WASHINGTON STATE
DEPARTMENT OF WATER RESOURCES

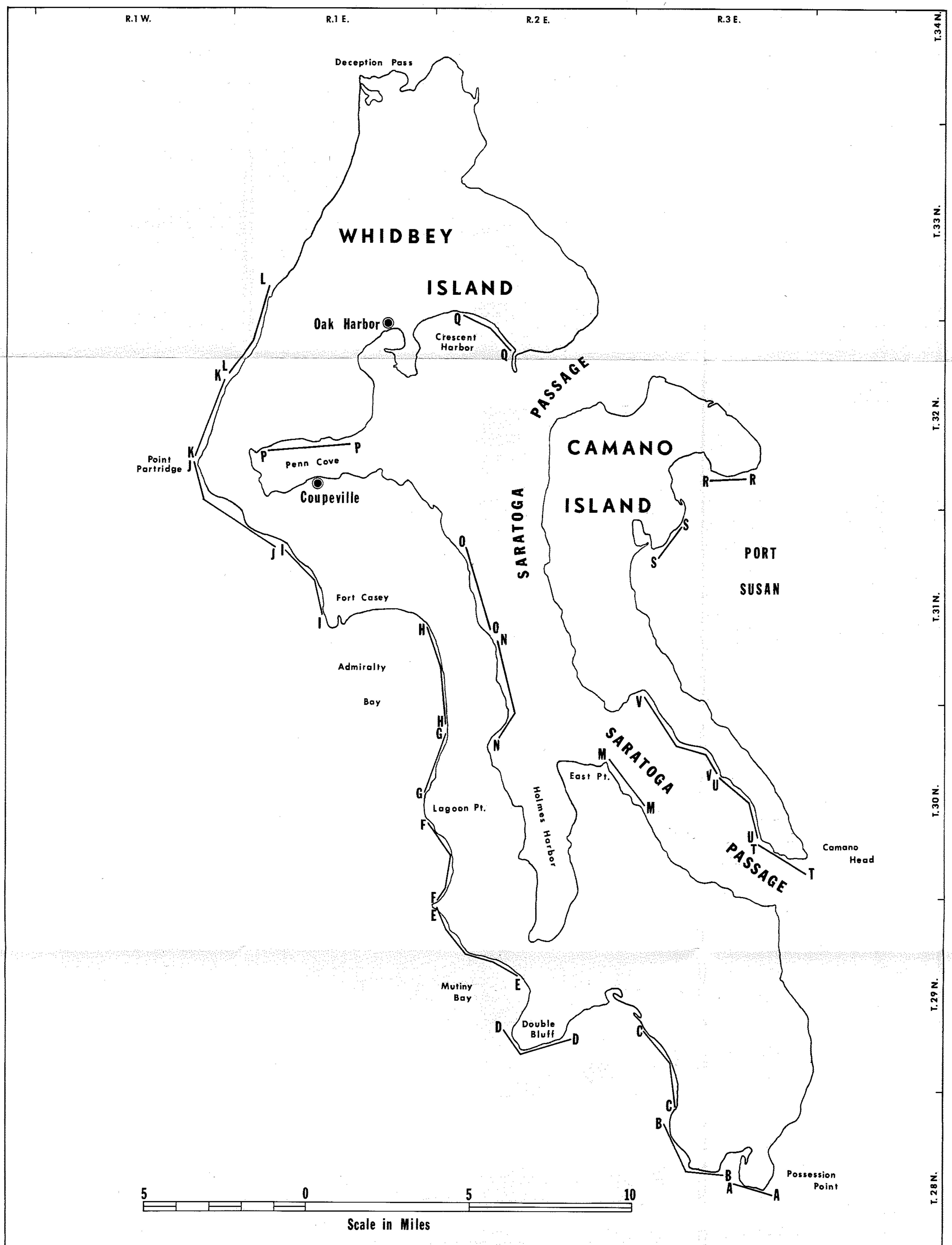
PREPARED IN COOPERATION WITH THE
U.S. GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

WATER-SUPPLY BULLETIN 25
PLATE 1

LOCATION OF WELLS AND SPRINGS LISTED IN TABLES 7, 8, AND 11, AND KNOWN OR INFERRED PRODUCING INTERVALS FOR DRILLED WELLS IN ISLAND COUNTY, WASHINGTON

