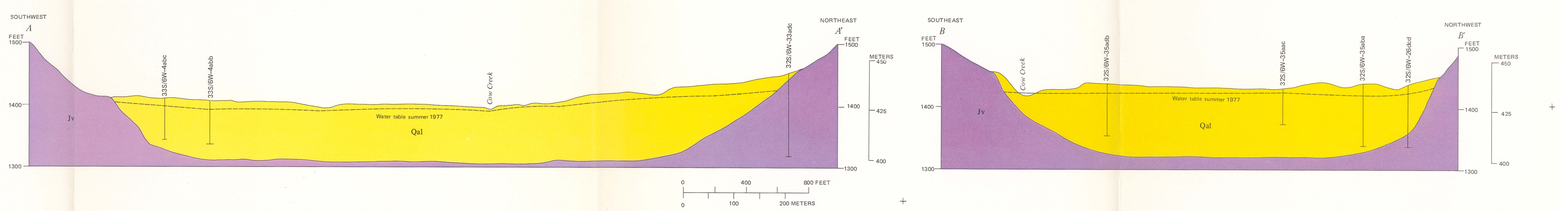
Geology adapted from Beaulieu and Ramp, fig. 1, in Ramp, 1972; and from Wells and Peck, 1961.

SCALE 1:62 500

CONTOUR INTERVAL 80 FEET
DATUM IS NATIONAL GEODETIC VERTICAL DATUM OF 1929

APPROXIMATE MEAN DECLINATION, 1974

VERTICAL EXAGGERATION X 4



CORRELATION OF MAP UNITS

Qal	Holocene	QUATERNARY
Tu	Eocene	TERTIARY
Ks	Cretaceous	TERTIARY
KJi	Lower Cretaceous and Upper Jurassic	CRETACEOUS AND JURASSIC
Jui	Upper Jurassic(?)	JURASSIC(?)
Jd		JURASSIC(?)
Jg		JURASSIC(?)
Jv		JURASSIC(?)

DESCRIPTION OF MAP UNITS

Qal — ALLUVIUM—Sand, gravel, and silt deposited by rivers and streams

Tu — UMPQUA FORMATION—Rythmically bedded sandstone and siltstone

Ks — CRETACEOUS SEDIMENTARY ROCKS—Chert-pebble conglomerate and medium-bedded sandstone and siltstone (Riddle Formation), dark-gray sandy siltstone and fine- to medium-grained sandstone (Days Creek Formation), and conglomerate, sandstone, and siltstone of Late Cretaceous age

KJi — CRETACEOUS AND JURASSIC INTRUSIVE ROCKS—Granitic textured igneous rocks ranging in composition from granite to diorite

Jui — JURASSIC(?) INTRUSIVE ROCKS—Greenish rock composed of serpentine and peridotite

Jd — DOTHAN AND OTTER POINT FORMATIONS, UNDIVIDED—Massive to thickly bedded graywacke sandstone with thin interbeds of dark siltstone (Dothan Formation); and graywacke, siltstone, greenstone, and limestone (Otter Point Formation)

Jg — GALICE FORMATION—Dark, slaty siltstone and lesser amounts of interbedded graywacke sandstone and occasional lenses of conglomerate

Jv — JURASSIC VOLCANIC ROCKS—Includes andesitic breccias and flow rocks of the Dothan, Galice, and Rogue Formations

Note: Since this report was prepared, the U.S. Geological Survey now considers the Riddle and Otter Point Formations to be Upper Jurassic and Lower Cretaceous, and the Dothan Formation to be Upper Jurassic and Lower Cretaceous(?)

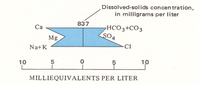
Contact

Fault—Approximately located; dotted where concealed.

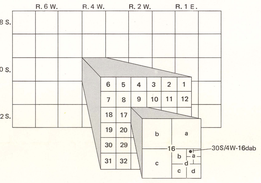
abb ○ Well—Location number shown

ada ● Well—Completed in alluvium

bcd(s) ○ Spring—Location number shown. Chemistry shown in table



Chemical diagram showing concentrations of major ions

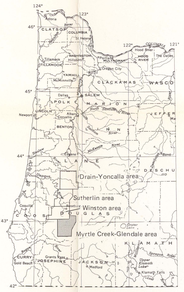


WELL AND SPRING LOCATION DIAGRAM

INTRODUCTION

The Myrtle Creek-Glendale area covers about 400 mi² (1,000 km²) in Douglas County in southwestern Oregon. Although the geologic formations of the area have low permeabilities and generally yield small amounts of water to wells, ground water is the chief source of water for domestic use in rural parts of the area not served by public supplies. A well capable of yielding 5 to 10 gal/min (0.3 to 0.6 L/s) is generally adequate for a household. Where a suitable storage facility can be provided, yields of less than 5 gal/min (0.3 L/s) can supply household needs. In most places in the area, the quantities of water obtainable from wells are inadequate or would be only marginally adequate for irrigation, municipal, or large industrial use.

The purpose of this report is to describe briefly the occurrence of ground water and to present ground-water information that will help water users, public officials, and planners to determine the probability of obtaining adequate quantities of good-quality ground water in the Myrtle Creek-Glendale area.



