STATE OF WASHINGTON
Daniel J. Evans, Governor

DEPARTMENT OF WATER RESOURCES
H. MAURICE AHLQUIST, Director

Water Supply Bulletin No. 25

Part I

PLEISTOCENE STRATIGRAPHY OF ISLAND COUNTY

By
DON J. EASTERBROOK

and

Part II

GROUND-WATER RESOURCES OF ISLAND COUNTY

By
HENRY W. ANDERSON, JR.

With a section on
Quality of the Ground Water

By
A. S. VAN DENBURGH

Part II
prepared in cooperation with
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FORWARD

Water Supply Bulletin No. 25, "Pleistocene Stratigraphy and Ground-Water Resources of Island County" represents the result of two coordinated but entirely separate studies of the geohydrology of Island County, Washington. The stratigraphy was studied and mapped by Dr. Don J. Easterbrook, Chairman of the Department of Geology, Western Washington State College, through a national science foundation grant. Part II of the report, "Ground-Water Resources of Island County" was prepared by Henry W. Anderson, Jr., Geologist with the U. S. Geological Survey, as a part of the Washington State Department of Water Resources-U. S. Geological Survey Cooperative Program to map and interpret the geology and ground-water resources of the State of Washington.

Water Supply Bulletin No. 25 represents a change from the standard format used by the Department of Water Resources. The Island County report is published in two parts under one volume in order to retain and identify the styles and interpretations of the individual authors. Although there was a continuing exchange of ideas between the two authors, the contributions of each is published pretty much as presented. The cooperation between Dr. Easterbrook and Mr. Anderson greatly minimized redundant geologic mapping and reduced the time and expense of the entire project. Water Supply Bulletin No. 25 will be of value to a number of engineers, geologists, planners, and individuals actively involved with the development and distribution of the water resources of Island County.

The Department of Water Resources takes this opportunity to extend its appreciation to Dr. Easterbrook for permitting the Department to publish his Island County work and to Mr. Anderson and the U. S. Geological Survey for their usual fine contribution to our cooperative water resource program. A special note of appreciation is extended to Joanne Fitzsimmons for her tireless and dedicated typing of the manuscript.

Robert H. Russell
Division of Planning & Development
Department of Water Resources

PART I

PLEISTOCENE STRATIGRAPHY

OF

ISLAND COUNTY, WASHINGTON

by

Don J. Easterbrook
Department of Geology
Western Washington State College
Bellingham, Washington

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PLEISTOCENE STRATIGRAPHY

OF

ISLAND COUNTY, WASHINGTON

By

Don J. Easterbrook

ABSTRACT

Island County consists of two major islands, Whidbey and Camano, plus several smaller ones. All of Camano Island and all but the very northern part of Whidbey consist of Pleistocene deposits, representing three glaciations and three interglaciations.

The oldest glacial deposits exposed in Island County consist mostly of till, gravel, sand, and pebbly clay belonging to the Double Bluff Glaciation. Exposures of the drift are relatively rare and are restricted to a few outcrops in sea cliffs near sea level.

Following the Double Bluff Glaciation, floodplain sand, silt, and peat were deposited during the Whidbey Interglaciation. Pollen from peat interbedded with other deposits suggest that at least part of the interglaciation was characterized by climatic conditions somewhat similar to those at present. The Whidbey Formation may correlate with the Puyallup Formation or with sediments lying between two glacial drifts deposited during the Salmon Springs Glaciation in the southern Puget lowland.

An unconformity separates the Whidbey Formation from overlying deposits in most places. At several localities till deposited during the Possession Glaciation occurs between the Whidbey and overlying sediments. The Possession Drift consists mostly of till, gravel, and pebbly clay. Outcrops of the drift are seldom continuous, usually pinching out laterally within a half mile or less.

Deposits of the Olympia Interglaciation are rare in Island County. Generally, the Esperance Sand lies directly on Possession Drift or the Whidbey Formation with no evidence of deposits of the Olympia Interglaciation. The Esperance Sand was deposited largely by outwash streams originating from the advancing Vashon glacier.

Vashon till from the last major advance of Pleistocene ice into the lowland mantles most of the upland areas. Following deposition of the Esperance Sand, erosion by the Vashon glacier carved deep troughs into what was probably a more-or-less continuous outwash plain of Esperance Sand. Vashon till deposited during the late phases of glaciation mantles the truncated upper surface of the Esperance Sand.

During the late phases of the Fraser Glaciation relative sea level was 100 feet or more higher than at present and floating shelf and berg ice covered parts of Island County. Everson glaciomarine drift, mostly pebbly silt, was deposited on the sea floor as debris was shed from the melting ice. Marine shells in the deposit were radiocarbon dated at 12,535$\pm$300 years (I-1079), 11,850$\pm$240 years (I-1448) and 13,010$\pm$170 years (UW-32) which establishes the upper limit for the end of the Vashon Stade. Locally, recessional sand and gravel occurs between Vashon till and Everson glaciomarine drift.

INTRODUCTION

LOCATION

Island County is located in the Puget Sound lowland of western Washington northwest of Seattle (fig. 1). The county consists essentially of two islands, Whidbey and Camano, separated from each other and the mainland by long narrow troughs filled with sea water.

Whidbey, the larger of the two islands, is about 40 miles long and varies in width from about 1 to 10 miles. Camano Island is about 15 miles long and varies from about 1 to 7 miles in width. Only a narrow slough separates Camano Island from the deltas of the Stillaguamish and Skagit Rivers on the mainland. A bridge across this slough at Stanwood provides access to the island. A bridge at the northern end of Whidbey Island spans Deception Pass and connects the island with Fidalgo Island and the mainland.

Good exposures of Pleistocene deposits are found on the west sides of the islands where wave erosion is vigorous. Poorer exposures occur on the east sides of the islands where vegetation mantles much of the slopes.

SCOPE AND ACKNOWLEDGEMENTS

A reconnaissance study of the Pleistocene geology of Whidbey Island was begun by the writer in the summer of 1962 under a National Science Foundation research grant whose primary purpose was the study of late Pleistocene glaciomarine sediments. The Pleistocene deposits on Whidbey Island were studied in more detail during most of the summers of 1963 and 1964 under NSF support and the study was extended to Camano Island. In 1962 the Washington State Division of Water Resources in cooperation with the Ground-Water Branch of the United States Geological Survey initiated a study of water resources in Island County. Because the Pleistocene geology has a direct bearing on ground-water problems

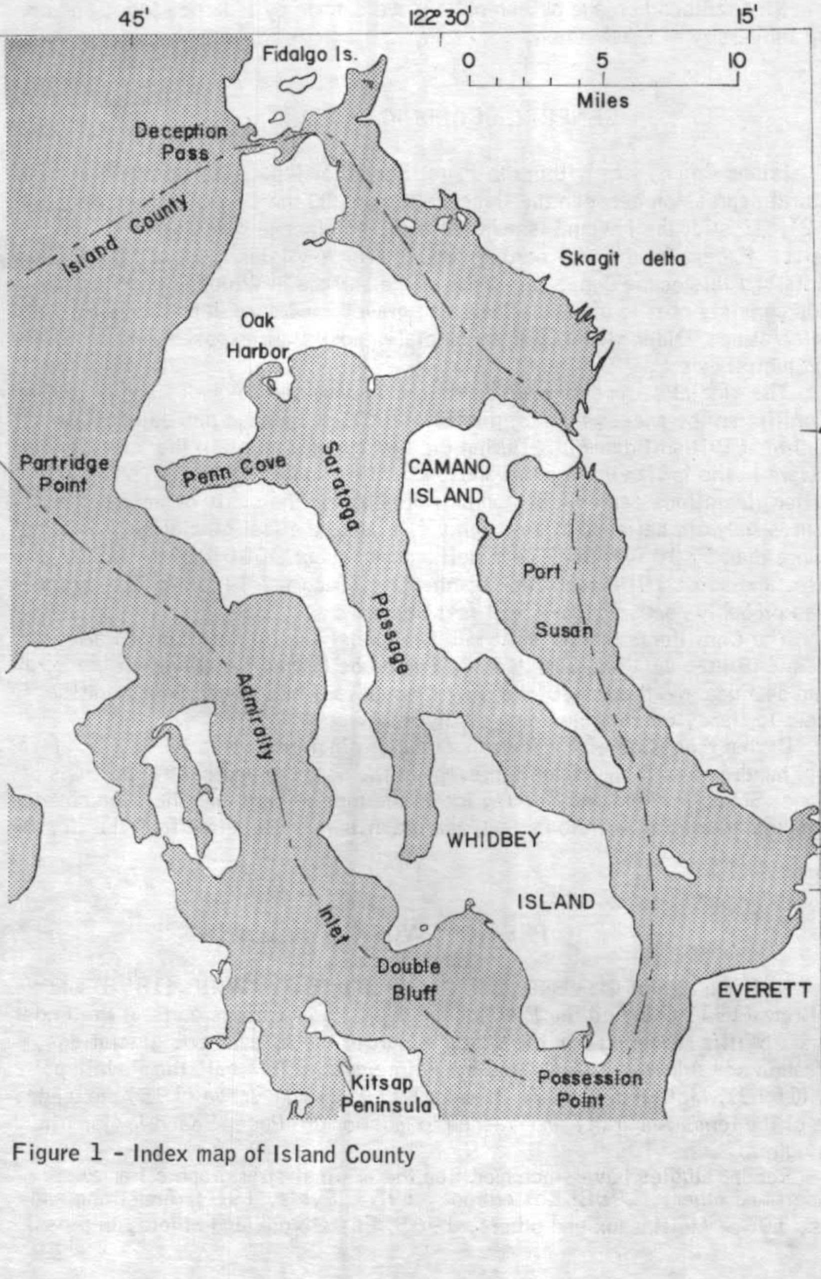


Figure 1 - Index map of Island County

and since it seemed desirable to avoid needless duplication of effort, the author agreed to publish separately a report on Pleistocene stratigraphy of the islands which could be used in conjunction with the hydrologic report.

Nine radiocarbon age determinations were made by Isotopes Inc., and one by the University of Washington.

GENERAL GEOLOGIC SETTING

Island County lies within the Puget Sound lowland, a topographic and structural depression between the Cascade Range and the Olympic Mountains (fig. 2). Most of the lowland is mantled with Pleistocene glacial and nonglacial deposits. Except for the very northern end of Whidbey Island, all of Island County consists of Pleistocene deposits. Most of the surface of Whidbey and Camano Islands consists of till, glaciomarine drift, gravel, and sand deposited during the last glaciation. Older glacial and nonglacial deposits are exposed in sea cliffs around the islands.

The glacial sediments were deposited by repeated advances and retreats of the Cordilleran ice sheet which originated in the Coast Range and adjacent areas in southwest British Columbia. During the last major glaciation the ice extended southward in the lowland to a point about 15 miles south of Olympia. The extents of earlier glaciations can only be approximated but on the basis of more limited exposures they are believed to be roughly similar to the last glaciation. The ice was more than 5300 feet thick near Bellingham, about 3000 feet thick near Seattle, and about 1000 feet thick southeast of Tacoma. In Island County the ice was probably about 3500-4500 feet thick.

The Cordilleran glacier split into two lobes near the latitude of Port Townsend (Bretz, 1913). The Juan de Fuca lobe flowed westward out the Strait of Juan de Fuca and the Puget lobe flowed southward into Puget Sound and the adjacent lowland, terminating south of Olympia.

During recession of ice in the last major glaciation, relative sea level was several hundred feet higher than at present in the northern and central portions of the Puget Sound lowland and floating ice in the form of berg and shelf ice covered much of the area. Fossiliferous glaciomarine drift was deposited from the floating ice.

PREVIOUS WORK

Near the turn of the century, I. C. Russell, Bailey Willis (1898) and J H. Bretz (1913) studied the Pleistocene deposits of various parts of the Puget lowland. Willis recognized in the southern part of the lowland two glaciations, the Vashon and Admiralty, separated by an interglacial interval, the Puyallup. Bretz (1913), McLellan (1927), Newcomb (1952) and Sceva (1957) extended usage of the terms Admiralty and Vashon to most of the Puget Sound lowland in Washington.

Recent studies have since modified the original stratigraphic framework (Crandell and others, 1958; Easterbrook, 1963; Fyles, 1963; Armstrong and others, 1965; Mullineaux and others, 1965; Easterbrook and others, in press).

Figure 2 - Map of southwestern British Columbia and northwestern Washington showing extent of glaciation (after Armstrong, Crandell, Easterbrook, and Noble). Island County outlined by hachured lines.

The Pleistocene geologic-climate sequence now recognized in the Puget lowland is as follows: (Crandell and others, 1958; Armstrong and others, 1965)

Fraser Glaciation (youngest)
  Sumas Stade
  Everson Interstade
  Vashon Stade
  Evans Creek Stade
Olympia Interglaciation
Salmon Springs Glaciation
Puyallup Interglaciation
Stuck Glaciation
Alderton Interglaciation
Orting Glaciation (oldest)

In Snohomish County just east of Island County, Newcomb (1952) mapped two Pleistocene units, Admiralty clay and Vashon Drift, with several subdivisions of Vashon Drift. He questioned the idea of more than one glaciation and thought that pre-Vashon tills represented "ice tongues" or "bergs" which deposited pods and lenses of till in shallow water sediments.

In Kitsap County just south of Island County, Sceva (1957) mapped the following Pleistocene sequence:

Vashon Drift
Puyallup sand
Orting gravel
Admiralty Drift

The sequence in Kitsap County was modified by Molenaar (Garling, Molenaar and others, 1965) to include:

Vashon Drift

Unnamed gravel
Kitsap Formation

Salmon Springs(?) Drift

pre-Salmon Springs(?)
  deposits, undifferentiated

Deposits from at least three glaciations can be recognized on Whidbey and Camano Islands in Island County. These drifts were first recognized by Bretz (1913) at Possession Point on the south shore of Whidbey Island, but he tentatively concluded that the two lower tills belonged to the same glaciation. Hansen and Mackin (1949) studied the sequence at Possession Point in detail and showed that the three drifts represented three separate glaciations. Evidence of

GEOLOGIC CLIMATE UNITS		STRATIGRAPHIC UNITS		C^{14} DATES
FRASER GLACIATION	Everson Interstade	Everson Glaciomarine drift		11,850±240 12,535±300 13,010±170
		Partridge Formation		
	Vashon Stade	Vashon Drift	Vashon till and associated drift	
			Esperance Sand	
OLYMPIA INTERGLACIATION		Quadra Formation		26,850±1700
POSSESSION GLACIATION		Possession Drift		>40,000
WHIDBEY INTERGLACIATION		Whidbey Formation		>33,200 >35,000 >40,000 >42,000
DOUBLE BLUFF GLACIATION		Double Bluff Drift		

Table 1 - Pleistocene Stratigraphic Sequence in Island County, Washington

at least three glaciations separated by interglacial intervals on Whidbey and Camano Islands and adjacent areas in the central Puget lowland were found by Easterbrook (1962, 1963), Easterbrook, Crandell, and Leopold (in press), and Easterbrook, (1965). The two pre-Vashon drifts were named the Double Bluff (oldest) and Possession. They are separated by the interglacial Whidbey Formation.

STRATIGRAPHY AND GEOLOGIC HISTORY

DOUBLE BLUFF DRIFT

Description

The oldest glacial deposit recognized in Island County is the Double Bluff Drift (fig. 3). The type section of the drift is at sea-cliff exposures at Double Bluff (fig. 4) (Easterbrook, Crandell, and Leopold, in press) where it consists of gravel, till, sand and pebbly silt.

At its type section the lower part of the Double Bluff Drift consists of about 30 feet of crossbedded sand overlain by 20 feet of pebbly-cobble gravel and about 10 feet of silt, clay, and fine sand. This material is interpreted to be largely proglacial outwash deposited during the advance of the Double Bluff glacier. The upper part of the drift is composed of till and stony silt and clay containing irregular lenses of sand and gravel. A few shell fragments occur in the upper pebbly silt which resemble in general character post-Vashon glaciomarine drift deposited from floating ice. However, whether or not this part of the drift is glaciomarine in origin remains uncertain on the basis of available evidence. Some of the pebbly silts may represent mudflows that flowed from a glacier into ponded water.

Distribution and Stratigraphic Relationships

The contact between the Double Bluff Drift and the overlying Whidbey Formation is exposed in the sea cliffs at Double Bluff and about a quarter of a mile east of the southernmost point at Double Bluff. Double Bluff pebbly silt and oxidized sand and gravel is overlain by Whidbey sand and peat-bearing silt. The contact dips eastward and disappears below sea level (fig. 3). Elsewhere in Island County Double Bluff Drift is only rarely exposed above sea level. On Whidbey Island it occurs at Possession Point (fig. 5) where it corresponds to the lowest drift recognized by Bretz (1913) and Hansen and Mackin (1949). Bretz included it in his Admiralty Glaciation and Hansen and Mackin informally referred to it as the "sea-level till". The till at Possession Point is a poorly sorted mixture of pebbles, cobbles, sand, silt, and clay which is fairly compact and stands in near-vertical bluffs. Near the east end of the point, a few feet of wood-bearing clay occur beneath the till. Peat-bearing silt and sand of the Whidbey Formation overlie the Double Bluff Drift at Possession Point.

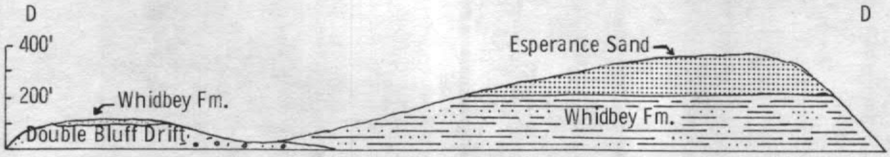


Figure 3 - Type section of the Double Bluff Drift and Whidbey Formation along the sea cliffs at Double Bluff and Useless Bay.

Double Bluff Drift is also exposed on Camano Island about 1/2 mile northwest of Camano Head on the west shore where it consists of compact till near sea level. The till thickens to the southeast toward Camano Head until it reaches a thickness of about 50 to 60 feet. Beneath the till is compact sand and platy silt cut by many small faults. Farther southeast the till disappears and a gravel unit appears to become the lateral equivalent. Sand, silt, and peat of the Whidbey Formation overlies the drift near Camano Head.

Double Bluff Drift is again exposed just north of Pebble Beach on Camano Island. Till and associated drift rise from beach level to about 50 feet where they are overlain by sand and peat of the Whidbey Formation. The upper contact of the drift descends below sea level within a quarter of a mile both to the north and to the south.

Age

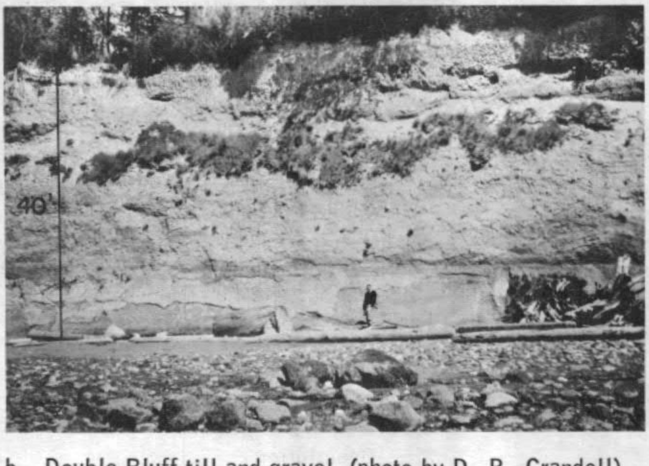
Radiocarbon dating of material overlying the Double Bluff Drift indicates that the drift is older than 40,000 years. How much older than 40,000 years it is appears uncertain at present but the drift is not believed to be of great antiquity because of the general lack of weathering of pebbles in the drift and absence of a weathering profile on the upper surface of the drift (Easterbrook and others, 1965). The general lack of significant weathering may, however, be related in part to burial by younger sediments shortly after the drift was deposited.

WHIDBEY FORMATION

Description

The type locality of Whidbey Formation is in sea cliffs between Double Bluff and Useless Bay (Easterbrook and others, in press) where more than 200 feet of the unit is exposed (fig. 7, 8a).

a. Contact of Double Bluff Drift and Whidbey Formation



b. Double Bluff till and gravel (photo by D. R. Crandell)

Figure 4 - Double Bluff Drift at its type locality

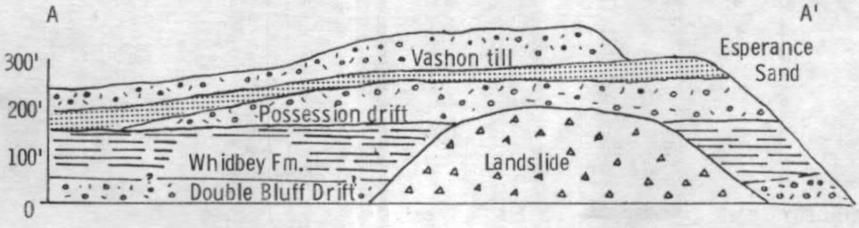


Figure 5 - Geologic cross section A-A' at Possession Point, Whidbey Island

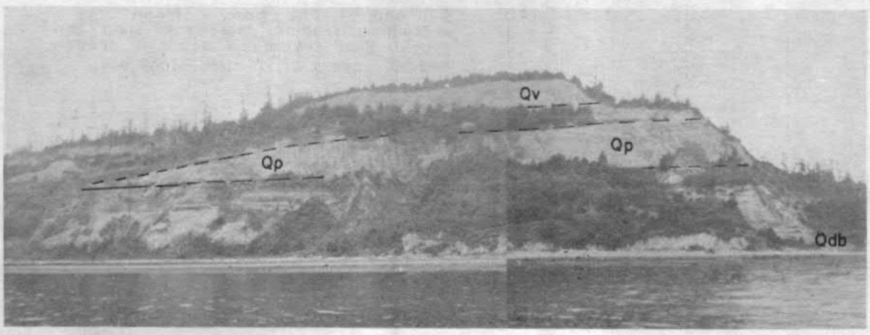


Figure 6 - Vashon till (Qv), Possession till (Qp), and Double Bluff till (Qdb) in a single exposure at Possession Point

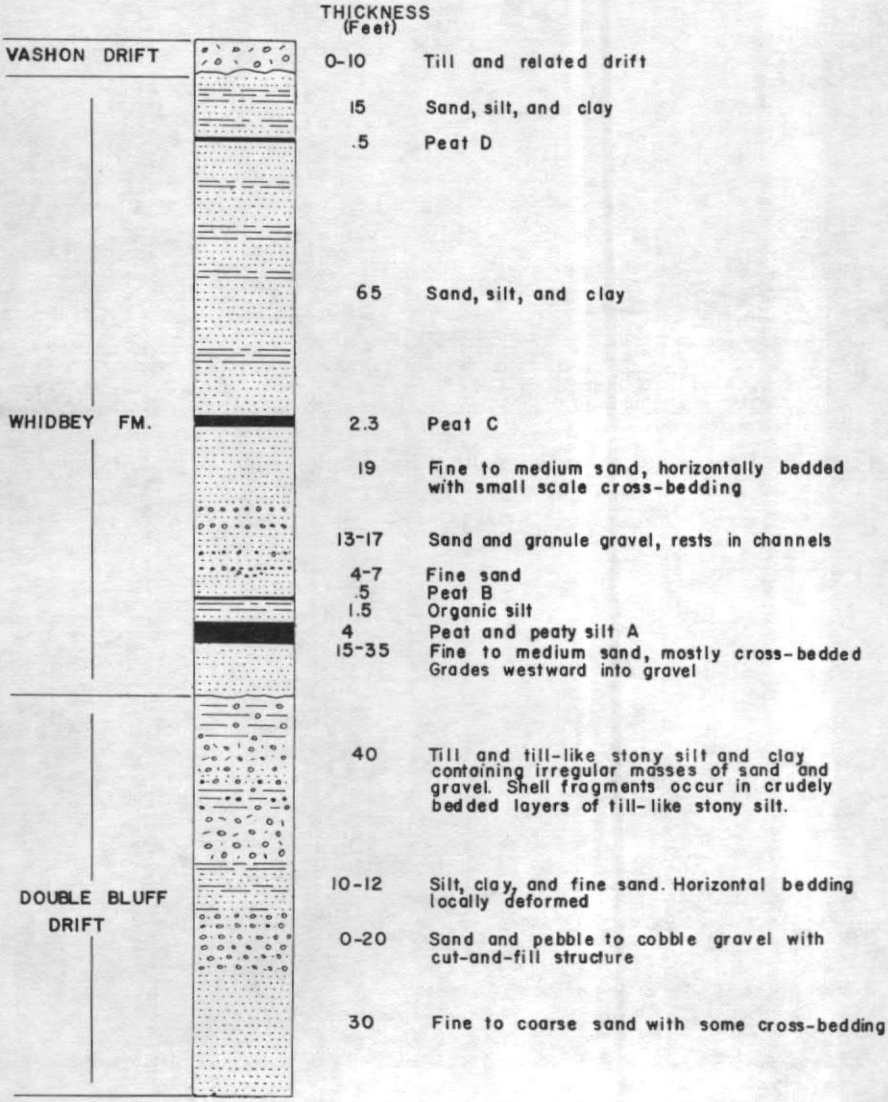
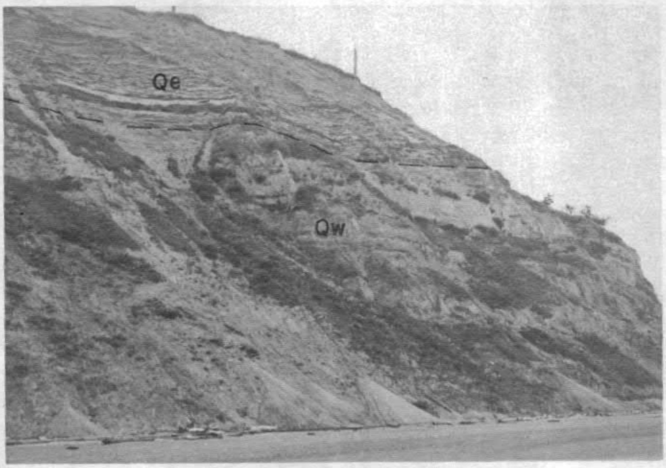


Figure 7 - Composite stratigraphic section at the type locality of the Double Bluff Drift and the Whidbey Formation in sea cliffs between the SE¼NE¼ Sec. 28 and the SE¼NW¼ Sec. 26, T. 29 N., R. 2 E.

a. Sand, silt, and peat of the Whidbey Formation at its type locality near Double Bluff, Whidbey



b. Esperance Sand overlying Whidbey Formation, west side of Useless Bay, Whidbey Island

Figure 8 - Whidbey Formation at its type locality, west side of Useless Bay

The Whidbey Formation consists of sand, silt, and clay interbedded with peat and lenses of gravel. Most of the silt and clay portions of the unit are horizontally stratified. Crossbedding is common in the sand. Peat beds varying in thickness from a few inches to several feet are common.

The sediments of the Whidbey Formation appear to be almost entirely floodplain deposits similar to those described by Hansen and Mackin (1949) at Everett and Possession Point. They interpreted deposits there to be the result of "aggradation by meandering streams flanked by floodplain lakes and swamps". Lenses of gravel and coarse sand were thought to represent channel deposits.

Distribution and Stratigraphic Relationships

Exposures of the Whidbey Formation are numerous in the sea cliffs of Whidbey and Camano Island but the contact with the underlying Double Bluff Drift is exposed at only a few localities. Inland from sea cliffs the Whidbey Formation is covered by younger sediments and is rarely exposed.

An unconformity is almost always present at the top of the Whidbey Formation so the original stratigraphic thickness of the unit is not known. At the type locality east of Double Bluff, at Scatchet Head, and on the east side of Useless Bay the Whidbey is more than 200 feet thick. An unconformity at the top of these sections, however, may cut out an unknown thickness at these localities (fig. 8b). Elsewhere on Whidbey and Camano Islands thicknesses vary from a few feet to about 100 feet.

At several localities Possession Drift overlies the Whidbey, but in most places the Esperance Sand Member of the Vashon Drift (Mullineaux and others, 1965) lies unconformable on the Whidbey Formation (fig. 8b).

Where the Esperance Sand Member lies directly on the Whidbey Formation, it is sometimes difficult to distinguish them, especially in places where the Whidbey consists of sand. The Esperance is usually somewhat coarser than the typical Whidbey, consisting mostly of pebbly crossbedded sand with scattered lenses of gravel. The Whidbey is characterized by generally finer sediments, horizontally stratified, with peat layers commonly interbedded. Silt, fine sand, and peat in the Whidbey Formation often stand in near vertical cliffs, whereas the looser sands of the Esperance tend to have slopes of a lower angle. The difference in character of the two units often results in a sharp, well-defined contact (fig. 9). However, in a single isolated exposure, sand of the Whidbey Formation may be indistinguishable from that of the Esperance Sand. No peat beds have been observed in the Esperance whereas peat is quite common in the Whidbey. In addition, all peat beds from the Whidbey Formation which have been radiocarbon dated have been beyond the range of finite radiocarbon dating. If, as suggested, the Esperance is early Vashon in age, any peat which might be found in the Esperance should lie within the range of radiocarbon dating.

Figure 9 - Contact between Whidbey Fm. and Esperance Sand south of Swantown, Whidbey Island

Climate

Analyses of pollen from peat in the Whidbey Formation suggest that the sediments were deposited during an interglacial interval within at least a part of which the climate was similar to that of the present (Easterbrook, and others, in press).

Hansen and Mackin (1949) found lodgepole pine to be the dominant pollen from the lower part of the Whidbey Formation at Possession Point, suggestive of an early interglacial climate. Decrease of lodgepole pine and increase in balsam fir and western hemlock higher in the unit suggested warming of the climate. In a correlative section at Everett, Hansen and Mackin (1949) found a pollen assemblage dominated by western hemlock and Douglas fir, suggesting a relatively mild climate. Higher in the same section disappearance of Douglas fir, decrease in western hemlock, and increase in lodgepole pine was believed to represent physiographic instability possibly accompanying advance of a glacier into the Puget Sound lowland to the north.

Pollen from peat beds at the type locality of the Whidbey Formation consists mostly of spruce in the lower part of the section, nearly equal amounts of Douglas fir and hemlock in an intermediate peat bed, and alder with spores and pine pollen higher in the bluffs (Easterbrook and others, in press). Climatic conditions represented by the lower peat are not clear but the middle and upper peat beds probably represent a climate somewhat similar to that of the present.

Table 2 - Radiocarbon dates from the Whidbey Formation

C^{14} DATE	SAMPLE NUMBER	SAMPLE NAME	LOCATION		
			DESCRIPTION	T & R	LAT & LONG
>42,000	I-722	N. of West Beach Whidbey Island	About ¼ mile South of intersection Willamette Meridian & Shoreline	SE¼NE¼, Sec. 13 T. 32 N., R. 1 W	48°15½'N 122°45'W
>35,000	I-1194	Polnell Point Whidbey Island	One mile East of Polnell Point	NW¼NE¼, Sec. 10 T. 32 N., R. 2 E	48°17'N 122°32'W
>35,000	I-1445	Swantown Whidbey Island	North end of Bluffs	NE¼NE¼ Sec. 6 T. 32 N., R. 1 E	48°17½'N 122°43½'W
>33,200	I-1446	Penn Cove Whidbey Island	East of Juan de Fuca	NE¼NW¼, Sec. 29 T. 32 N., R. 1 E	48°14'N 122°43'W
>35,700	I-1528	Elger Bay Camano Island	Elger Bay	NE¼SE¼, Sec. 31 T. 31 N., R. 3 E	48°7½'N 122°27½'W
>40,000*	W-1516	Indian Point Whidbey Island	Indian Point		
>40,000*	W-1523	Double Bluff Whidbey Island	Double Bluff		

*D. R. Crandell, written communication (1965).

Age and Correlation

Seven wood and peat samples from the Whidbey Formation in Island County yielded ages beyond the range of finite radiocarbon dating (table 2) and three samples in adjacent areas gave similar results. At the type locality peat bed C (fig. 7) was dated as older than 40,000 years B.P.

Vertebrate fossils of the mammoth Mammuthus (Parelephas) columbi (Falconer) have been found on the beach at Possession Point, Scatchet Head, Double Bluff (Easterbrook and others, in press) and a five-foot tusk was found in situ on Camano Island.

Correlation of the Whidbey Formation with previously recognized Pleistocene units in the Puget lowland is uncertain at present, although the Puyallup Formation or the nonglacial sediments between two drifts included in the Salmon Springs glaciation may be correlative (Easterbrook and others, in press).

If the Whidbey correlates with the Puyallup Formation then it probably is equivalent to the Sangamon Interglacial of the midwest. If the Whidbey correlates with the nonglacial sediments between the two Salmon Springs drifts, it probably represents a post-Sangamon interglacial interval.

POSSESSION DRIFT

Description

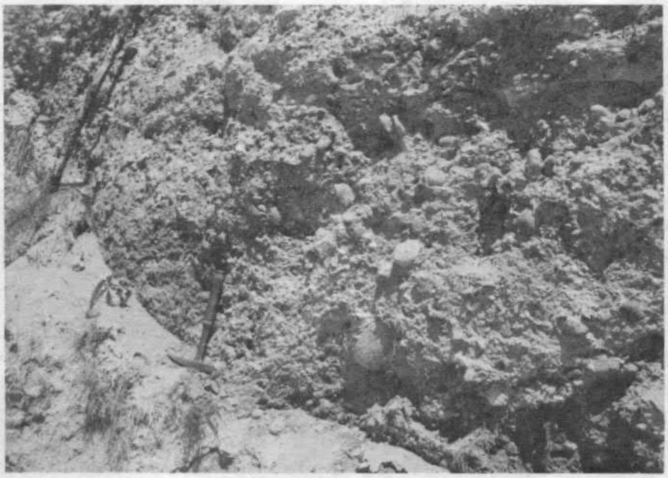
The Possession Drift consists of till, sand and gravel, and pebbly clay (fig. 10a). At its type locality, Possession Point, the drift consists of compact till, but along the east side of Useless Bay it is a pebbly clay containing widely scattered marine shells and shell fragments.

At the east end of Possession Point the drift is about 80 feet thick but it thins westward and pinches out between the underlying Whidbey Formation and overlying the Esperance Sand and Vashon till (fig. 5). Between Lagoon Point and Lake Hancock on the west side of Whidbey Island, Possession Drift reaches a thickness of 80-100 feet (fig. 10b).

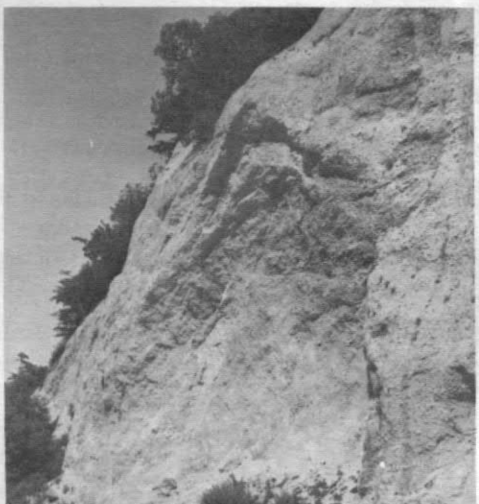
The contact between the Possession Drift and Whidbey Formation is about 135 feet above sea level at Possession Point and about 90 feet above sea level at east Useless Bay (fig. 11a), but elsewhere it ranges from sea level to 150 feet above sea level.

Distribution and Stratigraphic Relationships

Outcrops of the Possession Drift are seldom continuous laterally for long distances, usually occurring in discontinuous patches here and there between the Whidbey Formation and Esperance Sand. In most places the stratigraphic position of the Possession Drift is represented by an unconformity between the Whidbey Formation and younger deposits.

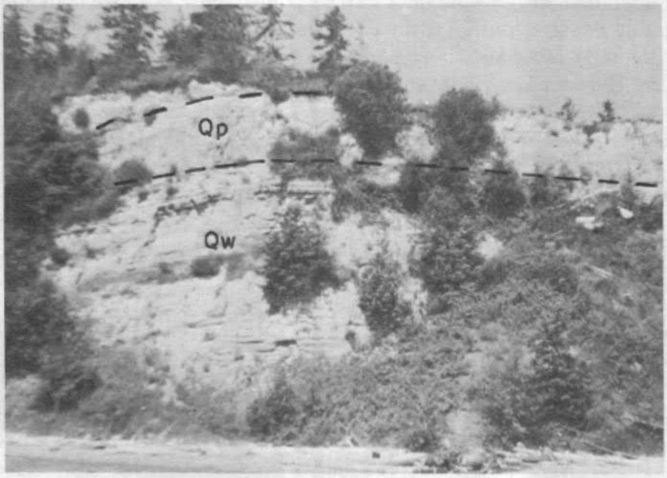


a. Closeup of Possession till north of Lagoon Point Whidbey Island

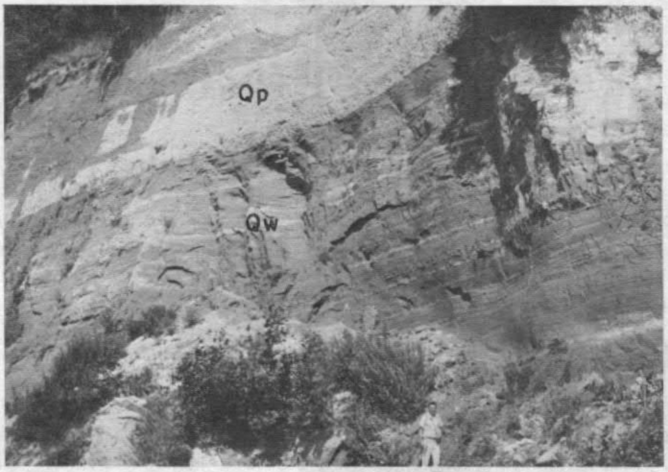


b. Possession till north of Lagoon Point, Whidbey Island. Overlain by Vashon till (see cross section G-G)

Figure 10 - Possession till



a. Possession Drift overlying the Whidbey Formation and overlain by Esperance Sand, east side of Useless Bay, Whidbey Island C^{14} date of older than 40,000 obtain from drift at this locality



b. Possession till overlying the Whidbey Formation north of Lagoon Point, Whidbey Island

Figure 11 - Stratigraphic relationships of Possession Drift

Exposures of the Possession Drift are relatively rare, only six localities having been found where the drift can be positively identified. In addition to the outcrops at Possession Point the east slope of Useless Bay, and north of Lagoon Point, the only other known exposures are north of Bush Point, southeast East Point and Blowers Bluff between Penn Cove and Oak Harbor. At each of these localities the drift is underlain by peat-bearing silt and sand of the Whidbey Formation. The next youngest deposit above Possession Drift is that of the Olympia Interglaciation (Armstrong and others, 1965) but deposits representing this time interval have not been definitely identified in Island County except for a peat bed at a single locality near Strawberry Point, 6 miles east of Oak Harbor. Possession Drift is overlain in most places by the Esperance Sand or Vashon Drift.

Age and Correlation

Wood from Possession Drift at east Useless Bay was radiocarbon dated as older than 40,000 years (I-1203). At east Useless Bay the upper one foot of the drift has a weathered zone but constituents in the drift are as fresh as in Vashon Drift. No other weathered zones have been found on the Possession Drift. A tentative correlation between Possession Drift and the upper Salmon Springs Drift of the southern Puget Sound lowland has been suggested (Easterbrook and others, in press), but evidence for such a correlation is as yet not conclusive. A possibility also exists that the Possession Drift may be equivalent to both drifts of the Salmon Springs Glaciation in the southern Puget lowland. The Possession Drift is considered to be post-Sangamon in age.

QUADRA FORMATION

The Olympia Interglaciation is the last major interglaciation in northwestern Washington and southwestern British Columbia (Armstrong and others, 1965). Deposits of this interglaciation are widespread in the Puget Sound lowland and parts of British Columbia. The type section of deposits of the Olympia Interglaciation is in sea cliffs near Fort Lawton in Seattle where radiocarbon ages of 22,400±800 (W-1181), 20,350±600 (W-1091), and 18,000± 700 years have been obtained (Mullineaux and others, 1965). In southwestern British Columbia the Quadra Formation has been included in this interglaciation (Armstrong and others, 1965).

The only deposit of the Olympia Interglaciation recognized with any degree of certainty in Island County consists of a peat bed near Strawberry Point on Whidbey Island from which a radiocarbon date of 26,850±1700 years (I-1111) was obtained. The peat lies on till and oxidized gravel and is overlain by the Esperance Sand and Vashon till. It is possible that silt and sand deposits in certain areas elsewhere on Whidbey and Camano Islands belong to this interval but they cannot at present be distinguished from parts of the Whidbey or Esperance deposits.

In Kitsap County which borders Island County on the south, Molenaar (Garling, Molenaar and others, 1965) redefined the Kitsap clay member of the Orting gravel, originally named by Sceva (1957). The Kitsap Formation includes a sequence of clays and silts with minor sand and gravel which were thought by Molenaar to belong to the Olympia Interglaciation on the basis of a series of radiocarbon dates ranging in age from about 28,000 years to 35,000 years. However, discrepancies among several dates obtained from the same peat bed have cast doubt on the reliability of many of the dates in the sequence and the exact stratigraphic position of these deposits is now unclear. In view of the doubts concerning the age and correlation of the Kitsap Formation the term Quadra Formation is used in this report. Radiocarbon dates from the Quadra Formation in southwestern British Columbia range from about 23,000 to about 35,000 years. Thus the radiocarbon date of $26,850 \pm 1700$ years (I-1111) from peat near Strawberry Point falls well within the age range of the Quadra.

VASHON DRIFT

The Vashon Drift, deposited during the Vashon Stade of the Fraser Glaciation, includes all sediments laid down between the advance and retreat of the last Pleistocene ice sheet which occupied the Puget Sound lowland (Armstrong and others, 1965). Four stratigraphic units belonging to the Vashon Drift are recognized in Island County. The oldest of these is the Esperance Sand Member which probably represents proglacial outwash later overridden by Vashon ice and covered with till. The Partridge sand and gravel and Everson glaciomarine drift represent phases of deglaciation.

Esperance Sand

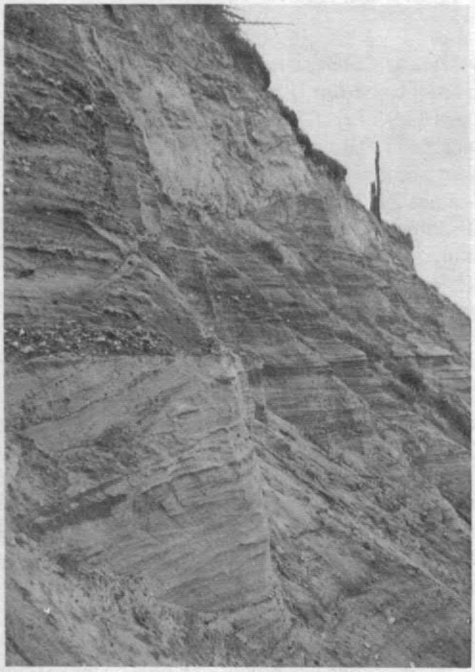
Description

The Esperance Sand Member consists mostly of moderately well sorted fluvial sand and pebbly sand with occasional lenses of gravel (fig. 12a). Most of the unit is extensively crossbedded with laminae having a southerly component, suggesting deposition from south-flowing streams.

On the west side of Whidbey Island south of Swantown, more than 200 feet of the unit is exposed and about 180 feet is exposed one mile south of Lake Hancock (fig. 12b). Elsewhere thicknesses range from zero to about 130 feet.

Distribution and Stratigraphic Relationships

The Esperance Sand is overlain by Vashon till and associated drift in most places, although in a few localities Everson glaciomarine drift overlies it. The Whidbey Formation underlies the Esperance in most sea cliff exposures but at a few sea cliffs Possession Drift separates the Esperance Sand from the underlying Whidbey (fig. 13). Because of the coarse material in it and the extensive



a. Esperance Sand Member, showing crossbedding and gravel lenses, west side of Useless Bay, Whidbey Island

b. Esperance Sand, south of Lake Hancock, Whidbey Island

Figure 12 - Typical exposures of Esperance Sand Member of the Vashon Drift

crossbedding, the Esperance is interpreted to have been deposited by outwash streams. However, there is little conclusive evidence to demonstrate whether the Esperance Sand is associated with the Vashon glacier or the Possession glacier. In most places Vashon till overlies the Esperance and a sharply defined contact between the Esperance and Possession Drift is equally well defined. Near Strawberry Point a peat bed lying on Possession till and overlain by Esperance Sand yielded a radiocarbon date of 26,850±1700 years, indicating that the sand there is post-Olympia in age and thus could not be associated with Possession Drift. Since the only recognized post-26,000 year glaciation in the Puget lowland is the Fraser Glaciation, the Esperance Sand is interpreted to be early Fraser (Vashon Stade) outwash.

Age and Correlation

Interpretation of the sand as Esperance implies correlation with stratigraphic units of early Vashon outwash elsewhere in the Puget Sound lowland. In various areas it has been mapped as part of Vashon Drift, either lumped with till and other Vashon Drift or mapped separately as Vashon advance gravel.

Newcomb (1952) mapped a unit in Snohomish County which he named the "Esperance sand member of the Vashon drift". He recognized two major units within the Esperance (p. 20).

> "The earlier phase of the sand member appears to be a coarser continuation of the horizontal Admiralty clay, whereas the later outwash phase is undoubtedly the advance outwash of the Vashon glacier."

Newcomb did not designate a type locality for his Esperance sand, making comparisons with other sections difficult. The lower part of the Esperance as used by Newcomb in Snohomish County appears to include some pre-Vashon deposits.

In the Seattle area Mullineaux, Waldron, and Rubin (1965) recognized two early Vashon deposits overlying Olympia interglacial deposits. The lower part of the early Vashon sediments at Fort Lawton in Seattle consist of clays defined as the Lawton Clay Member of Vashon Drift. The overlying sand unit was defined as the "Esperance Sand Member of Vashon Drift" but used in a restricted sense to include only the "later outwash phase" of Newcomb. The Lawton Clay Member was thought to have been deposited in a proglacial lake created by damming of northflowing streams by the Vashon glacier. The Esperance Sand Member as restricted was thought to represent chiefly proglacial fluvial and lacustrine sediments deposited after the lake was mostly filled with sediment. Wood from beneath the Lawton Clay Member was dated by them as 15,000±400 (W-1227) and 15,100±300 (W-1305) years old. Since early Vashon sand and gravel in Island County is bracketed only between 26,000 and 12,500 it may be equivalent in time to either the Esperance Sand Member as restricted by Mullineaux, Waldron and Rubin, or the Lawton Clay Member, or both. No equivalent of the

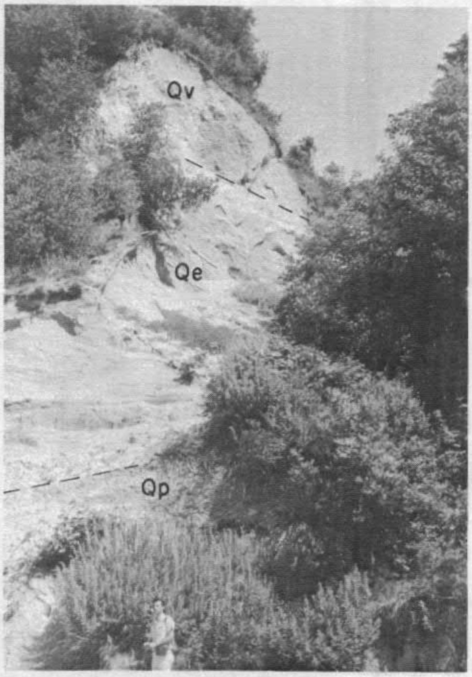


Figure 13 - Esperance Sand overlain by Vashon till, underlain by Possession till, north of Lagoon Point, Whidbey Island

Lawton Clay has been recognized in Island County, and lithologically the deposits of this interval in Island County resemble the Esperance Sand Member. Esperance Sand as used in this report refers to early Vashon (or Fraser) proglacial outwash deposits.

On the Kitsap Peninsula south of Island County, Molenaar (Garling, Molenaar, and others, 1965) mapped the Colvos Sand, which may be at least in part equivalent to the Esperance Sand in Island County. The Colvos Sand consists mostly of sand with a few lenses of gravel, coarse sand, silt, and clay. The sequence is thought to represent the earliest proglacial deposit of the advancing Vashon glacier. Since the Esperance Sand, as used in this report, includes sand, gravel, and pebbly sand interpreted to be advance Vashon outwash, it appears to include Colvos Sand and additional material mapped as Vashon advance outwash in Kitsap County.

Vashon Till and Associated Drift

Description and Origin

Vashon till and associated drift were deposited by the last major Pleistocene glacier in the Puget Sound lowland. The depositional interval has been termed the Vashon Stade of the Fraser Glaciation.

Vashon till typically consists of a single sheet of poorly sorted boulders, pebbles, sand, silt and clay (fig. 14a). The till is often fairly compact and tends to stand in nearly vertical bluffs in sea cliffs along the shore line. In places the till grades laterally and vertically into gravel and minor amounts of sand.

Gravelly phases of the drift are often crudely stratified. Boulders, cobbles, and pebbles in both the till and gravel phases are occasionally faceted, striated, and polished but the majority of them tend to be rounded, rather than angular, apparently as a result of stream transportation prior to incorporation in the till.

The compact till phases of the drift were deposited as lodgement till beneath the glacier, whereas the less compact till and gravelly drift phases probably represent largely subglacial and proglacial meltwater deposits, ablation till, and flow till.

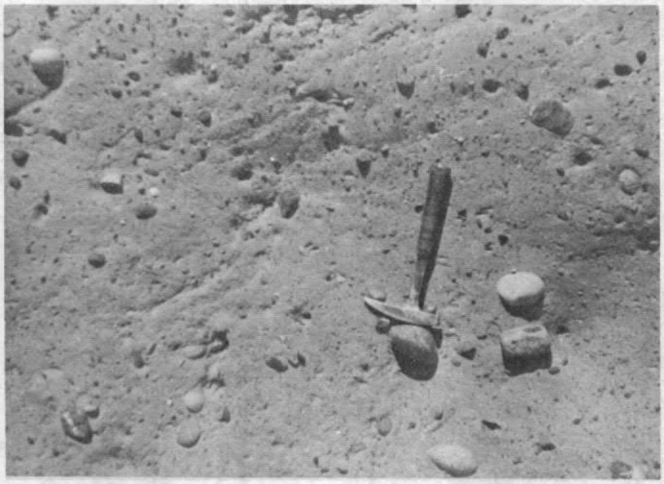
Vashon till is widespread throughout Island County. It commonly occurs near the top of sea cliff exposures and mantles much of the surface inland from the shorelines where Partridge gravel or Everson glaciomarine drift are absent.

The thickness of the till varies from a few feet to more than 175 feet. Thicknesses are often greatest on the south ends of sea cliff exposures.

Stratigraphic Relationships

Vashon till rests unconformably on a wide variety of older deposits. In many places Vashon till lies on the Esperance Sand with a nearly horizontal contact, but cuts across the sand locally, especially on the north and south ends of sea cliff exposures. A good example of this relationship occurs in the bluffs south of Swantown on the west side of Whidbey Island (fig. 15). Esperance Sand rises to an elevation of over 250 feet with a thin mantle of Vashon till back from the edge of the sea cliffs. At the south end of the bluffs Vashon till cuts down across the entire thickness of Esperance Sand, across the Whidbey Formation, and descends an unknown distance below sea level. The conclusion drawn from these relationships is that aggradation in front of the advancing Vashon glacier was followed by deep glacial erosion and subsequent deposition of Vashon till.

In places where Vashon till lies on older drift an unusual thickness of till may be seen in sea cliffs. North of Lagoon Point where Vashon till lies on Possession till over 200 feet of massive till is exposed in the bluffs. To the north, however, Esperance Sand appears between the two units.



a. Typical exposure of compact Vashon till, Barnum Point

b. Vashon till overlying the Esperance Sand Member, Barnum Point, Camano Island. Vashon till rises and thins eastward.

Figure 14 - Vashon Till

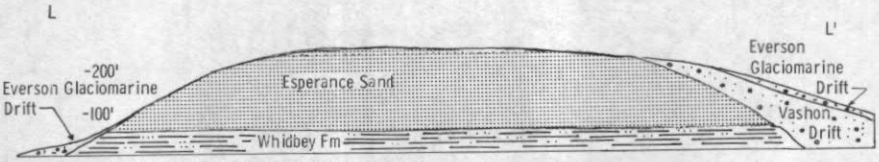


Figure 15

Age and Correlation

No carbon-bearing material contemporaneous with deposition of Vashon till has been found in Island County or elsewhere in the Puget lowland. However, sufficient radiocarbon dates have been obtained from sediments above and below Vashon drift to bracket the time within fairly narrow limits. On Whidbey Island radiocarbon dates from the overlying Everson glaciomarine drift indicate that the Vashon Stade ended about 12,500 to 13,000 years ago. The same relationship of Vashon Drift to radiocarbon dated Everson glaciomarine drift in the Puget lowland north of Island County indicates a similar age for the end of the Vashon Stade there (Easterbrook, 1963). To the south, post-Vashon peaty sediments at Lake Washington in Seattle yielded radiocarbon dates to 14,000$\pm$900 (L-330) and 13,650$\pm$550 (L-346A) (Rigg and Gould, 1957), indicating that the Vashon glacier had retreated from the Seattle area sometime prior to that.

The age of the advance of the Vashon glacier is only imperfectly known in the Puget lowland north of Seattle as radiocarbon dates beneath Vashon Drift are rare. In the Seattle area Mullineaux, Waldron, and Rubin (1965) obtained radiocarbon dates of 15,000$\pm$400 (W-1227), and 15,100$\pm$300 (W-1305), from sediments beneath Vashon till and concluded that the Vashon glacier occupied the Seattle area for less than 1,500 years, between about 15,000 and 13,500 years ago.

In British Columbia radiocarbon dates between 22,000 and 26,000 have been obtained from pre-Vashon sediments (Fyles, 1963; Armstrong and others, 1965).

The only established lower limit for the Vashon Stade in Island County is the 26,850$\pm$1700 (I-1111) age obtained from pre-Vashon peat on Whidbey Island.

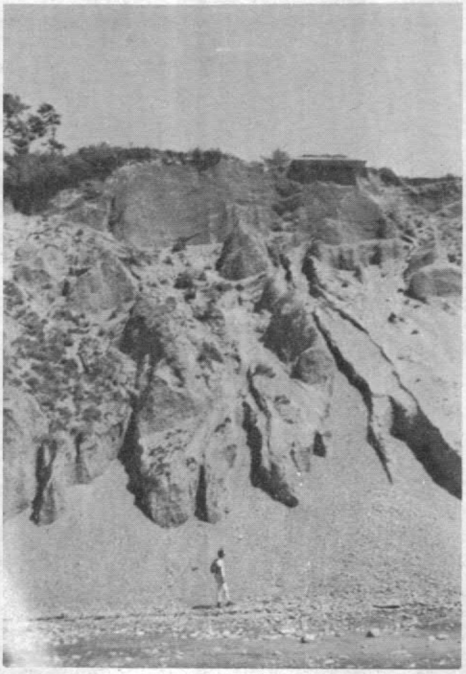


Figure 16 - Partridge Gravel at its type locality, Partridge Point, Whidbey Island

PARTRIDGE GRAVEL

Description

Pebble to cobble gravel and sand is present in parts of northern Whidbey Island. The gravel is moderately well sorted and stratified, with occasional south-dipping forest beds. The type locality of the unit is here designated as the sea cliff exposures between Partridge Point and West Beach on the west side of Whidbey Island where about 150 feet of sandy gravel is exposed beneath glaciomarine drift of Everson age. Cobbles 8-12" in diameter are common in parts of the gravel sequence and cover the beach in places with a lag mantle.

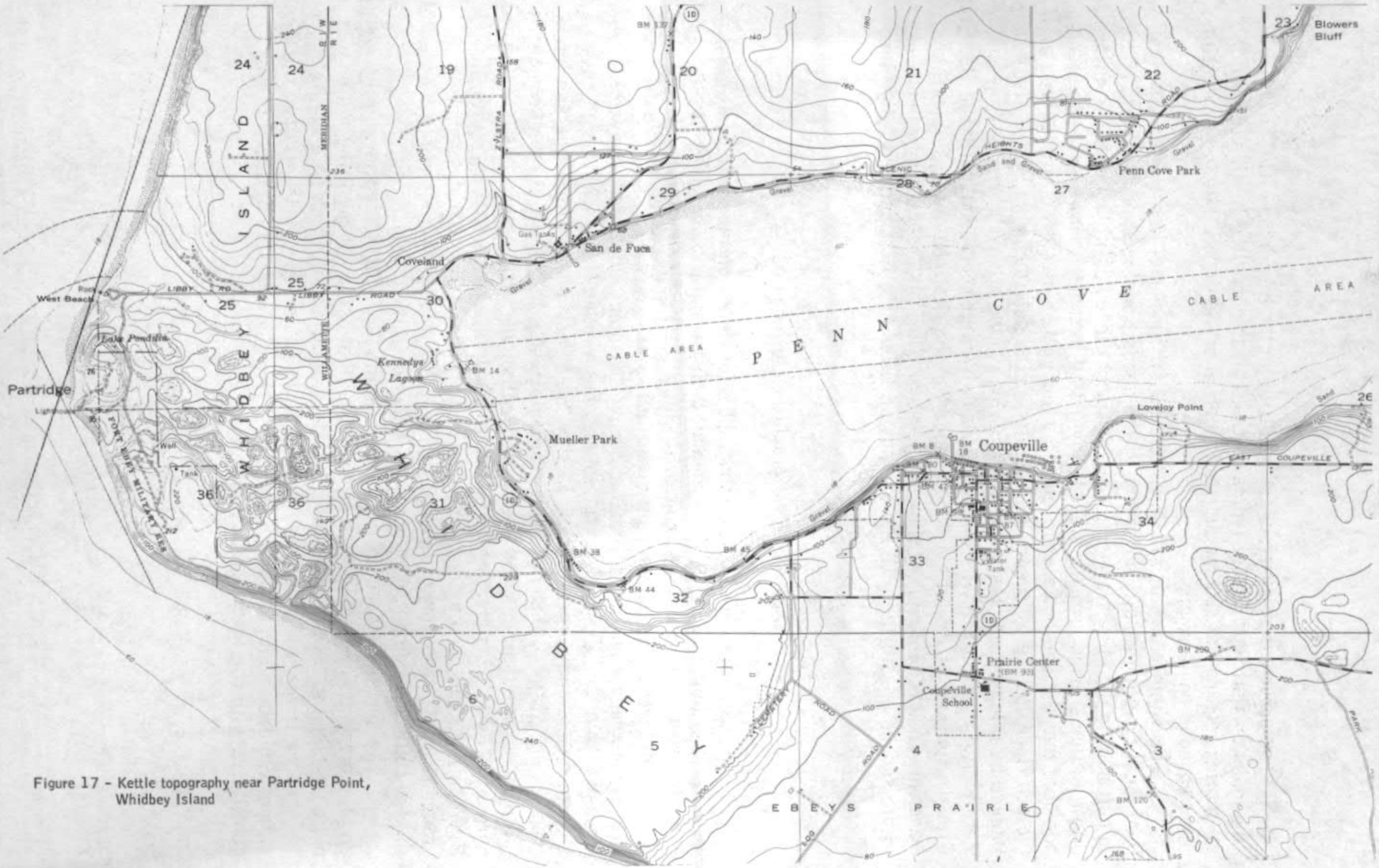


Figure 17 - Kettle topography near Partridge Point, Whidbey Island

Origin

The presence of numerous deep kettles in the topography (fig. 17) developed on Partridge Gravel indicates that it was deposited in the vicinity of stagnating ice and the sorting and stratification of the gravel indicate deposition in an aqueous environment.