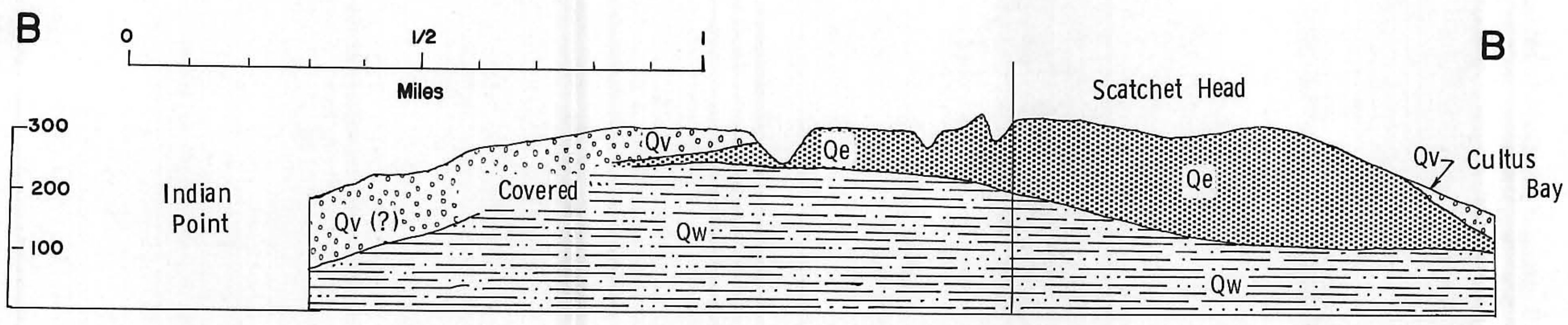
Base from U.S. Geological Survey quadrangle maps

Hydrology by H. W. Anderson, Jr.



LOCATIONS OF GEOLOGIC CROSS-SECTIONS, ISLAND COUNTY, WASH.

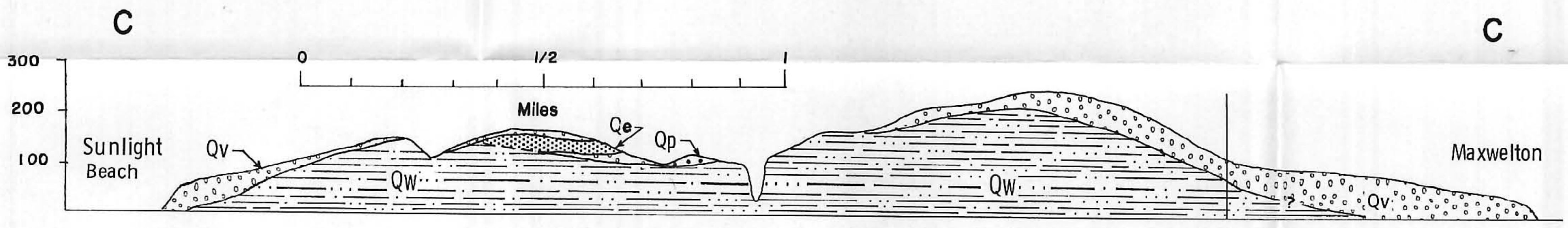
WATER SUPPLY BULLETIN NO. 25
PLATE I-A, PART 1



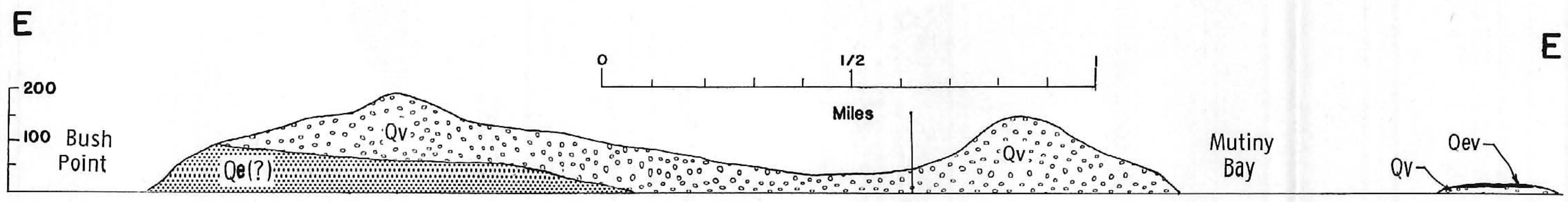
Geologic Section: Indian Point-Cultus Bay

EXPLANATION
of
GEOLOGIC SYMBOLS

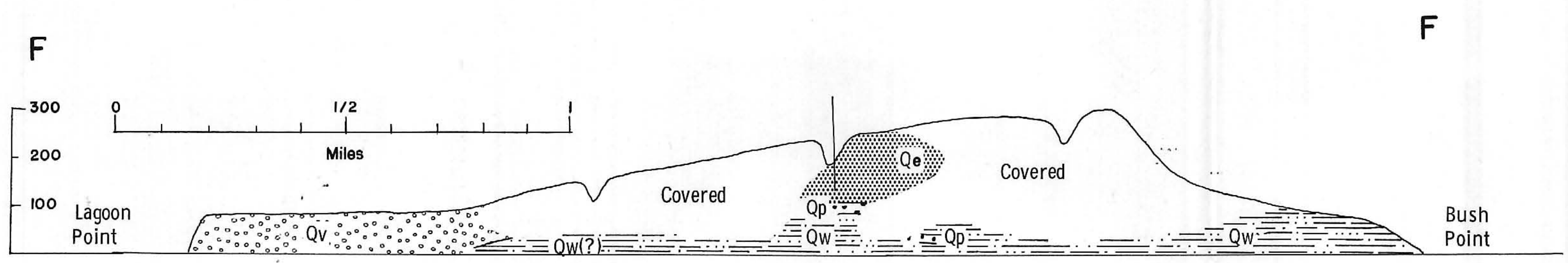
- Qev - Everson glaciomarine drift
- Qpp - Partridge Gravel
- Qv - Vashon till
- Qe - Esperance Sand
- Qq - Quadra Formation
- Qp - Possession Drift
- Qw - Whidbey Formation
- Qdb - Double Bluff Drift