INDEX MAP OF WESTERN OREGON SHOWING LOCATION OF STUDY AREA (SHADED) AND OTHER COMPLETED GROUND WATER STUDIES IN DOUGLAS COUNTY

GEOLOGY AND GROUND-WATER RESOURCES

The geohydrologic map shows the general distribution of geologic units in the study area. These units range in age from Jurassic to Holocene and include consolidated igneous and sedimentary rocks that are folded and faulted. In the stream valleys, these rocks are overlain by unconsolidated to semi-consolidated alluvium consisting of poorly sorted mixtures of clay, silt, sand, and gravel.

The oldest rocks in the area are the Jurassic volcanic rocks, consisting of altered andesitic flows. These rocks form discontinuous exposures that trend in a northeasterly direction. Yields to wells from the volcanics are variable, but are generally less than 10 gal/min (0.6 L/s). The Galice Formation of Late Jurassic age consists primarily of dark slatey siltstone with small amounts of sandstone and lenses of conglomerate. These rocks crop out chiefly in the east-central and southeastern parts of the area. The few well records available indicate that yields from wells completed in these rocks are small.

The Dothan and Otter Point Formations of Jurassic age are mapped as a single unit. Sandstone and mudstone of the Dothan Formation are exposed south of the major east-west fault that crosses the central part of the area. Siltstone, greenstone, and limestone of the Otter Point crop out north of the fault. Only a few wells have been completed in the Dothan and Otter Point Formations, and yields of water from wells completed in these rocks generally are low.

Greenish intrusive rocks of Jurassic(?) age, comprised of serpentine and peridotite, form a discontinuous band extending northward from Cow Creek to the north boundary of the area. Similar thin, narrow bands extend northward from the southeast boundary of the area. Yields from the few wells drilled in these rocks are generally less than 5 gal/min (0.3 L/s).

Intrusive rocks of Jurassic and Cretaceous age, ranging in composition from granite to diorite, are present along Myrtle Creek and in the southeastern corner of the area. Wells drilled in the weathered and deeply fractured zones of these rocks generally yield 10 gal/min (0.6 L/s) or more.

Conglomerate, sandstone, and siltstone of Cretaceous age crop out near Riddle and along Days and Myrtle Creeks. Most wells completed in these sedimentary rocks yield less than 10 gal/min (0.6 L/s) to wells.

The Eocene Umpqua Formation consists of rhythmically bedded siltstone and sandstone that crop out southwest of Riddle. Wells completed in these rocks generally yield less than 5 gal/min (0.3 L/s) of water to wells.

Unconsolidated Quaternary deposits of alluvium cover the valleys of the major streams in the area. These deposits consist of sand, gravel, and silt, which in places are well indurated. The alluvium ranges in thickness from about 5 to more than 100 ft (1.5 to 30 m). Wells drilled in places where the alluvium is permeable and of sufficient saturated thickness generally yield more than 10 gal/min (0.6 L/s).

Ground water occurs in intergranular spaces in the unconsolidated rocks and in fractures, joints, and weathered zones in consolidated rocks. The number and size of the fractures and joints decrease with increasing depth in the consolidated rocks. Many of the higher yielding wells are less than 100 ft (30 m) deep. Data in the well-records table suggest that chances are small for increasing the yield of a well by drilling deeper than about 150 ft (45 m). Although wells drilled in the consolidated rocks generally yield less than 5 gal/min (0.3 L/s), some of the wells that tap the granitic intrusive rocks (see wells 29S/4W-4bbc,-22add, and -22bcb, table of well records) have greater yields, possibly because they tap rocks that are more deeply weathered or fractured. In places, the consolidated rocks are folded and faulted; therefore, wells in the same vicinity frequently differ in the types of materials penetrated and in quantities of water yielded.

Coarse sand and gravel beds in the Quaternary alluvium are the most permeable and best water-yielding units in the area. In most of the area, however, the areal extent and saturated thickness of the alluvial deposits are too small to make the alluvium an important source of water supply.

In Cow Creek valley near Glendale Junction and Glendale in T. 32 S., Rs. 5 and 6 W., the alluvium exceeds 100 ft (30 m) in thickness and may be an important source of water for the city of Glendale. The cross sections A-A' and B-B' show that the saturated thickness of the alluvium is about 100 ft (30 m) near Glendale and more than 100 ft (30 m) near Glendale Junction. Because the type of alluvial material changes within short vertical and horizontal distances, test drilling and pumping are recommended to determine sites that are most favorable for wells or well fields. The most favorable sites are those where the saturated thickness of coarse-grained alluvium is greatest. Wells in the thickest parts of the saturated coarse-grained alluvium should be capable of producing 50 to 100 gal/min (3.2 to 6.4 L/s).

In some areas (Missouri Bottom south of Myrtle Creek and Tri-City, and the area along Cow Creek south of Riddle), wells drilled through the alluvium and completed in the underlying consolidated rocks generally may have higher yields than most wells that produce water solely from the consolidated rocks. A probable explanation is that the fracture and joint openings in the consolidated rocks are recharged by the downward movement of ground water from the overlying saturated alluvium.

Springs are present throughout the area; they most commonly discharge from fractures, joints, and bedding planes in the consolidated rocks. The springs yield from 0.50 to 10 gal/min (0.03 to 0.6 L/s); most yield less than 5 gal/min (0.3 L/s) during the dry summer months. In parts of the area, particularly along North Myrtle, Days, and Lower Cow Creeks, springs are the primary source of water. Records of several typical springs in the area are shown in the spring-records table.

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GROUND WATER IN MYRTLE CREEK-GLENDALE AREA, DOUGLAS COUNTY, OREGON

By F. J. Frank, 1979