The significance of small scattered shell fragments in the gravel at the type locality is not readily apparent. If the depositional environment were at least in part marine the shell fragments may represent pieces of broken shells similar in origin to those found on many present day gravel beaches. However, it is also possible that the shells were picked up by the Vashon glacier as it advanced across the sea floor and the fragments incorporated in the debris carried by the glacier, later to be released as clastic particles during deglaciation. Terraces of probable marine origin associated with and approximately contemporaneous with the Partridge Gravel southeast of Penn Cove lends support to the first possibility. Small shell fragments in Vashon Drift south of Foulweather Bluff in Kitsap County lend support to the second possibility. Of the two possibilities, the first appears to be the more likely.

Age and Stratigraphic Relationships

The well-preserved kettle topography developed on the Partridge Gravel west of Penn Cove identifies it as younger than the main Vashon glaciation. Fossiliferous Everson glaciomarine drift which overlies the gravel at its type locality yielded a radiocarbon date of $12,535 \pm 300$ (I-1079). The Partridge Gravel thus must have been deposited during the interval between recession of the Vashon glacier and the Everson Interstade, but whether the gravel should be considered recessional outwash of the Vashon Stade or a phase of the Everson Interstade is uncertain at present. If the shell fragments in the gravel represent deposition in a marine environment associated with higher relative sea levels as recorded during the Everson Interstade, the gravels could logically be placed within the Everson Interstade and the kettles considered related to blocks of stagnating grounded ice. Reworking of the sediments by the wave action along the margins of the ice could then produce the observed features in the gravel.

The general absence of Vashon recessional outwash elsewhere in the area and the presence of glaciomarine drift suggest that deglaciation of the region was not characterized by deposition of outwash by meltwater streams on a regional scale.

The lower contact of the Partridge Gravel is below sea level along the west side of Whidbey south of West Beach. In a few places gravel believed to be correlative with the Partridge Gravel lies on Vashon till.

EVERSON GLACIOMARINE DRIFT

Description

Glaciomarine sediments deposited from floating ice during retreat of the Vashon ice sheet have been included in the Everson Interstade (Armstrong and others, 1965). The glaciomarine drift consists of poorly sorted sediments varying from pebbly silt and clay with only scattered pebbles to till-like deposits (fig. 18). On Whidbey and Camano Islands the deposits tend to contain fairly high percentages of silt and clay and tend to develop a blocky weathering feature on exposed surfaces.

The thickness of the unit is generally not great, usually about 8-20 feet. The glaciomarine drift is absent on the higher parts of the islands. Where the deposits occur in bluffs near sea level they typically thin progressively as the top of sea cliffs become higher. The maximum observed thickness is about 40 feet.

Origin

Evidence for the origin of similar glaciomarine drift in the Puget lowland (Easterbrook, 1963) and in the Fraser Valley (Armstrong, 1954) has previously been established and is not repeated here. The reader is referred to these earlier publications for details. The glaciomarine drift was deposited in marine water during an interval when sea level was higher relative to land than at present and berg and shelf ice contributed debris released by melting of the ice. Shells of marine organisms living on the sea floor were occasionally buried in the sediments.

Age and Correlation

Radiocarbon analyses of marine shells in the glaciomarine drift at three localities on Whidbey Island yielded ages of 12,535±300 (I-1079), 11,850±240 (I-1448), and 13,010±170 (UW-32). All of the dates correspond well with dates obtained from sediments at the type locality of the Everson Interstade and dates from glaciomarine drift elsewhere in the Puget Sound lowland.

At the type section of the deposits of Everson age southeast of the town of Everson, three rock stratigraphic units are present: Bellingham glaciomarine drift, Deming Sand and Kulshan glaciomarine drift. On Whidbey and Camano Islands, however, only a single glaciomarine unit is present. Because the two glaciomarine units near Everson are so closely related in time, radiocarbon dating cannot satisfactorily distinguish them from one another and it is not known whether the single unit on Whidbey and Camano is equivalent to the Bellingham or the Kulshan, or both. It is certain, however, that the single post-Vashon glaciomarine drift in Island County lies within the Everson Interstade. Thus, the unit here will be referred to as the Everson glaciomarine drift.

Correlations of the Everson Interstade with late Pleistocene deposits in the midcontinent and Rocky Mountains has been discussed by Easterbrook (1966).

Figure 18 - Glaciomarine drift of Everson age, West Beach, Whidbey Island. C^{14} date from this locality 12,535±300 (I-1079)

BIBLIOGRAPHY

Armstrong, J. E. and Brown, W. L., 1954, Late Wisconsin marine drift and associated sediments of the lower Fraser Valley, British Columbia, Canada: Geol. Soc. America Bull., v. 65, p. 349-364.

Armstrong, J. E., Crandell, D. R., Easterbrook, D. J. and Noble, J. B., 1965, Late Pleistocene stratigraphy and chronology in southwestern British Columbia and northwestern Washington: Geol. Soc. America Bull., v. 76, p. 321-330.

Bretz, J H., 1913, Glaciation of the Puget Sound region: Washington Div. Mines and Geology Bull., no. 8, p. 244.

Crandell, D. R., Mullineaux, D. R., and Waldron, H. H., 1958, Pleistocene sequence in southeastern part of the Puget Sound lowland, Washington: Am. Journ. Sci., v. 256, p. 384-397.

Easterbrook, D. J., 1962, Pleistocene sequence on Whidbey Island: Northwest Sci., v. 36, no. 4, p. 128.

---------, 1963, Late Pleistocene glacial events and relative sea level changes in the northern Puget lowland, Washington: Geol. Soc. America Bull., v. 74, p. 1465-1484.

---------, 1964, Late Pleistocene glaciation of Whidbey Island, Washington: Geol. Soc. America, Sp. Paper 76, p. 198.

---------, 1965, Guidebook for field conference J, Pacific Northwest, VII Congress, International Assoc. for Quaternary Research, p. 68-75.

---------, 1966, Radiocarbon chronology of late Pleistocene deposits in northwest Washington: Science, v. 152, p. 764-767.

Easterbrook, D. J., Crandell, D. R., and Leopold, E. B., in press, Pre-Olympia stratigraphy and chronology in the central Puget lowland, Washington: Geol. Soc. America Bull., in press.

Fyles, J. G., 1963, Surficial geology of Horne Lake and Parksville map-areas, Vancouver Island, British Columbia: Geol. Survey Canada Memoir 318, p. 142.

Garling, M. E., Molenaar, Dee and others, 1965, Water resources and geology of the Kitsap Peninsula and certain adjacent islands: Washington Div. Water Resources Water Supply Bull. 18, p. 24-50.

Hensen, H. P. and Mackin, J. H., 1949, A pre-Wisconsin forest succession in the Puget lowland, Washington: Am. Jour. Sci., v. 247, p. 833-855.

McLellan, R. D., 1927, Geology of the San Juan Islands: Univ of Wash. Pub in Geology, v. 2, p. 185.

Mullineaux, D. R., Waldron, H. H., and Rubin, Meyer, 1965, Stratigraphy and chronology of late interglacial and early Vashon glacial time in the Seattle area, Washington: U. S. Geol. Survey Bull. 1194-0, p. 1-10.

Newcomb, R. C., 1952, Ground-water resources of Snohomish Co., Washington: U. S. Geol. Survey Water-Supply Paper 1135, p. 133.

Rigg, G. B., and Gould, N. R., 1957, Age of Glacier Peak eruption and chronology of post-glacial peat deposits in Washington and surrounding areas: Am. Journ. Sci., v. 255, p. 341-363.

Sceva, J. E., 1957, Geology and ground-water resources of Kitsap County, Washington: U. S. Geol. Survey Water-Supply Paper 1413, p. 178.

Willis, Bailey, 1898, Drift phenomena of Puget Sound: Geol. Soc. America Bull., v. 9, p. 111-162.

PART II

GROUND-WATER RESOURCES

OF

ISLAND COUNTY, WASHINGTON

by

Henry W. Anderson, Jr.
U. S. Geological Survey

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(Plates are in pocket)

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GROUND-WATER RESOURCES

OF

ISLAND COUNTY, WASHINGTON

By

Henry W. Anderson, Jr.

ABSTRACT

The population of Island County has grown from 6,700 in 1940 to about 22,000 in 1964, causing a corresponding increase in the demand for water. Ground water is the only significant source of water within the county. Average annual precipitation ranges from less than 20 to more than 40 inches, and is the only recharge to the ground-water body.

In most of Island County, wells are concentrated along the coastline, although most of the central upland areas have a few wells. Wells withdrawing from zones above sea level are concentrated in the higher upland areas; in many of those areas, the ground water appears to be semiperched, with water levels as high as 400 feet above sea level. Most wells producing from below sea level, even in these high uplands, have water levels within about 20 feet of sea level. Production from between sea level and 75 feet below is widespread, and ground water is available from this interval in all but a few places in the county. Wells producing from deeper zones are scattered throughout the county; six wells are known to obtain water suitable for domestic use from more than 200 feet below sea level--two of them from about 400 feet below.

All ground water in Island County is obtained from deposits of Pleistocene age. Deposits representing three glaciations and three interglaciations have been recognized from surface exposures in the county.

Of the drilled wells for which records are available 32 percent are less than 100 feet deep, 47 percent of the drilled wells are 100 to 200 feet deep, 18 percent are 200 to 300 feet deep, and only 3 percent are more than 300 feet deep.

Although the average specific capacity is about the same at different depths, the average reported yield increases with depth from about 20 gpm (gallons per minute) for wells producing from intervals above sea level to about 80 gpm for those that obtain water more than 75 feet below sea level.

Three chemically distinct ground-water types occur in Island County. The first type is dilute, with less than 300 mg/l (milligrams per liter) of dissolved-solids content, with silica and bicarbonate the principal dissolved components and with hardness values in the 50- to 180- mg/l range. This dilute ground water predominates in southern Whidbey Island and in the Camano Island uplands. The second type, a very hard ground water, is common in northern Whidbey Island and in the Brown Point lowland of Camano Island. It is characterized by 300 to more than 1,000 mg/l of dissolved solids, and hardness values that range from 180 to more than 800 mg/l.

The more dilute versions of this second chemical type are rich in calcium, bicarbonate, and chloride, whereas the more concentrated versions contain abundant magnesium, bicarbonate, sulfate, and chloride. The chemical quality of both the dilute ground water and the very hard ground water may be modified as a result of sea-water encroachment at many shore localities.

Iron is noticeable in the ground water of several areas, the most important of which are on Whidbey Island south and west of Clinton, in and near Freeland, on the Crockett Prairie south of Coupeville, and north and west of Penn Cove.

The total withdrawal of ground water in Island County is estimated at about a billion gallons per year; about 60 percent is used for domestic and public supplies primarily serving private residences, 25 percent for irrigation of about 500 acres of farmland, 10 percent for livestock and poultry, and the remaining 5 percent for commercial and industrial needs.

Water-level fluctuations of less than 2 feet in 50 percent of the observation wells indicate a relatively constant supply of ground water in storage. Long-term fluctuations of water levels are also small, as evidenced by the similarity between present levels and those reported by drillers at the time wells were drilled. This suggests that ground water in storage is not being depleted at present (1965). However, the occurrence of (1) water levels only 5 to 15 feet above sea level in many drilled wells, (2) sea-water encroachment, and (3) the very hard ground water, signal the possibility of more serious and widespread problems in the future.

INTRODUCTION

PURPOSE AND SCOPE OF THE INVESTIGATION

The investigation upon which this report is based was made by the U. S. Geological Survey in cooperation with the Washington State Department of Water Resources. The purpose of the project was to determine and describe the location, availability, and quality of ground water in Island County.

The project area is one of rapidly increasing population, and wells presently provide the only significant source of water in the county. The population has grown from 6,700 in 1940 to about 22,000 in 1964. As a result of the consequent increase in ground-water withdrawals, several areas in the county have reported water-quality problems. No previous ground-water investigations have been made in Island County.

This report includes a general description of the geographic and hydrologic setting; a description of the occurrence of ground water areally and vertically; an evaluation of the chemical quality of ground water; comments on present and future use of ground water; and a tabulation of data relevant to the ground-water hydrology of Island County.

This investigation was made and the report prepared under the general supervision of Leslie B. Laird, District Chief, Water Resources Division, U. S. Geological Survey, and under the immediate supervision of A. A. Garrett of the U. S. Geological Survey and Robert H. Russell of the State Department of Water Resources.

ACKNOWLEDGMENTS

The cooperation of well owners, users, and drillers who supplied well records is appreciated. Well drillers A. G. Kounkel of Stanwood, A. M. Scurlock of Freeland, and Lambert Vander Stoep of Oak Harbor, who provided access to their files of well logs, deserve special thanks, as do W. J. Hunziker of Langley, E. H. Jones of Greenbank, and G. S. Wallace of Lake Goss near Freeland, for their contribution of weather data.

GEOGRAPHIC SETTING

Island County consists chiefly of Camano and Whidbey Islands which are located north of Puget Sound opposite the Strait of Juan de Fuca (fig. 1). Several small islands are included in the county but are not covered in this study because of their small size.

Land area in Island County totals something more than 210 square miles, including about 45 square miles on Camano and 165 on Whidbey. Both islands are long and narrow; no place on either is more than 2½ miles from the shore. Most of the land surface consists of rolling uplands ranging from 100 to 300 feet above mean sea level. In a few places, the uplands are 500 feet above sea level. In this report the county is divided into subareas, mainly upland and lowland areas (fig. 2). The boundary between many of these areas is taken as a generalization of the 100-foot topographic contour. The subdivisions vary in their hydrology principally due to differences in altitude, surface features, and geologic conditions.

HYDROLOGIC CYCLE IN ISLAND COUNTY

The term "hydrologic cycle" refers to the movement of water from the atmosphere to the earth, on and under the surface of the earth, and from the earth back to the atmosphere. The several major parts of the hydrologic cycle are discussed briefly in the following sections.

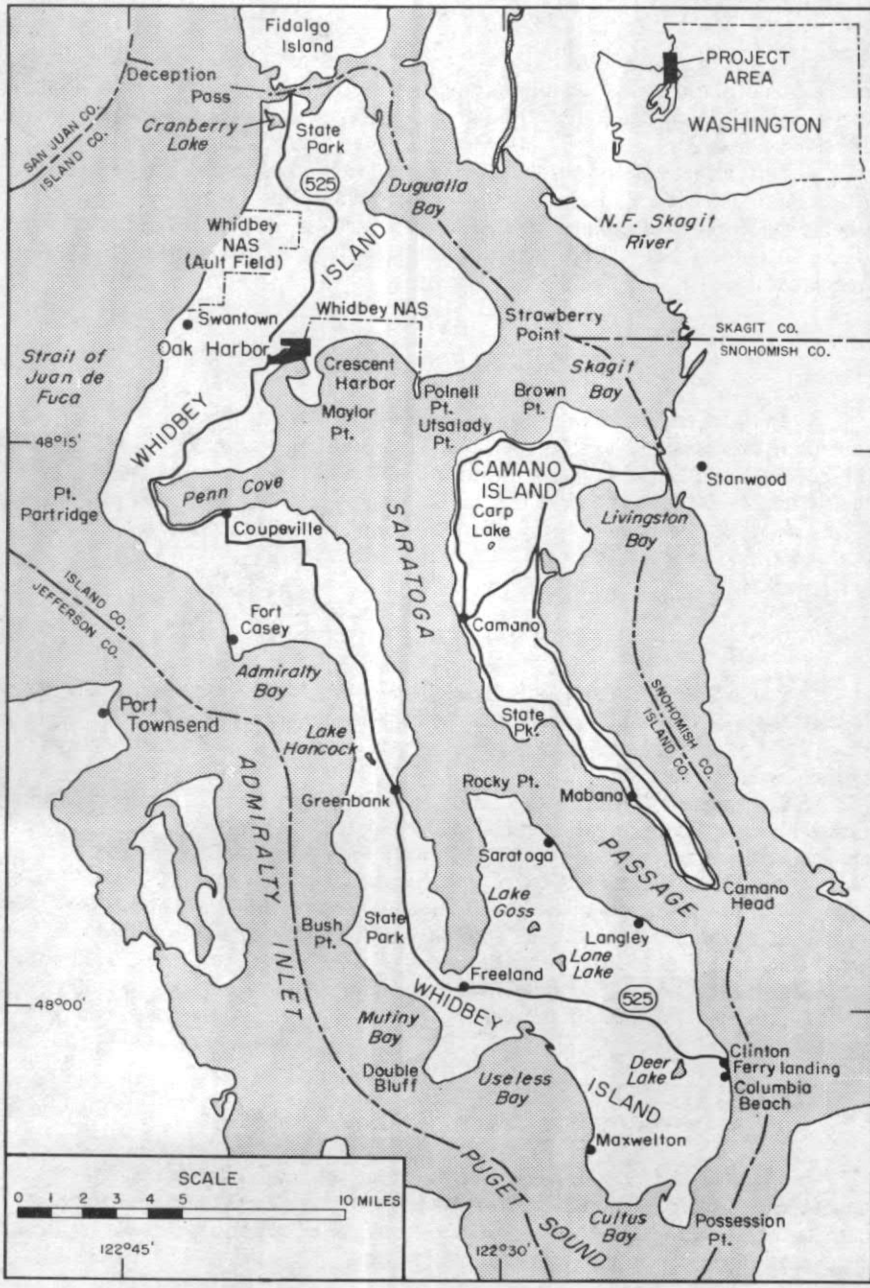

Figure 1 - Index map showing towns and principal geographic features of Island County.

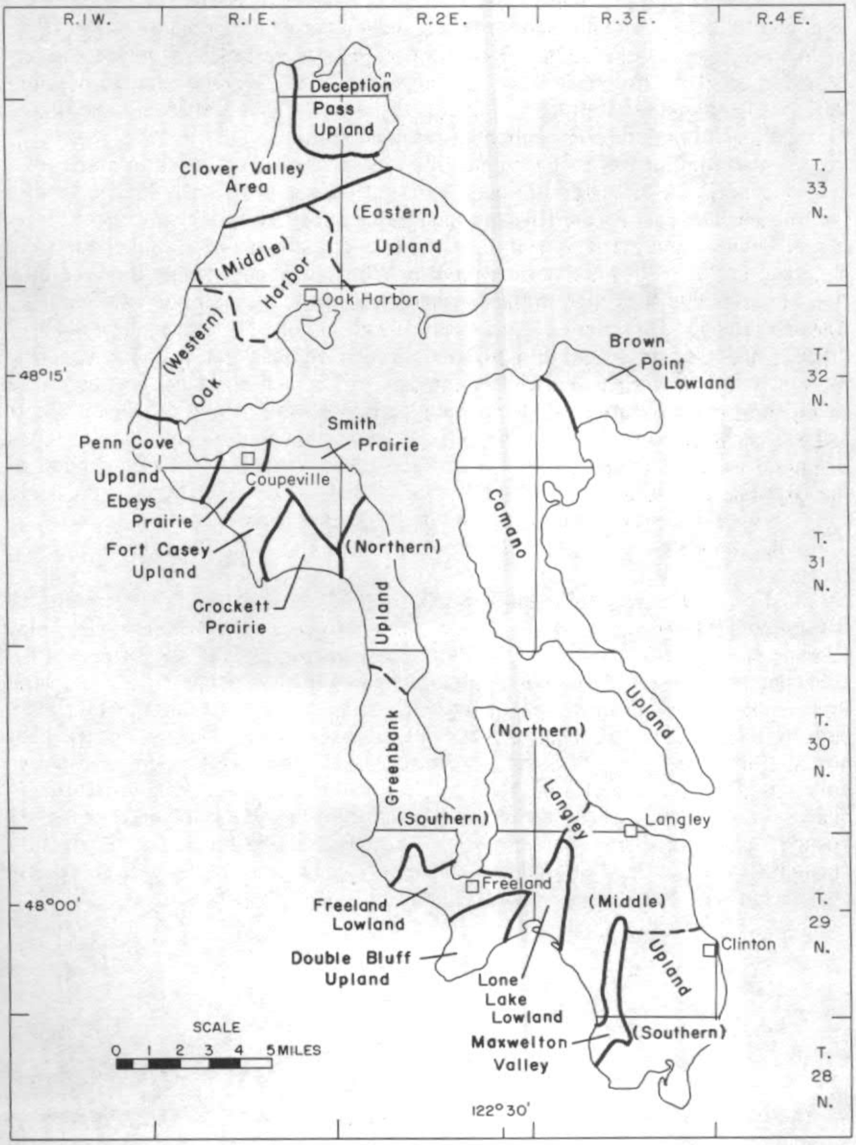

Figure 2 - Map showing physiographic subdivisions.

PRECIPITATION

All recharge of ground water and surface water in Island County comes from precipitation, which ranges from 18 inches per year at Coupeville to 42 inches per year at Lake Goss. Precipitation generally occurs as gentle showers or as fog or mist. Figure 3 shows a comparison of the average monthly precipitation at five weather stations in the county, with the years of record and the average annual precipitation indicated for each station.

Variation in the amount of monthly precipitation from place to place in Island County, as indicated in figure 3, is influenced principally by two factors: the rain shadow cast by the Olympic Mountains about 50 miles southwest of Island County, and the land-surface altitude. The effect of the rain shadow is observed in the central and northern part of Whidbey Island, where the precipitation is noticeably less than in the southern part of the island or on neighboring Camano Island. The effect of land-surface altitude can be seen by comparing altitude and average annual precipitation at each weather station. The Greenbank station, with an average annual precipitation of 28 inches, is 80 feet above sea level; the Langley station, with 38 inches, is 135 feet above sea level; and the Lake Goss station, with 42 inches, is 290 feet above sea level. This suggests a general increase in precipitation with increasing altitude. The rain shadow of the Olympic Mountains masks the effect of altitude at Coupeville and Ault Field.

All five weather stations have similar seasonal precipitation patterns. The only significant difference between them seems to be in the amount of precipitation.

Figure 4 shows the long-term variation in precipitation at Coupeville for the period 1916-64.[1/] It also shows that a 26-year period of generally below-average precipitation began in 1922 and continued through 1947. During the subsequent 17 years (1948-64), precipitation has been generally above average. Above-average precipitation means a greater-than-average amount of water available for infiltration and recharge to the ground-water body. However, during the period since 1947, on the basis of reported data, the water level rose slightly in only about half of the wells in the county for which data are available (tables 7 and 8, in appendix), whereas more than a fourth of the wells had no water-level change, and a little less than a fourth indicated declining levels. This would suggest that storage in the ground-water reservoir for most of the area is about at equilibrium with the recharge and discharge.

1/ The cumulative-departure curve is constructed on a year-by-year basis by adding or subtracting the excesses or deficiencies of precipitation relative to the long-term average. Thus, during a wetter-than-average year, the curve rises, whereas during a dryer-than-average year, the curve falls.

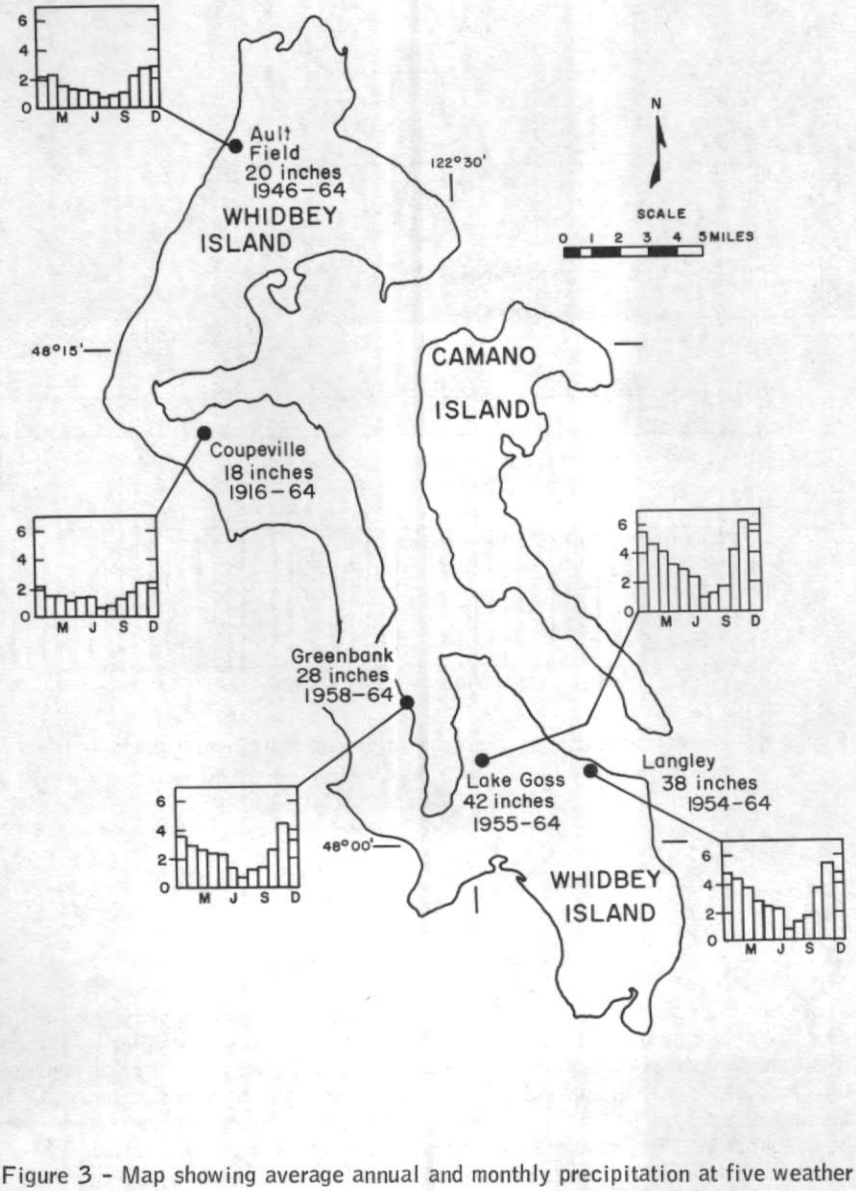

Figure 3 - Map showing average annual and monthly precipitation at five weather stations.

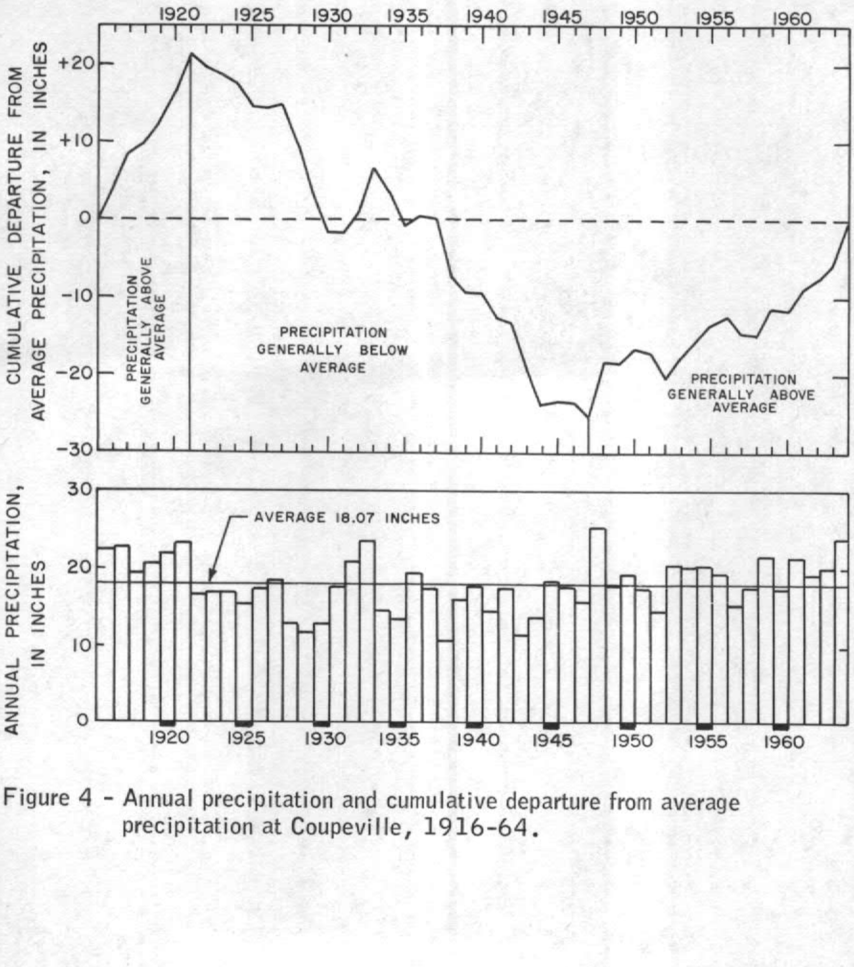

Figure 4 - Annual precipitation and cumulative departure from average precipitation at Coupeville, 1916-64.

EVAPOTRANSPIRATION

At the Coupeville weather station, 70 percent, and at Lake Goss, 80 percent of the precipitation falls during cool months, October through April. During this time the rate of transpiration by vegetation is relatively low, though much of the area, especially the uplands, is covered by dense evergreen forests, and water loss may be substantial. Also, much of the intercepted precipitation may be lost by evaporation. Furthermore, the evapotranspiration rate is relatively high in summer. However, no field study has been made in Island County to determine evapotranspiration loss.

RUNOFF

Whidbey and Camano Islands have an apparently small stream runoff, as indicated by a poorly developed stream network. Also, the dense evergreen vegetation, which covers much of the area, doubtless aids in holding back surface drainage, which in turn provides greater opportunity for infiltration of water into the soil. Another indication of poor surface drainage is the large number of swamps and marshes found not only in lowland areas but also scattered across upland areas, some as much as 500 feet above sea level. Another reason for a small runoff is that much of the rain in Island County falls as slow drizzle, with few heavy rainstorms. The long periods of slow drizzle tend to keep the soil saturated and give more time and opportunity for moisture to percolate through the soil and down toward the water table.

INFILTRATION

A comparison of water-level fluctuations (changes of ground water in storage) with precipitation indicates the probable rate of movement of water from land surface to the ground-water body. Some wells show a nearly immediate response to precipitation, whereas others show a lag ranging from 1 to 5 months. Figure 5 illustrates this by comparing the water-level fluctuations in three wells with variation in monthly precipitation at the Langley weather station. Well 30/2-16F1, drilled from an altitude of 157 feet above sea level to a depth of 168 feet below land surface exhibits water-level peaks and low points that correlate directly with the monthly precipitation at Langley. (For description of numbering system see appendix.) Well 29/3-36M2, drilled from an altitude of 485 feet, yields from a zone about 50 feet below land surface. Its water level reaches peaks and low points that lag about 3 months behind the fluctuations in monthly precipitation. Well 29/3-23F1, dug from an altitude of 405 feet to a depth of 45 feet, exhibits water-level peaks and low points that lag about 5 months behind precipitation. Figure 17 (discussed later) shows a comparison of the water-level fluctuations in 50-foot well 31/1-9A1 with the cumulative departure from average monthly precipitation at the Coupeville weather station. The figure suggests that a direct correlation exists between the water-level fluctuations and monthly precipitation. An accurate determination of the rate of water movement from recharge to discharge in Island County will require considerable additional information regarding subsurface geology and quantitative evaluation of aquifers.

GROUND-WATER STORAGE

The amount of ground water in storage appears to remain fairly constant, although the actual volume in storage was not estimated. Regardless of the amount, however, water levels measured in 58 observation wells from 1963 into 1965 indicate that the volume was fairly constant during that period. More than half of the water-level fluctuations were less than 2 feet.

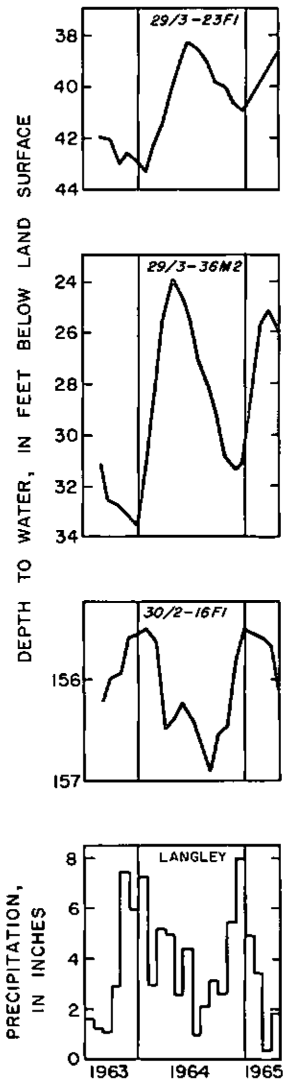

Figure 5 - Monthly precipitation at Langley and hydrographs for three observation wells. Hydrographs show variations in the amount of time lag between precipitation and subsequent water-level fluctuations.

Comparing these measurements, however, with levels reported at the time of drilling (tables 7 and 8), a few trends appear significant.

On Camano Island, 68 percent of the wells with data available had a higher water level in 1963 or 1964 than when drilled; about 14 percent had lower levels, and 18 percent were about the same. On Whidbey Island south of Penn Cove, 58 percent of the wells with data available had a higher water level in 1963 or 1964 than when drilled; and only 31 percent of the wells had a lower level. These trends are indicative of the rise that would be expected due to generally above-average precipitation during the 17 years prior to 1965 (fig. 4).

In the area between Penn Cove and Ault Field, water levels in general remained about the same; half of the levels measured were within a foot of that reported by the driller. A little over a quarter were slightly higher, and another quarter were lower. This area, which includes the town of Oak Harbor, has been developed more intensively than most other parts of the county. This is also the area of lowest annual precipitation (fig. 3). Each of these two factors, intensive development and low precipitation, may account in part for the absence of a slight general rise in the water table, such as that noted on Camano Island and on the southern part of Whidbey Island.

Water levels east of the town of Oak Harbor and north of Ault Field did not change in 57 percent of the wells, rose in 30 percent, and declined in only 13 percent.

These generally static or rising water levels indicate the probable adequacy of ground water in storage for further development, at least in the immediate future.

Circulation of water through the ground-water body seems to be very slow in some areas. Moderately saline ground water, containing 300 to more than 1,000 mg/l (milligrams per liter) of dissolved solids is present as much as 250 feet above sea level in some places (at well 31/2-30J1, for example). The presence of such water more than 200 feet above present-day sea level may indicate that ground-water circulation has been slow, or may simply be the normal water at this place.

GROUND-WATER DISCHARGE

Most of the natural ground-water discharge on Whidbey and Camano Islands occurs as spring flow along the sea cliffs, and probably from submarine springs as well. Most streams on the islands are intermittent. Only a few streams, mostly in the southern part of Whidbey Island and the northern part of Camano, are fed by springs and therefore discharge throughout the year.

Wells in Island County supply an estimated billion gallons of water per year. The volume of natural discharge is unknown but is much greater than the present withdrawal from wells.

GROUND-WATER OCCURRENCE

All ground water presently used in Island County is withdrawn from aquifers contained within glacial and interglacial deposits of Pleistocene age. The relation of ground-water occurrence to stratigraphy is summarized in table 1. The table is based in part on drillers' logs of wells (see tables 10 and 11, in appendix). A description of the stratigraphy of Pleistocene deposits exposed in Island County is presented in the accompanying report by D. J. Easterbrook.

Data for all wells canvassed in the county are listed in tables 7 and 8 and data for springs are compiled in table 9 (in appendix). Plate 1 shows the location of the wells and springs, and records the well-bottom altitudes for many of the drilled wells.[1/] In the small graphs A-J, on plate 1, these altitudes are plotted against land-surface altitude for each of 10 subdivisions of the county.

1/ Most drilled wells in Island County obtain water from thin aquifers through a 5- or 10-foot screen at the well bottom (more than half the aquifers reported in well logs are less than 15 ft. thick, three-fourths are less than 25 ft.). Because of these conditions well-bottom altitude is used to represent the producing interval in a well except where the producing interval is known to be appreciably above well bottom, in which case the screen or aquifer bottom altitude is indicated (graphs A-J on plate 1; tables 7 and 8).

GENERAL GROUND-WATER CONDITIONS

Ground water is available at depth at almost any location on Camano and Whidbey Islands. A general water table occurs on both the islands and individual aquifers are more or less connected as part of this saturated zone. The altitude of this general water table is shown on plate 2. The average reported yield ranges from about 20 gpm for wells producing from above sea level to about 80 gpm for wells producing from more than 75 feet below sea level. Because the average specific capacity is about the same (4 to 5 gallons per minute per foot of drawdown), the increase in yield of the deeper wells is due primarily to the increased depth of water standing in the well, which permits greater drawdown.

In part of Camano Island and in southern Whidbey Island some aquifers appear to be semiperched. Upper aquifers are separated from the lower saturated zone by a relatively impervious saturated layer. Drillers' logs of only a few wells report the existence of dry materials between the shallow and deep aquifers, indicating that in very few places are the shallow aquifers perched.

Widespread layers of clay and till restrict vertical movement of water so that the lower aquifers have a hydrostatic head many feet lower than that of the perched or semiperched aquifers. For example, well 29/2-1G1 yields water from a sand that lies between 15 and 48 feet below sea level; its water level is about 6 feet above sea level. The well is close to wells 29/2-1F1,-1Q1, -2A1, and 29/3-6B1, all of which produce from semiperched bodies and whose water levels are more than 100 feet above sea level. A similar relationship is demonstrated by the levels in wells 29/3-3B3 and -3B6. Well 29/3-3B3 yields 100 gpm from about 113 feet above sea level and has a water level 142 feet above sea level. Well 29/3-3B6 penetrated a similar semiperched aquifer (19 ft. of brownish-yellow water-bearing sand) at slightly higher altitude and continued to 70 feet below sea level, to tap 30 feet of coarse, blue, water-bearing sand at the bottom. The water level in well 3B6, in this deeper aquifer was only 5 feet above sea level, 137 feet lower than in the nearby well producing from the semiperched aquifer.

Aquifers both above sea level and below sea level are tapped by wells throughout the county. Wells withdrawing water from aquifers above sea level are, as might be expected, most numerous in the higher uplands because the increasingly higher water table inland--away from shorelines--provide a correspondingly greater thickness of saturated sediments. Of the drilled wells canvassed, 34 percent of those in the upland areas produce from aquifers above sea level, in contrast to only 18 percent in lowland and valley areas.

Average well depths in different parts of the county vary only slightly (graphs A-J, pl. 1). About 32 percent of the wells are less than 100 feet deep, 47 percent of the wells are 100 to 200 feet deep, 18 percent are 200 to 300 feet deep, and only 3 percent are more than 300 feet deep. More than half the wells canvassed tap aquifers between sea level and 75 feet below.

By using graphs A-J in plate 1 a person interested in drilling a well can note the depths at which other wells in the same general region obtain water. The hydrographs for selected wells on plate 3 provide information concerning the amount of seasonal fluctuation that may be expected from wells of various depths in Island County.

AREAL DISTRIBUTION OF GROUND WATER

Camano Island

Camano Island includes about 40 square miles and is divided into two subdivisions: the Camano upland and the Brown Point lowland (fig. 2). They are separated arbitrarily at approximately the 100-foot topographic contour extending north from Livingston Bay. The Camano upland is rolling and wooded. The southern part, south of Elger Bay, rises to a height of 440 feet and the northern part rises to a height of 580 feet. The northern part of the upland includes several areas that have been cleared for farming and housing developments.

The 29 drilled wells canvassed in the Brown Point lowland are distributed throughout the area, but most of the 87 wells recorded in the Camano upland are within half a mile of the shore (pl. 1). More development is expected both along the coast and in the higher central part of the upland. Graph A on plate 1 illustrates the altitude of producing intervals in existing wells. More than three-fourths of the drilled wells in the Camano upland and 90 percent of those in the Brown Point lowland obtain water between sea level and 75 feet below. Most of the data available indicate that water levels rose from 1 to 8 feet during the past several years. Levels in only three canvassed wells declined. This appears to reflect the generally greater-than-average precipitation during the 17 years prior to 1965 (fig. 4).

The major aquifers below sea level on Camano Island are fine- to medium-sand facies of the Whidbey Formation, outwash sand and gravel of the Double Bluff Drift, and pre-Double Bluff deposits. Above sea level, the most frequently tapped aquifers are the Esperance Sand Member of Vashon Drift, and outwash sand and gravel of the Possession Drift (table 1).

Fifty percent of the drilled wells canvassed on Camano Island are between 100 and 200 feet deep, and only two wells are known to be more than 300 feet deep. A similar pattern may be expected in the future unless larger well yields are required, in which case more wells probably will be drilled to greater depths.

The average yield reported for wells in the Camano upland ranges from 27 to 40 gpm. However, in the Brown Point lowland, due to the greater number of irrigation wells, the average yield reported was about 100 gpm.

Plans for future development should take into account the abundance of springs on the north- and east-facing slopes of the northern part of the Camano upland at altitudes of 300 to 400 feet. These springs indicate the existence of an impermeable layer whose top is within that altitude range. Whether this layer is overlain by an aquifer capable of supplying a significant number of domestic wells would have to be determined by exploration. Adequate water for domestic supplies may be found at slightly lower altitudes as well. However, wells requiring a large volume of water (over 100 gpm), even in this central upland, may need to penetrate to sea level or below.

The quality of water on Camano Island is discussed in the section of this report on chemical quality of the ground water.

Whidbey Island

Langley upland

The Langley upland, mostly an area of rolling wooded hills, covers about 45 square miles, and is the main upland region in the southern part of Whidbey Island. The population is concentrated in the southern part of the upland, especially around Clinton. In the middle and northern parts the population is sparse except within half a mile of the sea.

The southern part of the Langley upland rises to an altitude more than 500 feet above sea level, the middle part rises to just over 400 feet, and the northern to about 450 feet. The sea cliffs generally range in height from 100 to 300 feet. Most of the upland surface is capped by a thin layer of Vashon till and scattered patches of outwash. A perennial stream flows into Cultus Bay, and another flows past Glendale; elsewhere, most of the surface drainage is intermittent. A line of springs occurs along the west slope in the southern part of the Langley upland, and springs are scattered at numerous places along the sea cliffs. Two lakes are on the Langley upland: Lake Goss (55 acres) is 130 feet above sea level, and Deer Lake (82 acres) is 352 feet above sea level. The water level in each of these lakes is related to the ground-water table.

There are about twice as many wells in the southern part of the Langley upland as in either the middle or northern part. This is at least partly due to the populated area adjacent to the ferry landing at Columbia Beach. In the southern part of the upland the wells are scattered throughout the area, whereas in the middle and northern parts the wells are concentrated to a much greater extent along the seacoast.

Of the wells canvassed in the southern and middle parts of the Langley upland, 52 percent begin at an altitude of 200 feet or more. The bottoms of two-thirds of the wells are above sea level; only a few of these wells penetrate to within 75 feet of sea level (graph B, pl. 1). All wells that produce from below sea level are within about half a mile of the shore. In the northern part of the upland, more than two-thirds of the wells produce from between sea level and 75 feet below.

On the shore of Cultus Bay in the extreme south end of the Langley upland, several flowing artesian wells tap aquifers considerably below sea level. Among them, wells 28/3-14D1 and 28/3-11N2 produce from about 400 feet below sea level, and well 28/3-11N1 produces from 168 feet below sea level.

In the southern and middle parts of the Langley upland production from drilled wells is largely from the Esperance Sand Member of the Vashon Drift (table 1). The Esperance Sand Member is exposed at many places along the sea cliffs at an altitude of about 75 feet and above. The geologic identification of the aquifers below sea level is less certain. Most of the aquifers are medium sand, probably the Whidbey Formation and outwash phases of the Double Bluff Drift (table 1). In the northern part of the Langley upland most water is obtained from these same aquifers; some of the wells may also produce from the outwash phases of the Possession Drift, especially along Holmes Harbor.

The specific capacity of wells in the Landley upland increases with decrease in altitude of the water-bearing zone. The greatest yields reported are from aquifers slightly below sea level. Presumably, large public supplies and commercial water users have obtained adequate water without drilling deeper; deeper wells might supply even greater yields.

At the northern tip of the upland, near the Baby Island Heights area, appreciable chloride occurs in the water of some wells. Analysis of water from well 30/2-13B1 indicates it may be contaminated by sea water. Well 30/2-14Q1 has water slightly more saline than average that is of uncertain origin. Water supplies in this area should be developed with great care. Four other wells in different parts of the Langley upland also apparently yield somewhat saline ground water. Additional chemical-quality information is included in the section on water quality.

In the northern part of the Langley upland, most wells are within half a mile of the shoreline and are completed below sea level. As more wells are drilled in the higher central part of the upland, a greater number may produce from aquifers above sea level. However, even some of these future wells at higher altitudes will probably tap the deeper aquifers.

Double Bluff upland

The Double Bluff upland, a 3-square mile rolling wooded area, rises to more than 360 feet above sea level (fig. 2). Surface drainage is poorly developed and intermittent, and springs are located along the sea cliffs. Oliver Lake (13 acres) is 243 feet above sea level; its water level represents the water table.

Among drilled wells canvassed in this upland, most obtain water from aquifers below sea level. These consist of sand that appears to be outwash of the Double Bluff Drift (table1). According to well driller A. M. Scurlock of Freeland (oral commun., 1964), several wells in the Double Bluff upland have encountered water containing unsuitably large amounts of dissolved solids. Some chemical analyses of water from presently used wells also show unusually large amounts of dissolved solids in aquifers as much as 181 feet above sea level. (For example, see chemical-quality data for wells 29/2-22N1, -23C2, and -27L1 in pl.4.) In contrast, wells penetrating below sea level at places some distance from shore are known to produce water of generally suitable quality (pl. 4, wells 29/2-14D2, -14Q1, -15R1, and -23D1). Apparently, no water wells have been drilled to depths more than 50 feet below sea level, but future water supplies of satisfactory quantity and quality from greater depth seems probable in the Double Bluff upland, on the basis of information obtained in nearby lowland areas.

Southern Whidbey lowland areas

The southern Whidbey lowland areas consist of three physiographic subdivisions: the Maxwelton valley, the Lone Lake lowland, and the Freeland lowland (fig. 2). The aggregate area of these three subdivisions is 11 square miles. Each of them is generally limited in altitude to less than 100 feet above sea level. They are relatively flat and have in some places been developed for farming.

Perennial streams drain each of the lowland areas. Maxwelton valley includes 10-acre Miller Lake, which is about 63 feet above sea level, and the Lone Lake lowland includes Lone Lake (92 acres), which has a water surface about 17 feet above sea level.

Throughout the southern Whidbey lowland areas, almost all of the drilled wells canvassed as of 1965 obtain water between 25 feet above and 100 feet below sea level. In the Maxwelton valley, 6 of 9 drilled wells are completed at depths between 25 and 55 feet above sea level; the other 13 obtain water between sea level and 75 feet below. In the Lone Lake lowland, 14 drilled wells canvassed were completed within 15 feet above or below sea level. One was completed about 40 feet below sea level, and the other four were completed between 65 and 80 feet below. In the Freeland lowland, only 1 of 41 drilled wells was completed more than 10 feet above sea level, and only one was completed more than 100 feet below. All of the others (39) tap aquifers between sea level and 100 feet below sea level. As of 1965 only the one well had been drilled more than 100 feet below sea level in any of the southern Whidbey lowland areas, indicating the adequacy of the shallower water-bearing zone.

The relation between aquifers and stratigraphy is not clear in the southern Whidbey lowland areas, due largely to a lack of exposure of the stratigraphic units. At present, the depth of alluvium in these valley areas is unknown, which further complicates the relationship of stratigraphy to hydrology. In the Maxwelton valley and the Lone Lake lowland, water levels stand at about the same altitude in all wells completed below sea level, indicating that in each of these areas this interval functions hydraulically as a single aquifer. By contrast, in the Freeland lowland water levels stand at different altitudes in different wells completed below sea level, suggesting that impermeable layers may separate water-bearing deposits below sea level here.

The average yield from wells increases with increasing depth. The average for wells completed more than 75 feet below sea level is four times that for wells completed above sea level, even though the average specific capacity of the deep wells is only half that of the others.

The variation in ground-water availability is not significant from one lowland area to another. The yields of wells completed within 75 feet below sea level throughout the several lowland areas generally are adequate for domestic use. The chemical quality of most ground water in the lowland areas is good.

Greenbank upland

The Greenbank upland, an area of 24 square miles, is divided into northern and southern parts at Lake Hancock. The southern part rises to an altitude of about 500 feet, and the northern to about 420 feet.

This rolling wooded upland forms a ridge 13 miles long and reaches a maximum width of 3 miles at Bush Point. The upland has a poorly developed stream network. Springs occur at many sites along the sea cliffs and along the north-facing slope at Greenbank. The only lakes in the Greenbank upland are tidewater lakes. Lake Hancock, the largest, covers 38 acres.

Wells in the Greenbank upland are concentrated near Greenbank and along the seacoast. As of 1965, only a tenth of the drilled wells canvassed were located in the central part of the upland at altitudes of 300 feet or more. The producing zone in three-fourths of the drilled wells is between 15 feet above sea level and about 50 feet below (graph E, pl. 1). Many of these wells obtain water from medium sand of the Whidbey Formation. Most wells completed more than 25 feet above sea level produce from the Esperance Sand Member of Vashon Drift. The Esperance Sand Member is exposed along the sea cliff at several places in the Greenbank upland.

Yields of the few wells tapping water-yielding zones more than 75 feet below sea level are larger than those from wells in shallower zones. As additional large yields (50-100 gpm) are sought, more wells will penetrate to depths probably as much as 200 feet below sea level. In the southern part of the Greenbank upland, two wells drilled to a depth of about 500 feet--from an altitude just over 200 feet--penetrate mostly fine-grained impermeable materials. The areal extent of this nonproductive zone will be known only after further drilling. Logs from two oil test wells in the area (30/2-17K2, -28N1) indicate that fine-grained material continues to predominate below the depth of 500 feet penetrated by water wells (tables 10-11).

Several wells along the coast of the Greenbank upland yield water whose chloride content and other chemical characteristics suggest contamination by sea water. Very hard ground water occurs in the northern part of the upland; this is discussed in greater detail in the section,"Chemical Quality of the Ground Water."

Central Whidbey areas

The central Whidbey areas include five physiographic subdivisions that total 20 square miles. They are Crockett Prairie, Smith Prairie, Fort Casey upland, Ebeys Prairie, and Penn Cove upland (fig. 2).

Crockett Prairie covers less than 4 square miles, and is less than 100 feet in altitude. It is in part swampy, but contains several farms and dairies. Crockett Lake (10 acres), in the marshy central part of the prairie, lies less than 10 feet above sea level and contains brackish water.

Smith Prairie extends north from Crockett Prairie, and is separated from it by a fairly steep slope. Most of the 8 square miles of Smith Prairie lies between 180 and 200 feet above sea level. This area is a remnant of a glacial outwash terrace formed during the recession of Vashon ice, as shown by several kettles in the northern part of the prairie. No drainage network has developed on the prairie surface, and there are no lakes.

The Fort Casey upland is about 2 square miles in area, and appears to be a remnant of the same terrace surface that forms Smith Prairie and the southeastern part of Penn Cove upland. No streams drain the Fort Casey upland; however, small springs occur along the sea cliff.

Ebeys Prairie lies just west of Smith Prairie and the Fort Casey upland (fig. 2). Its area is a little more than 2 square miles, and it apparently was formed as an outwash channel cut into the terrace represented by Smith Prairie and part of the Penn Cove upland. Most of Ebeys Prairie lies below an altitude of 100 feet.

A fairly well-defined slope rises 100 feet from Ebeys Prairie to the Penn Cove upland on the west and to Smith Prairie and the Fort Casey upland on the east. No stream network has formed and no lakes are present in the area.

The Penn Cove upland, which covers about 4 square miles, is at the head of Penn Cove. The southern half of the upland is a smooth terrace, whereas the northern half is broken by kettles. The upland rises to a maximum altitude of approximately 280 feet, and has no stream network. Lake Pondilla, at Point Partridge, is a 4-acre kettle lake about 20 feet above sea level. Several tide-water pools have formed along the coast.

The distribution of wells in a large part of the central Whidbey areas is influenced by the Coupeville water system, which serves a large area surrounding Coupeville. This accounts in part for the small number of wells for the large population in this area. In addition, the presence of saline ground water below sea level in much of the Penn Cove upland has discouraged widespread drilling of wells. Smith Prairie encompasses the largest number of wells in central Whidbey areas. Here, 20 of the 24 drilled wells visited during this study obtained water between 35 feet above and 50 feet below sea level (graph F, pl. 1). Outside of Smith Prairie, only three of the drilled wells canvassed produce water from above sea level: two in Crockett Prairie and one in the Penn Cove upland. Some dug wells in the Penn Cove upland also obtain a small volume of water from above sea level. West of Coupeville no ground water is produced from below sea level. Here, the ground-water body is hydraulically connected with the sea, and the few wells that have been drilled below sea level yielded saline water. In other parts of the central Whidbey areas, the wells completed below sea level commonly have the largest yields of fresh water.

The relation between ground-water occurrence and stratigraphy in central Whidbey areas is not clear. This is due in part to the lack of clear exposures of the contact between the thick outwash gravel that blankets much of the area and the older Pleistocene deposits. As a result, there is a lack of information on the thickness of the gravel in many areas. The gravel is as much as 200 feet above sea level in places, and the base of the gravel is 136 feet below sea level at well 32/1W-25M1. However, the overall areal and vertical distribution is not known. This gravel has not been explored extensively and may provide a good source of water. In central Whidbey the most promising area for developing water supplies is near the center of the island on Smith Prairie and possibly the northern part of the Fort Casey upland.

The Esperance Sand Member of Vashon Drift, which may contain water in this area, is exposed in the sea cliffs in the Fort Casey upland. The Whidbey Formation also is exposed at sea level along the sea cliffs. Some of the sands in the Whidbey Formation may also yield water. The log for well 32/1-32N1, in the Penn Cove upland, indicates a water-bearing sand 26 feet above sea level. This aquifer was bypassed because the amount of water was inadequate to supply the gravel pit operation for which the well was intended. This well was deepened, and screened from 105 to 127 feet below sea level. Although the water from this deeper aquifer is considered too saline to use in mixing concrete, it is used for washing gravel.

The specific capacity of wells in the central Whidbey areas varies noticeably. The average specific capacity of 6 gpm per foot of drawdown calculated for the few wells that produce from above sea level indicates a fairly permeable aquifer. The average specific capacity of wells tapping aquifers between sea level and 75 feet below is only 1 gpm per foot of drawdown. In wells tapping aquifers more than 75 feet below sea level, the average specific capacity is 3 gpm per foot, which is slightly less than that of wells in most other parts of Island County.

In the central Whidbey areas, most new wells probably will be drilled to just below sea level; however, large-yield wells may extend more than 100 feet below, as do two wells presently (1965) serving Coupeville. Few deep wells probably will be drilled in the Penn Cove upland until more is learned about the areal distribution of the saline ground water. As the development of ground water continues in the Fort Casey upland, as elsewhere in the other central areas, many small domestic wells likely will be drilled that produce from aquifers above sea level.

Oak Harbor upland

The Oak Harbor upland includes 45 square miles. This rolling wooded upland is subdivided into western, middle, and eastern parts, as indicated in figure 2.

The western part of the upland is swampy and poorly drained, even in the higher areas, which reach a maximum altitude of about 250 feet. Hastie Lake, 125 feet above sea level, is a shallow swampy water body whose area changes periodically from 20 to 65 acres, depending on the amount of precipitation. The middle part of the Oak Harbor upland rises from sea level to an altitude of 300 feet, and contains fewer and smaller marshes than the western part. It contains a 16-acre tidewater lake at Swantown. The eastern part of the upland is considerably higher than either of the other two parts, reaching an altitude of more than 500 feet. It contains 15-acre Silver Lake at an altitude of 325 feet. Springs discharge at several places along the sea cliffs especially along the west shore of Oak Harbor and along Strawberry Point.

Because the middle part of the Oak Harbor upland is the most heavily populated area in Island County, ground water is intensively developed there. The western part of the upland, slightly less populated, is also quite intensively developed. The eastern part, though developed along the seacoast, is sparsely developed in its higher central area.