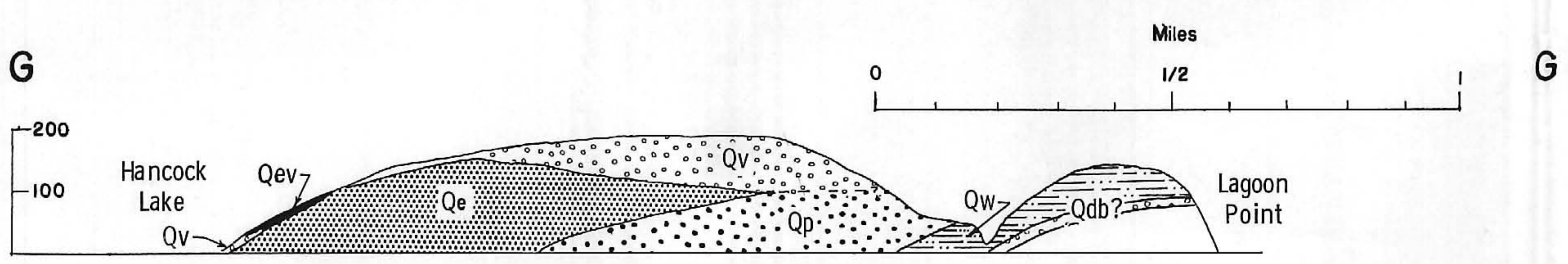
Geologic Section: Sunlight Beach-Maxwelton



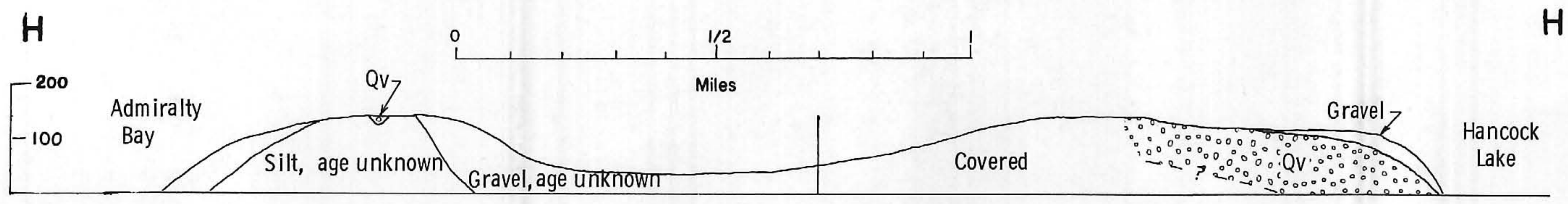
Geologic Section: Bush Point-Mutiny Bay



Geologic Section: Lagoon Point-Bush Point

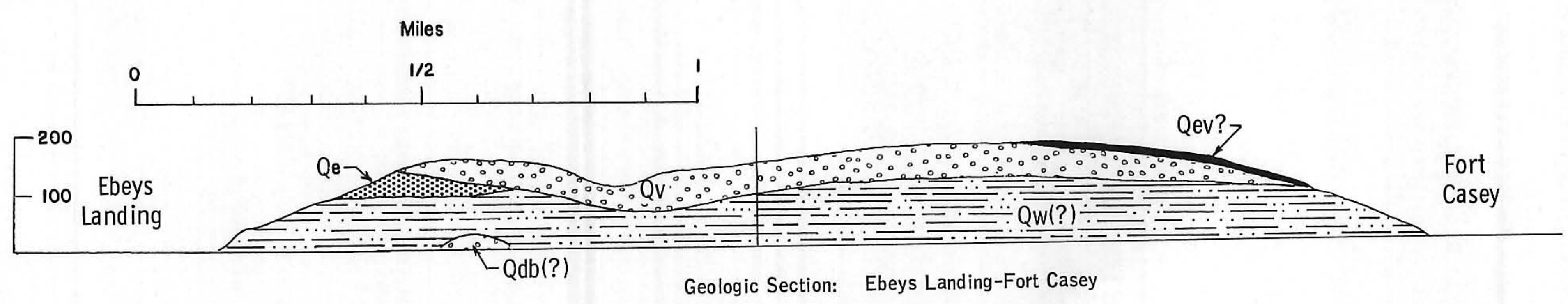


Geologic Section: Hancock Lake-Lagoon Point



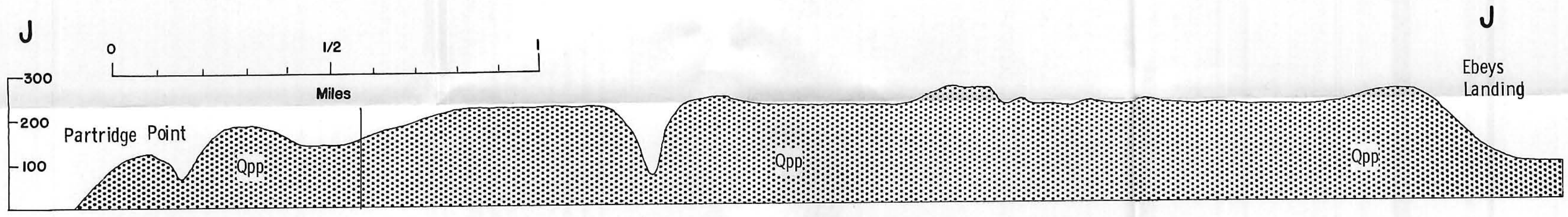
Geologic Section: Admiralty Bay-Hancock Lake

I — I



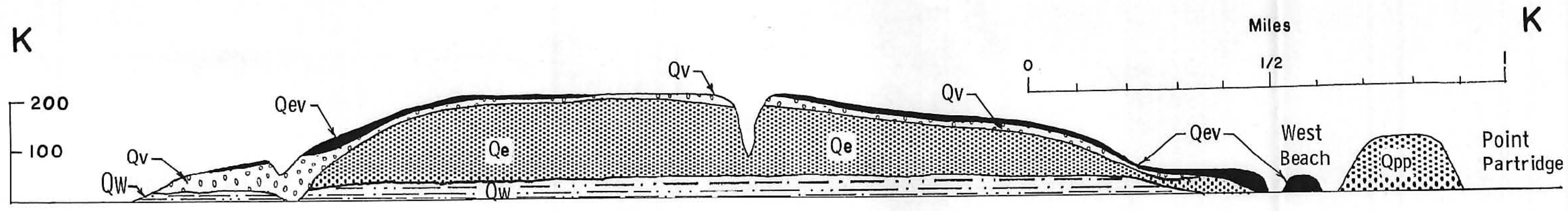
Geologic Section: Ebeys Landing-Fort Casey

J — J



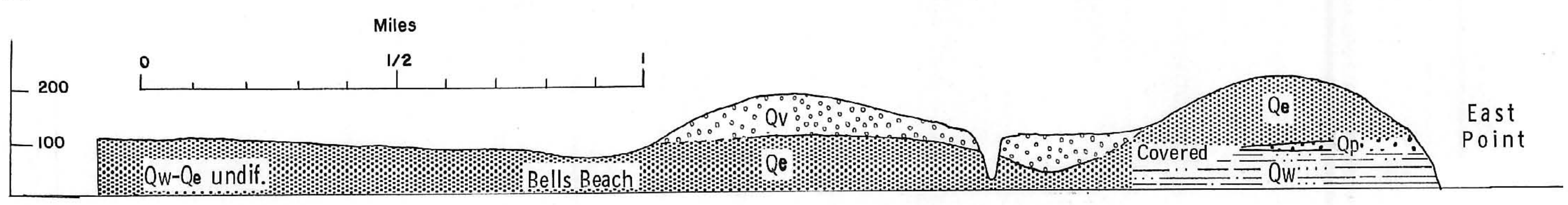
Geologic Section: Partridge Point-Ebeys Landing

K — K



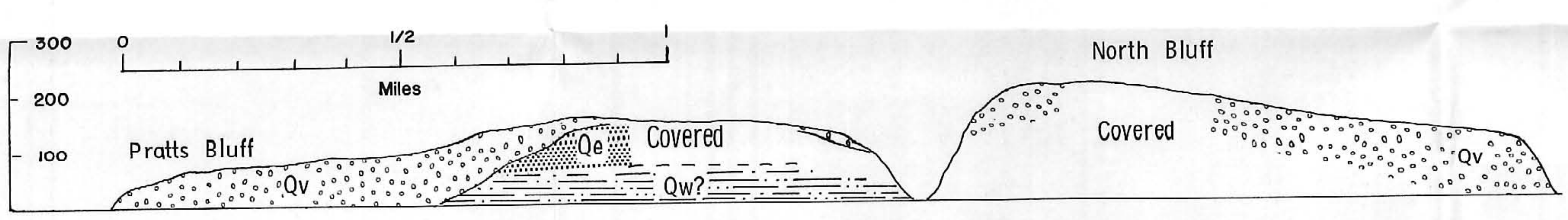
Geologic Section: Point Partridge-West Beach