The distribution of well-bottom altitudes in the Oak Harbor upland is indicated in graphs G and H on plate 1. In the western and middle parts, as of 1965, 25 percent of the drilled wells are completed between sea level and 50 feet above, 56 percent between sea level and 75 feet below. In the eastern part of the upland, well-bottom altitudes are fairly evenly distributed between 75 feet below and 200 feet above sea level.

In the western and middle parts of the Oak Harbor upland, both the producing intervals and water levels seem to vary considerably in altitude from well to well. Evidence suggests that the aquifers above sea level in these areas are hydraulically separate from each other. This is demonstrated in sec. 15, T. 32 N., R. 1 E., by the levels in two wells drilled within 100 yards of each other. Well 32/1-15E1 produces water from an aquifer at an altitude of 95 feet, for which the static water level is 113 feet above sea level, whereas nearby well 32/1-15E2 produces water from an aquifer 40 feet above sea level, and has a water level only 59 feet above sea level. Plates 1 and 2 indicate considerable variation in both aquifer and water-level altitudes for wells completed above sea level in the western and middle parts of the upland. In contrast, water levels in wells whose producing intervals are above sea level in the eastern part of the upland seem to represent a single continuous surface, suggesting that the producing intervals are hydraulically interconnected.

The most important aquifers in the western and middle part of the Oak Harbor upland are different from those in the eastern upland. In the western and middle parts, fewer than 4 percent of the drilled wells are completed more than 50 feet above sea level. These few produce from aquifers in Vashon outwash, the Esperance Sand Member of Vashon Drift or the Possession Drift (table 1). This contrasts markedly with the situation in the eastern part of the upland, where 60 percent of the drilled wells produce from one or more of these three geologic units. Most wells in the western and middle Oak Harbor upland produce from sands in the Whidbey Formation and from pre-Whidbey deposits. In the eastern part, less than a quarter of the wells produce from these older formations. The average yield from wells in the Oak Harbor upland increases from 19 gpm for aquifers above sea level to 142 gpm for those more than 75 feet below sea level. The average specific capacity of these wells does not differ significantly.

In the western and middle parts of the Oak Harbor upland, very hard ground water is obtained from many wells; this is described in the chemical quality of water section of this report. Three wells on Strawberry Point, in the eastern part of the upland, also yield very hard ground water.

The amount of ground water available from aquifers in the Oak Harbor upland is definitely limited, not so much because the amount of water available from individual wells is small but rather because of the danger of contamination from very hard ground water which occurs at depth there. For example, the problem of excessive dissolved solids was a factor causing abandonment of wells as the main source of water supply at Whidbey Naval Air Station. The station now imports about a million gallons per day from the Skagit River. As the population on Whidbey and Camano Islands increases, the problem of water quality will become more serious in the Oak Harbor upland, and probably in other parts of the county as well.

Clover Valley area

The Clover Valley area includes 9 square miles of open, level lowland, extending from Dugualla Bay west to Rosario Strait and north along the coast to the northwest tip of Whidbey Island (fig. 2). The altitude in most places is less than 100 feet. The main drainage is eastward to Dugualla Bay. Ault Field, at the Whidbey Island Naval Air Station, occupies the main part of Clover Valley. A few farms occupy the eastern part, adjacent to Dugualla Bay. The area along the west coast is marshy, and includes Cranberry Lake in Deception Pass State Park.

Cranberry Lake, the largest lake in the county, with an area of about 128 acres, has a surface about 20 feet above sea level.

About a third of the drilled wells canvassed in the Clover Valley area were drilled for Ault Field, and are not being used at present (1965). The remainder are private domestic wells scattered throughout the area. Only four well logs in the Clover Valley area indicate aquifers above sea level; about half of the drilled wells recorded in the area produce from sea level to about 75 feet below, and one-fourth are drilled to greater depth (graph I, pl. 1).

Although no geologic units are clearly exposed in the Clover Valley area, drillers' logs report the existence of a water-bearing sand that appears to be similar in lithology to the Whidbey Formation (table 1), which is exposed in the adjacent Deception Pass and Oak Harbor uplands. Presumably, Whidbey sands are productive in the Clover Valley area at altitudes near sea level. The deeper wells probably produce from the Double Bluff Drift and from pre-Double Bluff deposits.

Within the Clover Valley area, the average yield is about 40 gpm for wells producing from both above and below sea level. This rate is twice the county-wide average for wells producing from above sea level. The larger-than-average yield probably is related to the presence of coarse sand and gravel outwash deposits at and near the surface in this and adjacent areas; these coarse deposits provide an excellent recharge environment and their high permeability makes large yields possible. From zones more than 75 feet below sea level in the Clover Valley area the average yield is 49 gpm; this is lower than the county average, possibly because the bedrock is shallow and the sequence of potentially water-bearing sediments may be thin. (Metamorphic bedrock crops out several miles to the north, at Deception Pass.) Excessive dissolved-solids content in the water from some wells presents a problem that is discussed under the heading "Chemical Quality of Ground Water."

Deception Pass upland

The Deception Pass upland comprises 9 square miles between Dugualla Bay and Deception Pass. The main area rises to an altitude of 420 feet, although Goose Rock, a small bedrock knob, rises to 450 feet. The upland consists of rolling wooded hills with some farmland, and has a poorly developed stream network. A swampy area lies more than 200 feet above sea level in the southwest part of the upland.

Most of the wells recorded in the Deception Pass upland are along the seacoast and only a few are in the higher central part of the upland. About half of the wells in the upland yield water from permeable deposits between 50 and 100 feet above sea level (graph J, pl. 1); these deposits probably are in the Esperance Sand Member of Vashon Drift. Five wells producing from within 50 feet of sea level tap aquifers that may be sands in the Whidbey Formation. Four deeper wells also produce from similar medium-grained sand.

The yields of wells tapping aquifers above sea level appear adequate for domestic use; yields reported for wells tapping aquifers below sea level are less adequate. Of two wells obtaining water within 75 feet below sea level, one yields 15 gpm with 15 feet of drawdown, and the other yields only 7 gpm with 30 feet of drawdown. Yield and drawdown data are available for only one well tapping an aquifer more than 75 feet below sea level: that well was test pumped at 6 gpm with 97 feet of drawdown.

CHEMICAL QUALITY OF THE GROUND WATER

By A. S. VanDenburgh

The chemical quality of ground water in Island County has been evaluated using U. S. Geological Survey laboratory and field analyses (table 2). Analytical results determined by field methods are generally not as accurate as laboratory analyses, but are very useful in determining patterns and variations in ground-water quality.

In addition to chemical-quality data from the Geological Survey, analyses performed by commercial laboratories and the Washington State Department of Health are available for several ground-water supplies. The results of these analyses are not tabulated in this report, but some have been used in the evaluation of ground-water quality.

See pages 56 - 59 for a general explanation of water chemistry and a brief discussion of water-quality standards.

GENERAL CHEMICAL CHARACTERISTICS

The sedimentary deposits that form Whidbey and Camano Islands contain ground water of three contrasting chemical types. Wells and springs throughout much of Island County yield a "normal" ground water containing only 100-300 mg/l (milligrams per liter) of dissolved solids. In contrast, many wells in the Coupeville-Oak Harbor area of Whidbey Island and on the Brown Point lowland of Camano Island yield water of entirely different chemical character. Water from these wells is very hard, and contains 300 to more than 1,000 mg/l of dissolved solids.

At almost any place along the island shorelines, ground water of either the dilute or very hard variety is subject to contamination by encroaching sea water. The sea-water increment imparts a distinctive chemical character to the resulting blend that distinguishes it from water of the other two general types.

The contrasting distribution of major dissolved constituents in the three ground-water types is shown in figure 6. The chemical characteristics of each type are discussed in more detail below.

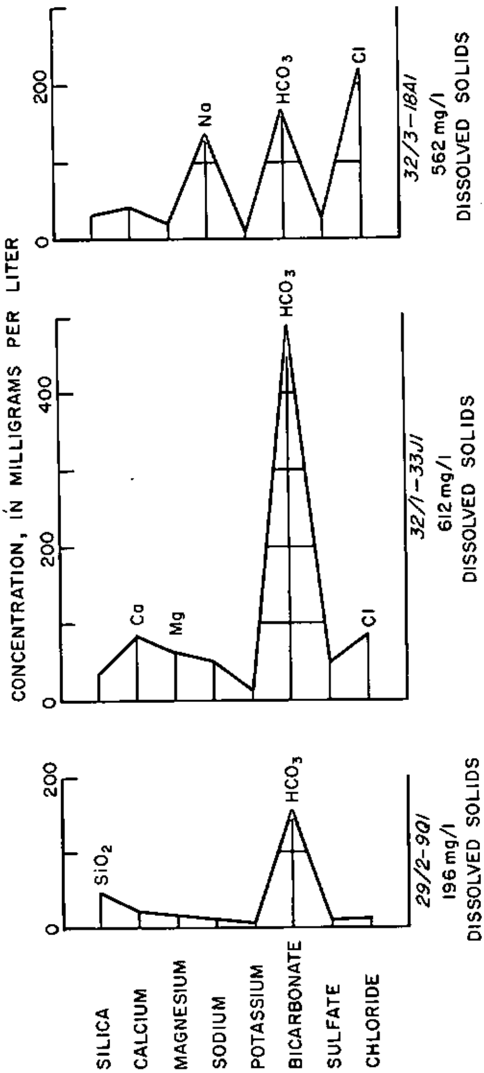

Figure 6 - Contrast between chemical characteristics of the normal dilute ground water (well 29/2-9Q1), the very hard ground water (32/1-33J1), and the ground water affected by sea-water encroachment (32/3-18A1).

Dilute Ground Water

Silica (25-50 mg/l) and bicarbonate (75-175 mg/l) are the principal constituents of the dilute ground water (fig. 6).

Calcium, magnesium, sodium, sulfate, and chloride are present in smaller concentrations (5 to 25 mg/l each), whereas other constituents generally are even less abundant. Hardness-of-water values range from less than 50 mg/l to about 180 mg/l; the water therefore ranges in classification from soft to hard (p. 59).

Examples of the dilute ground water are analyses 2-6 in table 2.

Very Hard Ground Water

Calcium (40-100 mg/l), magnesium (25-200 mg/l), and bicarbonate (250-750 mg/l) are the principal components of this water. Sulfate (25-250 mg/l) and chloride (25-150 mg/l) can also comprise an appreciable percentage of the dissolved-solids content, whereas silica, sodium, and potassium are less abundant. The hardness is wide in range. All values exceed 180 mg/l, and many exceed 300 mg/l; the greatest recorded hardness, 895 mg/l, was measured on a sample from well 32/1-33J1 (anal. 12, table 2). Examples of the very hard ground water are analyses 8-13 in table 2. Analyses 10 and 11 are particularly interesting because they show the pronounced changes in relative abundance of major constituents that can occur with increasing

Table 2 - Chemical analyses of ground water a/

Analysis	Well number	Bottom of producing interval: Feet below land surface	Bottom of producing interval: Feet above or below sea level	Sample collection date	Water temperature (°F)	Milligrams per liter: Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)
1	29/2-6A4	220	0	7-15-64	--	--	---	--	--	--
2	29/2-9Q1	245	-175	5-19-60	50	47	0.12	23	16	11
3				9-29-60	55	--	---	--	--	--
4	29/3-28F1	90	-16	11-13-62	51	44	c/1.7	14	16	9.1
5	29/3-36M2	40	+445	7-15-64	--	--	---	--	--	--
6	30/2-8J3	100	+71	4-25-61	53	29	.04	8.0	13	15
7	30/2-9D1	51	-41	7-15-64	--	--	---	--	--	--
8	31/2-30J1	60	+250	7-15-64	--	--	---	--	--	--
9	32/1-22P1	51	-39	7-15-64	--	--	---	--	--	--
10	32/1-33J1	240	-148	5-19-60	--	36	.09	82	61	51
11				9-29-60	53	27	c/ .69	90	152	73
12				4-25-61	52	--	---	66	178	--
13				11-13-62	52	--	---	--	--	--
14	32/3-18A1	165	-32	5-19-60	50	37	.07	39	19	120
15				9-27-60	51	31	.19	40	18	136
16	32/3-18A2	136	-3	4-24-61	51	31	.26	33	16	79
17				11-12-62	49	--	---	--	--	--
18	32/3-19C1	136	-56	5-19-60	50	38	.01	45	20	14
19				9-27-60	--	--	---	--	--	--

a/ Analyses by U. S. Geological Survey.
b/ Calculated from determined constituents. Bicarbonate is recalculated as carbonate.
c/ Total iron value (sample was turbid or contained sediment when collected). All other values

Milligrams per liter											
Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Orthophosphate (PO_4)	Dissolved solids b/	Hardness (as $CaCO_3$)	Specific conductance (micromhos per cm at 25°C)	pH
--	--	--	--	32	--	--	--	--	185	476	--
3.2	155	0	8.4	11	0.1	0.0	0.20	196	122	292	7.9
--	161	0	--	--	--	--	--	--	130	297	7.8
3.1	103	0	18	14	.2	1.5	.17	171	99	242	6.8
--	--	--	--	6.5	--	--	--	--	70	186	--
1.4	94	0	11	10	.1	5.2	.00	139	72	208	7.5
--	--	--	--	515	--	--	--	--	228	2100	--
--	--	--	--	61	--	--	--	--	216	612	--
--	--	--	--	141	--	--	--	--	504	1160	--
11	490	0	47	82	.2	.1	.35	612	454	1040	7.7
16	682	0	230	150	.2	.0	.37	1070	849	1720	7.7
--	696	0	--	--	--	--	--	--	895	1720	8.0
--	--	--	--	138	--	--	--	--	808	1660	7.4
6.6	170	0	27	185	.2	.5	.09	518	174	937	7.6
6.9	168	0	26	220	.2	.4	.10	562	174	986	7.4
5.3	173	0	20	112	.2	.6	.07	382	149	679	7.6
--	--	--	--	158	--	--	--	--	--	825	7.3
6.0	229	0	16	16	.2	1.0	.36	270	194	433	7.7
--	226	0	--	--	--	--	--	--	192	439	7.6

represent iron in solution at time of sample collection.

dissolved-solids content. At 612 mg/l of dissolved solids (anal. 10), calcium, bicarbonate, and chloride dominate, whereas at 1,070 mg/l (anal. 11), the water is richest in magnesium, bicarbonate, and sulfate.

The very hard water has been encountered as much as 250 feet above present-day sea level (well 31/2-30J1). Even at that altitude, the chloride content exceeds 50 mg/l and elsewhere closer to sea level it is greater than 150 mg/l. Much of this chloride, and accompanying sodium, may have been associated originally with glaciomarine deposits (table 1). These generally fine-grained sedimentary materials accumulated in a marine or brackish-water environment during periods when the land surface was several hundred feet lower relative to sea level than it is today. (This lowering, or depressing, of the land surface was caused by the weight of several thousand feet of glacial ice.) Other principal components of the very hard ground water (calcium, magnesium, bicarbonate, and sulfate) have a different but as yet uncertain origin.

Ground Water Influenced by Sea-Water Encroachment

Average sea water contains about 35,000 mg/l of dissolved solids, of which almost 86 percent is sodium chloride. Less abundant constituents include sulfate (8 percent), magnesium (4 percent), and calcium and potassium (1 percent each). Bicarbonate and silica, which are important components of much ground water in Island County, account for less than 0.5 percent of the dissolved-solids content in average sea water.

The sea water in many parts of Puget Sound and adjacent marine waters contains somewhat smaller amounts of dissolved solids than does normal ocean water, because of dilution by incoming streamflow. However, the overall chemical characteristics are similar to those of the undiluted brine.

The great abundance of sodium and chloride relative to other dissolved constituents in the sea water makes encroachment easy to recognize even where only small quantities of sea water have mixed with the ground water. The pattern for a sample from well 32/3-18A1 (fig. 6) shows the result of slight contamination[1/] of a dilute ground water by water from the Sound. The sample probably represents a mixture equivalent to about 100 volumes of dilute ground water and only one volume of sea water, yet the resulting blend shows the unmistakable chemical imprint of sea-water encroachment.

[1/] The term "contamination" is used in this report to describe the effect of sea-water encroachment on ground-water quality. However, "contamination" as used in this sense is not meant to imply that sea-water encroachment always makes the ground water unfit for human consumption. Such water is entirely suitable for drinking unless the chloride or the amount of dissolved solids exceed the recommended limits established by the U. S. Public Health Service (1962, p. 7) and summarized in table 6.

The hardness of a water affected by sea-water encroachment depends on the amount of contamination and the type of ground water being contaminated. A dilute water contaminated to a dissolved-solids content of 1,000 mg/l would have a hardness in the 200 mg/l range, whereas an initially hard water contaminated to the same degree would be considerably harder. Examples of well water influenced by sea-water encroachment are analyses 7 and 14-17 in table 2.

Distinguishing Between the Very Hard Ground Water and the Product of Sea-Water Encroachment

The relationships between chloride content, water hardness and specific conductance provide a useful means of distinguishing between the two types of more saline ground water in Island County. Figures 7 and 8, based on analyses in table 2, show chloride content and water hardness versus specific conductance. (As indicated on p. 29 and in fig. 9, the specific conductance of a water sample provides a generally reliable indication of the approximate dissolved-solids content.) Each figure shows two distinct trends with increasing specific conductance. Figure 7 shows that the chloride content of a blend of dilute ground water and sea water is considerably greater than that of the dilute and the very hard ground waters with a comparable dissolved-solids content. In contrast, the hardness of a water influenced by encroachment is considerably less than that of a calcium- and magnesium-rich water of similar salinity (fig. 8). The divergent trends permit identification of the particular water type using only the three easily measured properties.

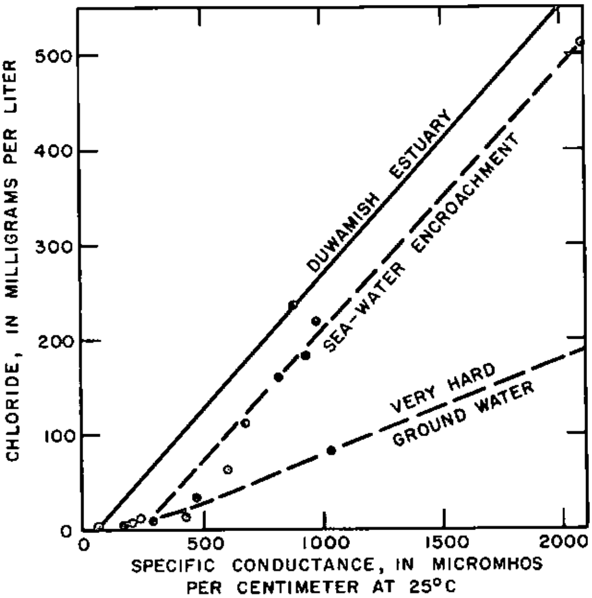

Figure 7 - Relation between chloride content and specific conductance of ground water.

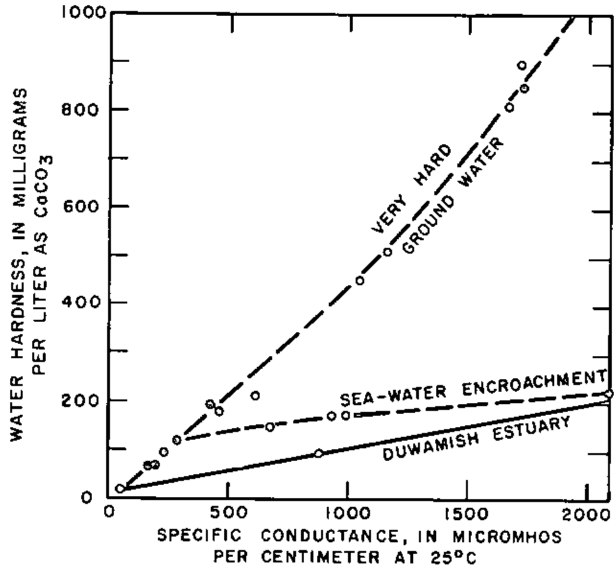

Figure 8 - Relation between ground-water hardness and specific conductance.

Figures 7 and 8 also include a plot based on three stream-water samples from the Duwamish River estuary in southern Puget Sound. The samples show varying degrees of mixing between dilute river water (about 50 mg/l of dissolved solids) and sea water from the Sound. The trend shown by the three samples provides a basis for comparison with samples of ground water thought to be influenced by sea-water encroachment in Island County.

In addition to chloride content and water hardness, several other major and minor constituents comprise significantly different percentages of dissolved-solids content in ground water of the two types. This is shown by the following tabulation of analyses for two representative waters of comparable dissolved-solids content (612 and 562 mg/l). Pronounced differences are shown by calcium, magnesium, sodium, bicarbonate, sulfate, chloride, and orthophosphate.

Constituent	Percentage of dissolved-solids content	
	Very hard ground water (well 32/1-33J1; 612 mg/1)	Ground water affected by sea-water encroachment (well 32/3-18A1; 562 mg/1)
Silica (SiO_2)	5.9	5.5
Calcium (Ca)	13.4	7.1
Magnesium (Mg)	10.0	3.2
Sodium (Na)	8.3	24.2
Potassium (K)	1.8	1.2
Bicarbonate (as CO_3)	39.4	14.8
Sulfate (SO_4)	7.7	4.6
Chloride (Cl)	13.4	39.2
Orthophosphate (PO_4)	.06	.02
Total percentage	100.0	99.8

AREAL AND VERTICAL DIFFERENCES IN WATER QUALITY

Ground water in Island County exhibits wide areal and vertical variations in its chemical properties. Certain of the properties are important in determining the suitability of a water for domestic, agricultural, and industrial use. Thus, the knowledge of the chemical characteristics that might be encountered in a particular area of the county can be useful when ground water is contemplated as a source of supply.

The important chemical properties for which considerable data are available include dissolved-solids content, water hardness, and the abundance of chloride and iron. The characteristics of areal and vertical distribution for these water-quality properties are discussed in the following sections.

Dissolved-Solids Content

Very little direct information is available regarding the exact dissolved-solids content of ground water in Island County. However, a comparison of the few values for dissolved solids and specific conductance in table 2 shows that a reliable correlation can be made between the two, as illustrated in figure 9. The solid

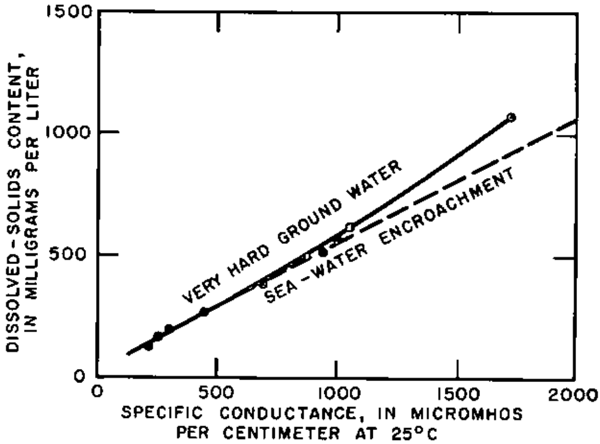

Figure 9 - Relation between specific conductance and dissolved-solids content of ground water.

line for dissolved-solids contents exceeding 500 mg/l applies to the very hard water, whereas the dashed line shows the probable relation for ground water affected by sea-water encroachment. Because no pairs of dissolved-solids and specific-conductance values are available for "encroachment" samples containing more than 600 mg/l, the correlation for such waters in figure 9 is based on the analysis of a sample from the Duwamish River estuary for which the values are 1,690 mg/l and 3,150 micromhos.

As a generalization, the data upon which figure 9 is based show that the dissolved-solids content is equivalent to almost 70 percent of the specific conductance for dilute ground water in the 100-200 mg/l range; about 60 percent for ground water in the 300-1,000 mg/l range; and about 55 percent for water in the 500-1,000 mg/l range affected by sea-water encroachment.

Specific conductances characteristic of ground water on Camano and Whidbey Islands are shown in plate 4. For the potential water user, data in plate 4 (and fig. 9) indicate the probable dissolved-solids content of ground water in a particular part of the county. In addition, the graphs included as part of plate 4 indicate the relationship between altitude of the producing interval and specific conductance of the ground water produced. The graphs show a pronounced scatter of points, indicating a wide range in dissolved-solids content in any particular zone of altitude. In some parts of the county, the clusters of points suggest a very general trend of increasing dissolved-solids content with decreasing altitude. The trend is clearest in the Oak Harbor upland and physiographic subdivisions to the north on Whidbey Island (graph F in pl. 4). Yet even in those areas, the relation is by no means consistent. For example, five adjacent wells within half a mile of the shore west of Oak Harbor show a trend of decreasing dissolved-solids content with depth:

Well	Bottom of producing interval, in feet above or below sea level	Specific conductance (micromhos)	Chloride (mg/l)
33/1-32G3	+5	1,200	120
-32L1	-46	1,000	160
-32G2	-85	950	120
-32E1	-100	860	110
-32L2	-129	730	100

On the southern Greenbank upland of Whidbey Island, the approximate salinity of water at considerable depth is indicated by the geophysical logs for two oil exploratory wells (fig. 10).

The areal distribution of water with specific conductance greater than 500 micromhos (equivalent to about 300 mg/l of dissolved solids) is summarized in figures 11 and 12. Figure 11 shows that most of the more saline ground water encountered to date (1965) is restricted to areas north of Greenbank on Whidbey Island and east of Utsalady on Camano Island. The most saline samples (those exceeding about 750 micromhos) were obtained within approximately 6 miles of Coupeville. Vertically, no consistent relation is evident between aquifer altitude and dissolved-solids content of the very hard ground water, except that specific conductances exceeding 700 micromhos (equivalent to about 400 mg/l of dissolved solids) are restricted to samples obtained from zones less than about 75 feet above sea level (fig. 13).

Figure 12 shows that sea-water encroachment can produce ground water with a specific conductance greater than 500 micromhos at almost any near-shore site on Whidbey and Camano Islands. Vertically, most of the well waters affected by encroachment are obtained from zones less than 50 feet below sea level (see graphs in pl. 4).

Chloride Content

The chloride content of ground water can provide a good clue to possible sea-water encroachment, and it can, to a lesser extent, suggest the presence of the very hard water (p.23 ; fig. 7). The amounts of chloride in sampled ground water is shown in plate 4. Most presently used ground water in the uplands of Camano Island and the areas south of Greenbank on Whidbey Island contains 10 to 20 mg/l of chloride. Wells that produce from zones above sea level in the Deception Pass and eastern Oak Harbor uplands of northern Whidbey Island characteristically yield water containing 15 to 40 mg/l of chloride, whereas most ground water throughout the remainder of northern Whidbey Island and in the Brown Point lowland of northeastern Camano Island contains 25 to more than 100 mg/l.

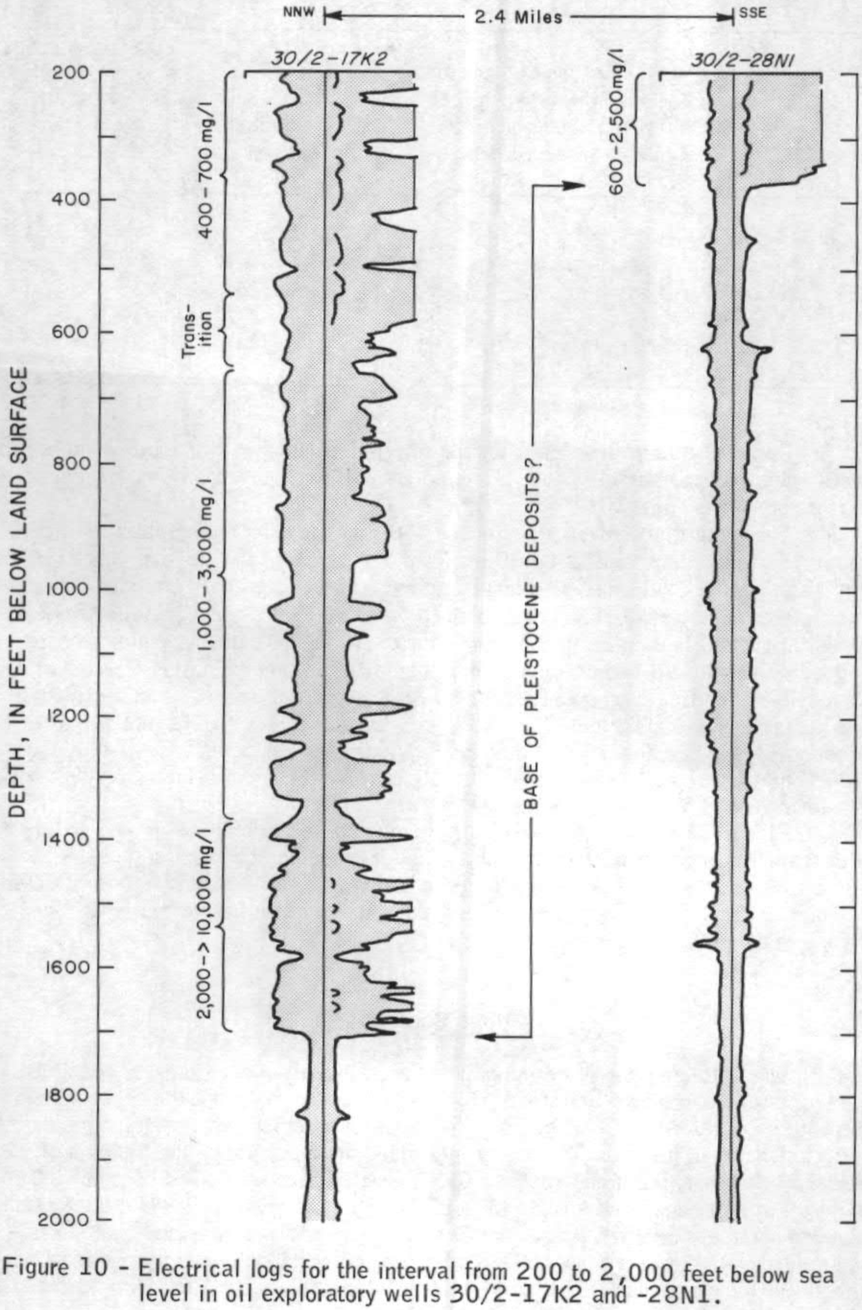

Figure 10 - Electrical logs for the interval from 200 to 2,000 feet below sea level in oil exploratory wells 30/2-17K2 and -28N1.

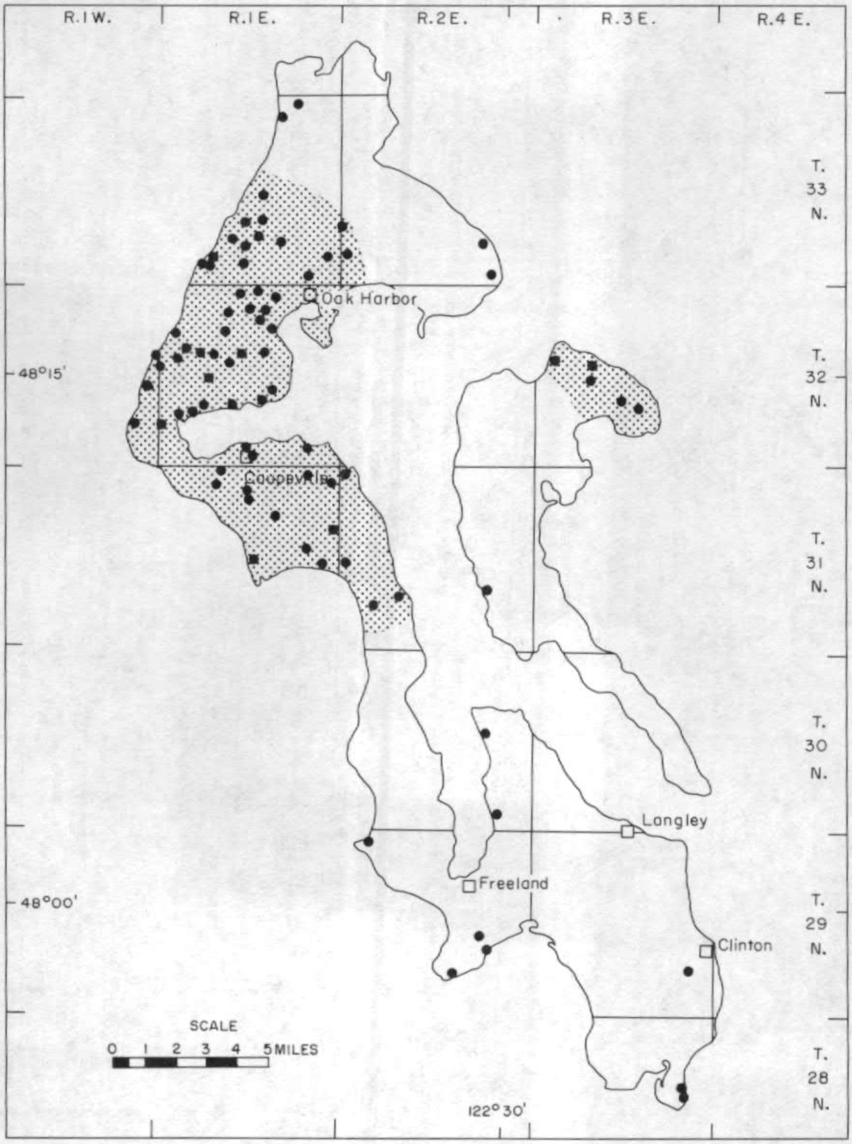

Figure 11 - Map showing distribution of very hard ground water with specific conductance greater than 500 micromhos.

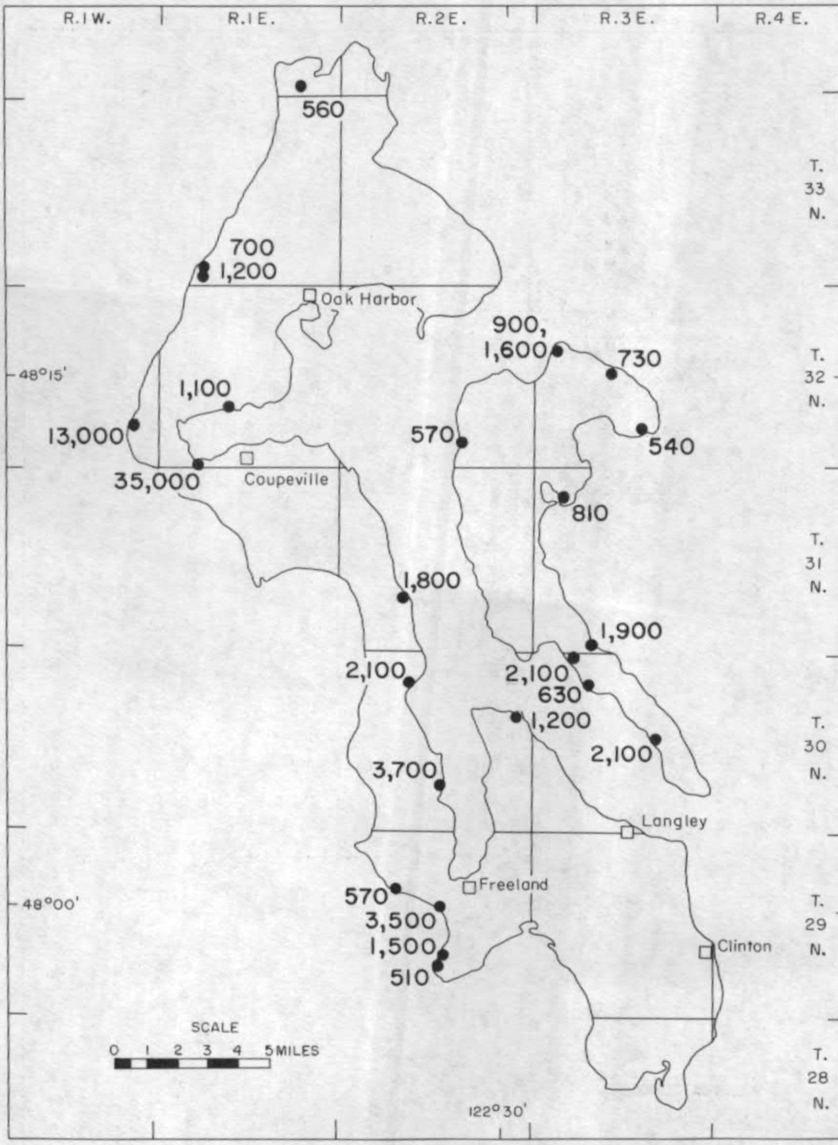

Figure 12 - Map showing wells that yield ground water thought to be influenced chemically by sea-water encroachment.

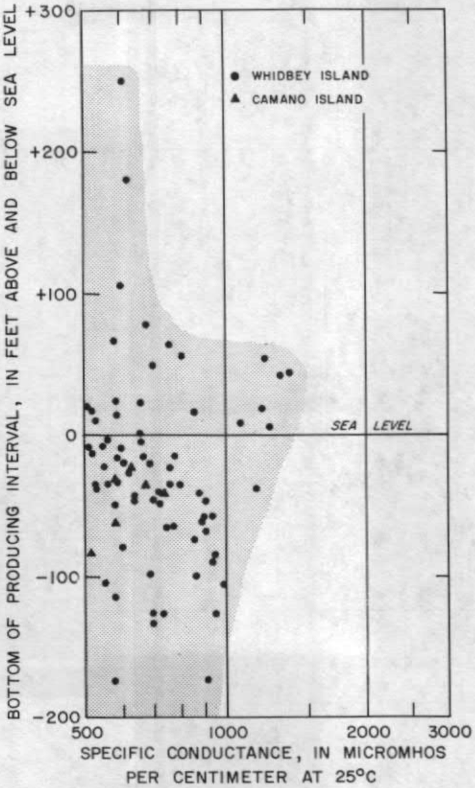

Figure 13 - Vertical distribution of very hard ground water with specific conductance greater than 500 micromhos. Shaded area emphasizes variation of maximum conductance with altitude.

Hardness of Water

The hardness of ground water in Island County ranges from less than 100 mg/l to more than 300 mg/l. Measured values are shown in plate 4, and the distribution of hardnesses exceeding 180 mg/l is summarized in figure 14. (The hardness of ground water in Townships 28/3, 29/3, and 30/2 is uncertain because most well waters in those areas were sampled during the early phases of the project, before hardness determinations were initiated.)

Ground water with less than 100 mg/l of hardness is mostly restricted to zones above sea level in the upland areas of Camano and southern Whidbey Islands (pl. 4). Wells that penetrate below sea level in those areas characteristically yield water with more than 100 mg/l of hardness. Values exceeding 180 mg/l (termed "very hard") are encountered most commonly north of Greenbank on Whidbey Island and in the Brown Point lowland of Camano Island. However, very hard ground water also occurs at some places near Madrona Beach on Camano Island and near

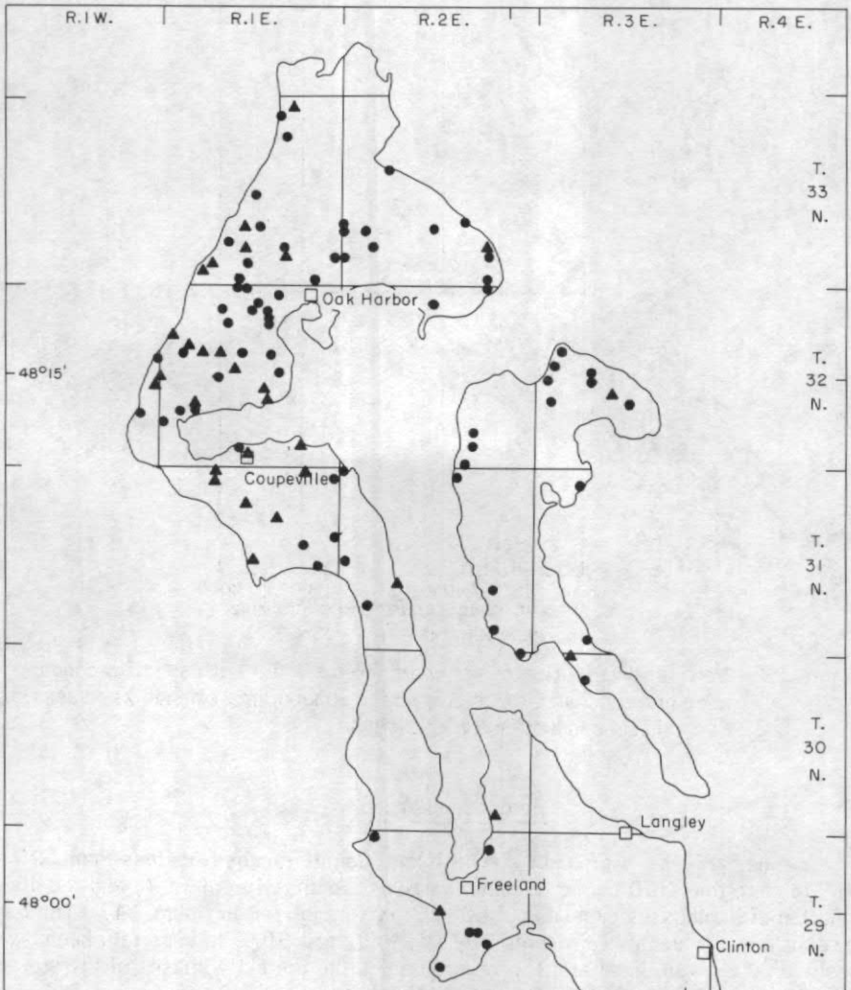

Figure 14 - Map showing distribution of wells known to yield very hard water.

Freeland on southern Whidbey Island (see fig. 14). One drilled well (29/2-23C2) known to produce from aquifers above the Double Bluff Drift in the Double Bluff upland of southern Whidbey Island yields very hard water containing about 40 mg/l of chloride.

Iron Content

Only a small amount of information is available regarding the exact iron content of ground water in Island County (table 2). Most of the discussion in this section is based on observations and well owners' reports of "noticeable" iron, which are listed in the records of wells (tables 7 and 8). Figure 15 summarizes the distribution of areas within which noticeable iron has been observed or reported in water from many of the scheduled wells. The figure also shows isolated occurrences of noticeable iron.

The available information gives a reasonably reliable indication of the distribution of iron-rich ground water. A good example of this is provided by data for the southernmost iron-rich area on Whidbey Island (fig. 15). Within the area indicated in black in figure 15, 115 wells and springs were canvassed, and of those, noticeable iron was reported or observed in 31. In contrast, only 3 additional occurrences (all within the small stippled area to the north) were recorded for the more than 120 additional ground-water sources canvassed throughout the entire southern and central Langley upland areas and in the northern part of Maxwelton valley.

In one area, the distribution of iron-rich ground water has been determined in greater detail than elsewhere. At Freeland on southern Whidbey Island, objectionable amounts of iron occur in wells immediately north of the town's main street, whereas most ground water south of the street is apparently free of excessive iron.

The source of the iron is uncertain. Within the principal iron-rich areas, no relation is apparent between the presence or absence of iron and the well depth or the altitude of the producing interval; nor do well logs (tables 10 and 11) suggest why iron is present in noticeable quantities.

SEASONAL AND LONG-TERM CHANGES IN CHEMICAL QUALITY

Water in eleven wells on Camano Island and 43 on Whidbey Island was sampled more than once during or before the recent period of study (1963-65). Only 3 of the 11 on Camano Island and 10 of the 43 on Whidbey exhibited an appreciable change in chemical character during the sample periods. (See table 3.)

Ground-water quality can change for several reasons. Inland, where the chemical character varies with depth, as in the northern part of Whidbey Island (p. 30; pl. 4), seasonal and long-term fluctuations in the amount of water withdrawn by wells can result in variations in the character of ground water produced. Several wells listed in table 3 yield water showing chemical fluctuations attributable to variations in ground-water use that are not related to contamination by

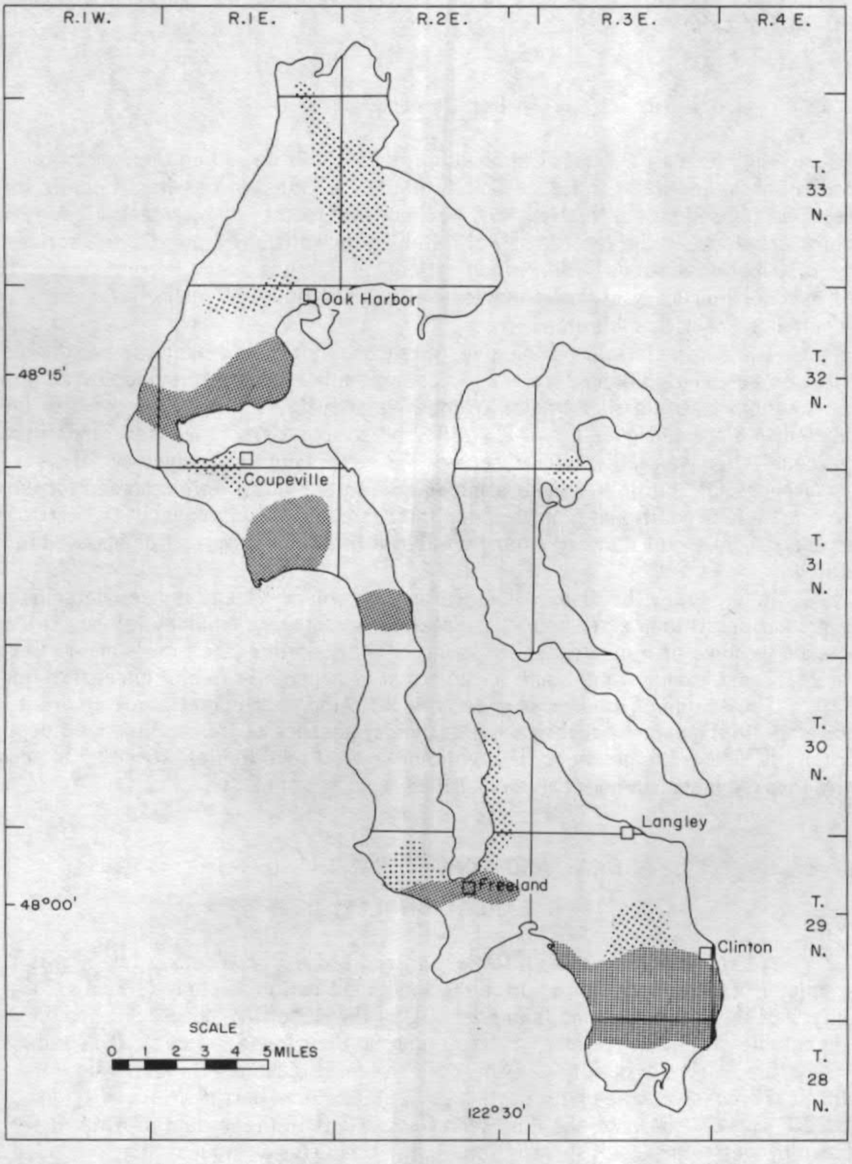

Figure 15 - Map showing areas of noticeable iron in ground water.

Table 3 - Sampled well waters that have exhibited changes in chemical quality [a/]

Well number	Bottom of producing interval		Number of samples	Range in specific conductance (micromhos)
	Feet below land surface	Feet above or below sea level		
CAMANO ISLAND				
32/3-18A1	165	-32	b/2	937-986
-18A2	136	-3	c/3	679-1,600
-22N1	186	-36	4	650-730
WHIDBEY ISLAND				
29/3-23F1	45	+360	4	200-250
-28F1	90	-16	d/4	200-290
30/2-9D1	51	-41	10	1,900-2,200
31/1-9A1	50	+42	4	920-1,300
31/2-30J1	60	+250	4	540-620
32/1-3C2	243	-28	3	410-530
-32J1	80	+10	3	290-460
-33J1	240	-148	e/7	830-1,720
33/1-22C1	98	-42	23	150-860
-28L1	194	-48	4	640-730

a/ Samples were collected during the period June 1963-May 1965, except as noted. Collection dates and total elapsed times vary from well to well.

b/ Period of record: 5-60 to 9-60.

c/ Period of record: 4-61 to 9-64.

d/ Period of record: 11-62 to 6-64.

e/ Period of record: 5-60 to 5-65.

sea-water encroachment. The best documented example of seasonal changes in water quality is provided by well 4 at Ault Field (33/1-22C1). Except for brief (15- to 30-minute) monthly test-pumping intervals, the well, which is maintained as an emergency supply, remains unused throughout most of the year. The only extended period of production occurs in the fall, when the well is test pumped for several days. Figure 16 summarizes the record of fluctuations in water level and chloride content for the well during the period March 1964 - April 1965. The figure shows the pronounced effect on water quality of continuous test pumping at a high rate (about 175 gpm) during 10 consecutive days in September and October 1964 (table 12). Chloride content, which remained less than 30 mg/l throughout most of the 13-month period of record, increased to 100 mg/l within 2 days after the start of continuous pumping, and remained at about that concentration throughout the final 8 days. Recovery to low chloride values following the test was slow: the chloride content was still 67 mg/l 19 days after pumping stopped even though the water level had already recovered to the prepumpage range (fig. 16). The data for this well show that: (1) the amount of dissolved solids remains low during periods of nonuse, whereas high pumping rates can draw in increments of the very hard, more saline ground water, presumably from greater depth;[1/] (2) the dissolved-solids content soon reaches a value that could be termed "in equilibrium" for the particular pumping rate; and (3) the water-quality conditions recover to prepumping values more slowly than does the water level. These characteristics doubtless would be true of many uncontaminated well waters in Island County, especially in areas characterized by the very hard ground water (fig. 11).

Fluctuations in the chemical character of uncontaminated ground water are not always dependent on variations in the amount of water used. Data for unused 50-foot well 31/1-9A1, summarized in figure 17, show that chemical character can change in response to seasonal differences in the amount of recharge, which in turn are governed by variations in the quantity of infiltrating precipitation. The figure shows that periods of greater-than-average precipitation (indicated by rising segments of the cumulative departure curve during the 3-month interval November-January) characteristically result in rising water levels and a dilution of ground water in the relatively shallow well. Presumably, the subsequent increase in dissolved-solids content during the period of lower-than-average precipitation and recharge (July-October 1964) is the result of a mixing of the more dilute recent recharge and the more saline ground water from below. The fluctuations exhibited in

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[1/] If the chloride contamination were the result of sea-water encroachment, the chloride content presumably would be expected to rise more slowly and continuously as the sea-water interface moved toward the well from the Sound, 0.7 mile to the west. In contrast, when ground water is being drawn in from a chloride-rich zone underlying the fresh water, the chloride content in the well would be expected to rise rapidly during the initial lowering of the water level in the well, but it would tend to stabilize as the water level stabilized (M. I. Rorabaugh, U. S. Geol. Survey, oral commun., 1965).

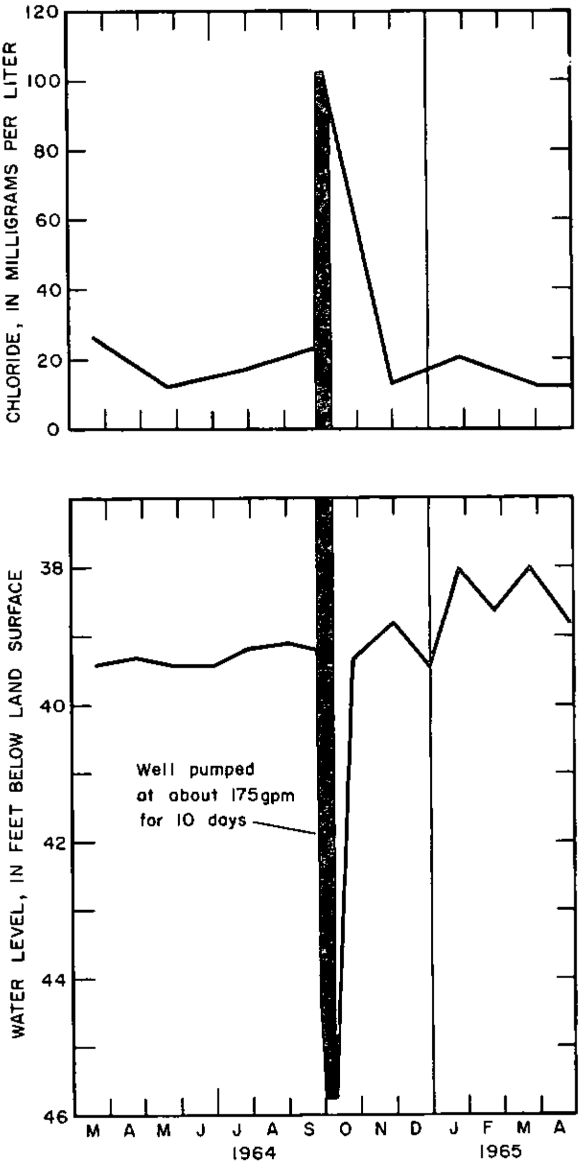

Figure 16 - Graphs showing fluctuations of chloride content and level of water in well 33/1-22C1.

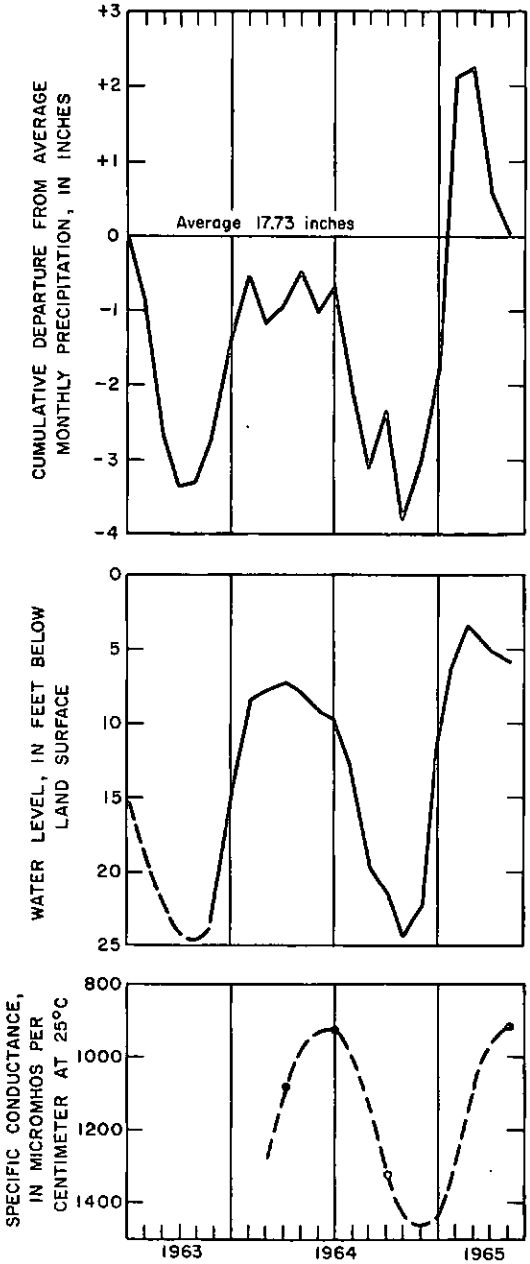

Figure 17 - Graphs showing effect of precipitation on specific conductance and level of water in well 31/1-9A1.

well 31/1-9A1 are those that would be expected in shallow aquifers, where the ground-water body can react rapidly to seasonal changes in recharge. Deeper aquifers generally are "insulated" from the effects of short-term fluctuations in recharge, and any pronounced seasonal changes in water quality generally are the result of variations in ground-water withdrawal.

Sea-water encroachment also can result in pronounced seasonal and long-term changes in ground-water quality. Aquifers tapped by many of the near-shore wells are hydraulically connected with Puget Sound and adjacent marine waters. Excessive withdrawals from such wells on a seasonal or long-term basis can upset the natural balance that exists between the dilute ground water and the sea water. The result is a deterioration in chemical quality such as that illustrated by data for well 32/3-18A2 at Arrowhead Beach on Camano Island. Water from the 136-foot well, which in 1964 supplied about 30 families, was sampled in 1961, 1962, and 1964. (Analyses of the first two samples are listed in table 2.) The following tabulation of chloride content shows the water-quality deterioration, which probably is a combination of seasonal and long-term effects:

Date	Chloride (mg/1)
April 24, 1961	112
November 11, 1962	158
September 23, 1964	430

AREAS OF FAVORABLE WATER QUALITY

Criteria for the suitability of water are highly variable, depending on the particular water use (p. 57). For example, the chemical quality of an individual well water can be excellent for drinking, yet entirely unsuitable for certain industrial applications. Thus, the ground water of a particular area is difficult to classify as to its general suitability. In the following discussion, water is considered to be of "favorable" chemical quality for most uses if it contains less than about 300 mg/l of dissolved solids and 180 mg/l of hardness, and if amounts of iron are not great enough to be objectionable for domestic use. (A consideration of bacteriological contamination is beyond the scope of this report.)

Ground water of excellent chemical quality for most purposes can be obtained in many parts of Camano and Whidbey Islands. The areas of best quality include much of the Camano upland and large parts of southern Whidbey Island. In the Camano upland, almost all ground water encountered to date (1965) is of favorable quality. The only important exceptions are near-shore wells that yield water influenced by sea-water encroachment (fig. 12). Similar statements can be made for well and spring water in southern Whidbey Island, except in areas where noticeable iron is characteristic of a moderate to large proportion of the presently exploited ground water (fig. 15).

On the Brown Point lowland of Camano Island, and in the area north of Greenbank on Whidbey Island, ground water of suitable chemical character is more difficult to obtain. Less than half of the well waters sampled to date have had specific conductances lower than 500 micromhos (graphs B, E, and F in pl. 4); most water hardnesses exceed 180 mg/l (fig. 14; pl. 4); and noticeable iron is a common complaint among well owners in several parts of northern Whidbey Island (fig. 15). Not all wells on the Brown Point lowland and north of Greenbank produce water of poor quality. Ground-water supplies of adequate quality have been obtained with reasonable success throughout much of the Deception Pass and eastern Oak Harbor uplands, where most wells tap zones above sea level (pl. 4). In addition, a group of wells immediately west of Oak Harbor also yields water of generally suitable quality, from zones both above and below sea level.

Wells throughout the county that extend more than 200 feet below sea level, yet are known to produce suitable water, or for which no saline water has been reported, are tabulated below:

Well	Deepest penetration, in feet below sea level
28/3-11N2	-403
-14D1	-395
-14P4	-226
29/2-6B1	-263
30/2-18P1	-297
31/2-31K1	-209
32/1W-36D1	-334
32/1-1B1	-397
-2G2	-247
-30G1	-427
33/1-15Q1	-403
-22Q1	-380
-28A1	-218

WATER-QUALITY PROBLEM AREAS

Although many areas in Island County yield ground water that is chemically favorable for most uses, many other areas can be characterized by the poor quality of their ground waters. (As discussed above, the exact borderline between "good" and "poor" quality varies depending on the particular water use; therefore an arbitrary classification is difficult.)

Excessive Dissolved-Solids Content

Ground water containing more than 300 mg/l of dissolved solids occurs in many parts of Island County; in fact, some areas yield very little water containing less than 300 mg/l. Almost anywhere along the coast, the encroachment of saline sea water as a result of substantial ground-water withdrawals is a hazard.

Scattered occurrences of very hard water are common throughout much of the county (fig. 11). However, the principal problem areas are north of Greenbank on Whidbey Island, and east of Utsalady on Camano Island.

In the Brown Point lowland of northeastern Camano Island, very hard ground water has been encountered in the area's principal producing zone, which extends about from sea level to a depth 75 feet below sea level (graph A in pl. 1; graph B in pl. 4). Although several of the lowland well waters were of suitable quality when sampled, moderate to heavy pumping of almost any of the wells probably would cause a deterioration of water quality similar to that observed in well 33/1-22C1 at Ault Field. However, the potential deterioration may not be as serious on the Brown Point lowland. Irrigation well 32/3-21K1, which at 450 gpm has the second highest production rating on the island, is reportedly pumped continuously during the summer months, yet the water had a specific conductance of only 740 micromhos (a dissolved-solids content of about 450 mg/l) in September 1964 after a full irrigation season.

Ground water on northern Whidbey Island ranges widely in dissolved-solids content. In some areas, concentrations are excessive regardless of depth. For example, between Greenbank and San de Fuca, 21 of the 23 sampled well waters had specific-conductance values greater than 500 micromhos (a dissolved-solids content of about 300 mg/l), and only three out of the group were influenced by sea-water encroachment (graph E in pl. 4). The 21 wells, which include well 31/1-9A1 in figure 17, draw water from altitudes ranging from about 250 feet above sea level to about 170 feet below. The maximum nonencroachment dissolved-solids content measured in that area to date (1965) is 1,070 mg/l (a specific conductance of about 1,720 micromhos), for a sample collected September 29, 1960, from Coupeville's well 32/1-33J1 (anal. 11, table 2).

North of Coupeville, the areas of excessive dissolved-solids content are more scattered. The western part of the Oak Harbor upland (pl. 4) resembles the Coupeville area in that almost all sampled ground water (25 of 26 samples) contained excessive amounts of dissolved solids regardless of the production intervals (which range from about +60 to -175 feet relative to sea level).

Wells in the central part of the Oak Harbor upland yield water with a wide range of dissolved solids, including many values greater than 300 mg/l (a specific conductance of about 500 micromhos). Most of the highest measured values occur in the northwestern part of the area, whereas the specific conductance of most samples collected near the town of Oak Harbor ranges from 400 to only 600 micromhos (a dissolved-solids content of about 250-350 mg/l).

Most wells in the eastern third of the Oak Harbor upland yield water with a favorable dissolved-solids content (fig. 11). Of the 28 wells sampled, only five, at the far western and far eastern boundaries of the area, yielded water with specific conductance exceeding 500 micromhos (a dissolved-solids content of about 300 mg/l) (pl. 4).

North of the Oak Harbor upland, only a small amount of the presently used ground water contains more than 300 mg/l of dissolved solids in the absence of sea-water contamination. The only presently known occurrences are within about a mile of the west coast, where wells tap aquifers below sea level. Evidence indicates that ground-water quality there can be markedly deteriorated as a result of excessive withdrawals. The specific conductance of water from well 4 at Ault Field (33/1-22C1), which ranged from 150 to 400 micromhos during the long periods of nonuse, reached 860 micromhos or more after 5 days of continuous production at about 175 gpm in 1964, and was still at about 630 micromhos 19 days after completion of pumping. The data suggest that moderately shallow ground water in the western parts of the Clover Valley and Deception Pass areas is underlain by more saline water, which can be drawn upward by pumping. A similar statement probably applies to other areas within Island County, especially where the very hard water has been identified as a component of the presently used ground-water resource. However, the apparent upward migration of the more saline water as a result of pumping apparently is not a universal characteristic in such areas. For example, 263-foot Oak Harbor well 6 (33/1-36M1), which is screened in an interval from 55 to 85 feet below sea level, is one of the most prolific ground-water producers in the county. Yet, the specific conductance of its discharge was only 410 micromhos (a dissolved-solids content of about 250 mg/l) when sampled in May 1964.

The possibility of saline ground water at appreciable depths throughout much of Island County cannot be ignored. Water too saline for use has been reported during the drilling of the following deep wells in central and northern Whidbey Island:

Well	Deepest penetration, in feet below sea level
29/2-6B3	-213
30/2-28A1	-260
-35H1	-320
32/1-2G1	-444

In addition, oil exploratory well 30/2-17K2, on the southern Greenbank upland of Whidbey Island, encountered water of marginal to unsuitable salinity in the interval from 200 feet below sea level to the base of the water-bearing sedimentary deposits, 1,700 feet below sea level. Water of similar character may underlie a large part of the county at depths more than 200 feet below sea level, although it has not as yet been detected because few wells have penetrated that deeply.

Excessive Hardness

Most of the preceding discussion of dissolved-solids problem areas applies to the hardness of water as well (figs. 11, 12). However, some ground water in several areas exceeds the 180-mg/l hardness limit by as much as 40 mg/l, even though its specific conductance is less than 500 micromhos. Although a few such ground waters have been encountered at scattered locations throughout the islands, the area of principal concern in this regard lies north of Coupeville on Whidbey Island. Throughout that area, and especially in the eastern part of the Oak Harbor upland (pl. 4), water hardnesses ranging from 180 to 220 mg/l are commonplace in combination with specific-conductance values in the 400- to 500-micromho range.

Excessive Iron

Objectionable amounts of iron are common in some parts of Island County, although neither the exact amounts nor the precise areal distribution of the problem areas are known as yet. The presently known areas within which noticeable iron commonly occurs in ground water are summarized in figure 15, on the basis of a few actual observations plus the reports of many well owners.

USE OF GROUND WATER

PRESENT USE

Ground-water use in Island County is summarized in table 4. The use of surface water in Island County is negligible with one exception: Whidbey Naval Air Station uses about a million gallons per day. This supply, piped from the Skagit River, amounts to about one-fourth of the estimated total water volume used in Island County.

The five main uses of ground water in Island County are public, domestic, irrigation, livestock and poultry production, and commercial-industrial use.

Public Supply

Public supplies account for about 35 percent of the ground water used in Island County. The 18 municipal water systems reported by the U. S. Public Health Service in their 1963 inventory account for 24 percent of the ground water used (U. S. Public Health Service, 1964). Table 5 gives information on municipal water facilities from the 1963 inventory.

Data for these 18 municipal water systems, along with values for total population in the county, were used to estimate the number of families and the total population served by domestic and public-supply wells.

Table 4 - Summary of ground-water use

Use	Estimated families served	Estimated population served	Estimated average water use	
			Millions of gallons per year	Acre-feet per year
DOMESTIC				
Permanent residences (about 2,300 wells)	2,700	8,550	237	727
Summer residences (about 1,000 wells)	1,600	5,000	57	175
Total	4,300	13,550	294	902
PUBLIC SUPPLY				
Municipal systems (18)	2,770	8,955	244	748
Small systems (110)	1,300	3,900	114	350
Total	4,070	12,855	358	1,098
TOTAL DOMESTIC & PUBLIC SUPPLY	8,380	26,405	652	2,000
LIVESTOCK AND POULTRY			95	293
IRRIGATION			260	800
COMMERCIAL AND INDUSTRIAL			33	100
TOTAL USE IN COUNTY			1,040	3,193

Table 5 - Municipal water facilities, 1963 inventory a/

Community or facility	Estimated population served	Number of service connections	Source of supply	Average plant output (mgd)	Maximum safe yield from source (mgd)
Baby Island	100	38	2 wells	--	--
Beverly Beach	180	65	1 well	--	--
Camano	350	110	Springs	--	1.0
Clinton	400	137	Spring, 1 well	0.025	.075
Coupeville	800	325	Infiltration system, 2 wells	.07	.24
Freeland	50	15	1 well	--	--
Hillcrest Water Dist.	500	168	3 wells	--	.10
Lagoon Point	300	100	1 well	--	.075
Langley	700	250	3 wells	.15	.50
New Utsalady	200	b/ 66	1 well	--	--
Oak Harbor	4,000	1,050	4 wells	.2	1.3
Penn Cove Park	175	101	2 wells	--	.50
Sandy Hook Water Co.	100	48	1 well	--	.019
Saratoga	150	75	2 wells	--	1.5
Scenic Beach	350	54	1 well	--	.30
Sunlight Beach	150	67	2 wells	--	.50
Tyee Beach	250	75	1 well	--	--
Utsalady Beach Water Co.	200	25	5 springs	--	.20
Total	8,955	2,769	--	--	6.309

a/ Data after U. S. Public Health Service (1964) with some revisions.

b/ Estimated.

The 110 public supplies in Island County described as "small systems" in table 4 include the public supplies not tabulated in the 1963 inventory made by the U. S. Public Health Service. Only three of these systems serve more than 100 families, and most of them serve fewer than 25.

Domestic

Private residences account for about 25 percent of the ground water used in Island County (table 4). Harstad Associates (1963, p. 7) reported to the Island County Planning Commission that: "Island County has a total of 8,920 housing units--all of which are classified by the census as 'rural' except for the 1,201 located within the corporate limits of Oak Harbor . . . . A 7-percent vacancy ratio exists among these rural homes. . . ." These data were used to determine the number of housing units for families being served by domestic supplies from ground-water sources in Island County. Harstad Associates (1963, p. 7) also reported that "Along the shores of Central Whidbey, South Whidbey, and Camano Island are scattered 2,680 vacation homes while North Whidbey with its large number of new permanent homes has only 50 summer dwellings." An estimated 60 percent of these vacation homes are served by private domestic wells. The average daily consumption per family unit is assumed to be 250 gallons for the permanent homes, and 100 gallons for the vacation homes.

Irrigation

Irrigation accounted for about 25 percent of the ground-water use in Island County as of 1959 (table 4). The agricultural census of 1959 (U. S. Bureau of Census, 1961, p. 146-147) indicates that only 533 acres were then being irrigated within the county. Assuming that 1½ feet of water is applied over this area annually, about 800 acre-feet of water would be used per year. A little less than half of this amount is accounted for by three large farms in the Brown Point lowland of Camano Island.

Livestock and Poultry

Livestock and poultry accounted for about 10 percent of the ground water used in Island County as of 1959. Of this amount, an estimated 93 percent was used by cattle, about 3 percent by poultry, and the remaining 4 percent by horses, hogs, goats, and sheep. These percentages were determined by multiplying the number of animals by the number of gallons each animal is expected to need per day. Data on the number of animals in Island County were obtained from the 1959 census of agriculture (U. S. Bureau of the Census, 1961, p. 172-173).

Commercial and Industrial

Commercial and industrial supplies represent 5 percent or less of the ground water used in Island County as of 1959. About one-third of this is used in gravel pits for washing sand and gravel. The remaining two-thirds supplies businesses and stores, a milk plant, saw mills, a nursing home, and a custom cannery.

FUTURE USE

The development of residential areas has increased in the higher uplands of Island County in recent years. Many of these uplands, more than 200 feet above sea level, have water available from aquifers above sea level in the Esperance Sand Member of Vashon Drift and other sedimentary units (table 1). In most of these areas, water is also available from aquifers a short distance below sea level, although the water levels in most wells tapping these deeper aquifers are much lower than those in aquifers above sea level. Wells tapping aquifers within 75 feet below sea level are found throughout most of the county. Future wells will probably be developed from aquifers near or below sea level with the exception of the areas west of Penn Cove, just south of Greenbank, and in Baby Island Heights on the northern tip of Langley upland. Several unsuccessful deep wells have already been drilled below sea level in these areas.

During the next few years, more residential subdivisions in Island County will require large-yield wells to serve central water systems. Because most of the county has a higher average yield reported for wells producing from the deeper aquifers than from the shallower aquifers, many of these large-yield wells will probably tap these deeper aquifers.

Plans for development and use of ground water in Island County must also consider water quality. In parts of the county, a high iron content in the water is a problem; however, a potentially more serious problem is the presence of saline water. Throughout much of the county, appreciable ground-water withdrawals are accompanied by a deterioration in chemical quality attributable to the encroachment of sea water or the influence of very hard ground water. Presumably, deterioration of this type will increase in extent and seriousness as more large-yield wells are drilled on the two islands to satisfy the demands of the expanding population.

Depletion of the ground-water body or loss of pressure in the aquifers is not a problem at present. The hydrographs in plate 3 indicate a relatively small amount of seasonal fluctuation in water level in most wells. A few of the wells show fairly large seasonal fluctuations, but these appear to be typical of rather limited areas and conditions. Two of the observation wells, both in the southern part of Whidbey Island, indicate a general decline in water level during the period of observation from 1963 to 1965. Levels in wells 29/3-23P1 and 30/2-29M1 dropped about 2 feet. These declines do not reflect a long-term fluctuation in the climatic cycle because the cumulative departure curve in figure 5 indicates generally above-average precipitation since 1947.

A comparison of water levels measured by well drillers immediately after drilling with those measured during this study indicates a slight rise in water level on Camano Island, and on Whidbey Island south of Penn Cove. North of Penn Cove, the water levels were, in general, static.

Present data do not indicate any net depletion of ground-water storage in Island County. Nonetheless, because of the expanding population and the potential for contamination and overdraft, a quantitative study of ground water seems desirable. To determine quantitatively the volume of ground water in storage and the rate of movement of water within and between aquifers, a better identification and description of the aquifers will be necessary. The amount of ground water in storage and its movement could then be determined more accurately by test drilling and pumping.

Limited water-level observations and chemical-quality surveillance should be continued to detect possible declines in water levels, and any long-term deterioration in the quality of ground water.

REFERENCES CITED

Armstrong, J. E., and Brown, W. L., 1953, Ground-water resources of Surrey Municipality, British Columbia: Geol. Survey of Canada Water-Supply Paper No. 322, 48 p.

Brown, R. F., and Lambert, T. W., 1963, Reconnaissance of ground-water resources in the Mississippian Plateau region, Kentucky: U. S. Geol. Survey Water-Supply Paper 1603, 58 p.

Harstad Associates, Inc., 1963, The general plan for Island County, Washington: Island County Planning Comm. Rept., 50 p.

Hem, J. D., 1959, Study and interpretation of the chemical characteristics of natural water: U. S. Geol. Survey Water-Supply Paper 1473, 269 p.

McKee, J. E., and Wolf, H. W., 1963, Water quality criteria: California State Water Quality Control Board Pub. 3-A, 548 p.

Meinzer, O. E., 1923a, The occurrence of ground water in the United States: U. S. Geol. Survey Water-Supply Paper 489, 321 p.

------ 1923b, Outline of ground-water hydrology, with definitions: U. S. Geol. Survey Water-Supply Paper 494, 71 p.

Swenson, H. A., and Baldwin, H. L., 1965, A primer on water quality: U. S. Geol. Survey, 27 p.

U. S. Bureau of the Census, 1961, United States census of agriculture, 1959: U. S. Bur. Census Final Rept., v. 1, pt. 46, 225 p.

U. S. Public Health Service, 1962, Drinking water standards, 1962: U. S. Public Health Service Pub. 956, 61 p.

------ 1964, Municipal water facilities, 1963 inventory: U. S. Public Health Service Pub. 775 (revised), v. 9, 151 p.

U. S. Salinity Laboratory Staff, L. A. Richards, ed., 1954, Diagnosis and improvement of saline and alkali soils: U. S. Dept. Agriculture, Agriculture Hand. 60, 160 p.

APPENDIX

WELL- AND SPRING-NUMBERING SYSTEM

The wells and test holes tabulated and used in this report are designated by numbers that indicate their locations according to the rectangular system for subdivision of public land. An illustration of the well-numbering system is shown in figure 18. In this example, using well 29/3-17F1, the numerals preceding the hyphen indicate the township and range north and east of the Willamette Meridian and Base Line (T. 29 N., R. 3 E.). The first numeral after the hyphen indicates the section in which the well is located (sec. 17), and the capital letter (F) indicates the specific 40-acre tract within the section. Within each 40-acre

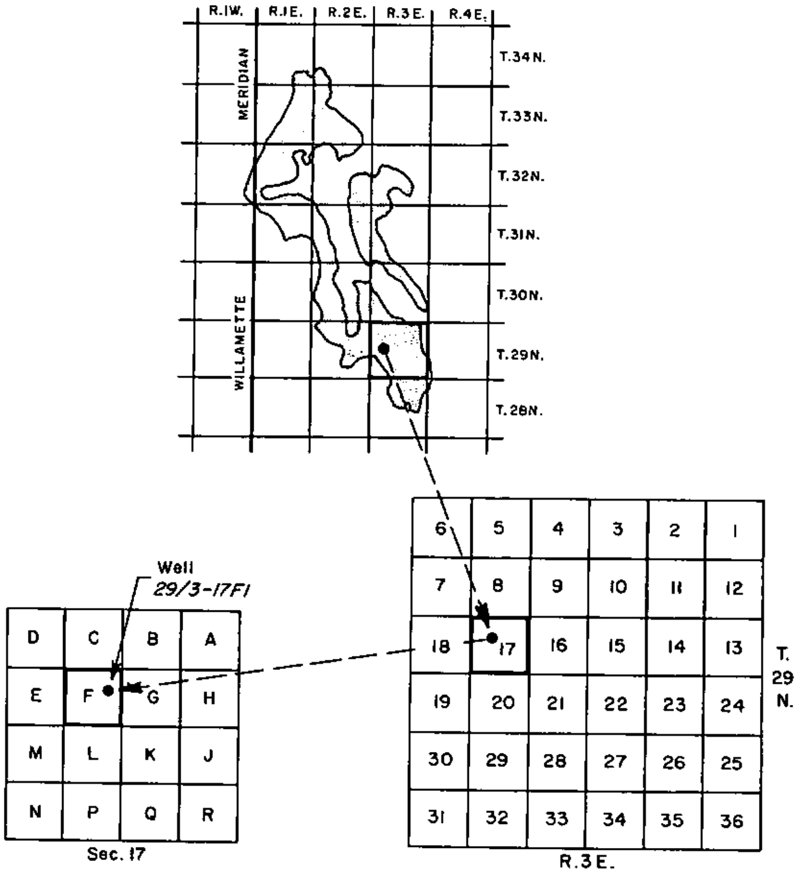

Figure 18 - Well-numbering system.

tract, the wells are numbered serially according to the order of well inventory in that tract. Because all townships in Washington are north of the Willamette base line, the letter "N," indicating north, is omitted; and because most of the State is east of the Willamette meridian, the letter "E" is also omitted, but "W" is included for wells west of the Meridian.

Springs are numbered in the same manner, except that the letter "s" is added after the serial number. Thus, the first spring listed for the SE¼SW¼ sec.24, T. 29 N., R. 3 E., would have the number 29/3-24P1s.

DEFINITION OF TERMS

One purpose of this report is to provide information on ground water for the residents of the region; therefore, the use of technical terms is limited to those considered essential to the description of the occurrence of ground water. The following definitions are based largely on those given by Meinzer (1923a, b), with some modifications in accordance with those presented by Brown and Lambert (1963, p. 16-17).

Aquifer. A formation, group of formations, or part of a formation that is water yielding.

Artesian, or confined, ground water. Ground water that is under sufficient pressure to rise above the level at which it is encountered by a well, but which does not necessarily rise to or above the land surface.

Discharge, ground-water. Discharge of water from an aquifer, either by natural means such as evapotranspiration and flow from seeps and springs, or by artificial means such as pumping from wells.

Drawdown. Lowering of the water level in a well as a result of withdrawal of water.

Evapotranspiration. Total discharge of water to the air by direct evaporation and plant transpiration.

Glacial drift. Sediment transported and deposited by glaciers; predominantly of glacial origin.

Glaciomarine drift. Sediment transported by floating glacial ice and deposited in a marine environment.

Ground water. That part of the subsurface water in the zone of saturation.

Head. A measure of the pressure or force exerted by a fluid (usually related to the height of the unconfined upper surface of the fluid above any point in a confined hydraulic system).

Infiltration. The flow of a fluid into a substance through pores or small openings. It connotes flow into a substance, as opposed to the word "percolation," which connotes flow through a porous substance.

Outwash. Stratified drift deposited by melt-water streams beyond active glacier ice.

Perched ground water. Ground water separated from an underlying body of ground water by unsaturated material.

Permeability. The capacity of aquifer materials to transmit water under pressure. In general, the larger the connected pore spaces or other openings in the materials, the greater the permeability.

Porosity. The ratio of the volume of openings to the total volume of a rock or soil. A high porosity does not necessarily indicate a high permeability, because the openings may not be connected.

Proglacial. Pertaining to features of glacial origin that are beyond the limits of the glacier itself.

Recharge, ground-water. Addition of water to an aquifer from all sources; in Island County, chiefly from infiltration of precipitation through the soil, but also from streams or other bodies of surface water, or flow of ground water from another aquifer.

Runoff. The quantity of water discharged by surface streams, expressed usually in units of volume, such as gallons, cubic feet, or acre-feet.

Semiperched ground water. Ground water is semiperched if it has a greater pressure head than that of an underlying body of ground water, but the underlying body of water is not separated from the water above by any unsaturated or impermeable rock.

Specific capacity. The rate of yield of a well per unit of drawdown, generally expressed in gallons per minute per foot of drawdown at the end of a specified period of discharge. It is not an exact quantity, because drawdown increases with time, but it does give an approximate indication of how much water a well can yield.

Storage, ground-water. Water that occurs in the zone of saturation.

Stratigraphy. The field of geology that pertains to the character, thickness and areal extent, age, and sequence of deposition, and to other factors related to sedimentary rocks.

Till. Poorly sorted, nonstratified sediment deposited directly beneath, and by, glacial ice.

Water table. The upper surface of the zone of saturation, except where that surface is impermeable material.

Zone of saturation. The zone in which the openings in the rocks are filled with water under hydrostatic pressure.

EXPLANATION OF WATER-QUALITY DATA

All water--even rain--contains some dissolved material. In most natural ground water the principal dissolved constituents are silica (chemical symbol SiO_2), calcium (Ca), magnesium (Mg), sodium (Na), potassium (K), bicarbonate (HCO_3), sulfate (SO_4), and chloride (Cl). Other constituents that occasionally are present in appreciable concentrations are iron (Fe), carbonate (CO_3), fluoride (F), nitrate (NO_3), and orthophosphate (PO_4).

Concentrations of the chemical constituents noted above as well as the water hardness and dissolved-solids content, all are reported in milligrams per liter (mg/l). [For most natural waters, a milligram per liter is virtually the same as a part per million (ppm), or 0.0584 grains per gallon.] Whereas rainwater and some dilute surface waters contain less than 20 mg/l of dissolved solids, most ground water in the Pacific Northwest ranges from 50 to 300 mg/l. As a comparison, ocean water contains about 35,000 mg/l of dissolved solids.

When the dissolved-solids content of a sample is computed by totaling the concentrations of constituents reported in a comprehensive analysis, the bicarbonate value conventionally is recalculated as carbonate, using the factor 0.492 (that is, mg/l $HCO_3 \times 0.492$ = mg/l CO_3).

Several properties of water are not reported in milligrams per liter. Specific conductance, for example, is a measure of the ability of water to conduct electrical current, and is expressed in micromhos per centimeter at 25°C. (Throughout this report, the units of measurement are abbreviated to "micromhos.") The specific conductance of a water sample is related to the amount of dissolved solids present. Numerically, the dissolved-solids content of water (in milligrams per liter) generally is 55 to 75 percent of the specific conductance.

The pH of water is a measure of its acidity (pH value less than 7.0) or alkalinity (pH value greater than 7.0); it is expressed in pH units, which are the negative logarithms of hydrogen-ion (H^+) concentration.

The hardness of a water sample is determined by measuring the combined concentrations of calcium and magnesium. These two constituents are the ones primarily responsible for water hardness, a characteristic that is indicated by the deposition of crusty calcium and magnesium compounds in hot-water lines and water-heating equipment, and by excessive soap consumption. Hardness data are reported as the calcium-carbonate equivalent of calcium plus magnesium.

Excellent discussions of water chemistry can be found in the U. S. Geological Survey publications "A Primer on Water Quality," by H. A. Swenson and H. L. Baldwin (1965), and "Study and Interpretation of the Chemical Characteristics of Natural Water," by J. D. Hem (1959). Both publications can be purchased from the Superintendent of Documents, Washington, D. C. 20402.

WATER-QUALITY STANDARDS

The suitability of a ground water for domestic, agricultural, or industrial use is dependent on the concentration of several constituents and properties. For this reason the U. S. Public Health Service (1962) has established recommended maximum concentrations for several constituents of drinking water. Values for the more commonly determined constituents are summarized in table 6.

The hardness of water is important in a consideration of the water for industrial and domestic use. The U. S. Geological Survey has classified water hardness in the following manner:

Table 6 - Recommended drinking water standards a/

Constituent or property	Recommended maximum concentration (parts per million)
Iron (Fe)	0.3
Sulfate (SO_4)	250
Chloride (Cl)	250
Fluoride (F)	1.7
Nitrate (NO_3)	45
Dissolved solids	500

a/ Data after U. S. Public Health Service, 1962, p. 7, 8.

Hardness as $CaCO_3$ (mg/l)	Classification and suitability
0-60	Soft (suitable for most uses without further softening)
61-120	Moderately hard (usable except in some industrial applications)
121-180	Hard (softening required by laundries and some other industries)
More than 180	Very hard (softening desirable for most purposes)

A consideration of water-quality tolerances is important to many industrial applications. McKee and Wolf (1963, p. 94-106) discuss tolerances for specific industrial applications in detail.

The definition of suitable concentration limits for certain constituents of irrigation water is difficult particularly because tolerances of specific plant types vary so much. A group of approximate standards for several common constituents and properties of irrigation water are summarized by McKee and Wolf (1963, p. 109). Other aspects of the quality of irrigation water are discussed in detail by the U. S. Salinity Laboratory Staff (1954, p. 69-82).

BASIC DATA

The basic data section includes information on wells, springs, drillers' logs, and a pumping test. Data describing wells, their water levels, and yields are tabulated in table 7 for Camano Island and table 8 for Whidbey Island. Yield data are those reported by the well driller, and specific capacities were calculated using the reported drawdowns. Data related to springs are included in table 9. Drillers' logs are listed in table 10 for Camano Island and table 11 for Whidbey Island. Pumping-test data are summarized in table 12.

Table 7 - Well records, Camano Island

Well number: Numbering system is described on page 54.

Altitude: Land surface above sea level, from hand-level traverse or interpolated from topographic maps.

Water level: Measurements reported to the nearest hundredth of a foot were made by U. S. Geological Survey personnel; those to the nearest foot were reported by the owner, tenant, or driller. A "+" preceding the water level indicates static head above land surface (a "flowing" well). Measurement dates reported as spring, summer, fall, or winter are abbreviated spr., sum., fall, or wtr.

Yield: b, determined by bailing; p, determined by pumping.

Use: C, commercial or industrial; D, domestic; I, irrigation; N, none; P, public or institutional supply; S, stock; X, destroyed.

Remarks: Most of the data tabulated under "remarks" were reported by the owner, tenant, or driller. Lithologic logs are included where the driller is not known and the log contains only a few entries or is very general. Depth of aquifer or producing interval is noted if it is significantly less than that of the well. Abbreviations: C, chemical analysis in table 2; L, log in tables 10 or 11; O, observation well; P, partial field chemical analysis in plate 4.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 30 N., R. 2 E.										
1A1	Camano State Park	175	236	8	166	1960	7	29	N	Screened from 211 to 216 ft. Supply inadequate for park use. L, O, P.
					166.10	3-9-64				

Table 7 - Well records, Camano Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 30 N., R. 3 E.										
3Q1	Mrs. Ingraham	60	133	--	70	9-19-58	--	--	D	L, P.
4B1	E. K. Lablond & Harrison	80	140	6	80	12- 3-58	--	--	D	Supplies 2 families. L, P.
4B2	R. B. Bretland	75	67	--	--	--	--	--	D	
4G1	Dan Casey	145	223	6	51.20	8- 6-64	15	--	D	L.
4N1	J. A. Walls	160	161	36	156.65	8- 5-64	--	--	D	
5C1	Dan Benson	94	100	6	90.99	8- 5-64	--	--	D	P.
5D1	Larsen	106	97+	36	97.03	8- 5-64	--	--	D	Supplies 2 families.
5F1	Cliff Marsh	98	102	36	86.37	8- 5-64	--	--	D	
5K1	LaVigne	121	112	36	108.65	8- 5-64	--	--	D	
5R1	Carl Challstedt	165	213	6	161.92	7-22-64	40	20	D	L, P.
5R2	Saratoga Water Assoc.	135	156	6	127	1952	--	--	P	Sand, 0-143 ft; clay, 143-154 ft; sand and 5 percent pea gravel, 154-156 ft. Supplies 17 families.
					126.97	8- 4-64				
9A1	M. G. McGrath	150	136	36	127.93	8- 3-64	--	--	D	Supplies 2 families.
9A2	Coombs	185	172	24	166.53	8- 4-64	--	--	N	
9B1	O. A. Greggorson	84	186	36	79.91	8- 4-64	--	--	D	P.

Table 7 - Well records, Camano Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 30 N., R. 3 E. - Continued										
9C1	S. Prestrud	103	98	20	95.50	8- 4-64	--	--	D	
9D1	Unknown	143	184	6	144.67	8- 5-64	--	--	N	
9H1	Mrs. Cooney	130	128	36	126.51	8- 4-64	--	--	D	P.
10C1	J. Heathlie	223	283	6	213	7- -61	--	--	D	P.
10H1	J. Stronjard	15	35	6	2.5	10-22-56	21	22.5	P	Supplies 24 families. L, P.
10M1	E. Johnson	143	140	36	124.38	8- 3-64	--	--	D	
10P1	Mabana Community System	114	104	36	92	6- 1-60	50	3	P	L.
14D1	Cusick	236	37	36	34.19	7-21-64	--	--	N	
14D2	W. W. Dallmon	250	36	36	31.13	7-28-64	--	--	DS	Supplies 16 cattle. Noticeable iron. P.
14F1	T. R. Snowden	289	31	36	28.22	7-21-64	--	--	D	
					28.72	8- 3-64				
14G1	Tyee Beach Improvement Club, Inc.	280	340	6-5	261	4-21-64	10	49	P	Screened from 314 to 323 ft. Supplies 80 families. L, P.
14M1	M. J. Watkins	195	115	48	105.78	7-28-64	--	--	DS	Supplies 10 cattle.
14N1	Vincent Helzen	120	171	6	157.47	7-28-64	--	--	CD	Water level measured during pumping. Noticeable iron. P.

Table 7 - Well records, Camano Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 30 N., R. 3 E. - Continued										
15B1	Fifteen Investors, Inc.	175	230	6	180	5-15-59	10	2	P	Screened from 218 to 223 ft. L,O,P.
					174.05	3-11-64				
15B2	S.	155	118	36	110.48	8- 3-64	--	--	D	
15H1	R. J. Lollar	163	117	36	105.05	7-28-64	--	--	D	
15J1	E. E. Waite	145	118	36	105	7-28-64	--	--	D	
23C1	F. M. Lefler	170	46	36	42.42	7-27-64	--	--	D	
23C2	Howard Maule	172	55	36	50	7-27-64	--	--	D	
23C3	Howard Maule	195	79	6	60	1961	--	--	D	
23G1	Owen Dallman	262	96	36	89	7-27-64	--	--	DS	Supplies 30 cattle. Noticeable iron. P.
23L1	H. K. Bunker	160	33	36	11.01	7-22-64	--	--	D	
25E1	H. L. Fowler	9	5	20	2.61	7-21-64	--	--	D	P.
26H1	H. L. Marcy	12	10	36	4.71	7-22-64	--	--	D	Supplies 2 families.

Table 7 - Well records, Camano Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 31 N., R. 2 E.										
2A1	International Order of Odd Fellows	440	51	6	26.13	3-11-64	--	--	D	Supplies 2 families, campground. O,P.
2M1	Unknown	295	9	48	7.90	9- 2-64	--	--	N	
2N1	Clarence Kelm	236	5	10	2.72	8-20-64	--	--	D	Noticeable iron.
3F1	J. H. Kortlever	13	25	36	14.05	8-21-64	--	--	D	Well dug around dry drilled well 3F2. Supply inadequate.
3F2	J. H. Kortlever	13	176	6	Dry	--	--	--	N	L.
3F3	L. H. Pritchard	12	18	30	8	1950	16	--	D	P.
3G1	Rockaway Heights Community Assoc.	230	384	6	226 224.94	5-18-61 3-10-64	21	2	P	Supplies 8 families. L, O, P.
3R1	K. F. Thompson	236	6	36	3.45	8-21-64	--	--	D	
11D1	Unknown	278	26	36	9.21	8-20-64	--	--	D	Hardpan, 0-10+ ft.
11D2	C. J. Stickel	330	238	6	Dry	10- -62	--	--	N	
11D3	D. L. Moody	257	14	40	10.38	--	--	--	IS	
11E1	R. K. Acre	278	20	48	9.18	8-20-64	--	--	D	Hardpan, 0-10+ ft. P.
11E2	University Lions Childrens Camp	315	198	6	--	--	--	--	D	

Table 7 - Well records, Camano Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 31 N., R. 2 E. - Continued										
11H1	W. H. McMillan	363	49	--	38	1955	--	--	DS	Hardpan to water-bearing blue clay at 49 ft. Supplies 12 horses.
11H2	W. H. McMillan	385	16	48	7.56	8-20-64	--	--	N	
11P1	Albert Sandburg	235	15	36	8.35	8-19-64	--	--	D	
12M1	Leroy Pollock	385	24	36	13.53	8-19-64	--	--	D	
14H1	Mrs. J. Hadley	334	9	36	2.03	8-19-64	--	--	D	P.
15J1	Svere Halvorson	45	12	24	8.07	8-20-64	--	--	N	
23C1	G. O. Montgomery	177	250	6	128	12- 9-53	100	--	D	Screened from 148 to 158 ft. L.
23Q1	Halver Halverson	158	241	6	141.47	8-18-64	--	--	D	Noticeable iron. L, P.
24F1	Jim Church	415	75	36	65	9- 1-64	5	--	D	L, P.
24K1	Lost Lake Development	270	317	8-6	242	3-25-64	100	5	P	L.
					241.90	9-10-64				
35A1	Pacific Northwest Land Co.	80	157	8	75	7-31-50	17	55	P	Supplies 5 families. L.
35B1	J. Milkay	50	100	6	30	1958	--	--	D	Supplies 2 families. P.
36B1	Unknown	362	62	36	10.19	3-10-64	--	--	D	O, P.
36E1	Pacific Northwest Land Co.	185	245	--	Dry	5-22-50	--	--	X	Casing pulled. L.

Table 7 - Well records, Camano Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 31 N., R. 2 E. - Continued										
36L1	Camano State Park	150	196	8-6	151 149.74	3-17-54 4- 8-64	160	--	P	Supplies camping areas, ranger. L, O, P.
36Q1	Camano State Park	250	313	8	131.65	8-18-64	22	35	P	Screened from 285 to 295 ft. Supplies picnic, camping areas. L, P.
T. 31 N., R. 3 E.										
5D1	Elmer Moem	202	215	6	209	1930	--	--	N	Water reported at 64 ft. Supply inadequate.
5G1	Ed Iverson	20	22	36	6.50	9-18-62	3	--	P	Supplies 30 families.
5K1	Sunrise Point Water Co.	30	30	36	27	8-17-64	--	--	P	Supplies 19 families. Four similar wells nearby. P.
5L1	Dick Pusey	102	139	6	95	1956	--	--	D	L.
5M1	R. S. Fullerton	135	176	6	130 127.15	10-31-58 4- 8-64	105	30	DI	Irrigates 5 acres. Noticeable iron. L, O, P.
5P1	Mrs. E. Stay	118	153	6	115 112.21	3-17-56 8-14-64	--	--	D	L.
6A1	Bill Anderson	142	176	6	163	1954	--	--	DS	Supplies 27 cattle. Noticeable iron. P.
6G1	A. E. Long	10	15	30	4.09	8-14-64	--	--	N	

Table 7 - Well records, Camano Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 31 N., R. 3 E. - Continued										
6J1	Mrs. E. C. Chase	32	96	6	26	8-28-62	--	--	D	L.
6K1	Art Seifke	37	70	6	28	7-14-62	6	32	D	L.
6R1	R. O'Neall	17	53	6	7.97	8-14-64	--	--	D	
7A1	Bob Barnum	40	48	6	24	10-25-60	20	--	D	Noticeable sulfide odor. L, P.
7E1	Driftwood Beach Water Co.	43	217	6	17	5-19-61	16	18	P	Supplies 67 families. P.
7M1	Magma Lehman	105	60	36	25.78	8-13-64	--	--	D	
18D1	D. Muscola	136	205	6	117.02	8-13-64	--	--	D	L, P.
18D2	Unknown	125	103	36	59.58	8-13-64	--	--	N	
18L1	H. Windgrove	70	112	6	65	12-29-52	20	15	D	L.
18L2	Earl Heitman	66	105	6	60	6- 9-61	30	20	D	Supplies 2 families. Noticeable iron. L, P.
18P1	L. H. Smith	78	134	6	60	7-21-59	5	--	D	Supplies swimming pool. 1964 water level measured during pumping. L.
					74.14	8-11-64				
19F1	Dan Garrison	174	206	8	148	8- 6-52	175	17	P	Standby supply. Noticeable iron. L,P.
19F2	Dan Garrison	182	207	8	156	8-26-51	225	30	P	L.

Table 7 - Well records, Camano Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 31 N., R. 3 E. - Continued										
19K1	Dan Garrison	110	170	8	91	6-27-58	--	--	P	Screened from 108-118 ft. Supplies 105 families. L, P.
30G1	E. F. Harnden	138	114	36	99.47	8-13-64	--	--	DS	Supplies 7 cattle. P.
30P1	Mariner	78	44	36	39.22	8-13-64	--	--	D	
30Q1	Dave Bartel	110	90	36	85	1948	--	--	CD	Supplies store, cafe.
31B1	Ronald Watkins	10	12	36	7.59	8-12-64	--	--	D	Water level measured during pumping.
31C1	Al Aiktins	39	43	36	37.00	8-13-64	--	--	D	P.
31J1	A. D. Bennett	35	156	6	60	7-16-51	--	--	D	L.
31J2	Elger Bay Water Assoc.	140	220	6	138.84	8-11-64	--	--	P	Water level measured during pumping. Supplies 12 families.
31J3	Arthur Gough	16	40	36	27	8-12-64	--	--	D	Supplies 2 families.
32J1	H. D. Porter	123	158	6	122	11- 1-55	15	Slight	D	L, P.
32J2	Miriam Loucks	125	150	6	127	4- 4-61	20	3	D	L.
					126.22	8- 7-64				
32N1	M. Flugsteads	90	119	6	90	9-18-56	15	--	D	L.
32N2	W. McConnell	99	118	6	98.82	8-11-64	--	--	D	L, P.

Table 7 - Well records, Camano Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 31 N., R. 3 E. - Continued										
33M1	McKnight	144	179	6	148	7- 1-64	--	--	D	Supplies 2 families. L.
					146.32	8- 7-64				
33M2	John Ryder	136	163	6	137	6-23-61	--	--	D	L.
					135.82	8- 7-64				
33P1	C. G. Well	37	39	24	35	8- 7-64	--	--	D	Fluctuates 1 ft with tide.
T. 32 N., R. 2 E.										
13M1	Ray Correll	90	122	6	90	6- 6-58	15	--	D	L.
					89.27	8-27-64				
22H1	C. Brokaw	60	178	8	+30	9-24-49	20	20	D	Supplies 4 families. L.
22J1	Sherman Bast	110	172	8	38	10-14-45	35	20	C	Supplies 24 cabin resort. L, P.
22Q1	Chambers & Rodgers	210	247	6	208.75	8-25-64	--	--	D	Supplies 2 families. L, P.
23A1	Glandon	170	22	36	21.78	8-27-64	--	--	D	
23B1	Acaladi Water Co.	160	280	6	90	7-10-62	50	3	P	Supplies 10 families. L. Perforated from 92 to 102 ft.
23E1	Scenic Beach Water Co.	30	118	8	12	7-24-57	12 30p	-- 42	P	Supplies 58 families Noticeable sulfide odor. P.

Table 7 - Well records, Camano Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 32 N., R. 2 E. - Continued										
23E2	M. Eikanger	110	141	6	32	11- 1-60	15	88	D	L.
23F1	Joe Miller	177	183	6	75	11- 1-61	20	--	D	L.
23L1	T. Stradly	250	15	36	7	1958	--	--	D	
23M1	Gilbertson Land Co., Rocky Point Tracts	125	199	8	23	12- 3-62	45	34	P	L, O, P.
					21.77	3-10-64				
24B1	A. F. Heaton & F. Moody	40	75	6	43	4-17-59	--	--	D	L.
24B2	C. Rothrock	45	125	6	42	7-31-57	--	--	D	Plugged at 85 ft. Open-hole, 76-85 ft. L.
24C1	Doug Mavor	45	40	6	18	5- 9-58	10	--	D	Perforated from 25 to 30 ft. L.
24C2	Fred Doerflein	90	74	6	40	7-28-60	--	--	D	L.
24D1	Pope & Talbot, Inc.	13	29	6	1.81	8-27-64	--	--	N	Brackish taste.
24D2	Svend Larson	150	213	6	155	10-30-61	20b	5	D	L, P.
24G1	Pearson	53	74	6	50	4-10-57	--	--	D	Noticeable iron. L, P.
24G2	W. E. F. Powell	60	73	6	50	6- 1-55	15	2	D	L.
24H1	G. Grant	45	76	6	45.54	9- 3-64	40	Slight	D	Water level measured during pumping. Supplies 5 families. L.

Table 7 - Well records, Camano Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 32 N., R. 2 E. - Continued										
24H2	M. Kimball	15	40	6	2	6-11-56	6	16	D	L.
24H3	Harold York	15	25	6	2	1-29-60	6	18	D	L.
					2.22	9- 3-64				
26C1	Carl Huntington	260	7	31	1.50	8-26-64	--	--	D	
27R1	R. S. Katzenberger	205	141	6	81	1946	--	--	D	Penetrated about 35 ft of hardpan. P.
34B1	R. Reynolds	75	154	6	79	--	--	--	P	Supplies 19 families.
34G1	Parker	38	43	24	37	8-21-64	16	½	P	34G1 and 34H1 supply 125 families.
34G2	Frank Guest	25	84	6	23	11-29-60	13	47	D	L.
34G3	George Diafos	15	103	6	11	2-26-52	20	29	D	L, P.
34G4	O. W. Marckmann	52	129	6	59	9-26-49	4	1	D	L.
34H1	Parker	52	62	24	56	1930	--	--	P	34G1 and 34H1 supply 125 families. P.
34K1	Harry Richards	35	92	6	30	8- 3-60	20	35	D	L.
34Q1	Raymond Arnold	95	74	36	59.55	8-24-64	--	--	D	P.
34Q2	Thiesen & Graybell	80	160	6-5	58	3-14-61	12	22	D	Screened from 82 to 87 ft. Supplies 2 families. L.
34R1	E. E. Reagan	217	148	6	120	11- 6-62	9	20	D	L.

Table 7 - Well records, Camano Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 32 N., R. 2 E. - Continued										
35B1	G. L. Edris	437	200	6	Dry	--	--	--	N	
35C1	C. F. Kracke	422	76	48	72.30	8-26-64	--	--	D	Mostly hardpan, 0-76 ft. Water level almost at surface in winter.
35E1	N. A. Kent	257	6	60	2.70	9- 2-64	--	--	S	Soil, 0-3 ft; blue clay, 3-4 ft; water-bearing gravel, 4-6 ft.
36D1	Dan Garrison	580	9	72	5	9-10-64	--	--	N	
T. 32 N., R. 3 E.										
16Q1	A. V. Bucklin	105	126	6	100	6-26-56	10	2	D	L, P.
					101.60	9-15-64				
17H1	Unknown	57	36	4	30.30	9-15-64	--	--	N	
17N1	R. D. Olson	83	137	6	107	1946	--	--	D	
17R1	Francis Jarard, Jr.	172	205	6	178	8-18-51	140	7	DS	L.
17R2	Francis Jarard, Jr.	172	194	8	169	1962	--	--	DS	Supplies dairy farm. P.
18A1	Arrowhead Beach, Inc.	133	165	6	122	3- 4-47	50	--	N	Brackish taste. C, L, P.
18A2	Arrowhead Beach, Inc.	133	136	6	122	11-18-51	14p	--	P	Supplies 31 families. Noticeable iron. C, L, P.
18K1	Ray Brayton	65	80	6	45	7- 3-59	9	30	D	L.

Table 7 - Well records, Camano Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 32 N., R. 3 E. - Continued										
18K2	Ed Granston	19	82	6	21	8-28-50	20b	44	D	Supplies 5 families. L, P.
18Q1	C. W. Reynolds	8	127	6	0	3-29-62	50	12	D	L.
					2.82	9- 8-64				
19C1	Utsalady Water System	80	137	6	86	9-13-57	--	--	P	Supplies 60 families. C, L, P.
19F1	Buena Vista Community Club	237	273	6	215	9- 8-60	43	4.5	P	L.
19G1	Marten Melum	188	15	48	1.87	9- 9-64	15	--	D	Noticeable iron. L.
19M1	A. W. Campbell	225	241	6	202	9- 9-63	20	2	D	L, O, P.
					200.08	6- 1-64				
19Q1	Mel Lukehart	250	267	6	240	9- 7-61	--	--	DS	Supplies 15 horses. L, P.
20A1	Orville Hanstad	140	180	8	141	5-24-60	350	12	I	L.
20A2	Orville Hanstad	130	160	6	130	1946	--	--	D	Noticeable iron. P.
20E1	Ken Turner	70	80	24	56.80	9-14-64	--	--	DS	Supplies a few cattle. P.
20Q1	M. Leque	23	73	6	19	1-10-53	--	--	D	L.
					18.60	9-15-64				
20R1	P. Johnson	40	67	6	37	8-26-58	--	--	D	L, P.

Table 7 - Well records, Camano Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 32 N., R. 3 E. - Continued										
21B1	N. Rekdahl	112	141	6	112	1- 4-58	--	--	D	L.
21C1	A. L. Danielson	124	170	8	125	6- 9-56	350	13	I	L.
21F1	A. L. Danielson	105	158	6	103	5-28-64	20	31	D	L.
21H1	Babcock	139	163	6	138	1-20-53	15	--	D	L.
					134.90	9-14-64				
21K1	Mike Martin	95	135	12	95	6-11-49	450	5	DIS	Originally dug to 95 ft. Perforated from 112 to 130 ft. L, P.
21M1	M. Johnson	47	85	6	41	7- 8-52	--	--	D	L.
22M1	Magnus Wold	143	159	6	142	1948	--	--	DS	Supplies 25 cattle.
22N1	Camano Gateway, Inc.	150	186	6	146	7-16-59	20	2	CD	Supplies 4 stores. Noticeable iron. L, O, P.
					143.86	4- 3-64				
22R1	Block	65	97	6	58	10- 9-62	20	2	D	Supplies 2 families. L, P.
					56.60	9-15-64				
27K1	Bub Nelson	72	70	6	60	--	--	--	D	
27L1	Juniper Beach Co-op Water Assoc.	63	80	8	60	1-17-60	80	5	P	Supplies 103 families. L, P.

Table 7 - Well records, Camano Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 32 N., R. 3 E. - Continued										
27M1	J. B. Magelssen	106	135	6	115	1954	--	--	D	
27N1	William Gaunt	90	121	6	99	1942	--	--	D	Supplies 2 families. L.
					90.90	9-16-64				
28A1	Wally Thurman	132	161	6	130	3-24-60	--	--	CD	Supplies drive-in cafe, store. L.
					129.42	9-16-64				
28A2	Ray Zuppe	144	178	6	145	5- 5-51	10	--	DS	Supplies a few cattle. L.
28C1	Miss Frostad	30	33	24	29.50	9-15-64	--	--	DS	Supplies 16 cattle.
28J1	L. Rhodes	70	69	36	66.30	9-16-64	--	--	DS	Water level measured during pumping. Supplies 24 cattle.
29L1	A. G. Nelson	17	8	29	4	1964	--	--	D	Supplies 2 families. P.
30B1	Ronald Strand	217	16	60	5.55	9-11-64	--	--	DS	Supplies 4 cattle. Noticeable iron.
30H1	Jay Couch	184	204	6	170	5-27-58	--	--	D	L.
					171.15	9- 9-64				
31C1	J. F. Hale	146	275	6	131	3-28-64	30b	30	CD	Plugged at 269 ft. Perforated from 265 to 269 ft. Supplies 3 stores. L, P.
31N1	Clarence Berry	83	70	5	20	1957	--	--	D	Well penetrates mostly sand, with gravel near bottom.
32L1	Harold Moe	125	164	6	124	11- 8-62	--	--	D	Noticeable iron. L, P.