M — M



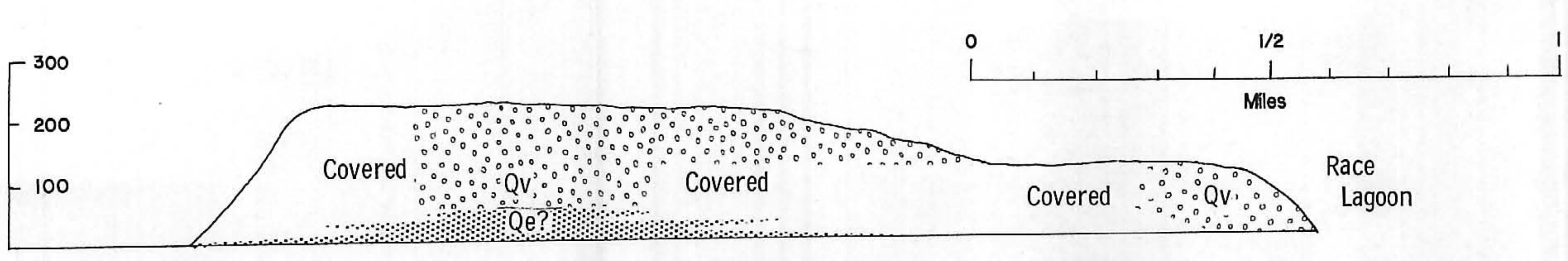
Geologic Section: Bells Beach-East Point

N — N



Geologic Section: Pratts Bluff-North Bluff

O — O



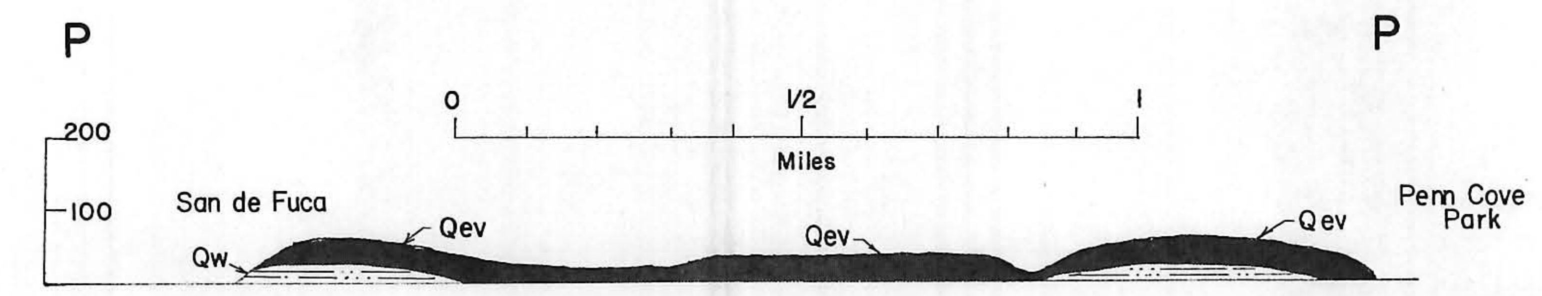
Geologic Section: Race Lagoon

EXPLANATION
of
GEOLOGIC SYMBOLS

- Qev - Everson glaciomarine drift
- Qpp - Partridge Gravel
- Qv - Vashon till
- Qe - Esperance Sand
- Qq - Quadra Formation
- Qp - Possession Drift
- Qw - Whidbey Formation
- Qdb - Double Bluff Drift

WASHINGTON STATE DEPARTMENT OF WATER RESOURCES

WATER SUPPLY BULLETIN NO. 25
PLATE I-C, PART 1



Geologic Section: San de Fuca-Penn Cove Park

EXPLANATION
of
GEOLOGIC SYMBOLS

- Qev - Everson glaciomarine drift
- Qpp - Partridge Gravel
- Qv - Vashon till
- Qe - Esperance Sand
- Qq - Quadra Formation
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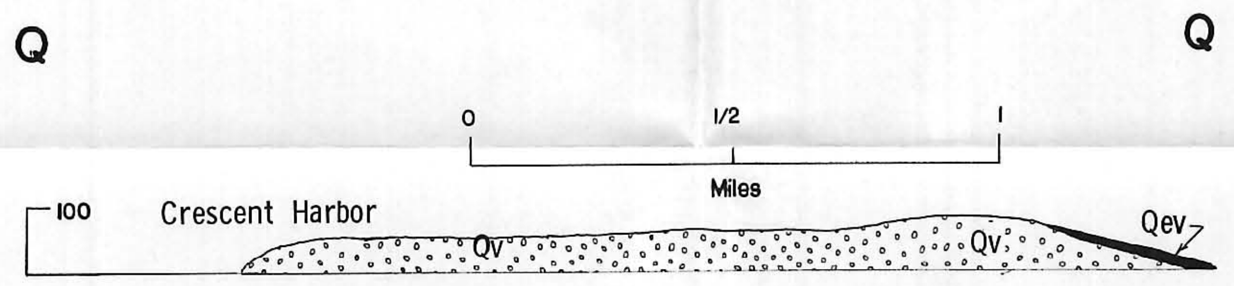
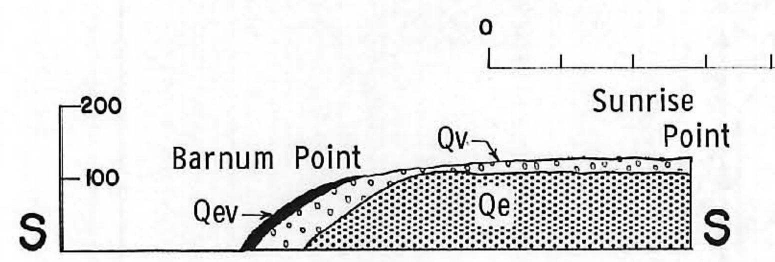
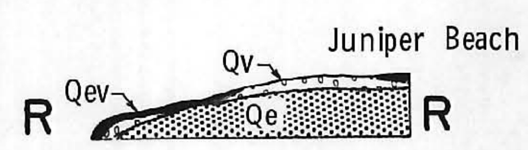
- Qdb - Double Bluff Drift