Table 8 - Well records, Whidbey Island

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 28 N., R. 3 E.										
1E1	Florence Morrison	255	49	48	44.01	5- 6-63	--	--	DS	Noticeable iron.
1E2	B. J. Kearney	240	55	30	47	--	--	--	DS	Supplies 4,000 chickens. Noticeable iron.
1J1	Jim Bowers	20	74	6	13.45	5- 6-63	25	10	P	Supplies 16 families. Noticeable iron. L, P.
2C1	D. L. Gibson	359	79	8	66	5- 8-63	--	--	D	Water-bearing sand, 66-79 ft. P.
2D1	Carl Poolman	305	14	30	7.62	5- 9-63	--	--	D	Noticeable iron.
2D2	Melvile Surface	285	10	30	2.71	5- 9-63	--	--	D	Noticeable iron. P.
2F1	Lyle Dexter	310	--	48-4	--	--	--	--	DS	Supplies 6 cattle
2G1	Wesley Dexter	325	--	48-6	--	--	--	--	D	
2H1	W. E. Johnson	280	9	36	.82	5- 6-63	--	--	I	Irrigates one-fourth acre.
3H1	Xelis Arnold	171	13	48	5.81	5-23-63	--	--	D	Supplies 2 families.
3K1	W. R. Adler	75	10	36	8.01	5-23-63	--	--	D	Supplies 3 families. Noticeable iron. P.
4A1	D. A. Green	125	95	6	79.04	6- 6-63	--	--	DS	Supplies 10 cattle. Noticeable iron. L,P.
4D1	Clay Green	10	67	6	8.60	6-10-63	15b	Slight	D	Supplies 9 families. L, O, P.
4E1	Harold Johnston	8	57	6	11	1956	15	10	D	L.
4M1	Dave Mackie Memorial Park	20	25	6	3.38	6- 6-63	10	--	D	L, O, P.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 28 N., R. 3 E. - Continued										
4M2	Henry Richards	18	16	30	6	6- -63	--	--	D.	L.
4M3	Ed Teel	10	14	48-36	5.75	6-10-63	--	--	PS	Supplies 10 families, 71 cattle, Noticeable iron. P.
5R1	Herb Thomas	12	70	6	3	10- -52	35p	14	P	Supplies 14 families. Noticeable iron. L.
5R2	Emma Chamberlain	13	72	6	4	1948	--	--	D	Noticeable iron. L.
8A1	A. B. Bently & Co.	14	92	6	24	1958	11	--	P	Supplies 8 families. Noticeable iron. P.
9B1	N. N. Greenleaf	350	54	36	52.56	6-10-63	--	--	D	P.
9H1	H. R. Baer	350	133	6	96.79	7- 5-63	10	--	D	L, P.
10B1	Harvey Gould	89	42	4	37	3- -63	--	--	D	Well penetrated sand with thin clay layers. P.
10L1	June Engebretson	250	12	30	3.84	5-23-63	--	--	D	
10P1	M. D. Hagstrom	225	6	105	4.20	5-23-63	--	--	D	Supply inadequate during summer. P.
11A1	Howard Hellman	301	98	30	88.78	5-10-63	--	--	DS	Supplies 1,000 turkeys, 10 cattle. P.
11C1	Lottie Johnson	118	81	6	67.15	5- 9-63	5	--	D	L, P.
11E1	Green & Collins	25	9	40	5.11	5-22-63	2	--	DS	Topsoil, 0-4 ft; water-bearing gravel, 4-9 ft. Supplies 50 cattle. P.
11G1	Melvin Kamback	85	73	6	42	1960	5	--	DI	Irrigates 1 acre. O, P.
					39.06	5-10-63				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 28 N., R. 3 E. - Continued										
11G2	Robert Bryant	100	80	6	30.82	5-10-63	30	--	D	
11H1	R. W. Brockman	179	112	6	94	1956	10	13	D	L.
					94	1962				
11J1	C. L. Roberts	140	58	--	Dry	1960	--	--	X	Topsoil, 0-4 ft; blue clay, 4-58 ft.
11J2	C. L. Roberts	110	45	30	36	1961	--	--	D	L.
					38.03	5-16-63				
11N1	Green & Collins	7	175	4	+20	1947	--	--	D	Noticeable sulfide odor. P.
11N2	Green & Collins	7	410	6	Flows	5-22-63	--	--	D	Perforated from 165 to 175 ft and at 200 ft; open at bottom. Well uncapped and flowing in 1963. Noticeable sulfide odor.
12E1	Neil Christensen	248	240	6	188.25	5-10-63	--	--	D	P.
13D1	Vern Scott	35	12	48	4	1943	--	--	D	
13N1	Gilbert Franklin	15	19	48	14.79	5-22-63	--	--	I	Irrigates one-fourth acre. P.
14A1	Arthur Heisdorf & Gordon Messenger	35	169	6	85.25	5-30-63	14	9	D	Supplies 2 families. L, P.
14D1	Sandy Hook Yacht Club Estates	8	403	8	Flows	--	--	--	P	Supplies 48 families. L, P.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well Alt. (feet)	Well Depth (feet)	Well Diam. (in.)	Water level below land surface Feet	Water level below land surface Date	Pump Yield (gpm)	Pump Draw-down (feet)	Use	Remarks
T. 28 N., R. 3 E. - Continued										
14G1	R. H. Viergutz	170	42	30	41	1953	--	--	D	
					40.27	5-21-63				
14P1	R. E. Tribou	208	86	36	71.89	5-21-63	--	--	N	
14P2	R. E. Tribou	208	215	6	103	1960	20	50	P	Supplies 12 families. L, O, P.
					77.55	5-21-63				
14P3	R. W. DeRosa	98	80	6	42	9- 2-58	5b	--	D	Screened from 62 to 67 ft. L, P.
					40.36	5-21-63				
14P4	R. W. DeRosa	100	326	6-4	40	8- 1-58	3b	20	D	Perforated from 61 to 80 ft. L.
					28.25	5-21-63				
14P5	Ray Reed	203	10	36	2.50	5-21-63	--	--	D	
14P6	Frank Dettenmayers	90	58	6	49	1958	3	--	D	L.
					44.55	5-30-63				
15C1	H. R. Janssen	179	10	30	.87	5-23-63	--	--	DS	Supplies 20 cattle.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 2 E.										
1D1	E. T. Andersen	133	143	6	--	--	--	--	N	
1F1	Unknown	165	18	48	9.95	8-26-63	--	--	D	
1G1	Robert Bremer	190	238	6	184.00	9-19-63	12	2	CDS	Supplies 500 goats, milk plant. L, P.
1Q1	Unknown	320	15	84	2.49	8-26-63	--	--	D	
2A1	D. H. Ingwersen	122	17	30	8.55	8-26-63	--	--	D	Noticeable iron. P.
2G1	W. E. Lawrence	116	270	6	118	4- 8-57	--	--	D	Gravel-filled to 170 ft. L, O, P.
					115.69	8-16-63				
2K1	C. J. Newlin	90	187	8	85	1958	40	4	D	P.
					82.20	8-16-63				
2Q1	F. D. Eaton	85	149	6	90	1-17-63	20	14.5	D	L, P.
					91.63	8-16-63				
2Q2	F. D. Eaton	68	35	36	30.30	8-16-63	--	--	N	L, P.
3B1	Jones	125	124	6	86.76	7-18-63	--	--	D	
3G1	Clyde Robinson	112	12	36	9.21	7-18-63	--	--	N	

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 2 E. - Continued										
3G2	Clyde Robinson	120	95	6	77	2-16-62	15	3	D	L.
3K1	J. F. Bradshaw	60	32	--	17	1942	--	--	P	Water encountered at 32 ft. Supplies 4 families, golf course club house.
					15	1953				
3K2	C. M. Ambrose & R. W. Isaacson	55	77	6	40	8-21-57	15	12	D	Supplies 2 families. L, P.
					39.37	7-18-63				
4L1	M. M. Ollom	120	115	6	84.73	7-19-63	--	--	D	Noticeable iron. P.
4P1	Roland Curtiss	145	140	6	103	10- 1-58	8p	Slight	D	Noticeable iron. L.
					101.04	7-19-63				
5D1	Gene Spradlin	245	248	6	234	1-23-63	12	Slight	D	L.
5N1	F. G. Read	186	214	6	187.84	7-23-63	--	--	N	Supply inadequate for domestic use. Casing badly rusted. P.
5N2	F. G. Read	185	210	6	182	1956	20	1.5	D	Supplies 2 families. L.
					185.11	7-23-63				
6A1	Fred Peterson	150	205	6	175	1956	15	7	D	L, P.
					173.55	7-22-63				
6A2	William Roller	123	18	--	12	1962	--	--	D	P.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 29 N., R. 2 E. - Continued										
6A3	William Roller	132	160	6	--	--	--	--	D	Noticeable odor swamp gas. L.
6A4	G. C. Harriman & Harry Wilbert	220	220	6	206.97	7-23-63	--	--	D	Supplies 3 families, fire department. C, O, P.
6A5	O. Sander	235	228	6	116	3-20-63	20	5	D	L.
6B1	Bush Point Resort	15	278	6	Flows	1- -51	--	--	C	Supplies resort, 15 cabins, cafe. L, O, P.
					27.51	7-22-63				
6B2	Mrs. Agnes Longfellow	18	31	48	7.70	7-22-63	--	--	D	Supply inadequate in summer.
6B3	Frank Bathurst	27	240	6	--	--	--	--	X	Well sealed and plugged. Brackish taste. L.
6B4	H. H. Mathis	35	38	6	31	6- -51	4	5	C	Supplies motel. L.
6G1	L. H. Bain	79	112	6	91	10-20-61	20	1	D	L.
					71.43	7-24-63				
6G2	Lighthouse Shores	90	107	6	84	5-17-61	40	6	P	Supplies 3 families. L.
					75	6-26-61				
6H1	Angus Scurlock	124	130	6	119	Spr. 1952	7	1.5	D	L.
6J1	R. Waylan	130	16	--	7.20	7-23-63	--	--	D	
8C1	Bush Point Park Water Co., Inc.	115	128	6	109.02	7-24-63	5	--	N	Well inadequate for public supply. O.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 29 N., R. 2 E. - Continued										
8C2	Bush Point Park Water Co., Inc.	115	138	6	102	8-15-58	30	6	P	Supplies 22 families. L, P.
8D1	W. H. Brog	118	168	6	131	8- -62	30	6	D	L, P.
					116.32	8- 1-63				
8F1	Paul Skewes	70	110	6	95	1946	10	9	D	Supplies 2 families. Noticeable iron. P.
					68.42	7-25-63				
8F2	W. P. Dobson	85	110	6	83.32	7-25-63	--	--	D	L.
8J1	Unknown	78	66	36	60.12	7-25-63	--	--	D	
8K1	C. Saddler	65	95	3	65	4-17-35	7	--	D	L, P.
8K2	Windmill Heights	162	185	6	155	6- 5-57	20	20	P	Supplies 8 families. L.
8L1	Ruby Adams	55	91	6	53.48	7-25-63	--	--	N	
8L2	Ruby Adams	55	122	6	80	4- 1-50	30	18	D	L.
8R1	C. W. Field	58	84	6	48	9- -51	15	2	D	L, P.
					61.77	7-25-63				
9A1	C. E. Smith	175	55	42	48.90	7-19-63	--	--	D	L.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 29 N., R. 2 E. - Continued										
9B1	R. F. Guptill	210	200	6	180	1948	--	--	D	P.
					182	1960				
					181	7-19-63				
9E1	Byron Pratt	25	23	--	18.76	7-25-63	--	--	DS	Supplies 25 cattle.
9E2	E. F. Sawyer	15	60	6	+5.50	1- 4-47	64	17.5	N	Flowed 20 gpm, 1-4-47. Fine sand plugged well soon after pump test. L.
					Flows	7-25-63				
9F1	Carson	125	16	48	13.36	7-19-63	--	--	D	
9F2	Frank Novarra	110	24	48	15.88	7-19-63	--	--	D	
9J1	Unknown	141	19	--	12.33	7-19-63	--	--	D	
9L1	Harry Josephson	40	45	60	15.55	7-25-63	--	--	DS	Hardpan and clay, 0-45 ft. Supplies 2,000 chickens, 80 cattle.
9L2	Elmer Sawyer	60	45	60	17	1942	--	--	DS	Supplies 750 chickens, 40 cattle.
					21	1- -63				
					16.03	7-25-63				
9N1	H. C. Hill	40	114	8	27	1- -63	40	Slight	CS	Supplies 15 resort cabins, swimming pool, 3 cattle. L.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 2 E. - Continued										
9N2	Mrs. E. H. Rose	10	58	6	Flows	2- 8-54	20	23	D	L, P.
					+.84	7-25-63				
9N3	Mrs. Fred Marshall	10	62	6	+2	1954	--	--	D	Supplies 2 families. P.
9N4	L. J. Proby, R. J. Ayres, George Monette	10	86	6	+2	1950	--	--	D	Supplies 3 families. Noticeable iron. L.
					Flows	7-25-63				
9N5	Harry Simmons and others	10	90	6	+2	1951	1f	--	D	Supplies 4 families. L.
9Q1	Mutiny Sands, Inc.	70	248	8	39	2- 6-59	323	109.9	P	Supplies 23 families. Noticeable iron. C, L, P.
10C1	R. M. McIntosh	75	135	6	65	1937	--	--	D	Supplies 2 families.
10C2	St. Angustines Episcopal Church	115	124	6	92	6-13-63	10	5	D	Supplies church. L.
					87.69	7-18-63				
10C3	R. O. Ward	70	130	36-6	47	1962	16	--	D	Originally dug to 64 ft. L.
					52.28	7-19-63				
10E1	John Petro	105	67	6	24.24	7-19-63	6	--	D	L, P.
10F1	F. A. Becker	25	95	6	13	1961	10	40	P	Supplies 5 families. L, O, P.
					24.03	8- 7-63				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 2 E. - Continued										
10J1	Dutch Hollow Terrace	55	137	6	50.16	8- 7-63	--	--	P	Noticeable iron. L.
10K1	R. R. Fournier	85	79	6	68	10- -58	10	2	P	Supplies 16 families. L, P.
					68.79	8- 6-63				
10L1	Fred Becker	19	14	--	10.15	8- 7-63	--	--	D	
10M1	P. W. Wyvel	112	32	--	21.40	7-19-63	--	--	D	Topsoil, 0-2 ft; hardpan, 2-32 ft, 1 inch layer of water-bearing sand.
10Q1	Austin Marshall	65	67	36-48	61.01	8- 6-63	--	--	D	L, P.
10R1	Lehman Mill & Lumber Co.	59	60	40	55	1961	8	--	C	Supplies sawmill and millpond. L.
					55.57	8- 6-63				
11B1	M. C. Otto	110	161	6	116	4-21-58	12	6	D	Noticeable iron. L.
					113.33	8-16-63				
11C1	Pope & Talbot, Inc.	95	138	6	92	4-26-62	18	12.5	P	L, P.
					89.33	8- 7-63				
11E1	Vern Stewart	28	19	36	11.52	8-27-63	--	--	D	Standby supply. Noticeable iron. P.
11J1	M. Rimstad	85	95	36	91.52	8-13-63	--	--	DS	Supplies 4 cattle.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 2 E. - Continued										
11K1	Ruby Sanders	100	138	6	112	11- 1-60	12	Slight	D	Noticeable iron. L.
					107.58	8-13-63				
11M1	C. E. Dahlman	85	143	6	78	1959	32	61	X	L.
11M2	C. E. Dahlman	110	165	6	115	11- -59	80	10	I	Irrigates 4 acres. Noticeable iron. L, P.
11N1	Mobil Oil Co.	110	117	6	102.71	8- 6-63	--	--	C	Supplies service station. L.
11N2	G. L. Brown	110	132	6	103	1961	30	20.5	C	Supplies 3 stores. Noticeable iron. L.
11N3	D. N. Harpham	110	104	38	98	3-30-61	25	2	C	Supplies nursing home. L.
					102.25	8- 8-63				
11N4	C. E. Dahlman	110	142	6	111	5- -52	6	7	D	Screened from 114 to 120 ft. L, P.
11N5	C. E. Dahlman	118	124	6	109	6-20-61	25	1	P	L, O, P.
					111.33	8-12-63				
11N6	Everett Hayes	112	132	6	104.70	8-12-63	10	Slight	C	Supplies 3 businesses. L.
11N7	Gerald Brown	92	117	6	90	10-31-63	10	6	CP	Supplies 4 families, 3 stores. L.
					89.98	4-14-64				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 2 E. - Continued										
11Q1	Ben Trussell	118	65	36	62	6- -63	--	--	D	Well penetrates sand with some hard layers. Supplies 2 families.
11Q2	E. W. Scott	100	110	6	98	9-28-60	10	2	DS	Supplies 7 cattle. L.
11R1	W. R. Everhart	135	145	6	128	7- -63	5	--	D	L, P.
					125.69	8-13-63				
11R2	E. J. Boyett	115	134	6	104.99	8-13-63	--	--	D	
12M1	Unknown	88	82	36	77.84	8-13-63	--	--	D	Noticeable iron.
12M2	Hilmer Newman	85	92	6	78	3-15-59	17	2	DS	Supplies 10 cattle, 10,000 chickens. Noticeable iron. L, P.
					77.05	8-13-63				
12N1	Harold Newman	105	112	6	86	11-27-56	100	--	DIS	Irrigates 20 acres, supplies 24 cattle. L.
13B1	C. T. Thompson	120	105	6	80	1958	10	1	DS	Supplies 15 cattle.
					93.10	9-23-63				
13C1	Mrs. Catherine Witty	140	125	6	108	1-30-62	15	4	D	Noticeable iron. L, P.
					105.81	9-24-63				
13D1	Eric Westin	100	15	48	10.70	8-14-63	--	--	DS	Sand, 0-15 ft. Supplies 10 cattle. Supply inadequate in fall.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 2 E. - Continued										
13E1	Ona Young	72	70	36	67.08	8-14-63	--	--	N	
13E2	Ona Young	71	84	6	64	4-30-56	12	1	CS	Supplies motel, 5 cattle. L, O, P.
					66.59	8-14-63				
13J1	Larson	78	88	--	84.66	6-13-63	--	--	N	
13J2	H. & H. Properties	114	126	6	100	6-16-60	25	3	P	Supplies 25 families. L, P.
					103.30	8-15-63				
13L1	C. E. Hornshaw	23	20	36	13.46	8-15-63	--	--	N	Supply inadequate for domestic use.
13L2	C. E. Hornshaw	18	25	36	21.99	8-15-63	--	--	DS	Supplies 14 cattle. P.
14A1	Carl Westin	95	92	36	90	1916	--	--	DS	Supplies 10 cattle.
					90	1950				
14C1	Unknown	175	6	--	3	--	--	--	D	
14D1	Jack Daniels	130	123	6	98	Spr. 1962	--	--	DS	Supplies 15 cattle.
14D2	R. A. Fuller	115	136	6	111	11- 1-60	15	Slight	D	L, P.
					111.47	8-12-63				
14E1	Albertina Rearden	133	157	6	130	--	--	--	D	

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 2 E. - Continued										
14H1	Carl Dassel	105	105	36	103	1954	--	--	N	Clay, 0-40 ft; sand, 40-105 ft. P.
					101.96	8-14-63				
14H2	Carl Dassel	105	120	6	102	1959	--	--	DS	Supplies 10 cattle.
14P1	W. J. McLees	300	110	48	102	8-14-63	--	--	D	Well being dug when visited.
14Q1	D. S. Johnson	270	282	6	262	4-21-60	25	8	DS	Supplies 7 horses. L, P.
15A1	C. L. Jensen	70	65	6	27.30	8-12-63	--	--	DS	Supplies 6,000 chickens. P.
15B1	Walter Weston	95	130	6	60	4-10-59	60	30	DS	B1 and B2 supply beaver ranch. L.
15B2	Walter Weston	100	167	8	105	3- 4-63	25	2	DS	B1 and B2 supply beaver ranch. L.
15B3	H. W. Chambers	58	67	--	--	--	--	--	D	L.
15E1	Fred Peterson	20	34	4	21	1945	--	--	D	P.
					21	1957				
15E2	Donald McKay	8	90	6	9	4-15-63	12	51	D	Slightly brackish taste. L, P.
					5.14	8- 1-63				
15F1	Where Ships Pass Addition	75	173	6	140	8- -57	25	6	P	Supplies 25 families. L.
					60.64	7-31-63				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 2 E. - Continued										
15K1	Mrs. Charles Dixon	78	72	48	70	1961	--	--	DS	Supplies 2 cattle. P.
					68.46	8- 5-63				
15L1	C. F. Andrews	25	28	2	--	--	--	--	D	P.
15L2	Glo-Crest Addition	8	41	6	7	6-15-59	12	--	P	Supplies 6 families. L.
15L3	C. H. Knoblauch	30	130	6	46	8- 9-61	12	11	D	Screened from 98 to 108 ft. L.
15P1	Oral Skiles	25	16	36	19	1960	--	--	D	P.
15P2	Thelen	5	32	6	2.52	8- 1-63	--	--	P	Supplies 10 families.
15Q1	Mrs. Sidney Ammondson	20	23	36	--	--	--	--	D	
15R1	G. S. Brewer	130	136	6	122	4- -52	5	1	D	Supplies 3 families. L, P.
					122.21	8- 2-63				
16A1	E. A. Gabelein	19	66	6	40	7-15-53	15	24	D	L.
16A2	L. T. Buhtz	38	85	6	61	1961	--	--	D	L.
					38.72	7-30-63				
16A3	W. C. Miller	25	71	6	39	3-13-62	--	--	D	Noticeable iron. L, P.
					19.19	7-30-63				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well Alt. (feet)	Well Depth (feet)	Well Diam. (in.)	Water level below land surface Feet	Water level below land surface Date	Pump Yield (gpm)	Pump Draw-down (feet)	Use	Remarks
T. 29 N., R. 2 E. - Continued										
16A4	A. M. Constans	30	65	6	29	10-26-61	--	--	D	Noticeable iron. L, P.
16B1	J. B. Schroeffel	45	53	36	49.31	7-30-63	--	--	D	
16B2	C. B. Lindahl	38	80	6	50	9-13-60	12	15	D	Noticeable iron. L.
					37.64	7-30-63				
22B1	O. E. Endicott	20	17	36	14	Fall 1962	--	--	DS	Supplies 4 cattle.
22C1	R. C. Robinson	10	8	30	7	8- 1-63	16	--	P	Supplies resort and 48 families. P.
22L1	Mrs. M. E. Barr	170	196	6	166.54	8- 2-63	--	--	P	Supplies 8 families.
22L2	Barr Addition	15	51	6	14	6-21-63	15	3	P	Supplies 6 families. L, P.
22N1	Mutiny Bay Shores	15	18	6	7.15	8- 2-63	--	--	P	Supplies 28 families. L, P.
23A1	Albert Oxford	15	19	48	17	1950	--	--	D	
					16	1962				
					15.19	8-14-63				
23C1	Mrs. J. J. Ernst	300	94	60	80.71	8-15-63	--	--	D	Hardpan, 0-87 ft; sand, 87-94 ft.
23C2	D. R. Fountain	292	111	6	86	3- 9-56	10	2	D	L, P.
					86.44	8-15-63				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 2 E. - Continued										
23D1	B. C. Gates	260	268	6	250.04	8- 2-63	--	--	D	Supplies 3 families. L, P.
23E1	B. J. Permenter	230	26	36	20.96	8- 2-63	--	--	DS	Supplies 6 cattle, P.
23G1	A. R. Bellem	35	100	6	13	11-19-62	20	10	DI	L.
23K1	J. E. Cloke	5	41	6	3	7-20-62	15	12	D	Noticeable iron. L, P.
					1.67	8-14-63				
27E1	K. W. Ellison	105	130	6	93	7-12-54	--	--	D	Brackish taste, 129-130 ft. Supplies 2 families. L, P.
27L1	Mrs. Phil Wahl	110	48	36	43.99	8- 7-63	--	--	DS	Mostly clay; blue sand at bottom. Supplies 15 cattle. Noticeable iron. P.
28H1	Mutiny Bay Shores	10	33	6	5.06	8- 2-63	--	--	P	Supplies 16 families. L, O, P.
T. 29 N., R. 3 E.										
2F1	Betty Harris	134	97	--	--	--	--	--	D	
2G1	R. C. Rainey	130	10	48	7.35	10- 3-63	--	--	DS	Supplies 50 hogs.
2R1	Beachwood Community Water System	250	165	6	130	12-13-58	20	25	P	L, P.
					132.01	10- 4-63				
3R1	Town of Langley	150	42	8	23	9- -62	100	7	P	B1, B2, B3 supply the Town of Langley.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 3 E. - Continued										
3B2	Town of Langley	175	244	8	167	9- 9-63	600	55	P	B1, B2, B3 supply the Town of Langley. L, P.
					163.80	9-11-63				
3B3	Town of Langley	155	42	16-8	13	10-21-62	100	7	P	Gravel-packed. B1, B2, B3 supply the Town of Langley. L, P.
3B4	Town of Langley	135	12	120	4	--	--	--	I	Irrigates 5 acres of lawn. Was supply for Langley, 1920-1939.
3B5	Town of Langley	137	12	120	3.43	9-11-63	--	--	N	Was supply for Langley, 1920-1939.
3B6	Town of Langley	175	245	10-8	170	6-22-47	200	15	X	Was supply for Langley, 1948-1962. L.
3J1	Clifford Hagstrom	165	14	36	9.08	10- 3-63	--	--	DS	Supplies 4 cattle.
3Q1	C. D. Reams	215	48	30	44.50	Fall 1963	--	--	D	Sand, 0-36 ft, 39-45 ft, 47-48 ft; hard sandy blue clay, 36-39 ft, 45-47 ft.
4E1	F. M. Phelps	255	100	36	91.25	9-13-63	--	--	D	
4F1	N. Baker	220	60	36	45	--	--	--	D	P.
4K1	George McAlpine	225	21	30	21.01	10- 2-63	--	--	D	Supply inadequate.
4L1	G. E. Rowlett	220	18	8	16.60	10- 2-63	--	--	D	
5C1	Unknown	210	70	42	Dry	--	--	--	N	
5H1	F. A. Peterson	240	78	--	74.61	9-18-63	--	--	D	P.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 3 E. - Continued										
5H2	F. Maltby	245	96	42-30	76	--	--	--	D	Hardpan, 0-2 ft; sand, 2-96 ft. P.
5H3	C. H. Gallion	275	101	62	99.69	9-17-63	--	--	DS	Supplies 9 cattle. P.
5L1	Adolph Rovainen	95	57	30	33	1962	--	--	D	
					46.95	9-25-63				
5P1	C. A. Anderson	50	61	6	46	6-29-61	15	4	D	L, P.
					33.14	9-25-63				
5P2	Ivan Richardson	65	138	6	61.92	9-25-63	8	--	D	L, P.
6B1	Newton Hollowell	185	32	8	19.44	9-25-63	--	--	D	P.
6R1	Carl Wernik	27	26	36	18	Spr. 1963	--	--	D	
					20.76	9-25-63				
7E1	Mrs. R. A. Buck	240	35	30	31	11- -62	--	--	D	
					33.54	9-24-63				
7G1	Ernest Graham	64	43	36-30	39.16	9-24-63	--	--	D	
7H1	Raynard Gabelein	25	16	60	10	Fall 1962	--	--	DS	Hardpan, 0-16 ft. Supplies 8 cattle, 13,000 chickens.
7L1	R. W. Hawkins	90	83	4	77.37	9-24-63	--	--	DS	Supplies 11 cattle.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 3 E. - Continued										
7N1	Jack Cordas	104	90	6	71.29	9-24-63	--	--	CS	Supplies motel, 3 horses. L, P.
8E1	Larson	32	--	6	8.54	9-25-63	--	--	D	
8M1	J. Z. Sexton	50	17	--	7	8- 8-63	--	--	D	Soil with gravel, 0-17 ft.
8N1	Hoss	117	114	6	93	6- 8-62	10	9	D	L, P.
					87.48	9-25-63				
9K1	George Saxton	180	22	40	18	Spr. 1963	5	.1	D	P.
					17.27	10- 2-63				
10A1	Reggie Taylor	285	167	6	152	--	30	--	D	Supplies 4 families.
10C1	Unknown	257	106	6	91.20	10- 2-63	--	--	D	P.
10F1	Sam Quigley	225	69	48	61.80	10- 2-63	--	--	D	P.
10H1	F. R. Neil	290	147	6	127.36	10- 3-63	--	--	D	P.
10P1	Patrick Clark	183	50	30	42.20	10- 2-63	--	--	DS	Supplies 1 cow, 20 chickens. P.
11E1	Jaeger	312	26	--	16.98	10- 3-63	--	--	D	
11N1	O. K. Porter	305	210	6	145.13	10- 3-63	25	--	D	P.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 3 E. - Continued										
12E1	H. S. Bartholemew	170	73	6	58	8-19-60	12	7	D	L, P.
					57.73	10- 4-63				
12M1	Fletcher	125	--	6	--	--	--	--	N	
12N1	Atkinson	119	32	30	30.52	10- 4-63	--	--	D	
12N2	J. R. Schillinger	135	12	63	8	--	--	--	DC	Supplies custom butchering shop.
13P1	E. L. Fuller	198	257	6	187	3- 8-61	--	--	N	Well had up to 8 lbs. gas pressure (68 percent methane). L.
14D1	Waterman Mills	310	186	6	149.23	10- 3-63	17	--	CD	Supplies sawmill.
14H1	McDonald	295	327	6	152	Sum. 1962	10	--	D	L, P.
14K1	C. H. Surface	225	16	36	13.54	4-25-63	--	--	D	P.
14M1	Mrs. Jennie Herd	350	50	--	46.35	5-28-63	--	--	N	Supply inadequate for domestic use. P.
14M2	Mrs. Jennie Herd	345	181	6	156	4- 1-60	25	7	D	L.
					167.84	5-28-63				
14M3	I. H. Clark	341	63	36	61.75	5-29-63	--	--	D	Hardpan, 0-63 ft.
14M4	I. H. Clark	328	12	48	9.87	5-29-63	--	--	N	Dry in summer. L.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 3 E. - Continued										
14N1	Mrs. Gertrude Kiehl	355	149	6	128	1958	15	4.5	DS	Supplies 4 horses. Noticeable iron. L.
					134.59	5-29-63				
15J1	G. E. Walls	340	45	36	37.91	5-29-63	--	--	D	Noticeable iron. P.
15N1	Dewey Hoekstra	110	37	48	25.05	5-31-63	1	--	D	Soil, 0-13 ft; hardpan, 13-34 ft. water-bearing sand, 34-37 ft.
15N2	Robert Pickens	98	36	48	32.55	5-31-63	--	--	D	Noticeable iron. L, P.
15N3	Eulice Miller	113	57	6	39	1953	10	--	D	L, P.
					30.25	5-31-63				
15R1	H. E. Davis	333	113	6	98	1954	30	2	D	L.
15R3	H. E. Davis	338	46	36	39.81	5-28-63	--	--	N	
15R4	Edwin Bergquist	330	24	36	19.02	5-28-63	--	--	CD	Supplies restaurant, 4 families. P.
16G1	J. O. Hapeman	120	17	30	10.60	9-26-63	--	--	DS	Topsoil, 0-2 ft; sand and gravel, 2-10 ft; very fine sand, 10-17 ft. Supplies 12 cattle.
16J1	William Mahan	90	38	36	36.15	5-31-63	--	--	D	P.
16J2	Aldon Johnson	115	16	48	14.46	6- 3-63	--	--	D	
17D1	M. J. Fedorak	135	12	42	Flows	9-25-63	--	--	D	P.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 3 E. - Continued										
17E1	Everett Hayes	105	118	6	97.19	9-26-63	--	--	D	Supplies 2 families. L.
17F1	Mrs. Ben Maynard	165	12	30	8.97	9-26-63	--	--	D	
17L1	Frank Kramer, Sr.	170	53	30	44	1958	--	--	DS	Topsoil, sand, 0-25 ft; hardpan, 25-27 ft; sand with blue clay layers, 27-53 ft. Supplies 14 cattle, 5,000 chickens. P.
17P1	Lawrence Gabelein	141	65	42	60	--	--	--	D	
18A1	Harold Johnston	46	18	--	12.05	9-24-63	--	--	CD	Supplies grocery store, 1 family.
18A2	Whidbey Telephone Co.	30	110	6	24	2-16-60	17	31	D	L, P.
18B1	F. F. McCloskey	25	36	42	28	1950	--	--	D	P.
					26.91	9-24-63				
18B2	F. F. McCloskey	19	18	94	7.61	9-24-63	--	--	S	
18C1	Frank Melendy	25	16	36	12	1962	--	--	D	Hardpan, 0-16 ft.
					10.08	9-24-63				
18D1	Thomas Johnson	130	117	6	92	2- 7-62	15	6	D	L.
					91.54	9-24-63				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 3 E. - Continued										
18H1	Island County Cemetery Assoc.	100	111	6	88	6- 5-61	15	Slight	I	L, O, P.
					89.65	9-26-63				
18Q1	Arthur Gabelein	15	5	144	2.24	6-13-63	--	--	DIS	Irrigates one-half acre, supplies 20 cattle.
19G1	Tom Kohlwes	22	15	48	.50	6-12-63	--	--	P	Supplies 45 families. L.
19G2	Sunlight Beach Community Water System	16	15	48	2	6-12-63	--	--	P	Supplies 30 families. L, P.
19J1	David Cittenny	30	30	48	26.05	6-11-63	--	--	D	P.
19J2	Fred Kohlwes	135	138	6	108	9- -59	15p	9	P	L, P.
					115.70	5-12-63				
20D1	L. C. Anderson	127	111	30	107	1962	15	Slight	D	P.
					109.23	6-11-63				
20E1	F. L. Maynard	140	143	6	124	9- -55	16	.5	D	L, P.
					124.49	6-11-63				
20M1	Doris Harpham	185	22	--	5.20	6-11-63	--	--	D	P.
20M2	W. L. Steele	135	150	6	133	Fall 1957	--	--	D	Noticeable iron. L.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 3 E. - Continued										
20N1	Holly Hill Community Well	150	232	6	72	1948	20b	--	D	Brown water from 180 to 185 ft. Supplies 4 families. Noticeable iron. L, P.
21B1	L. H. Campbell	90	35	36	31	1955	--	--	DI	Irrigates 1 acre.
22A1	R. E. Wonker	358	6	60	.2	5-28-63	--	--	D	A1 and A2 supply 2 families.
22A2	R. E. Wonker	361	6	96	1.01	5-28-63	--	--	D	A1 and A2 supply 2 families.
22A3	John Allward	335	37	6	32	1950	20	17	D	L.
					14.09	5-28-63				
22D1	W. J. Murphy	105	60	6	27	6- -62	10	3	D	L.
					23.40	5-31-63				
22E1	J. W. Miller	85	17	30	11.45	4-29-63	--	--	D	
22E2	L. H. Graves	101	67	6	37	1963	20	8	D	L.
					33.01	4-29-63				
22E3	J. C. Shelley	110	40	40	37.50	5-30-63	--	--	D	
22J1	Mrs. Virgil Auvil	425	265	6	Flows	1948	--	--	DS	Supplies 2 families, 5 cattle. L.
22K1	P. P. Sherlock	415	28	48	23.70	5- 1-63	--	--	D	

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 29 N., R. 3 E. - Continued										
22M1	George Stockholm & Leo Lee	128	103	6	59	8- -61	30	6	DS	Supplies beaver ranch. L.
23E1	W. L. Sloan	395	29	48	16.91	5-22-63	--	--	D	P.
23E2	R. W. Nichols	395	36	48	22.95	5-24-63	--	--	D	Hardpan, 0-20 ft; sand, 20-36 ft.
23E3	R. W. Nichols	387	12	60	4.84	5-23-63	--	--	I	Irrigates 1 acre.
23F1	J. G. Martin	405	45	48	43.01	5- 2-63	--	--	D	L, O, P.
23F2	Philip Von Pinnon	410	172	6	158.02	5-24-63	15	--	D	Supplies 5 families. L, P.
23G1	P. J. Zeman	402	176	6	--	--	--	--	DS	Screened from 152 to 162 ft. Supplies 12 cattle, 20,000 turkeys. L.
23L1	Agnes Bell	405	35	48	26.01	5-24-63	--	--	D	
23N1	E. R. Lutz	405	61	48	19.27	4-30-63	--	--	D	
23N2	Wally Hutchinson	415	130	6	107	9- -62	8	12	D	L, P.
					114.78	6-10-63				
23P1	Mrs. D. J. Jackson	430	175	6	144.24	4-30-63	15	7	D	Noticeable iron. L, O, P.
24N1	Clinton Water District	279	90	6	Flows	1961	30	64	P	24N1 and 24P1s supply Town of Clinton with 20,000 gpd for 10 months and 40,000 gpd during July and August. P.
24N2	Mrs. L. M. Cornwall	320	100	6	60	1954	7	--	D	L.
					60	1957				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 3 E. - Continued										
24P1	Warren Burrier	245	11	44	2.49	4-26-63	--	--	CD	Supplies 3 businesses, 2 families. Supply inadequate.
25C1	Hanna Birkett	305	22	48	9.91	4-26-63	--	--	D	
25C2	Al Olkonen	370	94	6	58	5- -61	12	3	D	Noticeable iron. L, P.
					60.17	5-24-63				
25E1	M. G. Alexander	365	11	48	2.13	4-29-63	--	--	D	P.
25F1	Edwin Swan	305	22	48	9.00	4-29-63	--	--	D	
25G1	T. J. Simmons	275	10	60	3.52	4-26-63	--	--	D	P.
25H1	Leif Heggenes	185	77	6	52.72	5- 6-63	6	Slight	N	Noticeable iron. O.
25K1	A. Ash	224	12	60	1.87	5- 6-63	--	--	D	
25P1	D. C. Wilson	250	38	60	31.29	4-29-63	--	--	D	Topsoil, 0-5 ft; hardpan, 5-38 ft.
25Q1	August Bardahl	210	15	36	4.88	5- 6-63	--	--	D	
25R1	Jim & John Cooper	155	117	6	82	2- -63	120	5.5	P	Supplies 3 families. L.
					81.89	5- 7-63				
26A1	Lake & Lands, Inc.	379	217	6	95	3-29-63	--	--	P	L.
					94.91	5-31-63				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 29 N., R. 3 E. - Continued										
26B1	F. R. Clement	358	18	48	11.30	4-30-63	--	--	D	Compact till, 0-18 ft. P.
26B2	Lakeside Bible Camp Assoc.	358	65	40	35.76	4-30-63	--	--	N	Noticeable iron. P.
26C1	Harry Anderson	356	55	6	20	11-17-47	6	Slight	C	Supplies resort, 10 cabins. Noticeable iron. L, P.
					20.85	4-30-63				
26C2	Jim Brickley	369	28	36	24.77	5- 1-63	--	--	D	
26D1	Don White	382	102	6	85.59	4-30-63	--	--	D	L.
26F1	Herman Braune	360	25	36	20.95	5- 1-63	--	--	N	P.
26H1	M. E. Robinson	390	40	36	4.45	5- 1-63	--	--	N	P.
26H2	M. E. Robinson	390	158	6	62	1- -62	20	40	D	L, P.
					90.48	5- 1-63				
26J1	Ralph Curtis	445	21	48	9.97	5- 3-63	--	--	D	
26K1	Arnold Engstrom	379	18	36	7.57	5- 1-63	--	--	D	
26M1	J. van Zanton	415	25	36	11.11	5- 1-63	--	--	D	P.
26M2	Edward Henney	412	106	6	--	--	--	--	D	L.
26N1	L. E. Griffin	358	24	48	21.15	5- 9-63	--	--	D	Supply inadequate to irrigate garden. Noticeable iron.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 3 E. - Continued										
27H1	Elmer Feathers	445	18	30	8.32	5- 3-63	--	--	D	
27K1	Robert Vaughn	425	17	30	11	1963	--	--	D	
27K2	United Developers, Inc.	445	331	6	Dry	8- -63	--	--	N	L.
27R1	John Baty	400	22	56	6.96	5- 3-63	--	--	D	
28C1	Lawrence Kirkham	77	24	48	14.90	6- 4-63	--	--	N	P.
28F1	Long brothers	74	90	6	67	1954	--	--	N	Noticeable iron. C, L, O, P.
					62.89	6- 3-63				
28F2	Long brothers	115	153	6	111	4- 9-62	60	6	DS	Supplies 100 cattle, 66,000 chickens. L, O, P.
					111.12	6- 3-63				
28H1	Ralph Noble	100	66	6	39.39	5- 3-63	--	--	D	L.
28J1	C. A. Nordstrom	65	16	48	10	1959	--	--	D	Noticeable iron.
28K1	Percy Ferguson	70	18	36	12.96	6- 3-63	--	--	D	
28K2	Lee Ewing	59	10	36	6.66	6- 4-63	--	--	N	
28N1	E. T. Evans	89	120	6	87.04	6- 5-63	15	Slight	D	L.
28P1	Mrs. Georgie Palmgren	70	75	6	55	5- -54	10	2	D	L.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 29 N., R. 3 E. - Continued										
29F1	Sam Maupin	136	160	--	--	--	--	--	D	P.
29F2	Walter Johnson	150	30	48	18	5- -63	6	--	D	Noticeable iron. P.
29Q1	Dr. Cal Schmid	165	28	30	16	--	--	--	D	Supply augmented with spring.
29R1	Stanley Norman	215	247	6	217	1960	9	--	D	Noticeable iron. P.
					210.85	6-13-63				
32A1	Phyllis Cannon	250	260	6	231	11- -62	9	8	D	L, P.
32A2	Phyllis Cannon	254	19	36	14.35	6-10-63	--	--	N	Supply inadequate.
33B1	Parker Wildes	98	47	6	39.65	6- 5-63	--	--	D	L, P.
33E1	R. G. Obrien	40	13	36	5.53	6- 5-63	--	--	D	
33F1	Neola Green	79	73	48	69.43	6- 6-63	--	--	D	P.
33H1	J. G. Saylor	158	8	72	3	6- -63	--	--	DS	Supplies 4 cattle.
33K1	C. W. Miller	84	87	6	55	9- -55	20	24	D	Noticeable iron. L, O, P.
					46.63	6- 6-63				
33L1	J. F. Patton	15	17	60	4.73	6- 6-63	--	--	DS	L1 and M2 supply 2 families, fire hall, 50,000 chickens.
33M1	Free Methodist Church	42	32	32	29	6- -63	--	--	D	Supplies 3 families, church. P.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 3 E. - Continued										
33M2	J. F. Patton	15	20	96-72	10.40	6- 6-63	--	--	DS	L1 and M2 supply 2 families, fire hall, 50,000 chickens. P.
33N1	Maynard Caughrean	15	14	48	10.66	6- 5-63	--	--	D	
33N2	Lyle Borden	1	60	--	+3	--	--	--	D	L, P.
33P1	Lincoln Wildes	18	70	6	15.30	6- 6-63	--	--	D	Noticeable iron. P.
34G1	Fred Conway	305	12	72	2	5- -63	--	--	DS	Supplies 7 cattle, 700 chickens.
34H1	Loise Pachmayer	323	23	48	12	7- -61	--	--	D	P.
					17.11	5-19-63				
34H2	R. B. Haines	305	26	--	23.21	5-23-63	--	--	DS	Hardpan, 0-26 ft. Supplies 5 cattle, 4,000 chickens. P.
34R1	Melle Darvo	325	30	48	23.77	5- 9-63	2	--	DS	Soil, 0-4 ft; hardpan, 4-12 ft; sand, 12-30 ft.
35B1	R. G. Goldthorp	421	13	42	4.15	5- 3-63	--	--	D	
35B2	R. G. Goldthorp	430	33	60	15.25	5- 3-63	--	--	D	Supply inadequate.
35G1	E. J. Horsman	435	8	34	.90	5- 3-63	--	--	D	
35M1	Frances Matheson	320	112	6	100	1945	--	--	DS	Supplies 100 cattle, 15 hogs, 5,000 chickens. L, P.
36B1	Lloyd Gage	260	13	60	5.65	5- 6-63	--	--	D	Noticeable iron.
36H1	G. M. Tallman	263	17	44	4.90	5- 8-63	--	--	D	P.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 3 E. - Continued										
36H2	J. E. Knipp	250	155	6	31.72	9-19-63	--	--	D	Bottom of casing plugged; perforated from 45 to 46 ft, 9-20-63.
					25.64	9-23-63				Noticeable iron. L.
					24.13	6- 3-64				
36L1	Sig Heggenes	450	70	6	15.73	5- 6-63	10	3	D	Noticeable iron.
36M1	George Heggenes	485	38	36	29.65	5- 6-63	--	--	D	Hardpan, 0-30 ft; sand, 30-39 ft. Noticeable iron.
36M2	George Heggenes	485	300	6	29.40	5- 6-63	--	--	DS	Chief aquifer, sand, 32-40 ft. Perforated from 32 to 40 ft. Supplies 3 cattle. Noticeable iron. C, O, P.
T. 29 N., R. 4 E.										
19M1	Guy Smith	10	42	6	5.75	4-25-63	4	--	I	Irrigates one-fourth acre. Noticeable sulfur odor.
30D1	W. E. Tallman	110	150	6	54	4- -48	--	--	D	Plugged at 93 ft, screened from 83 to 93 ft. L, P.
					56.33	4-25-63				
30M1	Mrs. Burch	23	150	6	2.61	4-24-63	--	--	D	Brackish taste after heavy pumping. P.
30M2	Roland Dick, Jr.	19	35	6	1.05	5- 7-63	--	--	N	
31D1	Jim & John Cooper	75	42	6	7.28	5- 7-63	--	--	P	D1 and D2 supply 30 families. L.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 29 N., R. 4 E. - Continued										
31D2	Jim & John Cooper	80	107	6	77	5- 7-63	--	--	P	D1 and D2 supply 30 families.
31D3	W. Roberts	50	29	50	20.18	5- 7-63	--	--	N	
31D4	W. F. Stevens	15	49	6	7	1948	12	2	P	Supplies 35 families. Noticeable iron. L.
					6.53	5- 8-63				
31D5	Clara Oberg	145	34	6	17	8- -63	25	7	D	L, P.
31D6	Wesley White	140	118	6	Dry	--	--	--	X	L.
31D7	Wesley White	147	37	6	18	9- -63	8	15	D	L.
31E1	J. J. Nelson	175	99	6	85	7-10-61	12	8	DS	L, P.
					86.10	5- 8-63				
					87.54	9-20-63				
31M1	Ray Kirby	260	267	6	258	1958	15	--	D	P.
					249.82	5-18-63				
					254.80	8-29-63				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 30 N., R. 2 E.										
4L1	North Bluff Assoc.	98	140	6	105	10-16-46	8	Slight	P	L1 and L2 supply 20 families. L.
4L2	North Bluff Assoc.	99	147	6	96	4-10-64	30	33	P	L1 and L2 supply 20 families.
4M1	Holmes Harbor Estates	120	303	8	154	7-16-62	90	120	P	L.
7K1	P. J. Cunningham	183	12	48	2.93	6-17-63	--	--	D	
8H1	Greenbank Beach Water Co.	40	52	8	48	7- -58	15	1.4	P	Supplies 23 families. L, P.
8J1	A. W. Bratsberg	150	181	6	156	2-23-60	20	7	C	Supplies grocery, laundromat, 1 family. L, P.
8J2	Jack Engstrom	112	52	48	44.48	6-21-63	--	--	D	Supplies 2 families. P.
8J3	Greenbank Progressive Club, Inc.	168	100	6	--	--	--	--	P	Supplies clubhouse, fire fighting reservoir. C, L, P.
8J4	Nickols	158	168	6	150	3- -50	3	13	D	L.
8N1	P. R. Bakken	190	56	36	54.48	6-17-63	--	--	DS	N1 and N2 supply 5 cattle. P.
8N2	P. R. Bakken	190	194	6	183	10- 2-63	10	2	DS	N1 and N2 supply 5 cattle. L.
8Q1	W. C. Gatton	180	207	6	190	Sum. 1961	10	--	DS	Supplies 11 cattle. L.
					185	2- -62				
					185.60	6-21-63				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 30 N., R. 2 E. - Continued										
8R1	I. H. Heffentrager	185	84	--	82.50	6-21-63	--	--	D	P.
8R2	W. E. Kirkam	180	86	36	79.18	6-21-63	--	--	D	
9D1	A. B. Snider	8	51	6	4.17	6-17-63	15	11	D	Brackish taste. C, L, O, P.
9D2	Ted Cavanaugh	12	53	6	3	11- -58	5	--	I	Noticeable iron; brackish taste. L.
					10	6- -63				
9N1	E. M. Hawes	103	15	--	10	--	--	--	D	
9N2	E. A. Willard	128	11	30	1.33	6-21-63	--	--	D	
9N3	Dan Leonard	160	171	6	158.30	6-21-63	--	--	D	L, P.
9N4	McAlester	160	35	6	25	1953	11	1	D	L.
11Q1	Keith Schmidt	125	278	6	129	12- 6-63	--	--	X	Brackish taste. L.
11Q2	Mrs. G. J. Pehling	130	100	8	91.40	--	--	--	P	Supplies 3 families. O, P.
11Q3	Keith Schmidt	125	92	8	74	7- -55	7	--	P	Supplies 80 families.
11R1	Keith Schmidt	155	270	6	130.65	8-28-63	--	--	N	L, O.
13B1	Gordon Erickson	185	201	8-6	179.92	9-13-63	--	--	P	Supplies 40 families. O, P.
13R1	John Gavin	138	22	48	8.60	8-28-63	--	--	DS	Hardpan, 0-23 ft. Supplies 3 cattle. P.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 30 N., R. 2 E. - Continued										
14A1	Keith Schmidt	220	248	6	215.56	4-10-64	--	--	N	
					215.37	10-29-64				
14Q1	Saratago Beach Development	210	290	10-8	203.37	10-29-64	250	--	P	Noticeable iron. P.
16D1	C. Q. Hoover	150	11	60	4.27	6-21-63	--	--	D	Gravel, 0-7 ft; hardpan (gray clay with pebbles), 7-9 ft; sand, 9-11 ft. Supplies 2 families. Noticeable iron. P.
16E1	Edith Magnuson	230	37	36	33.38	6-25-63	--	--	D	L.
16F1	Opal Norstrom & Mr. Frank	157	168	6	156.16	6-25-63	--	--	D	Supplies 2 families. L, O, P.
16M1	Emil Larson	295	35	4	29	1951	--	--	D	
16M2	Carl Johnson	312	125	8	36.45	6-25-63	--	--	D	L, P.
16M3	Peter White & John Alexander	360	15	36	6	1959	250	8	D	Fine compact blue sand, 0-13 ft; water-bearing sand, 13-15 ft.
16M4	W. F. Rotermund	270	296	6	274.35	6-25-63	15	--	D	L.
16Q1	Howard Fee	105	138	6	115	6-22-63	--	--	D	L, P.
					111.71	6-27-63				
17C1	Unknown	290	88	--	Dry	6-25-63	--	--	N	
17K1	R. S. Frieze	335	20	72	9.47	6-25-63	--	--	D	

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 30 N., R. 2 E. - Continued										
17K2	Engstrom Community lease	345	7,343	18-10	--	--	--	--	N	Standard Oil Co. of Calif. exploratory well. L.
17N1	Charles Christie	310	74	48-36	69	1962	0.1	--	D	Supply inadequate. L, P.
18P1	Lagoon Point Water Co.	203	500	6	180	4- -51	20	310	N	Inadequate as public supply. L.
18R1	Ed Holder	325	222	6	207	8-10-60	10	5	D	L.
19G1	Lagoon Point Water Co.	165	116	6	97.28	6-26-63	30	10	P	Supplies 100 families. L, P.
19L1	W. G. Crawford	20	25	1½	Flows	1953	--	--	D	Supplies 3 families. Noticeable iron. P.
19L2	C. P. Tschuden	17	33	6	3.88	6-26-63	15	--	D	Supplies 4 families. L.
20B1	L. J. Webster	439	55	--	41	1960	8	--	D	L, P.
					44.52	6-27-63				
21B1	D. C. Roberts	98	93	36	83.00	6-27-63	--	--	D	
21B2	Jack McPhee	155	188	6	154	6- 9-63	--	--	D	L.
21D1	S. E. Ammondson	350	311	6-5	--	--	--	--	D	L.
21H1	Harbor Grove Assoc.	23	30	36	28.60	6-28-63	--	--	P	Supplies 9 families.
21K1	P. T. Rehberg	300	315	6	279.00	2-27-63	--	--	DS	Supplies 6 cattle, 2 hogs. L, P.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 30 N., R. 2 E. - Continued										
21M1	H. R. Tabach	325	71	6	43	1960	5	--	DIS	Irrigates 1 acre, supplies 2 cattle. L, P.
					47.48	6-27-63				
22E1	G. B. Cundy	15	20	36	17.15	6-28-63	--	--	D	
22E2	Leo Murphy	60	68	6	49	1957	--	--	D	L.
					56.96	6-28-63				
22E3	Frank Halkes, Joe Duskin, Bill Downham	25	15	--	9	1959	--	--	D	Noticeable iron. P.
22E4	Cappy Clinton	85	101	6	88.74	7-16-63	--	--	D	Noticeable iron. L, O, P.
22E5	C. A. Sokolowski	82	101	6	86.10	7-16-63	--	--	D	L.
22E6	A. J. McMillan and others	98	124	6	98	4- 4-59	20	2	P	Supplies 4 families. L.
					96.27	7-16-63				
22M1	Mrs. T. L. Estes	85	91	36	89	1953	--	--	D	
24A1	O. N. Porter	142	25	48	16.44	8-30-63	--	--	D	P.
24A2	Carl White	143	145	--	142.50	8-30-63	--	--	D	
					142.98	4-10-64				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 30 N., R. 2 E. - Continued										
24B1	Frank Rose	220	235	6	10	8-30-63	--	--	D	L.
25D1	W. I. Little	170	205	36	171	5-19-57	10	2	DIS	Originally dug to 106 ft. Irrigates 1 acre, supplies 5 cattle. L, P.
					171.25	8-27-63				
26G1	Beverly Beach Improvement Club	50	118	6	63	5-18-61	20	2	P	Supplies 65 families. Noticeable iron. L, P.
					57.18	8-26-63				
26G2	Beverly Beach Improvement Club	50	40	--	--	--	--	--	P	Standby supply. Noticeable iron.
27D1	L. E. Fox	70	92	6	75	6- 8-60	--	--	D	L.
27D2	W. P. Wright	70	98	6	74	6-25-58	10	Slight	D	L, P.
					68.13	7-16-63				
27D3	M. W. Case	70	86	6	67.91	7-16-63	--	--	D	Supplies 2 families. P.
27E1	George Handy	55	23	36	12.98	7-16-63	--	--	N	
27E2	George Handy	65	235	6	45	4- 3-63	30	30	D	L, P.
					50.29	4- 1-65				
27M1	C. L. DeArmond	55	39	36	26.86	7-17-63	--	--	D	P.
27M2	C. L. DeArmond	80	80	6	62	10-11-61	25	1.5	P	L.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 30 N., R. 2 E. - Continued										
27M3	F. C. Heim	50	96	6	31	12-18-62	6	59	D	L.
					28.88	7-17-63				
27M1	Unknown	25	24	30	15.31	7-17-63	--	--	N	
27N2	J. W. Marsland	35	40	6	15	1959	--	--	D	Gravel-filled from 30 to 40 ft, casing pulled back to 30 ft.
27N3	George Ditlevson	13	39	6	6	5-29-63	25	25	D	L.
27P1	N. A. Antic	70	28	30	22	8- -62	--	--	D	Noticeable iron.
28A1	N. A. Antic	230	490	6	--	--	--	--	N	Saline water from 480 to 490 ft. L.
28A2	N. A. Antic	209	311	6	235	5-10-60	--	--	X	L.
28D1	Frank Rhodes	350	92	6	68	2-21-61	10	12	D	L.
28F1	Earl Garber	310	51	42	31.00	6-28-63	--	--	D	
28F2	Earl Garber	290	150	6	7	--	--	--	DI	L, P.
28N1	Pope & Talbot Lease	312	4361	10	--	--	--	--	N	Standard Oil Co. of Calif. exploratory well. L.
28P1	Robert Entz	270	12	36	8.75	6-28-63	--	--	D	
29M1	South Whidbey State Park	225	349	6	229	4- -61	30p	87	N	L, O.
					222.23	6-26-63				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 30 N., R. 2 E. - Continued										
29M2	South Whidbey State Park	225	363	8-6	225	8-25-61	15p	45	P	Screened from 354 to 359 ft. Supplies ranger station, state park. L, P.
30B1	P. E. Voinot	90	120	6	82	5- -48	10p	Slight	D	L, P.
30B2	Walter Cochran	85	97	6	65	9- -60	13	12	D	Screened from 86 to 91 ft. L.
					65.08	6-26-63				
30B3	C. M. Elliott & Art Bratsberg	93	186	6	93	8- -53	25p	Slight	D	Supplies 2 families. L, P.
					85.19	6-26-63				
30B4	Renshaw	85	99	6	--	--	3	--	D	L.
32E1	R. A. Peterson	301	306	6	290	5- 3-63	--	--	D	L.
32M1	D. D. Raymond	295	320	--	267	7-24-61	10	2	D	Screened from 273 to 283 ft. L.
34C1	Norman Chamberlain	7	6	30	4	7-17-63	--	--	D	
35H1	E. F. Jacoby	130	450	6	129	1952	--	--	D	Screened from 137 to 147 ft. Clay, 147-450 ft. Saline water reported below 400 ft. P.
					126.01	9-19-63				
35H2	E. F. Jacoby	75	21	--	18.23	8-27-63	--	--	N	
35R1	Walter Dolstad	110	14	36	11	1959	--	--	D	
					12.05	8-26-63				

Table 8 - Well records, Whidbey Island- Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 30 N., R. 2 E. - Continued										
35R2	Malos	102	152	6	96	7-18-62	35b	12	D	L.
36K1	Elmer West	290	343	6	286	9-21-61	15	4	DIS	Irrigates 1 acre, supplies 5 cattle. Noticeable iron. L, P.
36L1	G. S. Wallace	245	40	42	31	9-19-63	--	--	D	
36P1	Richard Muzzy	225	247	36-6	--	--	--	--	D	Originally dug to 105 ft.
T. 30 N., R. 3 E.										
18N1	G. T. Wallace	125	--	48	21.12	8-30-63	--	--	D	P.
19F1	Unknown	250	77	24	71.00	9-11-61	--	--	D	
19G1	Keith Schmidt	142	160	6	130	8-15-57	20	6	P	Supplies 75 families in Saratoga. L, O, P.
					131.66	9-12-63				
19K1	Island Sand & Gravel, Inc.	190	240	8	210	3-22-50	250	22	C	Used to wash sand and gravel. P.
					188.25	4-13-64				
19N1	Unknown	350	80?	36	Dry	9-13-63	--	--	N	
19P1	Unknown	345	22	36	Dry	9-12-63	--	--	N	
29K1	A. J. Bosshard	135	167	8	131.21	9-11-63	15	--	D	L, P.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 30 N., R. 3 E. - Continued										
29L1	Stanley Wood	155	11	36	3.30	9- 9-63	--	--	D	P.
32A1	Fred Frei	175	12	26	5.76	9-10-63	--	--	D	P.
32Q1	Unknown	170	24	36	18.12	9-17-63	--	--	N	
32Q2	Unknown	165	14	--	9.21	9-17-63	--	--	D	
33E1	Mrs. Emma Winston	142	155	6	134.87	9-12-62	5	--	D	Supplies 2 families. L, P.
33F1	G. F. Kohlwes	115	15	36	6	9-11-63	--	--	D	
33J1	Victor Primavera	130	20	30	10.40	9-11-63	--	--	D	P.
33K1	O. E. Olsen	125	11	30	4.98	9-11-63	--	--	D	
33K2	Jim Graham	110	8	30	1.60	9-11-63	--	--	D	
33K3	C. W. Montgomery	120	8	96	1.00	9-11-63	--	--	D	P.
33Q1	Thornton Vernal	195	44	38	40.61	9-17-63	--	--	D	P.
33Q2	George Livingston	180	26	24	16.20	9-11-63	--	--	D	

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 31 N., R. 1 E.										
1D1	State Game Farm	210	345	8	196	11- -46	25	15	X	L.
1E1	R. L. Kinneth	202	248	6	183.02	6-26-63	--	--	DS	
1E2	R. L. Kinneth	198	210	6	147.52	6-26-63	--	--	N	
1H1	M. F. Reid & Kay Baker	201	236	6	193.82	6-21-63	--	--	D	Noticeable iron. L, O, P.
					195.83	11-22-63				
2A1	Mrs. L. R. Van Gundy	202	220	6	148	8-21-50	12	Slight	C	Perforated from 168 to 175 ft, screened from 175 to 180 ft. Supplies 9-unit motel. L, P.
2D1	Coast Wide Land	202	170	6	154	8- -64	10b	3	P	L.
3E1	Robert Engle	95	70-75	36	11.23	6-28-63	--	--	N	
3E2	Robert Engle	95	24	30	14.01	6-28-63	--	--	N	
4C1	Mrs. Beulah Engle	108	90	48	72.66	7- 2-63	--	--	DS	Noticeable iron.
4L1	E. C. Lesourd	92	86	48	66	1960	--	--	N	
4M1	George Smith	96	204	8	143	1961	--	--	N	
4Q1	Alvin Sherman	90	146	6	52.18	7- 3-63	--	--	DS	Supplies 6,000 turkeys. Noticeable iron. O, P.
5A1	Clarke Sherman	203	308	8	199.11	7- 3-63	600	--	DS	Supplies 4 families, 100 cattle, 30,000 turkeys. P.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 31 N., R. 1 E. - Continued										
5H1	Mrs. Frank Pratt	202	224	6	195	5- 7-59	12	29	DS	Supplies 2 families, 100 sheep. L,O,P.
					194.34	11-22-63				
9A1	Bob Hancock	92	50	48	15.26	7- 3-63	--	--	N	O, P.
9D1	Burton Engles	71	17	60	6.31	--	--	--	N	
10G1	G. C. Reuble	92	24	48	11.41	6-26-63	--	--	DS	Supplies 150 cattle.
10J1	L. T. Nuss	78	35	30	9.61	6-26-63	--	--	DS	P.
10J2	L. T. Nuss	78	36	48	6.53	6-26-63	--	--	DS	
10L1	Ester Anderson	108	38	48	26.19	6-28-63	--	--	D	Noticeable iron.
10P1	Freeman Boyer, Sr.	97	98	48	71	1952	--	--	DS	Supplies 20 sheep.
10R1	Freeman Boyer	66	43	48	17.98	6-26-63	--	--	DS	
11B1	James Gabrysh	192	165	6	120.86	6-26-63	12	1.5	D	
11G1	Henry Youderian	188	125	36	119.78	6-27-63	--	--	D	Noticeable iron.
11M1	L. F. Green	90	36	48	12.92	6-26-62	--	--	DS	Noticeable iron, sulfide odor.
11N1	R. L. Eggerman	56	30	36	6.92	1963	--	--	D	Noticeable iron.
12G1	Robin Youderian	198	165	4	149.39	6-27-63	--	--	DS	Supplies 15 cattle. Noticeable iron.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 31 N., R. 1 E. - Continued										
13A1	T. E. Pope	195	127	6	105	4-15-56	10p	2	D	L, P.
					112.53	6-27-63				
13H1	Jim Waldrip	195	161	6	154.59	6-27-63	--	--	D	
13L1	Eddie Rosenfield	40	39	40	39.31	6-27-63	--	--	DS	
13M1	Herman Rorrer	34	37	--	32	1963	--	--	D	Noticeable iron.
14D1	Edward Kottke	34	14	36	4.53	6-27-63	--	--	D	Noticeable iron.
14F1	F. A. Wanamaker	38	42	6	6.36	6-27-63	--	--	D	Noticeable iron.
14G1	Charles Morgan	100	95	6	69	8-15-56	6	10	D	L.
					70	1963				
14J1	Town of Coupeville	18	151	8	15	2- 8-63	60	--	N	Screened from 76 to 87 ft, gravel-filled from 87 to 151 ft. L, O, P.
					13.84	7- 4-63				
14J2	Town of Coupeville	18	25	--	12	1963	--	--	P	Infiltration system, 18 interconnected dug wells. P.
14K1	Phil Snover	48	40	6	17.31	6-28-63	--	--	D	
15H1	H. T. Wanamaker	20	49	60	7.52	6-27-63	--	--	D	