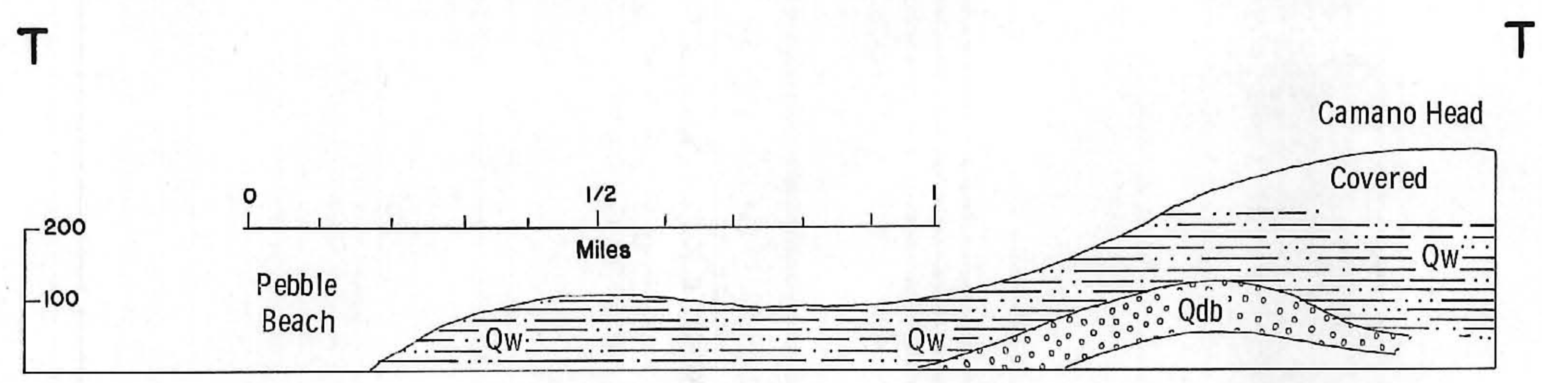
Geologic Section: Crescent Harbor



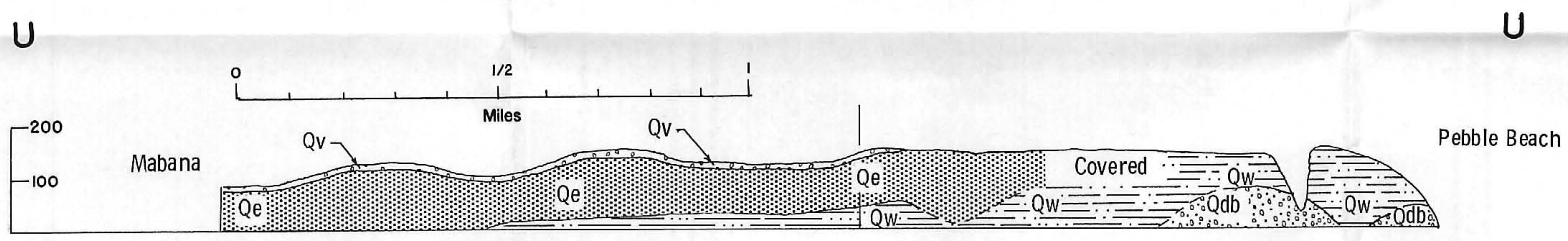
Geologic Section: Barnum Point-Sunrise Point



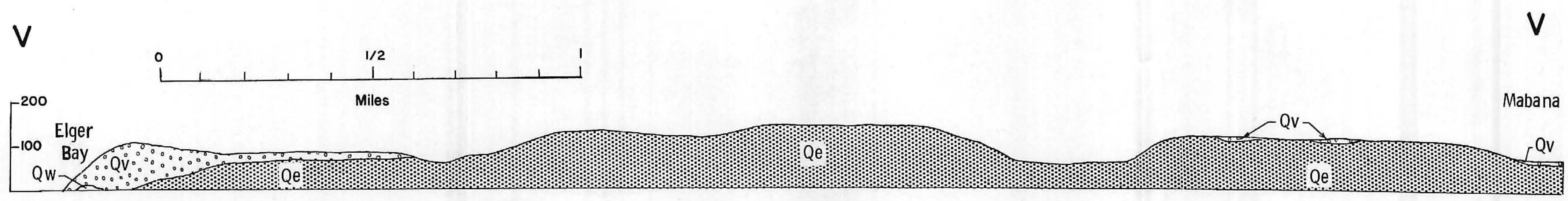
Geologic Section: Juniper Beach



Geologic Section: Pebble Beach-Camano Head



Geologic Section: Mabana-Pebble Beach



Geologic Section: Elger Bay-Mabana

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WATER-SUPPLY BULLETIN 25
PLATE 2

EXPLANATION

Well, with well number

Spring

Well for which water level is used in construction of contours (All such wells produce from aquifers above sea level.)