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 31 N., R. 1 E. - Continued										
15L1	Mrs. Fred Armstrong	31	45	6	16.72	6-28-63	--	--	D	Noticeable iron, sulfide odor.
15N1	Seattle Pacific College	76	175	6	50.97	6-28-63	30	42	P	Supplies dormitories. Noticeable iron. L, P.
24C1	Telaker Shores Water Co.	2	117	6	+12	1954	40	30	P	Supplies 8 families. L, P.
					+.08	6-27-63				
T. 31 N., R. 2 E.										
6C1	Oswald Thanem	60	105	6	65	8-29-56	3	7	D	Originally dug to 72 ft. Perforated from 65 to 70 ft, from 80 to 90 ft, and from 92 to 100 ft. L.
					64.68	6-20-63				
6C2	E. S. Jones	30	57	6	36	1963	--	--	D	
6D1	Morris Labusky	39	46	48	43	1963	--	--	D	
6D2	H. Johnston	39	66	6	40	1957	12	10	D	L, P.
					36.17	6-21-63				
6D3	Leslie Patmore	22	39	--	30	1963	15	--	D	
6F1	Roy Smith	164	197	6	165	7- 5-62	--	--	P	Specific capacity, 1.2 gpm per ft dd. Supplies 20 families. L.
					162.89	6-20-63				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 31 N., R. 2 E. - Continued										
6Q1	Herb Hildebrandt	58	75	6	35.99	6-20-63	--	--	D	
6Q2	George Hart	100	116	6	84.71	6-20-63	--	--	D	
7B1	Vern Street	16	32	48	15.69	6-20-63	--	--	D	Supply inadequate.
7F1	Mrs. Harry Race	139	238	6	131	3-24-48	--	--	N	Fire protection. L.
					56.34	6-21-63				
8N1	T. D. Roberts	145	155	6	136.32	6-18-63	--	--	P	Specific capacity, 2 gpm per ft dd. Supplies 12 families. L, P.
17D1	William Roth	165	165	6	138.42	6-18-63	--	--	D	Supplies 2 families. Noticeable iron.
18F1	W. A. Ayerst	275	7	48	1.03	6-19-63	--	--	DS	
19D1	Admiral's Cove, Inc.	155	197	6	145	3-19-63	100	--	P	L, P.
19M1	Stephen Lea	97	95	6	84.66	6-19-63	--	--	DS	L.
20L1	Rowland Davis	329	349	6	327	12- 3-62	50	14	DS	L.
					327	11-22-63				
20R1	H. A. Lancaster	60	81	6	55	2-28-58	30b	5	P	Supplies 8 families. Noticeable iron. L, P.
					65.16	6-18-63				
					56.84	4- 1-65				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 31 N., R. 2 E. - Continued										
28E1	J. D. Tush	182	178	6	165.66	6-18-63	--	--	D	Screened from 173 to 178 ft. Noticeable iron.
30F1	Dr. R. N. Donahey	155	156	42	151.22	6-19-63	--	--	D	Noticeable iron.
30J1	Ben Lamphere	310	60	48	53.42	11-22-63	--	--	DS	Noticeable iron. C, L, O, P.
30J2	F. R. Kenonen	312	65	72	56.47	6-19-63	--	--	D	Noticeable iron.
30Q1	Ledgewood Beach Water Assoc.	222	232	6	206	6-18-53	30	5	P	Supplies 12 families. L.
					205.72	6-19-63				
31K1	C. J. Hinds	91	300	8	--	--	--	--	DS	
32D1	A. J. McMillan	350	130	8	84	2-28-62	30	6	P	Screened from 114 to 124 ft. L.
T. 32 N., R. 1 W.										
13H1	Henry Looff	44	64	6	43	7-14-62	15p	14	DI	Irrigates 6 acres. L, O, P.
					40.78	3-18-64				
13J1	A. J. & E. G. McMillan	100	103	6	87	1960	15p	3	P	L.
					85.59	4-14-64				
24A1	Albert Van Dam	230	295	6	227.81	5-22-64	--	--	DS	Gravel-packed. L, P.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 32 N., R. 1 W. - Continued										
24G1	Glenn Darst	220	397	8-6	220	1958	15p	46	I	Screened from 263 to 283 ft. Noticeable iron. L, O, P.
					219.74	3-18-64				
24J1	Bell Brothers	250	265	6	235	6-22-51	14p	7	DS	Supplies 10,000 chickens. Noticeable iron. L.
					230.44	4-14-64				
24R1	Bell Brothers	261	265	6	245	7-15-29	--	--	X	L.
25E1	C. F. Larsen	60	96	6	58	4-11-64	20b	9	P	L.
					57.29	5-19-64				
25F1	C. F. Larsen	100	47	60	46.01	4- 9-64	--	--	DS	Supplies 20 cattle. P.
25J1	D. J. Sell	65	70	6	--	--	--	--	D	L.
25L1	Unknown	50	--	72	9.30	4- 9-64	--	--	N	
25M1	Pondilla Estates (well 2)	119	275	6	138	1965	350	--	X	L, P.
36D1	U. S. Coast Guard, Ft. Ebey	80	414	10	54	1940	100p	--	P	Plugged at 125, screened from 62 to 72 ft. L.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 32 N., R. 1 E.										
1B1	U. S. Naval Air Sta. (well 3)	82	479	12-10	67	4- 2-42	300p	--	X	Plugged at 227 ft. L.
1B2	U. S. Naval Air Sta. (well 3A)	80	225	10-8	--	--	220p	10	X	L.
1C1	U. S. Naval Air Sta. (well 5)	181	275	6	--	--	175p	--	P	Standby supply. L.
2B1	Town of Oak Harbor	85	135	8	61	2-24-54	--	--	X	Test well at same location drilled in clay from 100 to 260 ft. L.
2D1	Polard	52	76	6	19	8-22-56	6b	1	D	L.
2D2	Gerald Toler	45	98	6	15	10- 5-62	25	--	D	L.
2D3	Standard Oil Co.	40	115	6	5	6- 7-62	--	--	D	L, P.
					5.15	6-22-64				
2D4	Chris Fakkema	58	72	6	24	10-30-62	30p	44	D	Noticeable iron. L.
					21.25	6-22-64				
2D5	H. J. Wichers	63	70	6	21	8-30-60	--	--	DS	Specific capacity 0.5 gpm per ft dd. Noticeable iron. L, P.
2D6	H. J. Wichers	63	23	--	4.90	6-22-64	--	--	DS	Noticeable iron.
2E1	Town of Oak Harbor (well 3)	40	203	8	40	1965	75p	40	P	
2G1	Unknown	18	700	12	15	12- 2-36	100b	5	N	Perforated from 288 to 388 ft, plugged at 350 ft, water brackish. Saline water at 462 ft. Was City of Oak Harbor well 1. L.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 32 N., R. 1 E. - Continued										
2G2	Unknown	18	265	12	--	--	20	--	N	Plugged at 104 ft, perforated from 45 to 67 ft. Was City of Oak Harbor well 2. L.
2G3	Town of Oak Harbor (well 4)	84	165	18-8	81	1962	200	--	P	
2M1	Allan Vanderzicht	15	29	--	+4	6-29-28	--	--	X	L.
2N1	B. J. Reinstra	8	90	--	--	--	--	--	D	L.
3A1	Cleo Murray	80	109	6	30	7-18-62	20	--	D	L.
3A2	Assembly of God Church	88	110	6	--	--	--	--	D	L.
3A3	First Reformed Church	88	120	6	39	12-21-59	15	--	D	L.
3B1	Branco	130	101	6	66	11-20-56	10p	15	D	Supplies 2 families. L, P.
3B2	Town of Oak Harbor (well 10)	141	250	8	102	2-24-60	160p	36	P	Plugged at 161 ft, screened from 137 to 158 ft. L.
3B3	Bud Zylstra	130	94	6	61	10-23-56	30b	10	D	L.
					63.34	6-23-64				
3C1	Town of Oak Harbor (well 8)	232	300	8	188	2- 4-61	190p	25	P	Screened from 210 to 258 ft. L, P.
3C2	Town of Oak Harbor (well 9)	214	243	10	173	8-22-61	200p	30	P	L, O, P.
3C3	F. A. Ephrom	175	180	--	150	1963	--	--	D	

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 32 N., R. 1 E. - Continued										
3E1	Norman	190	203	6	149	11-28-61	15	15	P	Supplies 13 families. L.
3H1	Sid Eelkema	75	72	6	21	6- 5-57	16b	10	D	L, P.
3L1	Bernard Lueck	168	200	6	140	8-22-58	14p	3.4	P	Supplies 23 families. L, P.
					141.04	6-17-64				
3L2	Bernard Lueck	150	163	6	125	1- 4-63	--	--	P	Specific capacity 1 gpm per ft dd. Standby supply. Noticeable iron. L.
					123.50	6-17-64				
3N1	Harry Riepma	190	181	6	163	10-22-62	7	--	D	L.
					161.36	6-17-64				
3N2	Herman Lange	198	189	6	162	3-20-64	--	--	D	L, P.
					160.95	6-17-64				
3P1	Al Nelson	155	175	6	139	2- 3-59	--	--	D	L.
					139.05	6-17-64				
3Q1	Esther Pennington	140	127	6	90	9- 5-57	10	7	P	Supplies 33 families. L, P.
					92.15	6-17-64				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 32 N., R. 1 E. - Continued										
3Q2	Urban Faber	125	135	6	92	9-20-61	25	--	D	Screened from 113 to 118 ft. L.
					91.68	6-17-64				
4A1	Whidbey Golf and Country Club	115	130	4	75	--	50p	6	DI	Supplies 3 families, irrigates golf course. Two identical wells 3 ft apart. L, P.
4B1	Harold Reinstra	155	165	6	123	1952	13b	Slight	D	L, P.
4D1	Harry Fakkema	84	48	36	46.57	6-24-64	--	--	N	
4D2	Harry Fakkema	85	73	6	34	1963	15	--	DS	Supplies 4 families, 300 cattle, 10,000 chickens, 4,000 turkeys.
					47.49	6-24-64				
4G1	Whidbey Golf and Country Club	85	99	16-8	26	10-20-46	150	--	N	Noticeable iron. L.
					33.23	6-24-64				
4N1	William Dunlap	159	180	6	128.92	6-18-64	--	--	D	P.
4P1	Richard Steele	149	215	6-4	121	1955	--	--	D	Originally dug to 105 ft, drilled to 215 ft in 1930, cleaned out to 150 ft in 1955. L.
4R1	Vance Morgan	150	165	6	123	1-15-62	30	--	D	Specific capacity 1 gpm per ft dd. L.
5Q1	Bob Brumagin	206	229	6	204	12-12-63	--	--	D	Specific capacity 1 gpm per ft dd. L.
5Q2	Robert Peterson	219	153	6	133	10- -58	5	15	D	Noticeable iron. L.
					133.66	6-18-64				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 32 N., R. 1 E. - Continued										
7L1	R. K. Hetherington	147	195	6	150	6-18-59	10	30	DS	Supplies 4 horses. L, P.
					145.88	4-14-64				
9D1	L. C. Hutchinson	165	81	6	62	8-25-59	5b	3	D	Screened from 64 to 69 ft. L.
9E1	Richard Steele	194	242	6	180	4-15-64	11p	26	D	L, P.
					179.54	6-18-64				
10B1	Egbert Becksma	130	134	6	98	7-25-63	--	--	D	Specific capacity 1.3 gpm per ft dd. L,P.
					97.32	6-19-64				
10B2	Vanderzicht	160	210	--	--	--	--	--	D	P.
10B3	C. Gilmore	75	73	6	53	12-19-63	20	--	D	L.
					52.46	6-19-64				
10B4	Peter Anderson	71	69	6	49	7- 2-58	17p	6	D	Supplies 2 families, church. L.
10C1	W. L. McCoy, Jr.	170	156	6	135	10-16-58	10p	7	P	Supplies 5 families in trailer park. L.
10C2	P. E. Kieviet	165	141	6	125	2-12-59	5	2	D	L, P.
					124.08	6-19-64				
10G1	D. L. Gordon	88	143	6	73	10- 4-57	15p	33	D	L.

Table 8 - Well records, Whidbey Island- Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 32 N., R. 1 E. - Continued										
10G2	Harold Ramaley	93	135	6	75	9- 4-62	35	--	D	L, P.
					74.99	6-19-64				
10J1	Dillon Kimple	75	98	6	74	9-12-61	4	--	D	Supplies 2 families. L, P.
					72.13	6-18-64				
10J2	Lloyd Cline	69	90	6	65.72	6-18-64	8b	--	D	Supplies 3 families. L.
10J3	Jim Flowers	75	96	6	62	11- -58	30	6	D	Supplies 3 families. L.
10K1	E. Anderson	178	193	6	157	2-17-61	--	--	D	Specific capacity 0.75 gpm per ft dd. L, P.
					155.35	6-19-64				
10K2	D. L. Gordon	70	113	6	57	1-31-62	10b	--	D	L.
12C1	U.S. Naval Air Sta. (well 4)	76	1933	20-16	113	1943	--	--	N	Casing removed or abandoned below 692 ft. L.
12F1	U.S. Naval Air Sta. (well 1)	90	201	--	91	2-10-42	40p	63	X	Aquifer from 148 to 170 ft. L.
14D1	Henry Koetje	130	173	6	128	5-15-58	18	10	D	L.
					128.30	6- 5-64				
14D2	A. F. Kennedy	148	179	36-6	140	1946	11p	1.5	DS	Originally dug to 145 ft. Supplies 3 families, 15 cattle. Noticeable iron.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 32 N., R. 1 E. - Continued										
14D3	Paul Sheppard	153	187	4	150	7-18-56	5b	Slight	D	Noticeable iron. L.
					150.78	6- 5-64				
14E1	Mrs. Mary Kooyman	140	177	6	138	11- 3-60	--	--	D	Specific capacity 1 gpm per ft dd. L.
14M1	R. F. Kallam	183	205	6	179	8- 9-63	15	--	D	L.
					178.46	6- 5-64				
14M2	R. F. Kallam	175	17	--	.40	6- 5-64	--	--	N	
14M3	Bonnie View Water Co., Inc.	155	174	6	150	1954	25p	6	P	L.
					150.26	6- 5-54				
14N1	R. W. H. Johnson	214	290	6	209.25	9-28-62	17p	3	P	L, O, P.
					208.25	3-19-64				
15A1	Ray Walter	160	180	6	147	3-20-57	10b	17	DS	Supplies 3 cattle. Noticeable iron. L.
					150.78	6-16-64				
15B1	Corwin Stanley	165	175	6	139	7- -58	10	18	D	L.
15E1	Grace Damon	132	40	6	20	11-23-59	5	15	D	L.
					19.09	5-27-64				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 32 N., R. 1 E. - Continued										
15E2	Richard Sherwood	132	92	6	74	6-20-60	19	13	D	L.
					72.86	5-27-64				
15G1	Ed Adamson	205	210	--	190	1933	--	--	N	L.
15G2	Ed Adamson	210	196	6	186.11	6-16-64	--	--	DS	Supplies 5 families, 40,000 chickens, 5,000 turkeys. P.
15N1	M. D. Scoville	162	168	6	144	9-19-63	10b	19	D	L.
					143.97	5-27-64				
16F1	George Dickson	147	163	6	130	12-29-58	10	12	P	Supplies 4 families. Noticeable iron. L.
16G1	Mrs. George Dickson	155	207	6	137	4-29-57	12p	7	C	Supplies drive-in movie. Noticeable iron. L, P.
					137.66	6-17-64				
16G2	Mrs. George Dickson	163	193	--	--	--	5b	--	X	L.
16J1	Robert Gamble	162	163	6	138	8-17-60	10b	5	D	Noticeable iron. L.
					137.37	5-27-64				
16P1	John Deighton	170	206	6	164	4-14-58	--	--	DS	Noticeable iron. L, P.
					162.96	6-16-64				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 32 N., R. 1 E. - Continued										
16R1	Howard Haveman	155	161	6	133	11-18-58	13b	--	D	L.
					134.16	5-27-64				
17F1	Lawrence Bethel	135	79	6	50	6- 6-56	15b	10	DS	L, P.
					50.32	6-17-64				
17H1	D. E. Gunsauls	140	208	6	124.48	6-16-64	--	--	DS	Supplies 40 hogs. P.
18A1	Mrs. Tex Howe	164	156	6	145	8-21-63	--	--	D	L, P.
18E1	Hide A Way Water Co., Inc.	51	80	6	44	11- 2-59	20g	3	P	Well pumping when water level measured 4-14-64. L.
					52.67	4-14-64				
18K1	John Semler	157	162	4	145	1960	5	--	D	L, P.
18N1	G. Wittig	210	180	6	160	10- -60	10b	10	D	L.
					158.59	5-22-64				
19D1	Henry Semler	222	241	6	220	4- 2-58	--	--	D	L.
20A1	Rolling Hills - Glencarn Community Service, Inc.	146	181	6	110	3-27-59	125	--	P	Supplies 75 families. Noticeable iron. L, P.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 32 N., R. 1 E. - Continued										
20P1	R. E. Stevenson	155	121	6	104	4-10-63	15	--	DS	Supplies 6 cows, 30 hogs. L.
					102.67	5-20-64				
21A1	Gertrude Rip	143	150	6	120	12- 5-60	--	--	D	Specific capacity 2.25 gpm per ft dd. L.
					120.16	5-27-64				
21J1	Woodrow Cecil	90	142	6	83	3-15-60	10	--	D	L.
					82.47	5-26-64				
21P1	Jack Tanner	115	154	6	111	11- 2-61	--	--	D	Specific capacity 2.5 gpm per ft dd. L.
21Q1	Parkhurst & Lange	63	71	6	26	7-21-58	8	30	D	Supplies 2 families. L.
21R1	Mrs. Ava Loers	18	57	6	5	8-29-63	--	--	D	1.5 mg/l iron reported. L.
					5.02	5-26-64				
21R2	L. A. Dremolski	19	40	6	5	4-13-61	6	25	D	L.
22L1	Penn Cove Park Water Dist.	150	279	8	142	1-23-58	225p	26	P	Supplies 101 families. Noticeable iron. L, P.
					152	12- 1-64				
22P1	R. G. Chaney	12	51	48	9.95	3-19-64	--	--	P	Hardpan, 0-51 ft; water-bearing sand, 51 ft +. Supplies 20 families. C, O, P.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 32 N., R. 1 E. - Continued										
23D1	Leo Jewett	195	208	6	189.13	6- 5-64	--	--	D	
23D2	Mrs. Paull Smyth	205	248	6	200	10-15-62	--	--	D	Noticeable iron. L.
					201.25	5-28-64				
23E1	L. B. Muzzall	205	295	6-4	199.28	5-28-64	--	--	DS	Supplies 4 families, 100 cattle. Noticeable iron. L.
23E2	F. C. Forsberg	199	256	6	195	12-17-59	16	50	D	L.
28B1	Dr. Dexter Lufkin	85	94	6	76	4-10-59	6	13	N	L.
28C1	Lambert Vander Stoep	16	83	6	2	10- 6-59	10	--	D	L, P.
28C2	John Blattman	18	61	6	19	10-12-59	--	--	D	Specific capacity 0.5 gpm per ft dd. Noticeable iron. L, P.
					22.86	5-26-64				
29D1	San de Fuca, Fire Dept.	75	123	6	72	10-24-60	--	--	D	Specific capacity 6 gpm per ft dd. Supplies fire station and truck. L, P.
29E1	Anna Fakkema	25	71	--	19.65	7- 5-63	30b	6	D	Noticeable iron and sulfide odor. L.
29E2	Ed Fakkema	29	46	6	23	2-11-58	5b	8	D	L, P.
					23.76	5-20-64				
30A1	Mrs. Alice Esterly	135	126	6	110	4-12-60	8	7	D	L.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 32 N., R. 1 E. - Continued										
30G1	Melvin Grasser	15	442	8	13.97	5-22-64	250	--	D	Perforated from 83 to 148 ft, screened from 148 to 190 ft. Pumped brackish water at 350 gpm. L, P.
30L1	William Burke	40	29	48	15.74	7- 5-63	--	--	D	Supply inadequate. Noticeable iron.
30M1	A. R. Vogel	55	76	6	20	1960	15	--	P	Screened from 61 to 66 ft. Supplies 7 families. Noticeable iron. L.
30M2	L. J. Gamache	55	50	48	42.91	7- 5-63	--	--	D	
30M3	Robert Dunn	68	84	6	63	3-25-63	15	--	D	L, P.
					62.65	5-19-64				
30P1	D. A. Shannon	35	18	48	14.61	7- 5-63	--	--	D	
30P2	J. A. Kennedy	40	23	60	1.40	7- 5-63	--	--	D	Noticeable iron.
31A1	Capt. Whidbey Inn	10	100	6	--	--	--	--	N	Well plugged and sealed. Water saline. L.
31A2	Capt. Whidbey Inn	10	113	6-4	--	--	--	--	X	Brackish taste. L.
32J1	David Wells	90	80	30	65.90	7- 3-63	--	--	N	Noticeable iron. O, P.
32J2	Mary Waite	80	8	30	.71	7- 5-63	--	--	N	Penetrated water-bearing sand 59-64 ft.
32N1	Libbey Const. Co.	90	217	8	87	10-14-64	--	--	C	Used to wash gravel. Brackish taste. Noticeable iron. L, P.
					71.95	1- 7-65				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 32 N., R. 1 E. - Continued										
32R1	Mrs. Boston	202	9	48	0.89	7- 3-63	--	--	N	
33G1	Town of Coupeville	25	198	12	30	1948	100+	--	P	Standby supply. L, P.
					24.84	4- 9-64				
33H1	Robert Winder	82	12	48	1.31	6-25-63	--	--	N	
33J1	Town of Coupeville	92	240	10	84	12- 4-58	150p	15.25	P	Perforated from 109 to 215 ft. Noticeable iron. C, L, P.
					79	6-25-63				
					82	4-15-64				
34H1	Town of Coupeville	205	374	--	193	9-25-64	10p	118	X	L.
35E1	Herman Seiger	205	222	--	--	--	--	--	D	
35G1	Long Point Manor Water Co. (well 1)	105	192	6	97.98	6-25-63	20	--	P	G1 and G2 supply 35 families. Noticeable iron. P.
35G2	Long Point Manor Water Co. (well 2)	105	201	6	97	8-18-59	150p	--	P	G1 and G2 supply 35 families. Noticeable iron. L, P.
					98.97	6-25-63				
36E1	Lucille Whelan	22	44	48	8.72	6-25-63	--	--	D	
36E2	B. M. Reeder	20	32	48	13.96	6-25-63	--	--	D	

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 32 N., R. 1 E. - Continued										
36G1	Rodena Beach Water Dist.	162	168	6	14	--	--	--	P	Standby supply. Noticeable iron.
36G2	Rodena Beach Water Dist.	160	186	6	32	--	65	--	P	Supplies 36 families. Noticeable iron.
36L1	Foss Tug Co.	218	219	8	216.15	4-13-64	--	--	N	
36N1	State Game Farm	205	200	12-10	169	1-17-48	20+	Slight	DS	Perforated from 148 to 194 ft. Supplies 17,000 pheasants. L.
					172	3-14-63				
36R1	Gordon Leitch	88	80	6	70.64	6-21-63	--	--	P	Supplies 10 families.
T. 32 N., R. 2 E.										
2A1	Fredrick Mitchel	140	129	6	72	7- 8-59	6	--	D	L, P.
					70.88	6-25-64				
2B1	Huntsker	30	29	--	18.80	6-25-64	--	--	D	Supplies 2 families. P.
2E1	Hans Olson	100	131	6	83	11-15-63	--	--	D	L, P.
					83.40	6-23-64				
3E1	John Schulz	342	172	6	144	9-30-59	10b	4	DS	Supplies 6 cattle. Noticeable iron. L.
					142.22	6-25-64				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 32 N., R. 2 E. - Continued										
3M1	Lynn Duncan	300	187	6	157	3- 5-59	11b	Slight	DS	L, P.
					156.23	6-25-64				
3R1	John Eckstrom	170	112	6	94	3-18-59	10b	3	D	Supplies 3 families. L.
4J1	Leroy Bodin	245	99	6	43	3- 3-60	10b	30	D	L.
4J2	R. G. Bruce	320	153	6	118	10- 3-63	--	--	D	L, P.
					117.19	6-25-64				
4Q1	U.S. Naval Air Station, Polnell Point well	105	163	6	17	1-15-43	60b	--	P	L, O, P.
					4.76	3-20-64				
T. 33 N., R. 1 E.										
1M1	Les Severide	210	140	6	106	8-30-57	16	10	D	Noticeable iron. L.
1M2	Glen Conway	230	152	6	129	5-22-59	16b	3	D	L, P.
					127.94	7-14-64				
2F1	Mrs. Flanagan	120	195	6	108	1-22-63	20-30	--	D	L, P.
2K1	Karl Henni	150	243	6	128	8- 4-58	6	97	X	L.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 33 N., R. 1 E. - Continued										
2K2	Karl Henni	135	214	6	97	9-22-58	--	--	D	L.
3J1	Moran Beach Comm.	14	109	6	+1	2-23-59	10	28	P	Supplies 11 families. L, P.
					.62	7-14-64				
11C1	A. P. Mahoney	135	180	6	121.68	7-16-54	15	15	P	Supplies 8 families.
11C2	Washington Land Co.	125	152	6	121.74	7-16-64	--	--	P	Supplies 12 families. L, P.
11D1	A. H. Gabor	97	158	6	83	6-18-30	--	--	D	L.
					83.85	7-16-64				
11D2	Ralph Forman	90	95	6	64	9- -61	--	--	N	Specific capacity 1 gpm per ft dd. L.
					63.00	7-16-64				
11R1	Fred Lang	75	92	6	59	7-18-56	30	2	DS	Supplies 30 cattle. L.
12H1	John Henni	220	108	6	100	12- 6-29	--	--	DS	L.
					81.94	7-10-64				
12H2	Ivan Norton	225	155	6	124	10-23-59	10	1	D	Noticeable iron. L.
					123.86	7-15-64				
12J1	John Van Every	205	118	6	103.30	7-15-64	--	--	D	L, P.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 33 N., R. 1 E. - Continued										
12M1	Andy Kammenga	220	9	48	4.32	7-15-64	--	--	DS	Supplies 10 cattle, 3 horses.
12M2	Andy Kammenga	113	48	6	26	8- 1-60	16	16	D	Supplies 2 families. L.
					26.52	7-15-64				
12N1	Mrs. M. Prothero	38	46	6	21	8- 2-60	10b	12.5	D	Supplies 3 families. L.
12N2	Ida Jenkins	45	55	6	29	9-20-58	15b	10	D	Noticeable iron. L, P.
13M1	Art Frostad	20	15+	--	Dry	1953	--	--	D	
					14.80	7-16-64				
13Q1	Everett Bros. Const. Co.	125	165	6	92	5- 1-61	4	1	C	Used to wash sand and gravel. L, P.
					91.60	7-15-64				
14D1	U. S. Naval Air Sta., Ault Field (well 6)	34	156	8-6	--	--	50	--	X	L.
14M1	U. S. Naval Air Sta., Ault Field (well 2)	28	182	--	--	--	100	--	X	Aquifer from 148 to 165 ft. L.
15Q1	U. S. Naval Air Sta., Ault Field (well 1)	42	445	--	--	--	30	--	X	Aquifer from 34 to 40 ft, from 67 to 130 ft, and from 165 to 172 ft. L.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 33 N., R. 1 E. - Continued										
22C1	U. S. Naval Air Sta., Ault Field (well 4)	56	98	12-6	39.41	3-20-64	220	11	P	Pumping test: from 9-28-64 to 10-8-64, about 175 gpm for 242 hr, 6 ft maximum drawdown. Noticeable iron. L, O, P.
22G1	U. S. Naval Air Sta., Ault Field (well 7)	30	151	--	--	--	12	--	X	Aquifer from 28 to 93 ft. L.
22Q1	U. S. Naval Air Sta., Ault Field (well 3)	154	534	10-6	--	--	80	--	N	Perforated from 134 to 140 ft. L.
23N1	U. S. Naval Air Sta., Ault Field (well 5)	48	122	10	--	--	--	--	X	L.
25B1	Ted Eden	145	90	6	60.06	7- 9-64	10	14	D	Supplies 3 families. L.
25F1	Lake City Contractors	162	253	6	155	3-29-61	--	--	N	Screened from 102 to 107 ft. Later deepened and screened from 211 to 227 ft. Specific capacity 8 gpm per ft dd. Formerly used to wash sand & gravel. L.
					161	10-23-61				
25F2	Curtis Const. Co.	157	252	12	150	6-22-61	250	75	N	Formerly used to wash sand and gravel. L.
					149.14	7- 9-64				
25G1	Case Brothers	90	78	6	33	6- 6-57	8	--	DS	Aquifer from 66 to 68 ft. Supplies 3,000 chickens. L.
					25.69	7- 8-64				
25P1	J. R. Kennedy	110	83	6	45	12- 1-59	16	20	D	L.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 33 N., R. 1 E. - Continued										
26E1	Whidbey Sand & Gravel Co.	145	202	10	140	11- 1-52	300	40	CP	Supplies ready mix concrete plant, 11 families. In 1952, used to wash sand and gravel. L.
					118.72	7- 9-64				
26N1	Doug Traylor & Harry Van Nieuwenhuise	155	178	6	150	9- 8-60	--	--	D	Specific capacity 2 gpm per ft dd. Supplies 2 families. L, P.
26N2	George Dickson	109	67	6	27	11-19-63	--	--	D	L, P.
					26.31	7- 9-64				
27B1	G. E. Pittam	160	173	6	--	--	--	--	P	Supplies an estimated 25 families.
27B2	G. J. Pehling	155	159	6	124	7- 6-59	20	1.5	P	Supplies an estimated 15 families. L.
					131.73	7-10-64				
27C1	R. E. Struthers	185	185	6	172	11-14-61	7	--	D	L, P.
					169.03	7-10-64				
27E1	Henry Zielstra	175	171	6	154	8- 1-58	10b	3	D	Supplies 3 families. L.
					152.27	7-10-64				
27F1	Lowell Harrington	198	202	6	176	4-29-63	50	--	P	L.
					176.08	7-10-64				

Table 8 - Well records, Whidbey Island- Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 33 N., R. 1 E. - Continued										
27J1	Whidbey Island Sportsmen's Club	275	236	6	219	1-20-64	--	--	D	Supplies club house. L.
27J2	Victor Scheer	215	200	6	170	7-23-59	10b	3	D	Supplies 3 families. L.
					169.13	7- 9-64				
27L1	Bert Roodzant	260	418	6-3	250	9-11-59	2	30	N	Aquifer from 338 to 341 ft. L.
27L2	Bert Roodzant	205	189	6	172	10-23-61	5	--	D	L.
27M1	W. P. Powell	210	269	6	196	7-28-60	8	--	P	Supplies 25 families. L, P.
					202.93	7-10-64				
27M2	John Roodzant	201	152	36-6	145	4-25-63	--	--	DS	Originally dug to 138 ft +. Supplies 22 cattle. L.
					145.30	7-10-64				
28A1	Axel Hallberg	148	366	6	135	1-17-30	4	--	X	L.
28A2	Axel Hallberg	133	117	6	105	8- 9-63	--	--	D	Specific capacity 2.6 gpm per ft dd. Supplies 2 families. L, P.
					104.10	7-10-64				
28J1	R. R. Vaughan	152	167	6	133	11- 5-57	16	12	D	L.
28J2	Ed Cunningham	145	240	6	136	11-25-57	16	20	D	Noticeable sulfide odor. L.
					135.75	7- 1-64				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 33 N., R. 1 E. - Continued										
28J3	L. S. Kollmorgan	140	107	6	90	1960	6	1	D	L.
28L1	U. S. Naval Air Sta., Rocky Point (well 1)	146	194	12	119.41	3-20-64	14	12	P	L, O, P.
28R1	J. H. Kamberger	135	116	6	85	1-30-56	8	1	D	Screen, 14-slot, 100-116 ft. P.
					85.52	7- 1-64				
32E1	Sunset Beach	9	109	6	6.10	6-24-64	--	--	P	Supplies 12 families. P.
32G1	R. P. Sullivan	75	203	6	58	12-22-60	18	60	D	L, P.
					59.87	6-23-64				
32G2	William Merrick	35	120	6	24	11-29-60	17	--	D	Supplies 3 families. L, P.
32G3	William Merrick	35	30	36	19.78	6-23-64	--	--	I	Irrigates one-fourth acre. P.
32H1	R. P. Sullivan	80	48	30-6	30	3-14-62	30	2.3	D	L.
					30.87	6-23-64				
32H2	R. P. Sullivan	77	51	10	27	6-25-62	100	4	I	L.
32L1	T. E. Ostrom	23	69	6	5	3-30-64	5	--	D	L, P.
					6.63	6-23-64				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 33 N., R. 1 E. - Continued										
32L2	John Blattman	15	144	6	+2	3-23-64	5	71	D	L, P.
32N1	West Beach Vista	18	75	6	5	5-30-62	300	--	D	Specific capacity 5 gpm per ft dd. L.
					3.53	6-23-64				
32P1	T. E. Ostrom	10	75	14-6	0	6-14-50	100	56	I	L.
					Flows	6-24-64				
33A1	Mrs. V. A. Campbell	140	114	6	82.58	6-25-64	25	3	D	L.
33A2	Mark DeAngelo	130	105	6	75	1-30-64	10b	6	D	Supplies 4 families. L.
					74.09	6-25-64				
33H1	Mike Jansma	140	123	36-6	97	8-28-59	10b	9	CD	Supplies garden nursery. L.
					94.79	6-25-64				
33H2	D. L. Honsberger	181	161	6	130	5-31-63	--	--	D	Specific capacity 1 gpm per ft dd. L,P.
					132.32	6-25-64				
33P1	Harry Fakkema	150	136	6	105	1-15-59	10	.5	D	L, P.
					105.23	6-24-64				
33P2	Garner	151	135	42-6	108	1-31-62	--	--	D	Specific capacity 1.5 gpm per ft dd. L.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 33 N., R. 1 E. - Continued										
33Q1	Hillcrest Village Water Co.	219	232	6	180	8-10-56	25	2	P	Q1, Q2, and Q3 supply 168 families. L.
33Q2	Hillcrest Village Water Co.	211	221	6	171	6-17-58	50b	3	P	Q1, Q2, and Q3 supply 168 families. L.
					171.61	6-25-64				
33Q3	Hillcrest Village Water Co.	202	217	8	163	6-30-61	100	16	P	Q1, Q2, and Q3 supply 168 families. L, P.
34E1	V. A. Campbell	140	137	6	96	10-31-63	45	--	P	L.
					96.24	6-25-64				
34E2	Lambert Vander Stoep	140	132	6	97	4- 6-64	40	--	P	L.
34F1	John Wold	174	169	6	128	2- 6-57	10	3	D	L, P.
					127.82	7- 1-64				
34Q1	Mrs. W. R. Gardner	151	131	6	101	2- 6-58	18b	10	D	L.
					102.41	7- 2-64				
35A1	Town of Oak Harbor (well 7)	185	300	16-8	174	7- -59	100	74	P	
35A2	L. C. Logan	175	120	6	92	7-11-63	--	--	C	Specific capacity 2 gpm per ft dd. Supplies 2 businesses. L.
35B1	Max Decker	103	104	6	53	12-12-57	8	30	D	L.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 33 N., R. 1 E. - Continued										
35B2	J. B. Murray	100	102	6	38	11- 3-63	7	50	D	Supplies 2 families. L.
					38.31	7- 2-64				
35B3	Ben Rohaar	60	34	6	9	11-30-63	8	--	D	L.
					6.68	7- 2-64				
35B4	Barney Barnard	135	135	6	74	8-25-60	4	15	D	L.
					72.32	7- 7-64				
35B5	Richard Hartman	117	96	6	63	7- 2-60	--	--	D	Specific capacity 0.5 gpm per ft dd. L.
35D1	Charles Aus	105	146	6	78	3-21-58	40	20	P	Supplies 41 families. L, P.
					80.66	7- 1-64				
35E1	John Hoffelt	99	157	6	54	5-11-57	16b	36	P	Supplies 17 families. L.
					53.49	7- 2-64				
35E2	R. C. Carder	77	169	6	45	7-12-57	5	9	X	L.
35E3	R. C. Carder	77	44	6	14	8-15-57	--	--	D	L.
35E4	R. C. Carder	77	50	6	17	8-20-57	8p	8	D	Screened from 27 to 32 ft. L.
					12.98	7- 2-64				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 33 N., R. 1 E. - Continued										
35E5	Irvin Faber	73	40	6	11	7-31-57	10b	15	D	L.
36A1	Henry Mouw	30	68	6	10	8- 7-58	5	43	DS	L, P.
					5.41	7- 7-64				
36D1	Island County Cemetery District 1	182	253	6	171	11- -62	--	--	I	Used to water cemetery. L.
36M1	Town of Oak Harbor (well 6)	178	263	12	167	12- 5-62	540	54	P	P.
36N1	Town of Oak Harbor (well 5)	171	303	18-10	163	5-20-64	250	24	P	Plugged at 278 ft. Aquifer from 173 to 277 ft. L, P.
36P1	U. S. Naval Air Sta. (well 2)	125	188	10-8	107	5- 2-42	250	50	N	Aquifers from 132 to 137 ft, and from 158 to 188 ft. L.
36P2	U. S. Naval Air Sta. (well 2a)	122	185	12	117	9-17-52	--	--	P	Standby supply. L.
T. 33 N., R. 2 E.										
5C1	Delmon Anderson	240	160	6	138	9-17-56	8	6	D	L, O, P.
					139.82	6- 4-64				
6D1	Ed Armstrong	344	109	40	79.76	7-13-64	--	--	DS	Supplies 19 cattle. P.
6D2	Ed Armstrong	354	272	4	--	--	--	--	N	L.
7D1	Robert Lane	288	216	6	196	5- 7-56	16	5	D	L.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 33 N., R. 2 E. - Continued										
7E1	John Henni	203	139	6	108	9-25-57	20	2	D	Supplies 3 families. L.
					107.10	7-15-64				
7J1	Ann Wier	35	180	--	29	3- 1-63	20	--	X	Screened from 42 to 47 ft. Well destroyed because of high iron content. L.
7J2	Joe Hallberg	110	39	6	10	2-14-64	25	12	D	L.
7J3	Joe Hallberg	102	9	36	.60	7-10-64	--	--	N	P.
7K1	Marion Christensen	77	76	6	40	9- 6-63	15	--	DS	Supplies 2 horses. L.
					40.39	7-10-64				
8E1	Van Rooy	75	36	6	12	4- 8-60	--	--	D	Specific capacity 1.2 gpm per ft dd. L, P.
					15.16	7- 9-64				
17G1	S. M. & K. J. Ducken	80	32	42	12	10-23-61	80	--	P	Supplies 17 families, clubhouse. L, P.
					11.19	7-13-64				
17K1	Hilbert Christensen	290	71	6	55.12	7- 8-64	--	--	D	Aquifer from 56 to 59 ft. L, P.
17R1	Wayne Chapman	390	320	6	280	10-31-63	50	--	P	Supplies 1 family. L.
					279.34	7- 8-64				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well Alt. (feet)	Well Depth (feet)	Well Diam. (in.)	Water level below land surface Feet	Water level below land surface Date	Pump Yield (gpm)	Pump Draw-down (feet)	Use	Remarks
T. 33 N., R. 2 E. - Continued										
18F1	C. W. Everson	65	84	6	61	2-14-64	--	--	D	Specific capacity 1 gpm per ft dd. L.
					59.91	7- 9-64				
18F2	Midge Waniski	60	75	6	53	4-20-59	20	7	D	Noticeable iron. L, P.
					53.15	7- 9-64				
19A1	Frank Shughart	365	282	6	252	6-22-63	30-50	--	D	L.
					251.70	7- 9-64				
19C1	Paul Faranda	280	305	6	--	--	5	--	N	Screened from 200 to 210 ft. Planned for public supply. L.
19K1	Ed Samonia	225	205	6	108.27	7- 8-64	--	--	D	L.
19Q1	George Pittam	179	105	6	82	9-17-58	20b	1	DS	Supplies 4 horses. L.
					82.08	7- 8-64				
19R1	Harry Balda	260	178	6	145	9- 9-58	15	5	P	Supplies 14 families. L.
20B1	Hubert Bogue	347	260	6	229	6-24-58	13	--	D	L, P.
					229.83	7- 8-64				
20D1	Chambers	352	266	6	234	6- -58	17	10	DS	Supplies 2 families, 20 cattle. L.
20K1	Walt Taylor	360	218	6	199.32	3-19-64	20	2	DS	Supplies 5 cattle. L, O, P.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 33 N., R. 2 E. - Continued										
20M1	W. E. Warren	350	212	6	188	5- -58	10	10	D	Supplies 2 families. Noticeable iron. L, P.
					185.70	7- 7-64				
20N1	H. E. Evans	265	133	6	110	7-20-60	--	--	D	Specific capacity 0.6 gpm per ft dd. L.
					112.99	7- 7-64				
20N2	Louis Mataczynski	283	138	6	116	5-21-63	10	7	D	Supplies 2 families. L.
					116.47	7- 8-64				
21M1	Bernard Nienhuis	386	232	6	215	2-24-56	--	--	DS	Supplies 3 cattle. L, P.
					222.45	7- 7-64				
26C1	Don Davis	70	55	6	38	3-31-59	8	--	D	L, P.
					39.31	7- 7-64				
26C2	Don Davis	15	160	--	Dry	3-25-59	--	--	X	L.
26D1	McLean	90	99	6	77.06	7- 7-64	16	--	D	Supplies 4 families. L, P.
26P1	Carol Borgman	180	81	6	65	6-27-63	16	--	DI	L.
					65.90	7- 6-64				
26R1	Albert Carlson	156	107	6	91.46	3-19-64	10	.5	D	L, O, P.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 33 N., R. 2 E. - Continued										
27E1	Harold Seligmiller	455	274	6	246	2-17-64	--	--	D	L, P.
					246.89	7- 7-64				
27Q1	McDonald	440	84	6	58	7- 1-59	--	--	D	L, P.
					58.14	7- 6-64				
27R1	Scully	373	100	6	Dry	9-28-62	--	--	N	L.
28D1	R. R. Lander	340	193	6	164	12-16-58	10	--	D	L.
					162.68	7- 6-64				
29M1	Chuck Bos	190	174	6	55	8-22-62	9	--	DS	L.
					54.25	7- 6-64				
29N1	R. L. Dickey	165	78	6	44	5- 9-62	15	Slight	D	Supplies 3 families. Noticeable iron. L, P.
					44.81	7- 6-64				
30A1	Roy Hoffman	248	168	6	134	8-30-63	20	--	D	L.
					132.89	7- 2-64				
30A2	Bill Winters	250	117	6	93	3-22-60	--	--	D	Specific capacity 0.6 gpm per ft dd. Supplies 3 families. L.
					93.76	7- 2-64				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well			Water level below land surface		Pump		Use	Remarks
		Alt. (feet)	Depth (feet)	Diam. (in.)	Feet	Date	Yield (gpm)	Draw-down (feet)		
T. 33 N., R. 2 E. - Continued										
30A3	Woodworth	251	167	6	136	9-20-60	--	--	D	Specific capacity 1.5 gpm per ft dd. Supplies 2 families. L, P.
30C1	Al Hills	150	64	6	36.90	7- 2-64	6	--	D	Noticeable iron. L.
30D1	F. C. Dempsey	120	41	6	23	9-20-63	16	--	D	L, P.
					22.38	7- 2-64				
30D2	Joe Schrindel	130	125	6	59	11-27-62	30	--	D	L.
					56.74	7- 6-64				
30E1	A. B. Sheppard	118	108	6	44	9-28-61	--	--	D	Specific capacity 0.75 gpm per ft dd. L, P.
					40.50	7- 1-64				
30E2	R. E. Cooper	105	48	36	30	1961	--	--	D	
30H1	G. V. Cook	210	180	6	140	1956	--	--	D	L, P.
30H2	Arlan Cook	235	204	6	122	8-21-63	200	--	D	Specific capacity 3 gpm per ft dd. Supplies 5 families. L, P.
30J1	Erling Frostad	180	234	6	51	7-19-63	10	--	N	Planned for domestic use. L.
31D1	D. L. Gordon	50	60	6	6	2-25-63	7-8	--	D	Noticeable sulfide odor. L.
31D2	Lola Park	75	85	6	18.47	7- 1-64	12	34	D	L, P.

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 33 N., R. 2 E. - Continued										
35A1	Youngblood	170	131	6	115	12-29-61	--	--	D	Specific capacity 2.2 gpm per ft dd. L, P.
					113.00	7- 1-64				
35R1	Alma Matsen	170	180	6	86	7-12-60	5	--	D	L, P.
					86.60	7- 1-64				
T. 34 N., R. 1 E.										
35F1	Deception Pass State Park	44	68	10	19.46	5-15-64	--	--	P	Standby supply. P.
35F2	Deception Pass State Park	45	150	8	16	9-13-33	--	--	P	Screened from 52 to 74 ft. Noticeable iron. L, O, P.
					19.97	4-15-64				
35F3	Deception Pass State Park	27	145	10	8	10-18-61	46	56.5	P	Screened from 79 to 85 ft and from 96 to 112 ft. L.
35G1	Nordland	48	107	6	26	6-21-62	15	--	C	Supplies drive-in cafe and grocery. L.
35K1	Harry Walters	115	150	6	106	5- -58	7	30	D	Noticeable iron. L.
36R1	Bill Thueson	65	174	6	38	5-29-61	--	--	P	Supplies 4 families. L, P.
					38.63	1- 8-65				

Table 8 - Well records, Whidbey Island - Cont.

Well no.	Owner or tenant	Well: Alt. (feet)	Well: Depth (feet)	Well: Diam. (in.)	Water level below land surface: Feet	Water level below land surface: Date	Pump: Yield (gpm)	Pump: Draw-down (feet)	Use	Remarks
T. 34 N., R. 1 E. - Continued										
36M1	Harlan Baker	220	127	6	106	12-19-62	16	10	D	L, P.
					105.48	7-13-64				
T. 34 N., R. 2 E.										
32E1	N. H. Koetje	150	59	6	40	6-29-61	25	6	D	L.
32P1	T. L. Graf	240	246	6	235	1-10-62	--	--	D	Supplies 2 families. L, O, P.
					233.44	6- 4-64				

Table 9 - Records of selected springs

Spring number: Numbering system is described on page 54.

Altitude: Land surface above sea level, from hand-level traverse or interpolated from topographic maps.

Yield: Reported by owner or user unless otherwise noted in "Remarks" column.

Use: D, domestic; I, irrigation; N, none; P, public supply; S, stock.

Remarks: Water temperatures were measured by U. S. Geological Survey personnel. P, partial field chemical analysis in plate 4.

Spring no.	Owner or tenant	Altitude (ft)	Water-bearing material	Yield (gpm)	Use	Remarks
			CAMANO ISLAND			
30/3-14F1s	T. R. Snowden	260	Sand, fine	--	D	Flow dependable; little fluctuation.
-26B1s	W. F. Fortson	40	Clay, blue	--	D	Flow dependable. P.
-26H1s	Wilks Garry Water Co.	135	Gravel, fine	8	D	Flow dependable; little fluctuation, supplies 6 families.
31/2-12N1s	I. M. Saimons	317	Sand	--	D,S	Flow dependable; supplies 26 cattle.
-12P1s	Camano Co-op Power & Water Co.	375	Sand, fine	760	P	12 springs piped to reservoir; supplies 110 families. P.
32/2-23C1s	Bob Neale	115	Sand, fine	1½	P	Flow dependable; supplies 16 families.
-24L1s	Utsalady Point Water System	265	Gravel	8⅔	P	Flow dependable; little fluctuation; supplies 22 families. Temp, 51° F. P.

Table 9 - Continued

Spring no.	Owner or tenant	Altitude (ft)	Water-bearing material	Yield (gpm)	Use	Remarks
			CAMANO ISLAND, Continued			
32/2-27B1s	Palisades Water Assoc.	75	Hardpan	16	P	Flow dependable; little fluctuation; supplies 25 families.
-27Q1s	Madrona Heights Water System	60	Silt	5	P	Supplies 9 families.
-35E1s	N. A. Kent	290	Hardpan	--	D	Flow decreased since recent logging. P.
-36G1s	Kristoferson	430	Clay, blue, just below topsoil	10	D	Flow dependable; yield measured 9-11-64. Temp, 49° F.
			WHIDBEY ISLAND			
28/3-10P1s	M. D. Hagstrom	206	Sand	--	I	Little fluctuation; irrigates 1 acre. P.
-11J1s	Denny Walters	260	Sand	--	D, S	P.
-14J1s	Mrs. H. F. Holcombe	100	--	Large	D	Flow dependable; supplies Ajax Powder Mfg. Co. P.
29/2-12Q1s	C. T. & Beatrice Thompson	65	Peat & clay	167	I	Supplies 22 3/16-inch sprinklers.
29/3-12M1s	Fletcher	25	Sand, clean, medium	5	N	3 or more undeveloped openings along sea cliff. Temp, 49° F. P.
-13M1s	Mrs. G. A. Zimmerman	200	--	--	D	Flow dependable; little fluctuation.

Table 9 - Continued

Spring no.	Owner or tenant	Altitude (ft)	Water-bearing material	Yield (gpm)	Use	Remarks
			WHIDBEY ISLAND, Continued			
29/3-15P1s	J.A.L. Hagglund	195	Sand, fine white	200	D	Reported adequate for 1,500 families.
-24P1s	Clinton Water	280	Sand	10	P	Flow dependable, slight decrease in summer; supplies 137 families. P.
-25P1s	O. R. Grider	340	Sand & gravel	--	D,S	Flow dependable, decreases during summer; supplies 2,500 chickens. P.
-29R1s	Hugh Taylor	175	--	--	P	Supplies 12 families. Temp. 51°F. P.
-29R2s	Dr. Cal Schmid	180	--	--	I	Irrigates a half acre.
30/2-8H1s	American Wine Growers	75	Sand, white	--	I	Flow dependable; little fluctuation; 8H1s and 8H2s irrigate 82 acres.
-8H2s	American Wine Growers	80	Sand, white	--	I	Flow dependable; little fluctuation; 8H1s and 8H2s irrigate 82 acres.
-17R1s	E. L. Tinius	385	--	--	D,S	Flow dependable; little fluctuation; supplies 8 cattle.
-32D1s	Hovde	188	Clay	10	D	Flow dependable; little fluctuation. P.

Table 9 - Continued

Spring no.	Owner or tenant	Altitude (ft)	Water-bearing material	Yield (gpm)	Use	Remarks
WHIDBEY ISLAND, Continued						
30/2-34C1s	H. D. Plants	14	Clay with sand leases, overlying sand and silt	1	D	Flow dependable; little fluctuation.
31/2-29A1s	Glenwood Beach Water Dist.	242	--	--	P	Flow dependable; little fluctuation; supplies 13 families.
-29H1s	Elmo Clarke	300	--	--	D	Flow dependable; little fluctuation.
32/1-10G1s	D. L. Gordon	23	Sand, coarse	8	D	Flow dependable; little fluctuation; auxiliary supply for 2 families. P.
33/2-26C1s	Don Davis	20	Sand, yellow	--	D	Flow dependable; little fluctuation; supplies 2 families P.

Table 10 - Drillers' logs of representative wells, Camano Island

Materials	Thickness (feet)	Depth (feet)
30/2-1A1. Camano State Park. Altitude 175 ft. Drilled by A. G. Kounkel, 1960. Screen, 211-216 ft.		
Gravel	15	15
Hardpan	45	60
Sand, brown	50	110
Clay, sandy, blue	25	135
Hardpan	30	165
Clay, sandy, blue	45	210
Gravel, coarse, water-bearing	6	216
Clay, blue	20	236
30/3-3Q1. Mrs. Ingraham. Altitude 60 ft. Drilled by A. G. Kounkel, 1958. Screen, 14-slot, 128-133 ft.		
Sand	70	70
Clay	53	123
Sand, fine, water-bearing	10	133
30/3-4B1. E. K. Lablond & Harris. Altitude 80 ft. Drilled by A. G. Kounkel, 1958. Screen, 14-slot, 135-140 ft.		
Sand	88	88
Clay, brown	37	125
Sand, fine, water-bearing	15	140
30/3-4G1. Dan Casey. Altitude 145 ft. Drilled by A. G. Kounkel, 1956. Screen, 25-slot, 218-223 ft.		
Sand	153	153
Silt, water-bearing	32	185
Clay, silty	5	190
Sand, water-bearing	25	215
Sand, coarse, water-bearing	8	223
30/3-5R1. Carl Challstedt. Altitude 165 ft. Drilled by A. G. Kounkel, 1964. Screen, 14-slot, 209-213 ft.		
Sand	140	140
Clay, sandy	40	180
Clay, blue	8	188
Sand, medium, water-bearing	25	213
30/3-10H1. J. Stronjard. Altitude 15 ft. Drilled by A. G. Kounkel, 1956. Screen, 14-slot.		
Clay, sandy	20	20
Sand, fine, water-bearing	15	35

Table 10 - Drillers' logs of representative wells, Camano Island - Cont.

Materials	Thickness (feet)	Depth (feet)
30/3-10P1. Mabana Community System. Altitude 114 ft. Dug by A. W. Johnson, 1957. Perforations, 101-104 ft.		
No log	90	90
Sand, fine, blue at 90 ft.	10	100
Sand, fine, blue, water-bearing	4	104
30/3-14G1. Tyee Beach Improvement Club, Inc. Altitude 280 ft. Drilled by A. G. Kounkel, 1964. Screen, 20-slot, 314-323 ft.		
Clay, sandy	20	20
Sand and gravel	45	65
Clay, blue	50	115
Gravel, some water at 115 ft.	90	205
Clay, yellow	22	227
Clay, blue	77	304
Clay and gravel	13	317
Sand and gravel, water-bearing	4	321
Clay, blue	19	340
30/3-15B1. Fifteen Investors, Inc. Altitude 175 ft. Drilled by A. G. Kounkel, 1959. Screen, 14-slot, 218-223 ft.		
Clay, sandy	10	10
Sand with gravel streaks	125	135
Sand, fine, water-bearing	18	153
Clay, blue	62	215
Sand, fine, water-bearing	15	230
31/2-3F2. J. H. Kortlever. Altitude 13 ft. Drilled by A. G. Kounkel, 1948.		
Clay	10	10
Gravel	5	15
Hardpan	3	18
Clay	22	40
Clay and sand (dry)	136	176
31/2-3G1. Rockaway Heights Community Assoc. Altitude 230 ft. Drilled by A. G. Kounkel, 1961. Screen, 14-slot, 374-384 ft.		
Hardpan	30	30
Sand	138	168
Clay, blue	7	175
Hardpan	5	180
Clay, silty. water-bearing	192	372
Sand, coarse, and gravel; water-bearing	12	384

Table 10 - Drillers' logs of representative wells, Camano Island - Cont.

Materials	Thickness (feet)	Depth (feet)
31/2-23C1. G. O. Montgomery. Altitude 177 ft. Drilled by A. G. Kounkel, 1953. Screen, 14-slot, 148-158 ft.		
Hardpan	95	95
Sand, clayey	33	128
Sand, some water	7	135
Sand, fine, silty	13	148
Sand, coarse, water-bearing	4	152
Clay, blue	98	250
31/2-23Q1. Halver Halverson. Altitude 158 ft. Drilled by A. G. Kounkel, 1960. Screen, 14-slot, 236-241 ft.		
Hardpan	50	50
Clay, blue	65	115
Sand and gravel, clayey	13	128
Sand, clayey	32	160
Sand, water-bearing	5	165
Clay	10	175
Sand, water-bearing	3	178
Clay	57	235
Sand, fine, water-bearing	6	241
31/2-24F1. Jim Church. Altitude 415 ft. Dug by A. W. Johnson, 1964		
Clay	50	50
Sand and gravel	15	65
Clay and hardpan	10	75
31/2-24K1. Lost Lake Development. Altitude 270 ft. Drilled by A. G. Kounkel, 1964. Screen, 30-slot, 307-317 ft.		
Gravel	5	5
Hardpan	30	35
Clay, blue	20	55
Sand, hard, brown	5	60
Sand, gray	15	75
Sand, fine, brown	65	140
Clay, blue	5	145
Sand, brown	15	160
Clay, brown	14	174
Sand, coarse, brown	21	195
Clay, blue	50	245
Sand, clayey	5	250
Sand, coarse, clayey, water-bearing	5	255
Clay, blue	17	272
Sand, coarse, water-bearing	45	317

Table 10 - Drillers' logs of representative wells, Camano Island - Cont.

Materials	Thickness (feet)	Depth (feet)
31/2-35A1. Pacific Northwest Land Co. Altitude 80 ft. Drilled by A. G. Kounkel, 1950. Screen, 30-slot, 151-157 ft.		
Clay, yellow	30	30
Clay, blue	107	137
Sand, clayey	13	150
Sand, clean, water-bearing	7	157
Clay, blue	--	157+
31/2-36E1. Pacific Northwest Land Co. Altitude 185 ft. Drilled by A. G. Kounkel, 1950.		
Gravel	15	15
Clay, blue	30	45
Sand, clayey	30	75
Clay, yellow	30	105
Gravel, clayey	10	115
Hardpan	20	135
Clay, blue	15	150
Clay, silty	5	155
Clay, blue	90	245
31/2-36L1. Camano State Park. Altitude 150 ft. Drilled by A. G. Kounkel, 1954. Screen, 40-slot, 186-196 ft.		
Clay, yellow	10	10
Clay, sandy	30	40
Clay, yellow	20	60
Gravel	31	91
Clay, silty, blue	49	140
Hardpan	4	144
Sand and gravel, clayey	10	154
Sand, coarse, and gravel; water-bearing	42	196
31/2-36Q1. Camano State Park. Altitude 250 ft. Drilled by A. G. Kounkel, 1964. Screen, 12-slot, 285-290 ft.; 14-slot, 290-295 ft.		
Clay and gravel	10	10
Hardpan	25	35
Sand, clayey	15	50
Hardpan	60	110
Clay, sandy, yellow	22	132
Clay, yellow	8	140
Hardpan	40	180
Sand, clayey	30	210
Hardpan	35	245
Clay, blue	15	260
Clay, silty, some water	20	280
Sand, fine, water-bearing	11	291
Clay, blue	22	313

Table 10 - Drillers' logs of representative wells, Camano Island - Cont.

Materials	Thickness (feet)	Depth (feet)
31/3-5L1. Dick Pusey. Altitude 102 ft. Drilled by A. G. Kounkel, 1956. Screen, 20-slot		
Sand, brown	115	115
Sand, water-bearing	24	139
31/3-5M1. R. S. Fullerton. Altitude 135 ft. Drilled by A. G. Kounkel, 1958. Screen, 14-slot, 166-171 ft.; 20-slot, 171-176 ft.		
Hardpan	58	58
Sand, brown	74	132
Sand, fine, water-bearing	28	160
Sand, coarse, water-bearing	16	176
31/3-5P1. Mrs. E. Stay. Altitude 118 ft. Drilled by A. G. Kounkel, 1956. Screen, 16-slot, 148-153 ft.		
Gravel, cemented	40	40
Sand	70	110
Clay	17	127
Sand, some water	8	135
Sand, water-bearing	18	153
31/3-6J1. Mrs. E. C. Chase. Altitude 32 ft. Drilled by A. G. Kounkel, 1962.		
Dug well, no log	33	33
Hardpan	7	40
Clay, sandy, and gravel	20	60
Sand, clayey	20	80
Clay, blue	11	91
Gravel, water-bearing	5	96
31/3-6K1. Art Seifke. Altitude 37 ft. Drilled by A. G. Kounkel, 1962. Screen, 12-slot, 65-70 ft.		
Topsoil	7	7
Hardpan	53	60
Sand, water-bearing	10	70
31/3-7A1. Bob Barnum. Altitude 40 ft. Drilled by A. G. Kounkel, 1960. Screen, 14-slot, 44-48 ft.		
Hardpan	25	25
Sand	5	30
Sand, water-bearing	18	48

Table 10 - Drillers' logs of representative wells, Camano Island - Cont.

Materials	Thickness (feet)	Depth (feet)
31/3-18D1. D. Muscola. Altitude 136 ft. Drilled by A. G. Kounkel, 1955. Screen, 20-slot, 200-205 ft.		
Hardpan	125	125
Sand	3	128
Clay, some water	69	197
Sand, water-bearing	8	205
31/3-18L1. H. Windgrove. Altitude 70 ft. Drilled by A. G. Kounkel, 1952. Screen, 30-slot, 105-110 ft.		
Hardpan	60	60
Sand, clayey	6	66
Sand and gravel, some water	2	68
Clay and some sand	33	101
Sand and some gravel; water-bearing	11	112
31/3-18L2. Earl Heitman. Altitude 66 ft. Drilled by A. G. Kounkel, 1961. Screen, 20-slot, 100-105 ft.		
Hardpan	37	37
Clay, sandy	18	55
Clay	22	77
Clay, sandy	13	90
Sand, water-bearing	15	105
Clay, blue	--	105+
31/3-18P1. L. H. Smith. Altitude 78 ft. Drilled by A. G. Kounkel, 1959. Screen, 14-slot, 126-134 ft.		
Dug well, no log	89	89
Clay, blue	40	129
Sand, water-bearing	5	134
31/3-19F1. Dan Garrison. Altitude 174 ft. Drilled by A. G. Kounkel, 1952. Screen, 14-slot, 196-201 ft.; 60-slot, 201-206 ft.		
Sand, fine, some clay	103	103
Sand, coarse, some gravel	17	120
Gravel	4	124
Clay, yellow	3	127
Gravel	16	143
Sand, clayey	4	147
Sand, some gravel	5	152
Sand, fine	27	179
Sand, coarse, sharp	16	195
Sand, coarse, water-bearing	11	206

Table 10 - Drillers' logs of representative wells, Camano Island - Cont.

Materials	Thickness (feet)	Depth (feet)
31/3-19F2. Dan Garrison. Altitude 182 ft. Drilled by A. G. Kounkel, 1951. Screen, 40-slot, 197-202 ft. 30-slot, 202-207 ft.		
Sand and gravel, mixed	154	154
Clay, yellow	4	158
Sand and gravel, mixed, water-bearing	49	207
31/3-19K1. Dan Garrison. Altitude 110 ft. Drilled by A. G. Kounkel, 1958. Screen, 20-slot, 108-118 ft.		
Sand	65	65
Gravel	25	90
Gravel, water-bearing	5	95
Sand and gravel, water-bearing	23	118
Clay, blue	52	170
Sand, fine	--	170+
31/3-31J1. A. D. Bennett. Altitude 35 ft. Drilled by A. G. Kounkel, 1951. Screen, 30-slot, 150-156 ft.		
Sand	10	10
Gravel, cemented	35	45
Gravel	5	50
Clay and gravel	16	66
Clay, blue	9	75
Silt	70	145
Sand and some gravel, water-bearing	11	156
31/3-32J1. H. D. Porter. Altitude 123 ft. Drilled by A. G. Kounkel, 1955. Screen, 25-slot		
Sand	122	122
Sand and some gravel, water-bearing	36	158
31/3-32J2. Miriam Loucks. Altitude 125 ft. Drilled by A. G. Kounkel, 1961. Screen, 14-slot, 146-150 ft.		
Sand, brown	127	127
Sand, water-bearing	23	150
31/3-32N1. M. Flugsteads. Altitude 90 ft. Drilled by A. G. Kounkel, 1956. Screen, 30-slot, 115-119 ft.		
Hardpan	45	45
Gravel	38	83

Table 10 - Drillers' logs of representative wells, Camano Island - Cont.

Materials	Thickness (feet)	Depth (feet)
31/3-32N1 - Continued		
Sand, brown	15	98
Sand, fine, brown, water-bearing	12	110
Sand, coarse, water-bearing	9	119
31/3-32N2. W. McConnell. Altitude 99 ft. Drilled by A. G. Kounkel, 1950. Screen, 14-slot, 113-118 ft.		
Sand and gravel, clayey	45	45
Sand and gravel	25	70
Gravel	18	88
Clay	12	100
Sand	8	108
Sand, water-bearing	10	118
31/3-33M1. McKnight. Altitude 144 ft. Drilled by A. G. Kounkel, 1964. Screen, 14-slot, 174-179 ft.		
Sand, clayey	38	38
Sand, fine	112	150
Sand, coarse, water-bearing	29	179
31/3-33M2. John Ryder. Altitude 136 ft. Drilled by A. G. Kounkel, 1961. Screen, 14-slot, 159-163 ft.		
Sand, brown	10	10
Clay, blue	5	15
Sand	10	25
Clay, blue	15	40
Sand, clayey, brown	95	135
Sand, water-bearing	28	163
32/2-13N1. Ray Correll. Altitude 90 ft. Drilled by A. G. Kounkel, 1958. Screen, 14-slot, 117-122 ft.		
Clay, sandy	38	38
Hardpan	27	65
Clay, sandy	15	80
Sand	19	99
Sand, fine, water-bearing	11	110
Sand and some gravel, water-bearing	12	122

Table 10 - Drillers' logs of representative wells, Camano Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/2-22H1. C. Brokaw. Altitude 60 ft. Drilled by A. G. Kounkel, 1949. Screen, 30-slot, 172-178 ft.		
Clay, blue	17	17
Clay, blue, with water-bearing gravel streaks	15	32
Clay and silt	103	135
Sand, silty, water-bearing	14	149
Clay and silt	17	166
Clay, blue	4	170
Sand, coarse, and gravel; water-bearing	8	178
32/2-22J1. Sherman Bast. Altitude 110 ft. Drilled by C. E. Miller, 1945. Screen, 162-168 ft.; perforations, 168-172 ft.		
Hardpan and gravel	78	78
Clay, silty, and blue clay	32	110
Clay-hardpan	45	155
Sand, medium, and fine gravel	13	168
Gravel, medium to coarse	4	172
32/2-22Q1. Chambers & Rodgers. Altitude 210 ft. Drilled by Carl Moody, 1955. Screen, 242-247 ft.		
Sand and gravel	40	40
Clay, blue	30	70
Sand and some gravel	177	247
32/2-23B1. Acaladi Water Co. Altitude 160 ft. Drilled by A. G. Kounkel, 1962. Perforations, 92-102 ft.		
Topsoil	5	5
Gravel	7	12
Sand and some gravel	80	92
Gravel and some sand, water-bearing	10	102
Clay, blue	178	280
32/2-23E1. Scenic Beach Water Co. Altitude 30 ft. Drilled by A. G. Kounkel, 1957. Screen, 30-slot, 105-115 ft.		
Clay	15	15
Sand and gravel	2	17
Clay, blue	83	100
Sand and some gravel	12	112
Clay, blue	2	114
Sand, water-bearing	4	118

Table 10 - Drillers' logs of representative wells, Camano Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/2-23E2. M. Eikanger. Altitude 110 ft. Drilled by A. G. Kounkel, 1960.		
Clay	15	15
Gravel	3	18
Clay, sandy	3	21
Sand, water-bearing	5	26
Clay, blue	109	135
Gravel, water-bearing	6	141
32/2-23F1. Joe Miller. Altitude 177 ft. Drilled by A. G. Kounkel, 1960. Perforations, 165-181 ft.		
Clay and gravel	20	20
Gravel, water-bearing	2	22
Sand, clayey	8	30
Sand and gravel, water-bearing	3	33
Sand, fine, water-bearing	8	41
Clay, silty	9	50
Clay and some gravel	110	160
Gravel, tight (screen, 20-slot; yield, 50 gpm, 20 ft. drawdown)	8	168
Gravel, tight	5	173
Gravel, water-bearing	10	183
32/2-23M1. Gilbertson Land Co., Rocky Point Tracts. Altitude 125 ft. Drilled by A. G. Kounkel, 1962. Screen, 20-slot 189-199 ft.		
Sand, and clayey gravel	25	25
Clay, blue	48	73
Clay, hard, blue, and some gravel	42	115
Clay, blue	30	145
Gravel, water-bearing	3	148
Gravel, clayey, water-bearing	7	155
Sand, silty, water-bearing	10	165
Sand, clean, gray, water-bearing	5	170
Sand, brown, with clay layers	5	175
Sand, brown, water-bearing	10	185
Gravel, coarse	14	199
32/2-24B1. A. F. Heaton & F. Moody. Altitude 40 ft. Drilled by A. G. Kounkel, 1959. Screen, 20-slot, 71-75 ft.		
Sand and gravel, loose	40	40
Hardpan	3	43
Gravel, clayey	22	65
Sand and gravel, water-bearing	10	75

Table 10 - Drillers' logs of representative wells, Camano Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/2-24B2. C. Rothrock. Altitude 45 ft. Drilled by A. G. Kounkel, 1957. Open-hole, 76-85 ft.		
Hardpan	10	10
Sand	15	25
Clay, blue	45	70
Clay, sandy, water-bearing	10	80
Clay, sandy	45	125
32/2-24C1. Doug Mavor. Altitude 45 ft. Drilled by A. G. Kounkel, 1958. Perforations, 25-30 ft.		
Gravel	25	25
Gravel, water-bearing	5	30
Clay, yellow	10	40
Clay, blue	--	40+
32/2-24C2. Fred Doerflein. Altitude 90 ft. Drilled by A. G. Kounkel, 1960. Screen, 14-slot, 67-72 ft.		
No log	66	66
Gravel, water-bearing	4	70
Clay	4	74
32/2-24D2. Svend Larson. Altitude 150 ft. Drilled by A. G. Kounkel, 1961. Screen, 20-slot, 203-208 ft.; 25-slot, 208-213 ft.		
Gravel	19	19
Clay, blue	4	23
Clay, sandy, brown	7	30
Hardpan	10	40
Clay, blue	18	58
Sand, clayey, brown	20	78
Sand, brown	10	88
Clay, blue	12	100
Sand, brown, water-bearing	2	102
Clay, blue	58	160
Clay, brown	15	175
Sand, fine, water-bearing	5	180
Clay, brown	15	195
Sand, coarse, gray, water-bearing	18	213
32/2-24G1. Pearson. Altitude 53 ft. Drilled by A. G. Kounkel, 1957. Screen, 30-slot, 69-74 ft.		
Gravel	55	55
Sand and gravel, water-bearing	19	74

Table 10 - Drillers' logs of representative wells, Camano Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/2-24G2. W. E. F. Powell. Altitude 60 ft. Drilled by A. G. Kounkel, 1955. Screen, 40-slot.		
Gravel	55	55
Sand and gravel, water-bearing	18	73
32/2-24H1. G. Grant. Altitude 45 ft. Drilled by A. G. Kounkel, 1957. Screen, 20-slot.		
Clay	55	55
Sand and gravel, water-bearing	21	76
32/2-24H2. M. Kimball. Altitude 15 ft. Drilled by A. G. Kounkel, 1956.		
Sand and gravel	4	4
Peat	6	10
Clay	12	22
Gravel, water-bearing	1	23
Clay	17	40
32/2-24H3. Harold York. Altitude 15 ft. Drilled by A. G. Kounkel, 1960.		
Clay	20	20
Gravel, water-bearing	5	25
32/2-34G2. Frank Guest. Altitude 25 ft. Drilled by A. G. Kounkel, 1960. Screen, 14-slot, 75-84 ft.		
Gravel	28	28
Gravel, yields saline water	5	33
Clay, brown	10	43
Clay and sand	27	70
Sand, water-bearing	14	84
32/2-34G3. George Diafos. Altitude 15 ft. Drilled by A. G. Kounkel, 1952. Screen, 30-slot, 98-103 ft.		
Gravel, yields brackish water (water-level, 25 ft.)	50	50
Clay, silty, brown	5	55
Clay, blue	5	60
Clay, blue, and coarse gravel	35	95
Sand, coarse, and some gravel; water-bearing	8	103

Table 10 - Drillers' logs of representative wells, Camano Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/2-34G4. O. W. Marckmann. Altitude 52 ft. Drilled by A. G. Kounkel, 1949. Screen, 30-slot, 123-129 ft.		
Dug well, no log	40	40
Boulders	2	42
Clay, yellow, and fine sand	40	82
Clay, blue	3	85
Clay and silt	21	106
Sand, some water	9	115
Sand and some coarse gravel; water-bearing	14	129
32/2-34K1. Harry Richards. Altitude 35 ft. Drilled by A. G. Kounkel, 1960. Screen, 20-slot, 86-91 ft.		
Gravel	5	5
Clay, sandy	75	80
Sand, mostly fine, some coarse	8	88
Sand, water-bearing	4	92
32/2-34Q2. Thiesen & Graybell. Altitude 80 ft. Drilled by A. G. Kounkel, 1961. Screen, 20-slot, 82-87 ft.; 5-inch casing, 87-97 ft.		
Clay	76	76
Gravel (water-level 66 ft. before surging, and 58 ft. after surging for 6 hr.)	11	87
Clay, blue	73	160
32/2-34R1. E. E. Reagan. Altitude 217 ft. Drilled by A. G. Kounkel, 1962. Screen, 20-slot, 144-148 ft.		
Hardpan	35	35
Clay, blue	15	50
Hardpan	15	65
Clay, sandy	61	126
Sand, water-bearing	22	148
32/3-16Q1. A. V. Bucklin. Altitude 105 ft. Drilled by A. G. Kounkel, 1956. Screen, 20-slot, 121-126 ft.		
Clay, yellow	15	15
Hardpan	55	70
Sand and gravel, water-bearing below 100 ft.	56	126

Table 10 - Drillers' logs of representative wells, Camano Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/3-17R1. Francis Jarard, Jr. Altitude 172 ft. Drilled by A. G. Kounkel, 1951. Screen, 50-slot, 193-205 ft.		
Sand and gravel, cemented	60	60
Hardpan and gravel, cemented	35	95
Sand and gravel, clayey	79	174
Sand and gravel, water-bearing	31	205
32/3-18A1. Arrowhead Beach, Inc. Altitude 133 ft. Drilled by A. G. Kounkel, 1947. Screen, 20-slot, 160-165 ft.		
Clay, yellow	18	18
Hardpan	7	25
Sand and gravel	5	30
Sand , fine,and clay	3	33
"Sandstone," soft	17	50
Sand, coarse, water-bearing below 122 ft.	115	165
32/3-18A2. Arrowhead Beach, Inc. Altitude 133 ft. Drilled by A. G. Kounkel, 1951. Screen, 30-slot, 131-136 ft.		
Clay	20	20
Boulders	2	22
Sand and gravel, clayey	23	45
Sand and gravel	88	133
Sand, fine, water-bearing	3	136
32/3-18K1. Ray Brayton. Altitude 65 ft. Drilled by A. G. Kounkel, 1959. Screen, 30-slot, 75-80 ft.		
Clay	25	25
Sand and some gravel	19	44
Gravel, water-bearing	12	56
Hardpan	9	65
Clay, blue	7	72
Sand and gravel, water-bearing	8	80
32/3-18K2. Ed Granston. Altitude 19 ft. Drilled by A. G. Kounkel, 1950. Screen, 25-slot, 72-82 ft.		
Clay	18	18
Boulders	4	22
Hardpan	4	26
Sand and gravel, clayey	7	33
Gravel, some water	9	42
Gravel, cemented	26	68
Gravel, water-bearing	4	72
Sand and gravel, water-bearing	10	82

Table 10 - Drillers' logs of representative wells, Camano Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/3-18Q1. C. W. Reynolds. Altitude 8 ft. Drilled by A. G. Kounkel, 1962. Screen, 14-slot, 122-127 ft.		
Conglomerate	20	20
Clay, blue	50	70
Silt, water-bearing	48	118
Sand and gravel, water-bearing	9	127
32/3-19C1. Utsalady Water System. Altitude 80 ft. Drilled by A. G. Kounkel, 1957. Screen, 20-slot, 126-136 ft.		
Sand	94	94
Sand, water-bearing	31	125
Sand and gravel, water-bearing	12	137
32/3-19F1. Buena Vista Community Club. Altitude 237 ft. Drilled by A. G. Kounkel, 1960. Screen, 40-slot, 263-273 ft.		
Hardpan, water-bearing at 44 ft.	72	72
Sand, fine	93	165
Sand, coarse	7	172
Clay, blue	11	183
Sand and gravel	32	215
Clay, hard, yellow	1	216
Sand, fine, water-bearing	39	255
Gravel, coarse, water-bearing	18	273
32/3-19G1. Marten Melum. Altitude 188 ft. Dug by owner, 1925.		
Topsoil	4	4
Sand, water-bearing	11	15
32/3-19M1. A. W. Campbell. Altitude 225 ft. Drilled by A. G. Kounkel, 1963. Screen, 20-slot, 237-241 ft.		
Hardpan	80	80
Sand and gravel	90	170
Gravel, compact	35	205
Clay, yellow, and gravel	15	220
Sand and gravel, water-bearing	3	223
Hardpan	5	228
Sand and gravel, water-bearing	13	241

Table 10 - Drillers' logs of representative wells, Camano Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/3-19Q1. Mel Lukehart. Altitude 250 ft. Drilled by A. G. Kounkel, 1961. Screen, 14-slot, 262-267 ft.		
Hardpan	100	100
Gravel, water-bearing	2	102
Hardpan	6	108
Clay, blue	17	125
Sand	119	244
Sand and gravel, water-bearing	8	252
Sand, water-bearing	15	267
32/3-20A1. Orville Hanstad. Altitude 140 ft. Drilled by A. G. Kounkel, 1960. Screen, 40-slot, 170-180 ft.		
Clay, yellow	10	10
Hardpan	72	82
Clay, blue	18	100
Sand, brown	41	141
Sand, coarse, gray, water-bearing	39	180
32/3-20Q1. M. Leque. Altitude 23 ft. Drilled by A. G. Kounkel, 1953. Screen, 30-slot, 68-73 ft.		
Hardpan	55	55
Sand, water-bearing	5	60
Sand and some gravel; water-bearing	13	73
32/3-20R1. P. Johnson. Altitude 40 ft. Drilled by A. G. Kounkel, 1958. Screen, 20-slot, 62-67 ft.		
Clay, yellow	20	20
Sand, coarse	28	48
Sand, coarse, and gravel; water-bearing	19	67
32/3-21B1. N. Rekdahl. Altitude 112 ft. Drilled by A. G. Kounkel, 1958. Screen, 14-slot, 136-141 ft.		
Clay	25	25
Gravel, cemented	30	55
Sand	60	115
Sand and gravel, water-bearing	26	141

Table 10 - Drillers' logs of representative wells, Camano Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/3-21C1. A. L. Danielson. Altitude 124 ft. Drilled by A. G. Kounkel, 1956. Screen, 60-slot, 160-170 ft.		
Hardpan	74	74
Clay, blue	36	110
Clay and gravel	15	125
Sand, coarse, and some gravel; water-bearing	45	170
32/3-21F1. A. L. Danielson. Altitude 105 ft. Drilled by A. G. Kounkel, 1964. Screen, 14-slot, 153-158 ft.		
Topsoil	4	4
Hardpan	86	90
Clay, blue	6	96
Clay	14	110
Clay, sandy	15	125
Sand and gravel (water-level, 109 ft.)	8	133
Clay	4	137
Sand and clay	8	145
Sand, water-bearing	13	158
32/3-21H1. Babcock. Altitude 139 ft. Drilled by A. G. Kounkel, 1953. Screen, 40-slot, 158-163 ft.		
Sand, cemented; gravel	50	50
Sand	85	135
Gravel	7	142
Sand and gravel, water-bearing	21	163
32/3-21K1. Mike Martin. Altitude 95 ft. Drilled by A. G. Kounkel, 1949.		
Old well, no log	95	95
Sand, coarse, and gravel; water-bearing	40	135
32/3-21M1. M. Johnson. Altitude 47 ft. Drilled by A. G. Kounkel, 1952. Screen, 20-slot, 80-85 ft.		
Dug well, no log	47	47
Hardpan	2	49
Sand, clayey	14	63
Sand, coarse, water-bearing	22	85

Table 10 - Drillers' logs of representative wells, Camano Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/3-22N1. Camano Gateway, Inc. Altitude 150 ft. Drilled by A. G. Kounkel, 1959. Screen, 20-slot, 176-186 ft.		
Sand and gravel, cemented	55	55
Sand	10	65
Gravel	10	75
Sand	40	115
Sand and gravel, clayey	10	125
Gravel	3	128
Sand, clayey	7	135
Gravel	4	139
Sand and gravel, clayey	7	146
Sand and gravel, water-bearing	40	186
32/3-22R1. Block. Altitude 65 ft. Drilled by A. G. Kounkel, 1962. Screen, 14-slot, 93-97 ft.		
Topsoil	2	2
Gravel, clayey	23	25
Sand and gravel	31	56
Sand and gravel, water-bearing	41	97
32/3-27L1. Juniper Beach Co-op Water Assoc. Altitude 63 ft. Drilled by A. G. Kounkel, 1960. Screen, 20-slot, 70-80 ft.		
Topsoil	2	2
Clay, sandy, brown	10	12
Sand, clayey, brown	45	57
Gravel	3	60
Sand and gravel, water-bearing	20	80
32/3-27N1. William Gaunt. Altitude 90 ft. Drilled by C. E. Miller, 1942.		
No log	102	102
Sand, water-bearing	8	110
Clay and "bark" [peat]	3	113
Sand, fine, loose	8	121
32/3-28A1. Wally Thurman. Altitude 132 ft. Drilled by A. G. Kounkel, 1960. Screen, 14-slot, 157-161 ft.		
Dug well, no log	60	60
Hardpan	5	65
Clay, blue	5	70
Sand	54	124
Gravel	7	131
Sand and gravel, water-bearing	30	161

Table 10 - Drillers' logs of representative wells, Camano Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/3-28A2. Ray Zuppe. Altitude 144 ft. Drilled by A. G. Kounkel, 1951. Perforations, 167-173 ft.		
Clay, yellow	10	10
Hardpan	56	66
Sand and gravel	34	100
Sand	30	130
Sand and gravel, clean; water-bearing below 145 ft.	48	178
32/3-30H1. Jay Couch. Altitude 184 ft. Drilled by A. G. Kounkel, 1958. Screen, 14-slot, 199-204 ft.		
Hardpan	53	53
Sand and gravel	5	58
Clay	20	78
Sand, clayey	12	90
Sand	80	170
Sand, water-bearing	34	204
32/3-31C1. J. F. Hale. Altitude 146 ft. Drilled by R. E. Freeman, 1964. Perforations, 265-269 ft.		
Topsoil	3	3
Hardpan, gravelly, brown	32	35
Sand, brown	110	145
Sand, fine, some water	3	148
Sand, very fine, brown; clay layers	7	155
Clay, sticky, brown	45	200
Clay, sticky, blue	40	240
Silt, clay layers	12	252
Silt, very fine sand	9	261
Sand and gravel; fine to coarse	9	270
Sand, tight, crusty	5	275
32/3-32L1. Harold Moe. Altitude 125 ft. Drilled by A. G. Kounkel, 1962. Screen, 14-slot, 159-164 ft.		
Clay	25	25
Sand and gravel	3	28
Hardpan	18	46
Sand and gravel	79	125
Sand and gravel, water-bearing	39	164

Table 11 - Drillers' logs of representative wells, Whidbey Island

Materials	Thickness (feet)	Depth (feet)
28/3-1J1. Jim Bowers. Altitude 20 ft. Drilled by Angus Scurlock, 1951. Screen, 14-slot, 68-73 ft.		
Topsoil	11	11
Sand, medium	62	73
Clay, blue	1	74
28/3-4A1. D. A. Green. Altitude 125 ft. Drilled by Angus Scurlock, 1953. Screen, 14-slot, 90-95 ft.		
Hardpan	90	90
Gravel	5	95
28/3-4D1. Clay Green. Altitude 10 ft. Drilled by R. L. Taylor, 1959. Screen, 14-slot, 62-67 ft.		
Hardpan	10	10
Sand and gravel	10	20
Gravel and hardpan	14	34
Gravel, water-bearing	2	36
Clay, sandy, blue	25	61
Sand, water-bearing	6	67
28/3-4E1. Harold Johnston. Altitude 8 ft. Drilled by Angus Scurlock, 1956. Screen, 14-slot, 52-57 ft.		
Sand, yields saline water	47	47
Clay, green, blue, and brown	6	53
Sand, medium, in clay; water-bearing	4	57
28/3-4M1. Dave Mackie Memorial Park. Altitude 20 ft. Drilled by Angus Scurlock, 1959. Screen, 10-slot, 20-25 ft.		
Clay, brown	19	19
Sand and gravel, water-bearing	6	25
28/3-4M2. Henry Richards. Altitude 18 ft. Dug by owner, 1961.		
Hardpan	4	4
Sand	6	10
Hardpan, clayey	1	11
Sand, hard, fine	5	16

Table 10 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
28/3-5R1. Herb Thomas. Altitude 12 ft. Drilled by Angus Scurlock, 1952. Screen, 14-slot, 59-70 ft.		
Sand, water-bearing below 3 ft; clam shell at 38 ft	70	70
28/3-5R2. Emma Chamberlain. Altitude 13 ft. Drilled by Angus Scurlock, 1948. Screen, 10-slot, 67-72 ft.		
Topsoil	2	2
Sand, black	55	57
Wood, carbonized	1	58
Clay, dark-brown	4	62
Sand, fine, water-bearing	10	72
28/3-9H1. H. R. Baer. Altitude 350 ft. Drilled by Angus Scurlock, 1956. Screen, 20-slot, 128-133 ft.		
Clay, sandy, brown	86	86
Mud	7	93
Clay, blue	2	95
Silt, fine	6	101
Hardpan, blue	23	124
Sand and gravel, water-bearing	9	133
Clay, blue	--	133+
28/3-11C1. Lottie Johnson. Altitude 118 ft. Drilled by Angus Scurlock, 1957. Screen, 10-slot, 75-81 ft.		
Hardpan and boulders	71	71
Hardpan with gravel	4	75
Hardpan with sand and gravel; water-bearing	6	81
28/3-11H1. R. W. Brockman. Altitude 179 ft. Drilled by Angus Scurlock, 1956. Screen, 8-slot, 102-112 ft.		
Hardpan and 2- to 5-ft boulders	50	50
Silt	20	70
Clay, brown	5	75
Clay, blue	2	77
Mud, brown	23	100
Sand, very fine, water-bearing	12	112
28/3-11J2. C. L. Roberts. Altitude 110 ft. Dug by owner, 1961.		
Topsoil	4	4
Hardpan	30	34

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
28/3-11J2 - Continued		
Sand, coarse, blue	3	37
Sand, fine	8	45
28/3-14A1. Arthur Heisdorf & Gordon Messenger. Altitude 35 ft. Drilled by Angus Scurlock, 1958. Screen, 10-slot, 164-169 ft.		
Clay, blue	145	145
Mud	16	161
Sand, fine, water-bearing	8	169
28/3-14D1. Sandy Hook Yacht Club Estates. Altitude 8 ft. Drilled by N. C. Jannsen, 1932. Perforations, 377-399 ft.		
Sand and gravel	48	48
Sand	15	63
Clay, sandy, blue	24	87
"Shale" [silt?], sandy, and clay	23	110
Clay, blue, and sandy "shale" [silt?]	22	132
Clay, blue, and sandy clay	29	161
Sand, cemented	47	208
Sand and gravel, cemented	18	226
Gravel, cemented	11	237
Clay, blue, and "shale" [silt?]	60	297
Clay and "shale" [silt?]	5	302
Clay, blue	18	320
Clay, blue, streaks of "shale" [silt]	33	353
"Quicksand," water-bearing	5	358
"Shale" [silt?], sandy	10	368
Sand	6	374
Gravel	1	375
Sand and gravel, water-bearing	26	401
Clay, blue	2	403
28/3-14P2. R. E. Tribou. Altitude 208 ft. Drilled by Angus Scurlock, 1961. Gravel-packed, 203-215 ft.		
Topsoil	3	3
Boulders and hardpan	24	27
Gravel	6	33
Clay, silty	6	39
Clay	22	61
Silt	8	69
Clay, compact	11	80
Silt, black, and peat	11	91
Silt and clay, layered	30	121
"Quicksand," very-fine, water-bearing	66	187
Clay, hard, blue, water-bearing	28	215

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
28/3-14P3. R. W. DeRosa. Altitude 98 ft. Drilled by H. O. Meyer, 1958. Screen, 14-slot, 62-67 ft.		
Sand, loose, and cobbles	10	10
Clay, sand, and gravel	15	25
Hardpan, sand, some water	20	45
Hardpan	3	48
Hardpan, blue	12	60
Sand and gravel, some water	3	63
Sand and gravel, with clay and silt	17	80
28/3-14P4. R. W. DeRosa. Altitude 100 ft. Drilled by H. O. Meyer, 1958. 4-inch perforated casing, 61-80 ft.		
Clay and sand	25	25
Hardpan	13	38
Sand, coarse, and gravel	13	51
Clay, blue	3	54
Hardpan, blue	7	61
Sand, gravel, some water	5	66
Hardpan	3	69
Sand, compact	7	76
Clay, sand, and some small gravel	26	102
Clay, blue	81	183
Sand, fine, silty, blue, water-bearing	5	188
Clay, very sandy, blue	50	238
Gravel, sand, and clay; interbedded	10	248
Clay, blue	45	293
Clay, very sandy, blue	12	305
Clay, blue	21	326
28/3-14P6. Frank Dettenmayers. Altitude 90 ft. Drilled by Angus Scurlock, 1958. Screen, 10-slot, 48-58 ft.		
Hardpan and boulders	31	31
Hardpan	1	32
Sand layers in hardpan, water-bearing	26	58
29/2-1G1. Robert Bremer. Altitude 190 ft. Drilled by Angus Scurlock, 1963. Screen, 14-slot, 223-228 ft.; 8-slot, 228-238 ft.		
Silt, sandy	69	69
Silt	120	189
Sand, peaty, black	16	205
Sand, water-bearing	15	220
Sand, very fine, water-bearing	18	238
Clay, brown	--	238+

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/2-2G1. W. E. Lawrence. Altitude 116 ft. Drilled by A. G. Kounkel, 1957. Open-hole, 149-191 ft.; originally gravel-filled, 170-270 ft.		
Sand	30	30
Hardpan	95	125
Gravel, water-bearing	1	126
Clay and gravel, water-bearing	14	140
Sand, coarse, water-bearing	22	162
Sand, fine	29	191
Clay, blue	79	270
29/2-2Q1. F. D. Eaton. Altitude 85 ft. Drilled by A. G. Kounkel, 1963. Screen, 10-slot, 145-149 ft.		
Sand	25	25
Clay	55	80
Sand, brown	17	97
Clay, blue	8	105
Sand	22	127
Clay, blue	8	135
Sand, fine	3	138
Clay, blue	3	141
Sand, fine, water-bearing	8	149
29/2-2Q2. F. D. Eaton. Altitude 68 ft. Dug by Fredson, 1944.		
Clay	6	6
Sand	27	33
Hardpan [till]	2	35
29/2-3G2. Clyde Robinson. Altitude 120 ft. Drilled by Angus Scurlock, 1962. Screen, 14-slot, 90-95 ft.		
Sand and gravel	16	16
Clay, blue	33	49
Hardpan and gravel	40	89
Gravel in hardpan, water-bearing	6	95
29/2-3K2. C. M. Ambrose & R. W. Isaacson. Altitude 55 ft. Drilled by Angus Scurlock, 1957. Screen, 10-slot, 67-77 ft.		
Hardpan and boulders	42	42
Clay, blue	23	65
Sand, some water	5	70
Sand, very fine, water-bearing	7	77

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/2-4P1. Roland Curtiss. Altitude 145 ft. Drilled by Angus Scurlock, 1958. Screen, 8-slot, 134-140 ft.		
Sand and gravel	5	5
Hardpan and boulders	107	112
Sand, fine	3	115
Sand, very fine, water-bearing	25	140
Clay, blue	--	140+
29/2-5D1. Gene Spradlin. Altitude 245 ft. Drilled by Angus Scurlock, 1963. Screen, 14-slot, 238-243 ft.; 10-slot, 243-248 ft.		
Hardpan and "rock"	149	149
Silt, sandy, brown	60	209
Clay, gray	7	216
Sand, fine	23	239
Sand, very fine, water-bearing	9	248
Clay, blue	--	248+
29/2-5N2. F. G. Read. Altitude 165 ft. Drilled by Angus Scurlock, 1956. Screen, 14-slot, 205-210 ft.		
Topsoil	1	1
Hardpan, rocks and boulders	172	173
Clay, silty, gray	19	192
Sand, very fine, clayey, micaceous	5	197
Sand, fine, water-bearing	3	200
Sand, medium, water-bearing	3	203
Sand, fine, water-bearing	7	210
29/2-6A1. Fred Peterson. Altitude 150 ft. Drilled by Angus Scurlock, 1956. Screen, 10-slot, 195-205 ft.		
Hardpan, blue	83	83
Silt, brown, and dirty sand	8	91
Sand, loose	52	143
Clay, blue	49	192
Sand, very fine, silty	13	205
29/2-6A3. William Roller. Altitude 132 ft. Drilled by Angus Scurlock, 1955. Screen, 155-160 ft.		
Hardpan	50	50
Silt, sand, and blue clay	100	150
Sand, very fine, silty, water-bearing	10	160

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/2-6A5. O. Sander. Altitude 235 ft. Drilled by Buzz Nelson, 1963. Screen, 223-228 ft.		
Topsoil	3	3
Clay, gravelly	62	65
Clay, sandy	4	69
Clay, gravelly	7	76
Clay, sandy	8	84
Clay	15	99
Sand	14	113
Clay, blue	39	152
Clay, sandy, brown	11	163
Sand, brown	28	191
Clay, blue	1	192
Clay, sandy, brown	9	201
Sand, brown	15	216
Sand, water-bearing	12	228
Clay, sandy, blue	--	228+
29/2-6B1. Bush Point Resort. Altitude 15 ft. Drilled by Angus Scurlock, 1948.		
Topsoil	3	3
Clay, brown	33	36
Conglomerate, clay, silty	24	60
Clay, blue	10	70
Sand, fine	20	90
Clay, blue	17	107
Gravel and sand, yields saline water	3	110
Clay, blue	159	269
Sand, fine, blue, water-bearing	9	278
29/2-6B3. Frank Bathurst. Altitude 27 ft. Drilled by Angus Scurlock, 1963.		
Sand	13	13
Clay, brown	6	19
Clay, blue	65	84
Sand, fine, black, yields saline water	39	123
Clay, gray	49	172
Sand, yields saline water	4	176
Clay, blue, yields saline water	64	240
29/2-6B4. H. H. Mathis. Altitude 35 ft. Drilled by Angus Scurlock, 1950. Screen, 14-slot, 33-38 ft.		
Topsoil	1	1
Sand, brown	11	12

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/2-6B4 - Continued		
Hardpan	11	23
Sand, fine	7	30
Sand, fine, water-bearing	5	35
Sand, medium, water-bearing	3	38
Hardpan	--	38+
29/2-6G1. L. H. Bain. Altitude 79 ft. Drilled by Angus Scurlock, 1961. Screen, 14-slot, 97-107 ft.; 10-slot, 107-112 ft.		
Hardpan	45	45
Silt and mud	25	70
Mud, black and green	25	95
Sand, medium, water-bearing	17	112
29/2-6G2. Lighthouse Shores. Altitude 90 ft. Drilled by Angus Scurlock, 1961. Screen, 14-slot, 97-107 ft.		
Clay, brown	24	24
Silt, brown	53	77
Sand, multicolored, carbonaceous	20	97
Sand and gravel	10	107
29/2-6H1. Angus Scurlock, Altitude 124 ft. Drilled by owner, 1952. Screen, 14-slot, 125-130 ft.		
Hardpan	2	2
Clay, sandy	3	5
Clay, brown	9	14
Clay, blue	10	24
Sand, brown	46	70
Silt	10	80
Sand, fine	32	112
Sand, dark, some water	10	122
Sand, pepper, water-bearing	8	130
Clay, blue	--	130+
29/2-8C2. Bush Point Park Water Co., Inc. Altitude 115 ft. Drilled by Angus Scurlock, 1958. Screen, 14-slot, 128-138 ft.		
Hardpan, cemented, and rocks	126	126
Sand, coarse, water-bearing	12	138

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/2-8D1. W. H. Brog. Altitude 118 ft. Drilled by Angus Scurlock, 1962.		
Clay	6	6
Hardpan	98	104
Clay, blue	46	150
Mud	3	153
Sand, water-bearing	15	168
29/2-8F2. W. P. Dobson. Altitude 85 ft. Drilled by Angus Scurlock, 1951. Screen, 20-slot, 105-110 ft.		
Hardpan and rocks	74	74
Clay, blue	11	85
Hardpan, sandy	20	105
Sand, clay, and gravel; water-bearing	5	110
29/2-8K1. C. Saddler. Altitude 65 ft. Drilled by N. C. Jannsen, 1935.		
Hardpan	80	80
Sand, some water	2	82
Sand and gravel	8	90
No record	5	95
29/2-8K2. Windmill Heights. Altitude 162 ft. Drilled by Angus Scurlock, 1957. Screen, 173-185 ft.		
Hardpan and rocks	165	165
Clay, blue	8	173
Sand and gravel, water-bearing	12	185
29/2-8L2. Ruby Adams. Altitude 55 ft. Drilled by Angus Scurlock, 1950. Screen, 14-slot, 116-121 ft.		
Hardpan and rocks	109	109
Clay, brown, and humus	7	116
Sand, medium to coarse, some water	4	120
Sand, medium, water-bearing	2	122
Sand, fine to medium	--	122+
29/2-8R1. C. W. Field. Altitude 58 ft. Drilled by Angus Scurlock, 1951. Gravel-filled, 75-84 ft.		
Hardpan and "rock," very hard	77	77
Sand and gravel, layered (best yield, 79-82 ft)	7	84

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/2-9A1. C. E. Smith. Altitude 175 ft. Dug by owner, 1938.		
Topsoil	8	8
Sand, with hard, thin layer of bright orange to chocolate brown clay at top of sand	42	50
Gravel	1	51
Clay	4	55
29/2-9E2. E. F. Sawyer. Altitude 15 ft. Drilled by Sig Heggenes, 1946.		
Peat	4	4
"Rock" and gravel	26	30
Sand, water-bearing at 30 ft	25	55
Gravel, fine, water-bearing; very fine sand	5	60
29/2-9N1. H. C. Hill. Altitude 40 ft. Drilled by Angus Scurlock, 1963. Screen, 15-slot, 109-114 ft.		
Hardpan and rocks	70	70
Hardpan and gravel, some water	17	87
Sand, some water	13	100
Sand, medium, water-bearing	14	114
29/2-9N2. Mrs. E. H. Rose. Altitude 10 ft. Drilled by Angus Scurlock, 1954. Screen, 14-slot, 50-58 ft.		
Topsoil	3	3
Sand and gravel, yields saline water	34	37
Clay	8	46
Sand and gravel, some water	9	54
Gravel, water-bearing	4	58
Hardpan	--	58+
29/2-9N4. L. J. Proby, R. J. Ayres, George Monette. Altitude 10 ft. Drilled by Angus Scurlock, 1949.		
Gravel	27	27
Sand and gravel, yields brackish water	30	57
Sand, yields saline water	1	58
Clay, green, wood and clam shells	11	69
Mud	4	73
Clay	10	83
Conglomerate, clayey, water-bearing	3	86

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/2-9N5. Harry Simmons and others. Altitude 10 ft. Drilled by Angus Scurlock, 1951.		
Topsoil	2	2
Sand, yields saline water	31	33
Sand, fine, blue	10	43
Sand and clam shells	26	69
Clay, gray and green	15	84
Gravel, clay, and sand; water-bearing	6	90
29/2-9Q1. Mutiny Sands, Inc. Altitude 70 ft. Drilled by H. O. Meyer, 1959. Screen, 40-slot, 230-235 ft.; 60-slot, 235-245 ft.		
Gravel, cemented	20	20
Hardpan	10	30
Gravel and clay	35	65
Sand, layered	8	73
Clay, blue	91	164
Hardpan and hard blue clay	10	174
Clay, hard, blue, some water	12	186
Clay, blue	32	218
Sand and gravel	2	220
"Shale," hard	6	226
Sand, coarse, and gravel	20	246
Gravel, tight, and clayey sand	2	248
29/2-10C2. St. Augustines Episcopal Church. Altitude 115 ft. Drilled by Angus Scurlock, 1963. Gravel-filled.		
Hardpan and rocks	119	119
Sand and gravel, water-bearing	5	124
Clay, blue	--	124+
29/2-10C3. R. O. Ward. Altitude 70 ft. Dug well drilled deeper by Angus Scurlock, 1963.		
Dug well, no log	64	64
Hardpan and gravel	62	126
Gravel	4	130
Hardpan	--	130+
29/2-10E1. John Petro. Altitude 105 ft. Drilled by Angus Scurlock, 1962.		
Hardpan and rocks; peat and acid water at 40 ft.	58	58
Hardpan and gravel, water-bearing	9	67

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/2-10F1. F. A. Becker. Altitude 25 ft. Drilled by Angus Scurlock, 1961. Screen, 10-slot, 84-90 ft.; 14-slot, 90-95 ft.		
Surface material	5	5
Hardpan and rocks	49	54
Hardpan, gravelly, loose	22	76
Hardpan	8	84
Sand and gravel in hardpan	11	95
29/2-10J1. Dutch Hollow Terrace. Altitude 55 ft. Drilled by R. L. Taylor, 1960. Screen, 20-slot, 132-137 ft.		
Sand and clay, mixed	60	60
Clay, blue	25	85
"Quicksand"	7	92
Clay	33	125
Gravel, water-bearing	12	137
29/2-10K1. R. R. Fournier. Altitude 85 ft. Drilled by Angus Scurlock, 1958. Screen, 14-slot, 69-79 ft.		
Clay	9	9
Sand	20	29
Hardpan, cemented	27	56
Sand, loose	13	69
Sand, water-bearing	10	79
29/2-10Q1. Austin Marshall. Altitude 65 ft. Dug by owner, 1939.		
Clay, yellowish-brown	11	11
Hardpan and gravel, mixed	8	19
Sand, medium, with thin clay layers at 35 and 40 ft	21	40
Sand, coarse, increasing coarseness downward	27	67
29/2-10R1. Lehman Mill & Lumber Co. Altitude 59 ft. Dug by owner.		
Hardpan, sandy, and gravel	5	5
Hardpan, drift boulders	50	55
Gravel, water-bearing	5	60

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/2-11B1. M. C. Otto. Altitude 110 ft. Drilled by Angus Scurlock, 1958. Screen, 14-slot, 152-156 ft.		
Clay	3	3
Hardpan	2	5
Sand, dirty	46	51
Clay, green	8	59
Clay, blue	64	123
Mud, brown	3	126
Clay, blue	26	152
Sand, medium, water-bearing	4	156
No record	5	161
29/2-11C1. Pope & Talbot, Inc. Altitude 95 ft. Drilled by Angus Scurlock, 1962. Screen, 131-138 ft.		
Sand	35	35
Clay and hardpan, brown	17	52
Hardpan	20	72
Clay, sticky, black	5	77
Clay, green	16	93
Clay, blue	13	106
Sand, blue	26	132
Sand, water-bearing	6	138
29/2-11K1. Ruby Sanders. Altitude 100 ft. Drilled by Angus Scurlock, 1961. Screen, 14-slot, 133-138 ft.		
Hardpan, sandy, muddy	129	129
Sand, coarse, water-bearing	9	138
29/2-11M1. C. E. Dahlman. Altitude 85 ft. Drilled by Angus Scurlock, 1959. Screen, 20-slot, 132-143 ft.		
Clay	27	27
Silt	57	84
Clay	24	108
Sand, very fine, some water	26	134
Gravel, water-bearing	9	143
29/2-11M2. C. E. Dahlman. Altitude 110 ft. Drilled by Angus Scurlock, 1959. Screen, 20-slot, 160-165 ft.		
Sand	101	101
Mud with sandy layers	16	117
Sand, mud, and clay	42	159
Gravel, water-bearing	6	165

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/2-11N1. Mobil Oil Co. Altitude 110 ft. Drilled by Angus Scurlock, 1957.		
Clay, sandy, brown	75	75
Clay, brown	30	105
Sand, dirty, water-bearing	12	117
29/2-11N2. G. L. Brown. Altitude 110 ft. Drilled by Angus Scurlock, 1961. Screen, 10-slot, 120-132 ft.		
Hardpan, sandy	27	27
Silt and sand, loose	78	105
Clay, blue	14	119
Sand, fine, water-bearing	13	132
29/2-11N3. D. N. Harpham. Altitude 110 ft. Dug by General Service Co. Perforations, 96-102 ft.		
Topsoil and sand	28	28
Clay, blue	3	31
Sand	14	45
Clay and sand, blue	5	50
Clay, blue	6	56
Sand, fine to coarse	18	74
Sand, coarse, water-bearing	4	78
Clay, hard, blue	8	86
Sand, fine, some water	2	88
Sand, coarse, water-bearing	16	104
29/2-11N4. C. E. Dahlman. Altitude 110 ft. Drilled by Angus Scurlock, 1952. Screen, 10-slot, 114-120 ft.		
Topsoil	1	1
Clay	3	4
Hardpan, sandy; rocks	107	111
Clay, gray and black	3	114
Sand, fine, some water	21	135
Sand and clay, mixed	7	142
29/2-11N5. C. E. Dahlman. Altitude 118 ft. Drilled by Angus Scurlock, 1961. Screen, 14-slot, 115-124 ft.		
Sand	115	115
Sand, clay, and gravel; water-bearing	9	124

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/2-11N6. Everett Hayes. Altitude 112 ft. Drilled by Angus Scurlock, 1948.		
Sand and gravel	125	125
Sand and gravel, water-bearing	7	132
29/2-11N7. Gerald Brown. Altitude 92 ft. Drilled by Angus Scurlock, 1963. Screen, 8-slot, 102-107 ft.; 10-slot, 107-112 ft.; 12-slot, 112-117 ft.		
Clay, sandy, brown	70	70
Clay, brown	27	97
Sand, dirty, water-bearing	20	117
29/2-11Q2. E. W. Scott. Altitude 100 ft. Drilled by Angus Scurlock, 1960. Screen, 20-slot, 105-110 ft.		
Sand, dirty	80	80
Sand, hard, brown	23	103
Sand, clay, and gravel	7	110
29/2-11R1. W. R. Everhart. Altitude 135 ft. Drilled by Angus Scurlock, 1949.		
No log	16	16
Hardpan, rocks	116	132
Sand, coarse, and gravel	13	145
Hardpan	--	145+
29/2-12M2. Hilmer Newman. Altitude 85 ft. Drilled by Angus Scurlock, 1959. Screen, 14-slot, 87-92 ft.		
Hardpan	35	35
Hardpan, sandy	48	83
Sand, some water	4	87
Sand and gravel, water-bearing	5	92
29/2-12N1. Harold Newman. Altitude 105 ft. Drilled by Angus Scurlock, 1956. Screen, 14-slot, 102-112 ft.		
Hardpan	86	86
Sand, some water	9	95
Sand, water-bearing	17	112
Hardpan	--	112+

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/2-13C1. Mrs. Catherine Witty. Altitude 140 ft. Drilled by Angus Scurlock, 1962. Screen, 14-slot, 115-125 ft.		
Hardpan	19	19
Clay, brown	41	60
Silt, brown	38	98
Sand, coarse	2	100
Sand, dirty, water-bearing	15	115
Sand, coarse, clean, water-bearing	10	125
Clay, blue	--	125+
29/2-13E2. Ona Young. Altitude 71 ft. Drilled by Angus Scurlock, 1956. Screen, 20-slot, 79-84 ft.		
Clay, sandy	34	34
Loam, sandy, brown	35	69
Clay, brown	1	70
Sand, water-bearing	5	75
Sand, coarse, water-bearing	9	84
Clay	--	84+
29/2-13J2. H. & H. Properties. Altitude 114 ft. Drilled by Angus Scurlock, 1960. Screen, 14-slot, 108-121 ft.; 20-slot, 121-126 ft.		
Hardpan	39	39
Hardpan, sandy	28	67
Sand	36	103
Sand, fine, some water	10	113
Sand, medium, some water	8	121
Sand, coarse, water-bearing	5	126
Hardpan	--	126+
29/2-14D2. R. A. Fuller. Altitude 115 ft. Drilled by Angus Scurlock, 1960. Screen, 14-slot, 131-136 ft.		
Sand	16	16
Gravel	9	25
Sand	28	53
Clay, silt, and large rocks	16	69
Sand	11	80
Sand, dirty	20	100
Sand, muddy	16	116
Sand and gravel, water-bearing	4	120
Sand, coarse	2	122
Sand, fine	8	130
Sand, coarse, clean, water-bearing	6	136

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/2-14Q1. D. S. Johnson. Altitude 270 ft. Drilled by Angus Scurlock, 1960. Screen, 14-slot, 272-282 ft.		
Hardpan and boulders up to 3 ft diameter	104	104
Mud, blue	10	114
Clay, blue	36	150
Sand, dirty	30	180
Hardpan, sandy	89	269
Sand, coarse to medium, water-bearing	13	282
29/2-15B1. Walter Weston. Altitude 95 ft. Drilled by Angus Scurlock, 1959. Screen, 20-slot, 120-130 ft.		
Hardpan, cemented	120	120
Gravel and coarse sand	10	130
29/2-15B2. Walter Weston. Altitude 100 ft. Drilled by Angus Scurlock, 1963. Screen, 16-slot, 152-162 ft; 14-slot, 162-167 ft.		
Hardpan	35	35
Hardpan and boulders	15	50
Hardpan	61	111
Sand	24	135
Sand, medium, some water	15	150
Sand, medium, water-bearing	16	166
Hardpan	1	167
29/2-15B3. H. W. Chambers. Altitude 58 ft. Drilled by owner, 1903.		
Hardpan	40	40
Sand, hard, thin layer at base	25	65
Sand, water-bearing	2	67
29/2-15E2. Donald McKay. Altitude 8 ft. Drilled by A. G. Kounkel, 1963. Screen, 15-slot, 87-90 ft.		
Sand	6	6
Sand, water-bearing	2	8
Clay, yellow	47	55
Sand and gravel, yields saline water	28	83
Sand, soft	4	87
Sand, water-bearing	3	90
29/2-15F1. Where Ships Pass Addition. Altitude 75 ft. Drilled by Angus Scurlock, 1957. Screen, 14-slot, 168-173 ft.		
Hardpan and boulders	169	169
Gravel, water-bearing	4	173

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/2-15L2. Glo-Crest Addition. Altitude 8 ft. Drilled by Angus Scurlock, 1959. Screen, 14-slot, 36-41 ft.		
Sand and peat	7	7
Clay mixed with hardpan	5	12
Sand and gravel, yields acid water	11	23
Sand, water-bearing	18	41
29/2-15L3. C. H. Knoblauch. Altitude 30 ft. Drilled by Angus Scurlock, 1961. Screen, 10-slot, 98-108 ft.; gravel-filled, 108-130 ft.		
Sand and gravel	28	28
Hardpan	7	35
"Quicksand"	11	46
Hardpan	52	98
Clay, brown	2	100
Sand, water-bearing	8	108
Silt, water-bearing	22	130
29/2-15R1. G. S. Brewer. Altitude 130 ft. Drilled by Angus Scurlock, 1952. Screen, 20-slot, 131-136 ft.		
Topsoil	1	1
Hardpan; sand	129	130
Sand, water-bearing	6	136
Clay, blue	--	136+
29/2-16A1. E. A. Gabelein. Altitude 19 ft. Drilled by Angus Scurlock, 1953.		
Sand	17	17
Hardpan and boulders	43	60
Gravel	6	66
29/2-16A2. L. T. Buhtz. Altitude 38 ft. Drilled by Angus Scurlock, 1961. Screen, 14-slot, 75-85 ft.		
Hardpan and drift boulders	72	72
Gravel	4	76
Hardpan, sandy, and gravel, some water	5	81
Gravel, water-bearing	4	85

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/2-16A3. W. C. Miller. Altitude 25 ft. Drilled by Angus Scurlock, 1962. Screen, 10-slot, 60-71 ft.		
Hardpan and rocks	68	68
Sand and gravel, water-bearing	3	71
29/2-16A4. A. M. Constans. Altitude 30 ft. Drilled by Angus Scurlock, 1961. Screen, 14-slot, 55-65 ft.		
Surface material	5	5
Hardpan, cemented	50	55
Gravel layers in hardpan, water-bearing	10	65
29/2-16B2. C. B. Lindahl. Altitude 38 ft. Drilled by Angus Scurlock, 1960. Screen, 14-slot, 75-80 ft.		
Hardpan and rocks	73	73
Gravel layers in hardpan	7	80
29/2-22L2. Barr Addition. Altitude 15 ft. Drilled by Angus Scurlock, 1963. Screen, 8-slot, 41-46 ft.; 10-slot, 46-51 ft.		
Sand, fine	51	51
Hardpan	--	51+
29/2-22N1. Mutiny Bay Shores. Altitude 15 ft. Drilled by Angus Scurlock, 1954.		
Clay	4	4
Sand, medium, water-bearing	14	18
Clay	--	18+
29/2-23C2. D. R. Fountain. Altitude 292 ft. Drilled by Angus Scurlock, 1956. Screen, 14-slot, 106-111 ft.		
Hardpan and "rock"	99	99
Clay	5	104
Sand and gravel, water-bearing	7	111
29/2-23D1. B. C. Gates. Altitude 260 ft. Drilled by Angus Scurlock, 1951. Screen, 20-slot, 263-268 ft.		
Hardpan and rocks	26	26
Hardpan, silty	33	59

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/2-23D1 - Continued		
Clay, blue	79	138
Hardpan, sandy	56	194
Silt, fine, brown	12	206
Sand	53	259
Sand and gravel, water-bearing	9	268
29/2-23G1. A. R. Bellem. Altitude 35 ft. Drilled by Angus Scurlock, 1962. Screen, 14-slot, 90-100 ft.		
Surface material	21	21
Hardpan, sandy	11	32
Sand, water-bearing	68	100
29/2-23K1. J. E. Cloke. Altitude 5 ft. Drilled by Angus Scurlock, 1962. Screen, 36-41 ft.		
Sand	12	12
Hardpan	5	17
Sand, water-bearing	24	41
29/2-27E1. K. W. Ellison. Altitude 105 ft. Drilled by Angus Scurlock, 1954.		
Clay and hardpan, layered	99	99
Gravel, water-bearing	1	100
Hardpan	29	129
Gravel, yields saline water	1	130
29/2-28H1. Mutiny Bay Shores. Altitude 10 ft. Drilled by Angus Scurlock, 1953. Screen, 10-slot, 28-33 ft.		
"Tide flat," logs	28	28
Sand, water-bearing	5	33
29/3-2R1. Beachwood Community Water System. Altitude 250 ft. Drilled by R. L. Taylor, 1958. Screen, 10-slot, 155-165 ft.		
Sand and gravel	144	144
Mud	4	148
Clay	3	151
Sand, water-bearing	14	165

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/3-3B2. Town of Langley. Altitude 175 ft. Drilled by Al Nelson, 1963. Screen, 223-244 ft.		
Hardpan, gravelly	9	9
Sand	14	23
Sand, water-bearing	28	51
Clay, sandy, blue	18	69
Clay, blue	15	84
Clay, hard, sandy	23	107
Sand	31	138
Clay, sandy	6	144
Peat and wood	5	149
Clay, silty, sandy	21	170
Sand	14	184
Clay, sandy	36	220
Sand, water-bearing	23	243
Sand and some clay	1	244
29/3-3B3. Town of Langley, Altitude 155 ft. Drilled by L. R. Gaudio, 1962. Gravel-packed, 21-42 ft.		
Sand, hard, impervious, and clay	10	10
Sand, coarse, water-bearing	15	25
Sand, fine, water-bearing	15	40
Sand and clay, fine, blue	2	42
29/3-3B6. Town of Langley. Altitude 175 ft. Drilled by J. J. Bell, 1947. Screen, 20-slot, 231-243 ft.; 40-slot, 243-245 ft.		
Topsoil, sandy	13	13
Clay, hard, yellow, and gravel	14	27
Clay, yellow, and sand	6	33
Sand, brownish-yellow, water-bearing (30 gpm)	19	52
Sand, brown, and clay	15	67
Clay, blue; gradational upper contact	5	72
Silt and "shale," blue	8	80
"Shale," blue	25	105
Silt, sand, and blue clay	9	114
Silt and sand, blue; water-bearing	19	133
Clay and silt, blue	38	171
Clay, blue, and sand	9	180
Clay, blue, and coarse sand	10	190
Sand, medium, blue	10	200
Sand, fine, blue	15	215
Sand, coarse, blue, water-bearing	30	245