82 -24

Numbers indicate water level, in feet above or below sea level

— — 200 — —

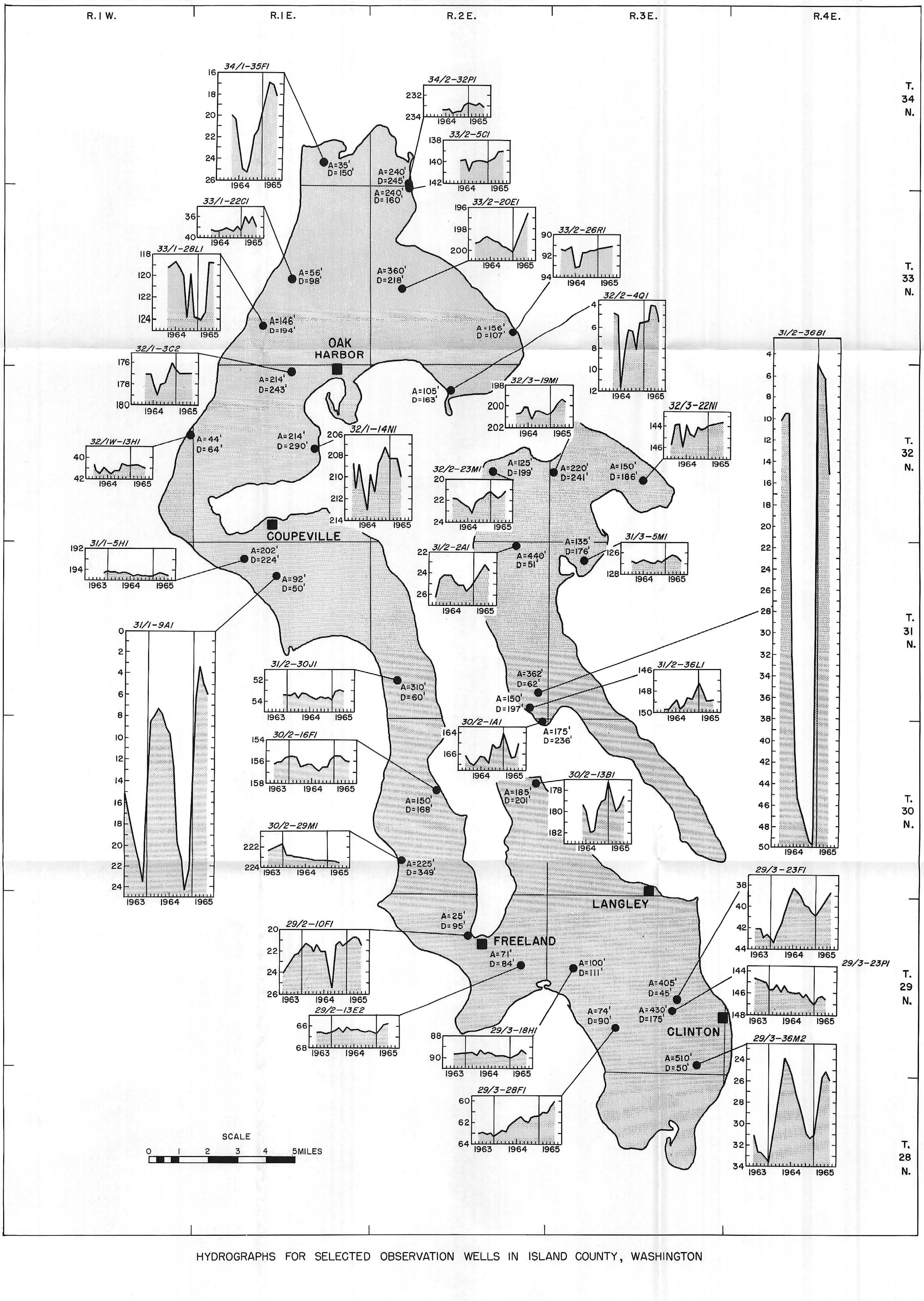
Generalized water-level contour. Contour interval is 100 feet datum is sea level

SCALE

0 1 2 3 4 5 MILES

ALTITUDE OF WATER LEVELS IN WELLS, ISLAND COUNTY, WASHINGTON

Hydrology by H. W. Anderson, Jr.



HYDROGRAPHS FOR SELECTED OBSERVATION WELLS IN ISLAND COUNTY, WASHINGTON

CHLORIDE CONTENT, HARDNESS, AND SPECIFIC CONDUCTANCE OF GROUND WATER IN ISLAND COUNTY, WASHINGTON

Chemical Quality by A. S. Van Denburgh

Scribed by E.C. Kennison

Base from U.S. Geological Survey quadrangle maps

EXPLANATION

Well

Spring

Well number

Cl
-27 36/180/430

Specific conductance
Hardness
Chloride
Bottom of producing interval, in feet above or below sea level

Graphs show a single point for each sampled well or spring. For wells, the point represents the bottom of the producing interval. (Where producing intervals are unknown, the well-bottom altitude is used.) The point characterizes the entire producing interval in most wells, because the intervals themselves are only 5 to 10 feet in vertical extent, and generally occur at or near well bottom. Triangles indicate wells thought to be influenced by sea-water encroachment

Note: Analytical results determined by field methods are subject to error. Samples collected between May 1963 and May 1965, except as indicated in table 2

Table 1 - Stratigraphic aspects of ground-water occurrence in Island County

Time-stratigraphic units	Geologic-climate units		Rock-stratigraphic units	Lithology	Thickness	Distribution	Environment of deposition	Inferred or observed water-bearing properties
Recent Series	Post-glacial		Alluvial deposits	Sand and gravel	10+	Shoreline	Beach	Non-water-bearing
				Peat & silt	10+	Marshes	Marsh	Non-water-bearing
Pleistocene Series	Fraser Glaciation	Everson Interstade	Glaciomarine drift	Till-like sediment, marine fossils, silty sand, clay-breccia, and stony clay.	5-30	Limited largely to northern part of Whidbey Island; exposed at Penn Cove Point Partridge, and from Crescent Harbor to Strawberry Point.	Glacial shelf ice, and berg ice in marine conditions.	Probably non-water-bearing. Distribution of very hard ground water in northern Whidbey Island may be related to glaciomarine deposits.
		Vashon Stade	Recessional gravel	Gravel, cobbles, and boulders, with sandy lenses; partly crossbedded deltaic.	Generally thin; 200 ft at Point Partridge	Scattered patches at land surface throughout county; thick deposits at Point Partridge, Saratoga, south of Ault Field, and southeast of Langley.	Glacial outwash in front of receding ice; may also include deposits related to a re-advance of ice during post-Vashon time.	Locally yields water to shallow dug wells; at Point Partridge, yields 100 gpm; provides rapid infiltration when at the surface.
			Till	Moderately compact till to loose sandy till.	5-200	Very widespread; covers surface of much of upland; caps most sea cliffs.	Ground moraine deposited under ice.	Aquiclude; slows infiltration of precipitation; locally yields water to dug wells.
			Esperance Sand Member of Vashon Drift	Medium to coarse sand, well sorted, locally crossbedded, light brown.	50-150	Very widespread, thick, forms upper part of many sea cliffs.	Proglacial streams and lakes.	Main aquifer in uplands at higher elevations; generally more than 100 feet above sea level.
	Olympia Interglaciation		Quadra Group of Armstrong and Brown (1953)	Clay, silt fine to medium sand; peat-bearing	50-150	Difficult to distinguish from Whidbey Formation except where Possession Drift is present; exposed along south-eastern shore of Holmes Harbor, and at Strawberry Point.	Flood-plain streams, lakes, and marshes.	Aquiclude; slows infiltration of precipitation; contains some lenses of fine to medium water-bearing sand; difficult to screen in some wells because of fine-grained material.
	Pre-Olympia glaciations and interglaciations		Possession Drift	Sandy till to gravelly outwash, stony clay, locally fossiliferous. Locally, compact till.	10-100	Typically discontinuous; exposed at Holmes Harbor, East Point, Blowers Bluff, east side of Useless Bay, and discontinuously between Bush Point and Ebeys Prairie; type section at Possession Point.	Ground moraine and outwash; in part marine.	Till discontinuous, non-water-bearing. Outwash sand and gravel locally productive.
			Whidbey Formation	Clay, silt, fine to medium sand, peat-bearing; some cross-bedded sand lenses.	50-200	Very widespread, thick; forms lower part of many sea cliffs; at or near sea level throughout county; difficult to distinguish from Quadra Group of Armstrong and Brown (1953).	Flood-plain streams, lakes, and marshes.	Aquiclude; slows infiltration of precipitation; some lenses of fine to medium water-bearing sand; usually near sea level; difficult to screen in some wells because of fine-grained material.
			Double Bluff Drift	Compact till, locally overlain by poorly sorted sand and gravel; underlain by crossbedded, well sorted sand and glaciomarine (?) deposits.	10-100	Exposed near sea level at Possession Point, Columbia Beach, Camano Head, Pebble Beach, southern end of Holmes Harbor, and between Cama Beach and Camano City.	Ground moraine, ablation till, outwash, and glaciomarine drift.	Till non-water-bearing. Outwash sand and gravel productive; probably main aquifer below sea level.
			Pre-Double Bluff deposits	Clay, silt, sand; peat-bearing.	10+	Below sea level in most places; exposed at Camano Head, southern end of Holmes Harbor, and half a mile north of Cama Beach.	Flood-plain streams, lakes, and marshes.	Clay non-water-bearing. Fine to medium sand water-bearing; difficult to screen in some wells because of fine-grained material.