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/3-5P1. C. A. Anderson. Altitude 50 ft. Drilled by Angus Scurlock, 1961. Screen, 10-slot, 51-61 ft.		
Hardpan, sandy	50	50
Sand and gravel, dirty, water-bearing	11	61
29/3-5P2. Ivan Richardson. Altitude 65 ft. Drilled by Angus Scurlock, 1961. Screen, 10-slot		
Sand and silt	75	75
Sand, very fine	10	85
Sand, medium	5	90
Sand, clayey, silty, water-bearing	48	138
29/3-7N1. Jack Cordas. Altitude 104 ft. Drilled by Angus Scurlock, 1952. Screen, 20-slot, 80-85 ft.; 30-slot, 85-90 ft.		
Hardpan, sandy	80	80
Sand, water-bearing	10	90
29/3-8N1. Hoss. Altitude 117 ft. Drilled by Angus Scurlock, 1962. Screen, 8-slot, 104-114 ft.		
Hardpan	31	31
Clay, brown	28	59
Clay, blue	31	90
"Silt" fine sand, water-bearing	24	114
29/3-12E1. H. S. Bartholemew. Altitude 170 ft. Drilled by Angus Scurlock, 1960. Screen, 14-slot, 63-73 ft.		
Sand and gravel	60	60
Sand, fine, water-bearing	13	73
29/3-13P1. E. L. Fuller. Altitude 198 ft. Drilled by Angus Scurlock, 1961.		
Hardpan, sandy	18	18
Clay, sandy	32	50
Clay, blue	88	138
Silt, fine	22	160
Clay, silty, blue	28	188
Clay, blue	61	249
Clay, compact, blue	2	251
Clay, compact, blue, with thin layers of peat; water-bearing and 8 lbs. pressure methane gas	6	257

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/3-14H1. McDonald. Altitude 295 ft. Drilled by Allan Countryman, 1962. Screen, 30-slot, 322-327 ft.		
Gravel and clay, mixed	100	100
Clay, blue	100	200
Clay, blue, and peat	100	300
Clay, blue, and fine gravel	17	317
Gravel, fine, water-bearing	10	327
29/3-14M2. Mrs. Jennie Herd. Altitude 345 ft. Drilled by Angus Scurlock, 1960. Screen, 14-slot, 171-181 ft.		
Hardpan	172	172
Sand and gravel, water-bearing	9	181
29/3-14M4. I. H. Clark. Altitude 328 ft. Dug by previous owner, 1955.		
Topsoil	4	4
Hardpan	8	12
Gravel	--	12+
29/3-14N1. Mrs. Gertrude Kiehl. Altitude 355 ft. Drilled by Angus Scurlock, 1958. Screen, 10-slot, 139-149 ft.		
Hardpan	76	76
Hardpan, sandy	57	133
Sand, fine, water-bearing	16	149
29/3-15N2. Robert Pickens. Altitude 98 ft. Dug by owner, 1936.		
Topsoil	6	6
Hardpan	24	30
Sand, coarse, water-bearing	2	32
Hardpan	2	34
Sand, coarse, water-bearing	2	36
Hardpan	--	36+
29/3-15N3. Eulice Miller. Altitude 113 ft. Drilled by Angus Scurlock, 1953. Gravel-filled, 52-57 ft.		
Hardpan	54	54
Gravel, water-bearing	3	57

Table 11- Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/3-15R1. H. E. Davis. Altitude 333 ft. Drilled by Angus Scurlock, 1954. Screen, 14-slot, 103-113 ft.		
Hardpan	60	60
Hardpan, sandy	40	100
Sand, medium, water-bearing	13	113
29/3-17E1. Everett Hayes. Altitude 105 ft. Drilled by Angus Scurlock, 1960. Screen, 30-slot, 113-118 ft.		
Topsoil	1	1
Sand and gravel	105	106
Sand, water-bearing	12	118
29/3-18A2. Whidbey Telephone Co. Altitude 30 ft. Drilled by Angus Scurlock, 1960. Screen, 10-slot, 100-110 ft.		
Hardpan and "rock"	40	40
Hardpan, "rock," and mud	62	102
Sand, medium, water-bearing	8	110
29/3-18D1. Thomas Johnson. Altitude 130 ft. Drilled by Angus Scurlock, 1962. Screen, 14-slot, 107-112 ft.; 10-slot, 112-117 ft.		
Gravel and "rock"	17	17
Sand	6	23
Silt, blue to brown	37	60
Mud, sandy, brown	30	90
Sand, brown, water-bearing	22	112
Sand, "granite," fine, water-bearing	5	117
29/3-18H1. Island County Cemetery Assoc. Altitude 100 ft. Drilled by Angus Scurlock, 1961. Screen, 14-slot, 101-111 ft.		
Sand and hardpan, layered	50	50
Hardpan, sandy	40	90
Sand, medium, some water	10	100
Sand, water-bearing	11	111
29/3-19G1. Tom Kohlwes. Altitude 22 ft. Dug by owner, 1940.		
Topsoil	3	3
Hardpan	10	13
Sand	2	15

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/3-19G2. Sunlight Beach Community Water System. Altitude 16 ft. Dug by Felix Gabelien, 1947.		
Topsoil	4	4
Hardpan	9	13
Sand	2	15
29/3-19J2. Fred Kohlwes. Altitude 135 ft. Drilled by Angus Scurlock, 1959. Screen, 10-slot, 128-133 ft.; 14-slot, 133-138 ft.		
Hardpan	121	121
Clay, brown	7	128
Sand, medium, water-bearing	10	138
29/3-20E1. F. L. Maynard. Altitude 140 ft. Drilled by Angus Scurlock, 1955. Screen, 20-slot, 138-143 ft.		
Dug well, no log	102	102
Sand, coarse	32	134
Sand, coarse, water-bearing	9	143
29/3-20M2. W. L. Steele. Altitude 135 ft. Drilled by Angus Scurlock, 1957. Screen, 14-slot, 146-150 ft.		
Hardpan, sandy, and brown clay; mixed	55	55
Peat	3	58
Hardpan	88	146
Sand, medium, water-bearing	4	150
29/3-20N1. Holly Hill Community Well. Altitude 150 ft. Drilled by Angus Scurlock, 1948. Gravel-filled, 220-232 ft.		
Hardpan	57	57
Peat, lignite	3	60
Hardpan	120	180
Clay and humus, yields brown water	5	168
Clay, brown	35	220
Sand and gravel, water-bearing	12	232
29/3-22A3. John Allward. Altitude 335 ft. Drilled by Angus Scurlock, 1950. Screen, 32-37 ft.		
Hardpan	36	36
Gravel, water-bearing	1	37

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/3-22D1. W. J. Murphy. Altitude 105 ft. Drilled by Angus Scurlock, 1962. Screen, 10-slot, 55-60 ft.		
Clay	4	4
Hardpan, and cobbles	36	40
Hardpan, sandy	10	50
Sand, very fine, water-bearing	10	60
Clay, blue	--	60+
29/3-22E2. L. H. Graves. Altitude 101 ft. Drilled by Angus Scurlock, 1963. Screen, 8-slot, 57-67 ft.		
Sand	5	5
Hardpan	14	19
Clay, blue	12	31
Clay, yellow	15	46
Sand, fine, dirty, water-bearing	14	60
Sand, medium to fine, water-bearing	7	67
29/3-22J1. Mrs. Virgil Auvil. Altitude 425 ft. Drilled by Angus Scurlock, 1948.		
Hardpan, very hard, and boulders	90	90
Clay, silty, blue	117	207
Humus and one log 14 inches thick	4	211
Clay, blue	23	234
Silt, and very fine sand; water-bearing	16	250
Silt and sand, 40 percent mica; water-bearing	15	265
29/3-22M1. George Stockholm & Leo Lee. Altitude 128 ft. Drilled by Angus Scurlock, 1961. Screen, 14-slot, 88-98 ft.; 10-slot, 98-103 ft.		
Hardpan	25	25
Hardpan, silty	46	71
Sand, fine, water-bearing	28	99
Sand, very fine, and silt; water-bearing	4	103
Clay, blue	--	103+
29/3-23F1. J. G. Martin. Altitude 405 ft. Dug by owner, 1953.		
Till	32	32
Sand and gravel	1	33
Till	7	40
Sand and gravel	5	45

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/3-23F2. Philip Von Pinnon. Altitude 410 ft. Drilled by Angus Scurlock, 1958. Screen, 14-slot, 167-172 ft.		
Hardpan	165	165
Sand, water-bearing	7	172
29/3-23G1. P. J. Zeman. Altitude 402 ft. Drilled by Angus Scurlock, 1956. Screen, 10-slot, 152-162 ft.		
No log	32	32
Sand and gravel	13	45
Hardpan	102	147
Sand, fine, water-bearing	15	162
Clay, blue	14	176
29/3-23N2. Wally Hutchinson. Altitude 415 ft. Drilled by Angus Scurlock, 1962. Screen, 8-slot, 120-130 ft.		
Hardpan and boulders	86	86
Silt, sandy	14	100
Silt, muddy, yellow	30	130
Mud	--	130+
29/3-23P1. Mrs. D. J. Jackson. Altitude 430 ft. Drilled by Angus Scurlock, 1963. Screen, 8-slot, 158-168 ft.		
Hardpan and "rock," water-bearing 65-70 ft	89	89
Silt	46	135
"Quicksand"	23	158
Sand, very fine, water-bearing	10	168
Clay, blue	7	175
29/3-24N2. Mrs. L. M. Cornwall. Altitude 320 ft. Drilled by Myrl Johnson, 1954.		
Topsoil	4	4
Hardpan, much gravel and rocks	14	18
Clay, sandy, brown, some rocks	20	38
Sand, brown	32	70
Sand, water-bearing	1	71
Clay, blue	29	100

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/3-25C2. Al Olkonen. Altitude 370 ft. Drilled by Angus Scurlock, 1961. Screen, 14-slot, 89-94 ft.		
Dug well, no log	24	24
Hardpan and boulders	65	89
Gravel, water-bearing	5	94
Hardpan, cemented	--	94+
29/3-25R1. Jim & John Cooper. Altitude 155 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 30-slot, 107-112 ft; 20-slot, 112-117 ft.		
Clay, sandy	6	6
Hardpan and gravel	6	12
Gravel	7	19
Clay	46	65
Hardpan and gravel	29	94
Sand, water-bearing	23	117
29/3-26A1. Lake & Lands, Inc. Altitude 379 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 12-slot, 204-209 ft; 10-slot, 211-216 ft.		
Topsoil	3	3
Hardpan	50	53
Gravel (water-level, 54 ft.)	5	58
Gravel and clay, mixed	20	78
Sand, water-bearing (SWL, 59 ft; bailed 12 gpm)	13	91
Clay, sandy	71	162
Sand, water-bearing (SWL, 93 ft; yields 5 gpm)	3	165
Hardpan	20	185
Clay, sandy	13	198
Sand, water-bearing (SWL, 95 ft; yields 50 gpm)	17	215
Sand	2	217
29/3-26C1. Harry Anderson. Altitude 356 ft. Drilled by Angus Scurlock, 1947.		
Topsoil	5	5
Gravel 95 percent, sandy hardpan 5 percent	49	54
Hardpan	1	55
29/3-26D1. Don White. Altitude 382 ft. Drilled by Angus Scurlock, 1952. Screen, 10-slot, 97-102 ft.		
Dug well, no log	40	40
Hardpan	48	88

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/3-26D1 - Continued		
Sand and silt	4	92
Sand, fine	4	96
Sand, medium, brown	6	102
29/3-26H2. M. E. Robinson. Altitude 390 ft. Drilled by Angus Scurlock, 1962. Screen, 8-slot, 148-158 ft.		
Hardpan and boulders	96	96
"Quicksand," very fine	62	158
29/3-26M2. Edward Henney. Altitude 412 ft. Drilled by Angus Scurlock, 1956.		
Hardpan and cobbles	43	43
Hardpan and gravel	22	65
Sand, brown, some water	7	72
Clay, red	2	74
Clay, blue	20	94
Gravel, water-bearing	12	106
29/3-27K2. United Developers, Inc. Altitude 445 ft. Drilled by Allan Countryman, 1963.		
Topsoil	4	4
Hardpan	43	47
Gravel, dirty, and clay layers	18	65
Gravel, boulders, and clay layers	31	96
Sand, gravel, and clay; mixed	18	114
Clay, blue	36	150
Sand, hard, fine	25	175
Clay, blue	50	225
Clay, green, with sand, gravel, and wood; mixed	28	253
Clay, green, with much sand and gravel, mixed	37	290
Sand, clay, and "rock," mixed	10	300
Sand and gravel, dirty	31	331
29/3-28F1. Long brothers. Altitude 74 ft. Drilled by Angus Scurlock, 1954. Screen, 20-slot, 80-85 ft.; 14-slot, 85-90 ft.		
Loam, sandy	8	8
Hardpan with clay	69	77
Sand and gravel, water-bearing	13	90

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/3-28F2. Long brothers. Altitude 115 ft. Drilled by Angus Scurlock, 1962. Screen, 10-slot, 132-152 ft.		
Topsoil	5	5
Hardpan	18	23
Clay, brown	11	34
Hardpan, clayey, brown	13	47
Hardpan, clayey, blue	1	48
Clay, blue	5	53
Silt, blue	8	61
Clay, blue	13	74
Silt	4	78
Sand, dirty	36	114
Clay	14	128
Sand, fine, "granite"	3	131
Sand, "granite"	21	152
Clay, blue	1	153
29/3-28H1. Ralph Noble. Altitude 100 ft. Drilled by Angus Scurlock, 1956. Screen, 10-slot, 56-66 ft.		
Sand	3	3
Sand, red, iron stain	16	19
Clay, blue	13	32
Clay, brown	10	42
Clay, blue	12	54
Silt, water-bearing	3	57
Sand and some gravel, water-bearing	9	66
29/3-28N1. E. T. Evans. Altitude 89 ft. Drilled by A. G. Kounkel, 1962. Screen, 15-slot, 115-120 ft.		
Topsoil	7	7
Hardpan	8	15
Sand, clayey, and gravel	39	54
Sand and gravel, water-bearing	9	63
Clay, silty	7	70
Clay, hard	33	103
Sand, silty, water-bearing	17	120
Hardpan	--	120+
29/3-28P1. Mrs. Georgie Palmgren. Altitude 70 ft. Drilled by Angus Scurlock, 1954. Screen, 14-slot, 70-75 ft.		
Sand	14	14
Hardpan	9	23
Silt	4	27
Sand, fine	20	47

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/3-28P1 - Continued		
Sand, very fine	7	54
Clay	14	68
Sand, medium, water-bearing	7	75
29/3-32A1. Phyllis Cannon. Altitude 250 ft. Drilled by Angus Scurlock, 1962. Screen, 8-slot, 250-260 ft.		
Hardpan	100	100
Clay, muddy	64	164
Clay, brown	16	180
Clay, bright green	40	220
Clay, gray	26	246
Sand, fine, silty, water-bearing	14	260
29/3-33B1. Parker Wildes. Altitude 98 ft. Drilled by Angus Scurlock, 1952. Screen, 14-slot, 42-47 ft.		
Sand	41	41
Sand, water-bearing	6	47
29/3-33K1. C. W. Miller. Altitude 84 ft. Drilled by Angus Scurlock, 1955. Screen, 82-87 ft.		
Sand, loose, water-bearing below 55 ft	87	87
29/3-33N2. Lyle Borden. Altitude 1 ft. (Log from owner's memory.)		
Peat	10	10
Clay	10	20
Sand, clayey	10	30
Clay	10	40
Sand, clayey	10	50
Sand and gravel, water-bearing	10	60
29/3-35M1. Frances Matheson. Altitude 320 ft. Drilled by Sig Heggenes, 1946.		
Topsoil	4	4
Hardpan	16	20
Clay, hard, blue	45	65
Sand, water-bearing	1	66
Clay, hard, blue	34	100
Sand and gravel, coarse, water-bearing	12	112

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/3-36H2. J. E. Knipp. Altitude 250 ft. Drilled by Allan Countryman, 1963. Perforations, 45-46 ft.		
Topsoil, hard packed	2	2
Hardpan	33	35
Sand and hardpan, layered, water-bearing	15	50
Clay, blue and green	20	70
Clay, blue	30	100
Clay, blue, and traces of gravel	5	105
Hardpan	31	136
Hardpan and much gravel	8	144
Gravel and cobbles (absolutely dry)	11	155
29/4-30D1. W. E. Tallman. Altitude 110 ft. Drilled by Angus Scurlock, 1948. Screen, 83-93 ft.		
Sand, some water near bottom	65	65
Clay, with sand lenses	28	93
Clay	34	127
Clay, dark-brown	19	146
Peat, some sound wood with bark	4	150
29/4-31D1. Jim & John Cooper. Altitude 75 ft. Drilled by Angus Scurlock, 1948. Screen, 37-42 ft.		
Clay, sandy	14	14
Hardpan	24	38
Sand, water-bearing	4	42
29/4-31D4. W. F. Stevens. Altitude 15 ft. Drilled by Angus Scurlock, 1947.		
Hardpan and gravel	4	4
Hardpan with 90 percent gravel	38	42
Hardpan and gravel	4	46
Gravel, water-bearing	3	49
29/4-31D5. Clara Oberg. Altitude 145 ft. Drilled by M. G. Lohse, 1963.		
Hardpan, sandy clay and gravel mixed	30	30
Gravel, medium, water-bearing	1	31
Sand, fine, water-bearing	1	32
Gravel, fine, water-bearing	2	34

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
29/4-31D6. Wesley White. Altitude 140 ft. Drilled by M. G. Lohse, 1963.		
Sand and clay, yellow; mixed	34	34
Sand, fine, and clay layers	2	36
Clay, sandy, yellow	4	40
Clay, blue	78	118
29/4-31D7. Wesley White. Altitude 147 ft. Drilled by M. G. Lohse, 1963. Gravel-filled, 32-36 ft.		
Hardpan; sandy clay and gravel mixed with yellow clay	30	30
Gravel, coarse to fine	2	32
Sand, fine	2	34
Gravel, fine	2	36
Hardpan	1	37
29/4-31E1. J. J. Nelson. Altitude 175 ft. Drilled by Lambert Vander Stoep, 1961.		
Sand, gravel	5	5
Hardpan, sandy	13	18
Hardpan	18	36
Hardpan, soft	4	40
Hardpan	3	43
Hardpan, gravelly	20	63
Sand	6	69
Gravel	10	79
-----, cemented layer	3	82
Hardpan, gravelly	12	94
Sand, water-bearing	5	99
Clay, sandy	--	99+
30/2-4L1. North Bluff Assoc. Altitude 98 ft. Drilled by M. C. Turley, 1946. Perforations, 126-140 ft.		
Clay, sandy	26	26
Hardpan	100	126
Sand, water-bearing	14	140
30/2-4M1. Holmes Harbor Estates. Altitude 120 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 30-slot, 283-303 ft.		
Sand and gravel	4	4
Hardpan, gravelly, sandy, with some soft streaks	152	156
Sand, very fine, some water	2	158
Hardpan, sand and gravel	123	281
Sand and gravel, water-bearing	22	303

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
30/2-8H1. Greenbank Beach Water Co. Altitude 40 ft. Drilled by Angus Scurlock, 1958. Screen, 14-slot, 47-52 ft.		
Hardpan and boulders	47	47
Sand and gravel in hardpan, water-bearing	5	52
30/2-8J1. A. W. Bratsberg. Altitude 150 ft. Drilled by Angus Scurlock, 1960. Screen, 14-slot, 172-181 ft.		
Hardpan, cobbles	38	38
Hardpan, sandy	22	60
Silt	27	87
Clay, blue and brown	5	92
Hardpan, large cobbles	80	172
Sand and gravel, water-bearing	9	181
30/2-8J3. Greenbank Progressive Club, Inc. Altitude 168 ft. Drilled by N. C. Jannsen, 1929.		
Hardpan, small boulders	10	10
Hardpan, sand	22	32
Sand, cemented gravel	15	47
Gravel, cemented	9	56
Sand, loose	36	92
Sand, hard, and gravel, water at 95 ft	5	97
Clay, blue	3	100
30/2-8J4. Nickols. Altitude 158 ft. Drilled by Angus Scurlock, 1950. Gravel-filled, 163-168 ft.		
Topsoil	2	2
Loam, sandy	8	10
Sand, brown	27	37
Sand, coarse, and gravel	13	50
Hardpan, cemented	19	69
Clay, brown	6	75
Sand, brown, and boulders with wood	16	91
Hardpan, cobbles	72	163
Gravel, water-bearing	5	168
30/2-8N2. P. R. Bakken. Altitude 190 ft. Drilled by Buzz Nelson, 1963. Screen, 189-194 ft.		
Hardpan, gravelly	16	16
Clay	3	19
Sand, dirty	49	68
Sand, water-bearing	2	70

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
30/2-8N2 - Continued		
Clay, sandy	27	97
Sand, clean	2	99
Clay, brown	2	101
Sand and gravel	19	120
Gravel, clean	29	149
Sand	3	152
Silt	25	177
Gravel	6	183
Gravel, water-bearing	11	194
Clay	--	194+
30/2-8Q1. W. C. Gatton. Altitude 180 ft. Drilled by Ernest Axelson, 1961.		
Sand, fine	190	190
Gravel, fine	15	205
Hardpan, blue clay	2	207
30/2-9D1. A. B. Snider. Altitude 8 ft. Drilled by Angus Scurlock, 1958. Screen, 14-slot, 44-49 ft.		
Sand and gravel, yields saline water	19	19
Hardpan	2	21
Sand, yields saline water	18	39
Clay, gray and blue	5	44
Sand, water-bearing	5	49
Hardpan	2	51
30/2-9D2. Ted Cavanaugh. Altitude 12 ft. Drilled by Angus Scurlock, 1958. Screen, 10-slot, 47-53 ft.		
Gravel, yields saline water	44	44
Hardpan	3	47
Sand and gravel, water-bearing	6	53
30/2-9N3. Dan Leonard. Altitude 160 ft. Drilled by Angus Scurlock, 1957. Screen, 166-171 ft.		
Clay and hardpan in alternating layers	165	165
Sand and gravel, water-bearing	6	171
30/2-9N4. McAlester. Altitude 160 ft. Drilled by Angus Scurlock, 1953. Screen, 20-slot, 30-35 ft.		
Topsoil	1	1

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
30/2-9N4 - Continued		
Hardpan	29	30
Sand and gravel, water-bearing	5	35
30/2-11Q1. Keith Schmidt. Altitude 125 ft. Drilled by A. G. Kounkel, 1964.		
Hardpan	30	30
Clay, blue	16	46
Sand	42	88
Clay, blue	17	105
Clay and gravel, soft hardpan	32	137
Clay, blue	50	187
Sand, coarse, yields saline water (water-level, 129 ft)	91	278
30/2-11R1. Keith Schmidt. Altitude 155 ft. Drilled by A. G. Kounkel, 1963; deepened, 1964.		
Hardpan	48	48
Sand, yellow	12	60
Clay, yellow	20	80
Sand, clayey	10	90
Sand and gravel	20	110
Clay, blue	12	122
Clay, yellow, and sand	13	135
Sand and gravel (water-level, 120 ft)	7	142
Clay, blue	104	246
"Sandstone"	8	254
Gravel, water-bearing	1	255
Clay, blue	15	270
30/2-16E1. Edith Magnuson. Altitude 230 ft. Dug by owner, 1928.		
Clay and fine sand mixed	22	22
Gravel, coarse, compact	10	32
Sand, gray, water-bearing	1	33
Hardpan	4	37
30/2-16F1. Opal Norstrom & Mr. Frank. Altitude 157 ft. Drilled by Angus Scurlock, 1959. Screen, 14-slot, 158-168 ft.		
Clay, blue	57	57
Clay, brown	33	90
Hardpan	69	159
Gravel and "granite" sand, with feldspar; water-bearing	9	168

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
30/2-16M2. Carl Johnson. Altitude 312 ft. Dug, 1952; drilled deeper by Lambert Vander Stoep, 1962. Perforations, 37-39 ft.		
Dug well, no log	39	39
Sand and gravel, dirty	1	40
Clay, sandy, tan	15	55
Clay, tan	13	68
Clay, sandy, tan	6	74
Clay, blue	6	80
Clay, sand, some gravel	25	105
Clay, gravelly, brown	3	108
Clay, sandy	3	111
Hardpan, gravelly	2	113
Hardpan, sandy	4	117
Hardpan, gravelly	8	125
30/2-16M4. W. F. Rotermund. Altitude 270 ft. Drilled by Angus Scurlock, 1960. Screen, 10-slot, 286-296 ft.		
Silt, brown	139	139
Clay, blue	17	156
Clay, brown	31	187
Hardpan	89	276
Sand, dirty, some water	10	286
Clay, blue	1	287
Sand, fine, "granite," water-bearing	9	296
30/2-16Q1. Howard Fee. Altitude 105 ft. Dug well drilled deeper by Al Nelson, 1963. Screen, 133-138 ft.		
Dug well, no log	30	30
Sand	53	83
Clay, brown	3	86
Clay, sandy	13	99
Sand, dirty	15	114
Sand, water-bearing	24	138
30/2-17K2. Engstrom Community Lease. Altitude 345 ft. Drilled by Standard Oil Co. of Calif., 1958. Cased to 537 ft; plugged, 475-620 ft. and 1,890-2,090 ft. (Log by A. S. Van Denburgh, based on lithologic data from Baroid Well Logging Service. Schlumberger induction-electric, micro, sonic, and dipmeter logs are available for the depth interval from 537 to about 7,315 ft.)		
No record	537	537
Siltstone, sandy, light gray	25	562
Sand, fine, gray, trace of peat	8	570
Shale	30	600

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
30/2-17K2 - Continued		
Sand, medium to coarse	22	622
Siltstone and shale, gray	46	668
Sand, medium to coarse; some gray shale, and 10-40 percent dense volcanic material [gravel?]	102	770
Shale, soft, gray	22	792
Sand, medium to coarse, and 10-20 percent volcanic material [gravel?]	48	840
Shale, firm, gray	10	850
Sand, coarse, and 20-60 percent dark gray volcanic material [gravel?]	96	946
Shale, soft, sandy, gray	32	978
Shale, siltstone, and mudstone, light gray	572	1,550
Shale and unconsolidated coarse sand, with 20 percent dark gray, dense volcanic material [gravel?]	40	1,590
Shale, sandy	24	1,614
Sand, unconsolidated, coarse	16	1,630
Mudstone and siltstone, medium to light gray	96	1,726
Sand, unconsolidated, coarse, and shale	26	1,752
Shale, soft, gray	42	1,794
Sandstone, very fine grained, gray; trace of peat, and 10-30 percent volcanic material [gravel?]	26	1,820
Mudstone, firm, gray, with 20-30 percent coarse sand at base	44	1,864
Sandstone, with some volcanic mud	48	1,912
Mudstone, light gray	18	1,930
Sandstone, coarse grained, angular, clear to milky, with dense, angular multicolored volcanic material; and mudstone and siltstone. Electrical and induction logs indicate major lithologic break at 2,040 ft. which may represent base of Pleistocene deposits	120	2,050
Siltstone and mudstone, soft to very soft, light gray, gray, buff, and rust-colored, sandy in places. Core, 2,343-62 ft, recovered 8 ft: Mudstone massively bedded, very soft, gray with yellow mottling	608	2,658
Mudstone, firm, brown carbonaceous; and very soft, light gray siltstone, with three 14- to 18-ft zones of 10-80 percent dark brown to black carbonized wood	82	2,740
Siltstone, light gray and green	66	2,806
Siltstone, very soft, light gray, with 20-80 percent carbonized wood	72	2,878
Carbonized wood	24	2,902
Mudstone, soft, light gray, with 20-50 percent carbonized wood	78	2,980
Sand, very fine, gray, and siltstone, gray	148	3,128
Sand, shaly, firm, very fine, gray, and firm gray sandy siltstone	62	3,190
Siltstone, sandy, gray. Core, 3,192-3, 212 ft, recovered 15 ft: Siltstone, massive to thin-bedded, carbonaceous and fossiliferous, gray locally sandy; dip about 30° (good)	198	3,388
Sand, very fine, and clayey light gray siltstone; carbonized wood and shell fragments at about 3,440 ft.	82	3,470
Siltstone, sandy, soft to very firm, light to dark gray and tan. Core, 3,786-3,806 ft, recovered 9 ft: Siltstone, carbonaceous, dark brownish gray, locally ashy, nodular, and fossiliferous; dip 30-35°	640	4,110
Siltstone and mudstone, sandy, very soft to firm, light tan to brown, and light to dark gray, with 10-20 percent carbonized wood, 4,372-86 and 4,420-36 ft	345	4,455

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
30/2-17K2 - Continued		
Sand, silty, fine to very fine, and soft to firm, carbonaceous; and light to dark brown sandy siltstone with a few shell fragments. Core, 4,455-75 ft., recovered 20 ft.: Sandstone, very fine grained, clean, well sorted, thin to massively bedded, carbonaceous, gray; dip 25-31° (very good)	187	4,642
Siltstone, mudstone, and shale, light tan to gray, sandy and carbonaceous in places	162	4,804
Sandstone, very fine, with soft gray clay matrix	26	4,830
Siltstone, soft to firm light tan and light to dark gray, sandy; and fine to very fine, gray, calcareous, silty sand. Core, 5,167-87 ft., recovered 20 ft.: Siltstone and sandstone, tough, gray, carbonaceous, slightly calcareous, massively bedded, locally fossiliferous	626	5,456
Sand, fine to very fine, light gray, with silt to clay matrix, coarse to medium at about 5,590 and 5,790 ft.; and some gray to light gray siltstone. Core, 5,645-55 ft., recovered 7 1/3 ft: Sandstone, very fine grained, angular, hard to friable, carbonaceous, gray, locally pebbly; dip 20-21°	358	5,814
Siltstone, sandy, tan and light gray to brown and dark gray, calcareous and carbonaceous in places. Core, 6,237-43 ft, recovered 1 ft: Siltstone, shaly, gray, fossiliferous. Core, 6,680-88 ft. recovered 6 ft: Sandstone, hard, very fine grained, well sorted, gray, interbedded with hard siltstone	894	6,708
Sand, very fine, gray, silty; and light to dark gray clayey siltstone	216	6,924
Siltstone, light gray, clayey	60	6,984
Sand, fine, firm, gray; and gray to light gray sandy siltstone. Core, 7,331-43 ft, recovered ½ ft: Sandstone, very fine grained, angular to subrounded, well sorted, slightly calcareous, gray	359	7,343
30/2-17N1. Charles Christie. Altitude 310 ft. Dug by owner, 1930.		
Topsoil	3	3
Hardpan	38	41
Sand, hard "beach sand"	6	47
Gravel, compact	1	48
Sand, hard	2	50
Gravel, hard	17	67
Sand, finer towards the bottom	7	74
30/2-18P1. Lagoon Point Water Co. Altitude 203 ft. Drilled by Angus Scurlock, 1951.		
Hardpan and boulders	32	32
Hardpan	53	85
Clay, blue	26	111
Clay, blue and brown layers	65	176
Silt, with clay layers	30	206

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
30/2-18P1 - Continued		
Sand, fine, in silt	9	215
Clay, green	6	221
Mud, blue and gray	9	230
Sand, fine, black	14	244
Clay, very compact, blue; includes small water-bearing zone bailed dry at 300 gal	113	357
Clay, compact, blue	138	495
Sand, "granite," some water	5	500
30/2-18R1. Ed Holder. Altitude 325 ft. Drilled by Angus Scurlock, 1960. Screen, 14-slot, 212-222 ft.		
Hardpan and "rock"	211	211
Hardpan, some water	11	222
30/2-19G1. Lagoon Point Water Co. Altitude 165 ft. Drilled by Angus Scurlock, 1953. Screen, 20-slot, 105-110 ft; 14-slot, 110-116 ft.		
Hardpan and cobbles	54	54
Sand, cemented, and hardpan	51	105
Sand and gravel, water-bearing	11	116
30/2-19L2. C. P. Tschuden. Altitude 17 ft. Drilled by Angus Scurlock, 1957. Screen, 10-slot, 23-33 ft.		
Sand	9	9
"Bog" [peat]	3	12
Clay	5	17
Hardpan	6	23
Sand and gravel, water-bearing	10	33
30/2-20B1. L. J. Webster. Altitude 439 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 14-slot, 51-55 ft.		
Topsoil, gravelly	3	3
Hardpan	5	8
Clay, sandy, to hard sand	32	40
Clay, sandy	9	49
Gravel, with clay; water-bearing	2	51
Gravel, water-bearing	2	53
Clay and gravel	2	55

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
30/2-21B2. Jack McPhee. Altitude 155 ft. Drilled by Buzz Nelson, 1963. Screen, 177-188 ft.		
Gravel	12	12
Sand, dirty	38	50
Clay, sandy, blue	12	62
Clay, sandy, brown	3	65
Sand, dirty	33	98
Sand, clean	59	157
Sand, brown, water-bearing	28	185
Sand, gray	3	188
30/2-21D1. S. E. Ammondson. Altitude 350 ft. Drilled by Angus Scurlock, 1949. Perforations and gravel-filled, 302-311 ft.		
Clay, brown	52	52
Clay, blue	145	197
Hardpan	36	233
Clay, blue (yields gas 260-268 ft)	37	270
Hardpan with layers of silt and fine sand	41	311
30/2-21K1. P. T. Rehberg. Altitude 300 ft. Drilled by Angus Scurlock, 1951. Gravel-filled, 306-315 ft.		
Dug well, no log	70	70
Bored well, no log	20	90
Sand, silty	179	269
Clay, blue	37	306
Sand, fine, water-bearing	9	315
30/2-21M1. H. R. Tabach. Altitude 325 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 66-71 ft.		
Topsoil	8	8
Hardpan	60	68
Sand, water-bearing	3	71
30/2-22E2. Leo Murphy. Altitude 60 ft. Drilled by Angus Scurlock, 1951. Screen, 20-slot, 58-68 ft.		
Hardpan, sandy	17	17
Hardpan	12	29
Silt	18	47
Sand, fine, brown	4	51
Sand, coarse, water-bearing	17	68

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
30/2-22E4. Cappy Clinton. Altitude 85 ft. Drilled by Angus Scurlock, 1954. Screen, 10-slot, 96-101 ft.		
Topsoil	3	3
Hardpan	94	97
Sand, water-bearing	4	101
30/2-22E5. C. A. Sokolowski. Altitude 82 ft. Drilled by Angus Scurlock, 1958. Screen, 10-slot, 96-101 ft.		
Topsoil	3	3
Hardpan	94	97
Sand, water-bearing	4	101
30/2-22E6. A. J. McMillan and others. Altitude 98 ft. Drilled by A. G. Kounkel, 1959. Screen, 14-slot, 119-124 ft.		
Sand	50	50
Clay	2	52
Clay, sandy	18	70
Sand	28	98
Sand, fine, water-bearing	26	124
30/2-24B1. Frank Rose. Altitude 220 ft. Drilled by Angus Scurlock, 1958.		
Hardpan and boulders	101	101
Silt and clay, water-bearing	134	235
30/2-25D1. W. I. Little. Altitude 170 ft. Drilled by Angus Scurlock, 1957. Screen, 10-slot, 195-205 ft.		
Dug well, no log	106	106
Sand	67	173
Clay, brown	9	182
Silt, muddy	3	185
Sand, medium, water-bearing	20	205
30/2-26G1. Beverly Beach Improvement Club. Altitude 50 ft. Drilled by Angus Scurlock, 1961. Screen, 14-slot, 108-113 ft; 10-slot, 113-118 ft.		
Clay, sandy, brown	65	65
Sand, water-bearing	53	118

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
30/2-27D1. L. E. Fox. Altitude 70 ft. Drilled by Angus Scurlock, 1960. Screen, 14-slot, 87-92 ft.		
Hardpan	78	78
Clay and rocks	7	85
Hardpan with layers of water-bearing sand	7	92
30/2-27D2. W. P. Wright. Altitude 70 ft. Drilled by Angus Scurlock, 1958. Screen, 10-slot, 88-98 ft.		
Hardpan	77	77
Hardpan, some water	11	88
Sand and gravel layers in hardpan, water-bearing	10	98
30/2-27E2. George Handy. Altitude 65 ft. Drilled by A. G. Kounkel, 1963. Screen, 20-slot, 230-235 ft.		
Hardpan	77	77
Gravel, water-bearing	1	78
Hardpan	44	122
Sand, water-bearing	3	125
Hardpan	70	195
Clay	3	198
Clay and gravel	32	230
Gravel, water-bearing	5	235
30/2-27M2. C. L. DeArmond. Altitude 80 ft. Drilled by Angus Scurlock, 1961. Screen, 14-slot, 70-80 ft.		
Hardpan, cemented	48	48
Hardpan, blue	6	54
Hardpan, green	12	66
Hardpan and gravel	4	70
Gravel, water-bearing, and some sand	10	80
30/2-27M3. F. C. Heim. Altitude 50 ft. Drilled by A. G. Kounkel, 1962. Screen, 14-slot, 92-97 ft.		
Gravel, clayey	27	27
Sand	27	54
Gravel, clayey	16	70
Clay, blue	18	88
Gravel, water-bearing	8	96

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
30/2-27N3. George Ditlevson. Altitude 13 ft. Drilled by Buzz Nelson, 1963. Screen, 34-39 ft.		
Fill	5	5
Hardpan	8	13
Sand, water-bearing	5	18
Clay, sandy	14	32
Sand, water-bearing	7	39
Clay, sandy	--	39+
30/2-28A1. N. A. Antic. Altitude 230 ft. Drilled by Angus Scurlock, 1959.		
Hardpan and boulders	110	110
Clay, sandy, brown	69	179
Clay, blue	301	480
Clay, blue, yields saline water	10	490
30/2-28A2. N. A. Antic. Altitude 209 ft. Drilled by Lambert Vander Stoep, 1960.		
Sand and gravel	5	5
Hardpan	22	27
Sand and gravel	33	60
Hardpan	15	75
Sand and gravel	12	87
Hardpan	8	95
Sand and gravel	7	102
Hardpan	24	126
Clay, sandy	38	164
Clay, hard, sandy	11	175
Sand, clean	12	187
Clay, sandy	3	190
Clay, brown to gray	8	198
Clay, blue	94	292
Clay, trace of fine sand	19	311
30/2-28D1. Frank Rhodes. Altitude 350 ft. Drilled by Angus Scurlock, 1961. Screen, 10-slot, 87-92 ft.		
Dug well, no log	15	15
Hardpan and rocks	49	64
Hardpan and large boulders	10	74
Hardpan and mud	10	84
Sand, fine, water-bearing	8	92

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
30/2-28F2. Earl Garber. Altitude 290 ft. Drilled, 1955. (Log from owner's memory.)		
Gravel and clay	70	70
Clay	60	130
Gravel and clay	20	150
30/2-28N1. Pope & Talbot Lease. Altitude 312 ft. Drilled by Standard Oil Co. of Calif., 1962. Cased to 500 ft. (Log by H. W. Anderson, based on lithologic data from Pacific - Oil Well Logging, Inc. Schlumberger induction-electric, micro, sonic, and dipmeter logs are available for the depth interval from 486 to about 4,325 ft.)		
Gravel, well rounded, variegated, predominately yellowish brown [glacial till?]	126	126
Clay (glacial till), soft to firm, gray to grayish green, with silt, sand and some gravel	85	211
Conglomerate, some sand variegated [glacial till?]	175	386
Clay (glacial till), soft, silty, gray	75	461
Clay, gravelly, silty, gray	25	486
Clay, soft, silty, gray	10	496
Conglomerate, with abundant angular to subangular gray quartz sand [glacial till?] Electrical and induction logs indicate a major lithologic break at 676 ft, which may represent base of Pleistocene deposits	180	676
Clay (glacial till), soft, silty and sandy	125	801
Sand and gravel, silty, gray, with shells	55	856
Clay, sandy, silty, with shells	20	876
Sandstone, silty, gray, with shells	5	881
Clay, sandy, silty, with shells	35	916
Sandstone, silty, gray, with shells	20	936
Claystone, soft, silty, brown	190	1,126
Claystone, silty, gray brown, and firm, brown to tan to light gray siltstone, with trace of peat	100	1,226
Sand, very fine, silty, gray	80	1,306
Sandstone, calcareous cemented to friable, silty, fine grained, gray, white, and gray green; with feldspar and carbonaceous material	345	1,651
Siltstone, firm, gray brown to brown	70	1,721
Sand, fine to very fine, silty, gray; with layer of carbonaceous gray brown siltstone; and becoming calcareous at base	40	1,761
Claystone, soft to firm, yellow brown	15	1,776
Sandstone, calcareous cemented, gray to soft, kaolinitic, white	95	1,871
Claystone, silty, gray brown, grades to siltstone	40	1,911
Siltstone, brown, with shells; foraminifera at 2,016 ft.	235	2,146
Claystone, firm, silty, brown, with foraminifers; grades into siltstone	40	2,186
Siltstone, tuffaceous, tan to gray, becoming dense and limey below 2,284 ft.	130	2,316
Bentonite, tan	40	2,356

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
30/2-28N1 - Continued		
Sandstone, glauconitic, silty, fine grained, gray green grades to glauconitic (?) gray, green siltstone	130	2,486
[Claystone], tuffaceous, gray	30	2,516
Sandstone, very fine to medium grained, brownish green (brown matrix, green grains)	30	2,546
Sand, silty, clayey, kaolinitic, fine, gray white to gray green	110	2,656
Sandstone, firm to soft friable, clayey, kaolinitic, silty, fine grained, gray white to gray green; occasionally limey, and carbonaceous	239	2,895
Sandstone, firm to friable, clayey, locally calcareous, gray green. Core 2,895-2,915 ft, recovered 15 ft: Sandstone, slightly to very friable, angular to subangular, medium fine, greenish gray, with carbonaceous wisps and fragments, worm and clam borings, locally calcareous, very massive, well sorted; dip 0-7° (fair)	51	2,946
Sand, gray to white to greenish gray, becomes finer below 3,231 ft.	345	3,291
Sand, multi-mineral, fine to coarse, gray to grayish green, with foraminifera	135	3,426
Sand, very fine to fine, multicolored, gray to gray green, with foraminifera and shells	20	3,446
Clay, very sandy, light grayish green, increasingly silty below 3,486 ft, considerable calcite and shells 3,506-36 ft.	115	3,561
Clay, bentonitic, light gray to white; trace of reworked dark gray volcanic sandstone below 3,596 ft.	50	3,611
Volcanic material, dark gray to dark green, with talc and pyroclastics	75	3,686
Clay, silty, gray	50	3,736
Clay, silty, gray, with grayish green volcanic sandstone and very calcareous brown siltstone. Core, 3,846-61 ft, no recovery	200	3,936
Sand, well sorted, subangular to subrounded, fine to medium, gray to green. Core, 3,966-86 ft, recovered 1 ft: Sandstone, quartzose well rounded to angular, dirty, fairly well sorted, well indurated, gray to greenish gray; bedding as indicated by carbonaceous streaks is somewhat contorted; 30 percent quartz grains, 50 percent clay, 20 percent rock fragments, some basalt, hornblende; dip 45° (good). Core, 3,986-4,008 ft, recovered 16 ft. Upper part sandstone, dirty, angular to rounded, well indurated, quartz, feldspar, rock fragments, chlorite schist, carbonaceous material dark to light gray; dip 42-45° (very good). Lower part sandstone cleaner, less carbonaceous material, well indurated, massive, medium to coarse, light gray salt and pepper; 50 percent quartz, 10 percent feldspar, 20 percent clay, 20 percent rock fragments; dip 45-55° (fair to good)	120	4,056
Siltstone, micaceous, carbonaceous	10	4,066
Sandstone, very hard, well cemented, variegated, trace of chert	20	4,086
Clay, gray, and gray brown siltstone	90	4,176
Sandstone, very fine to fine grained, grayish green to white	35	4,211
Siltstone, firm calcareous, gray to grayish brown	60	4,271
Clay, silty, gray	10	4,281
Sand, very fine to fine, gray to grayish white	35	4,316
Siltstone, gray to grayish brown. Core, 4,317-14 ft, recovered 3 ft: Siltstone, hard, laminated, carbonaceous, dark gray; dip 45-48° (good to average)	35	4,341
Sand, fine to coarse, grayish white	10	4,361

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
30/2-29M1. South Whidbey State Park. Altitude 225 ft. Drilled by Angus Scurlock, 1961.		
"Bog" [peat]	11	11
Clay	50	61
Clay, blue, yields brackish water	14	75
Clay, green	55	130
Clay and mud	82	212
Sand, medium, water-bearing (12 gpm)	4	216
Clay, compact, blue	127	343
Clay, blue, with thin layers of water-bearing sand	6	349
30/2-29M2. South Whidbey State Park. Altitude 225 ft. Drilled by Lambert Vander Stoep, 1961. Screen, 30-slot, 354-359 ft.		
Fill	3	3
Hardpan, sandy	21	24
Sand, water-bearing (water-level, 8 ft)	6	30
Clay, various types, with thin sand streaks, some water	172	202
Sand and clay, mixed	6	208
Sand, gravel, and clay; mixed; some water	7	215
Clay	138	353
Gravel, water-bearing, with clay streaks	6	359
Gravel	4	363
30/2-30B1. P. E. Voinot. Altitude 90 ft. Drilled by Angus Scurlock, 1948. Open-hole, 115-120 ft.		
Topsoil	2	2
Hardpan	25	27
Clay, blue	84	111
Sand and gravel, water-bearing	4	115
"Sandstone," compact, medium, with peat layer at 118 ft	5	120
30/2-30B2. Walter Cochran. Altitude 85 ft. Drilled by Angus Scurlock, 1960. Screen, 14-slot, 86-91 ft.		
Clay, brown	17	17
Clay, blue	58	75
Clay, sandy	7	82
Sand, dirty, some water	5	87
Sand, medium, water-bearing	4	91
Clay, blue	6	97

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
30/2-30B3. C. M. Elliott & Art Bratsberg. Altitude 93 ft. Drilled by Angus Scurlock, 1953. Open-hole, 181-184 ft.		
Silt and sand	23	23
Hardpan	9	32
Hardpan, blue	33	65
Sand, fine, black, some water	5	70
Clay, blue	111	181
Sand and gravel, water-bearing	3	184
Clay, blue	2	186
30/2-30B4. Renshaw. Altitude 85 ft. Drilled by Angus Scurlock, 1950. Screen, 14-slot, 94-99 ft.		
Topsoil	2	2
Clay, brown	12	14
Hardpan, sandy	29	43
Clay, blue	51	94
Sand, dirty, water-bearing	5	99
30/2-32E1. R. A. Peterson. Altitude 301 ft. Drilled by Angus Scurlock, 1963. Screen, 8-slot, 296-306 ft.		
Hardpan and rocks	70	70
"Quicksand," fine, with clay layers	50	120
Clay, blue	60	180
Hardpan, yellow	20	200
Hardpan, yellow to blue	36	236
Clay, blue	42	278
Sand, fine, with clay layers	14	292
Sand, very fine	14	306
30/2-32M1. D. D. Raymond. Altitude 295 ft. Drilled by Angus Scurlock, 1961. Screen, 8-slot, 273-283 ft.		
Hardpan, sandy	130	130
Hardpan and mud	45	175
Hardpan	40	215
Clay, blue	52	267
Sand, fine, layered with mud	16	283
Clay, blue	37	320
30/2-35R2. Malos. Altitude 102 ft. Drilled by Angus Scurlock, 1962. Screen, 14-slot, 142-147 ft; 10-slot, 147-152 ft.		
Clay, silty	46	46
Sand	53	99

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
30/2-35R2 - Continued		
Sand with clay and iron concretions, some water	31	130
Sand, blue	7	137
Sand, medium, water-bearing	15	152
Clay	--	152+
30/2-36K1. Elmer West. Altitude 290 ft. Drilled by Angus Scurlock, 1962. Screen, 14-slot, 328-333 ft; 10-slot, 333-338 ft; 8-slot, 338-343 ft.		
Hardpan and boulders	190	190
Silt, mud	30	220
Hardpan and "rock" (cobbles), water-bearing	123	343
30/3-19G1. Keith Schmidt. Altitude 142 ft. Drilled by Angus Scurlock, 1957. Screen, 10-slot, 150-160 ft.		
Sand, dirty	81	81
Peat	57	138
Sand, fine, brown, some water	9	147
Sand, medium, and some gravel; water-bearing	13	160
30/3-29K1. A. J. Bosshard. Altitude 135 ft. Drilled by Angus Scurlock, 1959. Screen, 10-slot, 157-162 ft; 8-slot, 162-167 ft.		
Silt, sandy	85	85
Clay	35	120
Sand, very fine	24	144
Sand, fine, some water	11	155
Sand, fine, water-bearing	12	167
30/3-33E1. Mrs. Emma Winston. Altitude 142 ft. Drilled by Angus Scurlock, 1950. Screen, 10-slot, 150-155 ft.		
Hardpan, cobble size iron concretions	18	18
Hardpan, cemented	29	47
Silt and mud	50	97
Sand	12	109
Sand, water-bearing	46	155

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
31/1-1D1. State Game Farm. Altitude 210 ft. Drilled by J. J. Bell, 1946. Perforated and gravel-packed, 196-224 ft.		
Topsoil	2	2
Sand, gravel, and boulders	43	45
Sand, brown, with thin layers of clay	137	182
Clay, brown	10	192
Sand	6	198
Sand and clay, very silty; water-bearing	26	224
Sand and clay, blue	91	315
Clay with thin layers of sand	30	345
31/1-1H1. M. F. Reid & Kay Baker. Altitude 201 ft. Drilled by Lambert Vander Stoep, 1958.		
Topsoil	4	4
Hardpan, gravelly	6	10
Hardpan, very hard	10	20
Hardpan, sandy	14	34
Gravel, loose	48	82
Sand	62	144
Clay	1	145
Sand, some clayey layers; water-bearing below 190 ft	61	206
Clay, sandy	24	230
Sand, water-bearing; contains concretions and clay balls	6	236
31/1-2A1. Mrs. L. R. Van Gundy. Altitude 202 ft. Drilled by Angus Scurlock, 1950. Perforations, 168-175 ft; Screen, 10-slot, 175-180 ft.		
Topsoil, black	4	4
Gravel, small	68	72
Sand, hard, blue	4	76
Gravel, small and large	100	176
Sand, blue	12	188
Sand, hard, blue	32	220
31/1-2D1. Coast Wide Land. Altitude 202 ft. Drilled by Buzz Nelson, 1964. Screen, 165-170 ft.		
Topsoil	3	3
Gravel	88	91
Sand	3	94
Clay	8	102
Sand, dirty	65	167
Sand, water-bearing	3	170
Clay	--	170+

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
31/1-5H1. Mrs. Frank Pratt. Altitude 202 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 10-slot, 219-224 ft.		
Topsoil	2	2
Gravel with sand layers	38	40
Sand	3	43
Gravel	7	50
Sand	7	57
Gravel	28	85
Sand	21	106
Sand, dirty, drills open-hole	89	195
Sand, tight, some water	14	209
Sand, water-bearing	15	224
31/1-13A1. T. E. Pope. Altitude 195 ft. Drilled by Angus Scurlock, 1956. Screen, 20-slot, 122-127 ft.		
Hardpan	80	80
Sand, dirty	3	83
Clay, brown	32	115
Silt, brown	5	120
Sand, fine, brown	3	123
Sand, coarse, gray	4	127
Clay, blue	--	127+
31/1-14G1. Charles Morgan. Altitude 100 ft. Drilled by Lambert Vander Stoep, 1956. Screen, 10-slot, 90-95 ft.		
Gravel	9	9
Clay	5	14
Sand	56	70
Sand, gray	25	95
Clay	--	95+
31/1-14J1. Town of Coupeville. Altitude 18 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 12-slot, 76-82 ft; 14-slot, 82-87 ft; gravel-filled, 87-151 ft.		
Sand	4	4
Clay	4	8
Clay, sandy, mixed with gravel	18	26
Sand, water-bearing (water-level, $15\frac{1}{2}$ ft); clay at 34 ft and 41 ft	19	45
Clay	8	53
Hardpan, sandy	17	70
Sand, water-bearing (water-level, 15 ft)	17	87
Clay, grayish-blue	64	151

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
31/1-15N1. Seattle Pacific College. Altitude 76 ft. Drilled by Lambert Vander Stoep, 1956. Screen, 169-174 ft.		
Gravel	4	4
Hardpan, very hard	52	56
Gravel	2	58
Hardpan	3	61
Clay, sand, and gravel	17	78
Hardpan and clay (at 79 ft, water-level rose to 47 ft)	32	110
Clay, grayish-blue	45	155
Sand, clayey, water-bearing	5	160
Sand, clean, water-bearing	15	175
31/1-24C1. Telaker Shores Water Co. Altitude 2 ft. Drilled by Angus Scurlock, 1954. Screen, 10-slot, 101-117 ft.		
Topsoil, peaty	3	3
Gravel	18	21
Silt, black, yields saline water	16	37
Gravel, cemented	40	77
Clay, brown	9	86
Clay, blue	6	92
Sand, fine, water-bearing	25	117
31/2-6C1. Oswald Thanem. Altitude 60 ft. Drilled by Lambert Vander Stoep, 1956. Perforations, 65-70 ft; 80-90 ft, 92-100 ft.		
Old well, no log	72	72
Hardpan	23	95
Gravel	4	99
Sand	1	100
Clay	3	103
Hardpan	2	105
31/2-6D2. H. Johnston. Altitude 39 ft. Drilled by Lambert Vander Stoep, 1956. Screen, 20-slot, 61-66 ft.		
Clay	28	28
Sand and clay	5	33
Gravel (water-level, 43 ft)	13	46
Silt, sandy	7	53
Hardpan, sandy	7	60
Sand and gravel, water-bearing	6	66

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
31/2-6F1. Roy Smith. Altitude 164 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 30-slot, 192-197 ft.		
Gravel	3	3
Hardpan, sandy	9	12
Sand	28	40
Hardpan, gravel	14	54
Gravel, clean	6	60
Gravel, sandy	9	69
Hardpan, gravelly	10	79
Hardpan, soft	12	91
Hardpan, hard	13	104
Clay, sandy, some gravel	86	190
Gravel, water-bearing	7	197
Sand, clayey	--	197+
31/2-7F1. Mrs. Harry Race. Altitude 139 ft. Drilled by Angus Scurlock, 1948. Gravel-filled, 223-238 ft.		
Clay, blue	187	187
Hardpan, sandy; sand layers with some water	34	221
Hardpan, very hard	2	223
Sand, coarse, water-bearing	2	225
Gravel, very coarse, water-bearing	13	238
31/2-8N1. T. D. Roberts. Altitude 145 ft. Dug well drilled deeper by Lambert Vander Stoep, 1963. Screen, 30-slot, 150-155 ft.		
Hardpan	139	139
Hardpan, gravelly	11	150
Gravel, water-bearing	5	155
31/2-19D1. Admiral's Cove, Inc. Altitude 155 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 25-slot, 187-191 ft; 30-slot, 191-197 ft.		
Gravel	2	2
Hardpan	45	47
Sand	6	53
Hardpan	19	72
Sand and gravel	73	145
Sand, water-bearing	52	197
Sand, some water	--	197+

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
31/2-19M1. Stephen Lea. Altitude 97 ft. Drilled by Angus Scurlock, 1953. Screen, 20-slot, 90-95 ft.		
Old well, no log	45	45
No record	4	49
Clay, brown	13	62
Gravel layers in hardpan, water-bearing	33	95
31/2-20L1. Rowland Davis. Altitude 329 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 30-slot, 344-349 ft.		
Topsoil	2	2
Hardpan, sandy	28	30
Hardpan, gravelly; very hard, 42-73 ft	43	73
Sand and gravel	4	77
Clay	2	79
Hardpan, gravelly	15	94
Gravel	13	107
Clay, sandy, some water	10	117
Sand	7	124
Clay	26	150
Hardpan, gravelly; very hard, 160 ft.	37	187
Sand, drills open-hole	9	196
Gravel, fine, and loose sand	44	240
Gravel	11	251
Clay	3	254
Hardpan	32	286
Hardpan, soft	20	306
Sand	21	327
Sand, water-bearing	22	349
Sand, some water	--	349+
31/2-20R1. H. A. Lancaster. Altitude 60 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 14-slot, 76-81 ft.		
Gravel	4	4
Hardpan, soft, gravelly	30	34
Hardpan, hard, sandy	13	47
Hardpan, cemented	2	49
Hardpan, soft	3	52
Hardpan, sandy	21	73
Sand, water-bearing	8	81
Clay, sandy	--	81+

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
31/2-30J1. Ben Lanphere. Altitude 310 ft. Dug by owner, 1946.		
Topsoil	5	5
Sand, grading downward fine to coarse	10	15
Hardpan	35	50
Hardpan, sandy	5	55
Sand, water-bearing	5	60
31/2-30Q1. Ledgewood Beach Water Assoc. Altitude 222 ft. Drilled by Angus Scurlock, 1953. Screen, 216-232 ft.		
Hardpan	48	48
Clay, blue	23	71
Hardpan	63	134
Silt, muddy	82	216
Sand, fine, and gravel	7	223
Sand, coarse, and gravel	9	232
31/2-32D1. A. J. McMillan. Altitude 350 ft. Drilled by Dahlman Pump and Supply, 1962. Screen, 16-slot, 114-119 ft; 20-slot, 119-124 ft.		
Topsoil	2	2
Clay and gravel mixed, very hard	53	55
Sand, very fine	7	62
Clay and gravel, blue	16	78
Sand, fine, gray	3	81
Sand, fine, brown, water-bearing at 96 ft	23	104
Sand, medium, brown	14	118
Sand, coarse, brown	6	124
Clay, blue	6	130
32/1W-13H1. Henry Looff. Altitude 44 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 20-slot, 59-64 ft.		
Hardpan, gravelly	3	3
Clay, sandy	51	54
Sand, silty	3	57
Gravel, water-bearing	7	64
Clay	--	64+
32/1W-13J1. A. J. & E. G. McMillan. Altitude 100 ft. Drilled by Angus Scurlock, 1960. Screen, 14-slot, 93-103 ft.		
Sand	45	45
Clay	22	67

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1W-13J1 - Continued		
Silt	19	86
Sand, fine	7	93
Sand, medium, water-bearing	10	103
32/1W-24A1. Albert Van Dam. Altitude 230 ft. Drilled by N. C. Jannsen, 1929. Gravel-filled, 285-295 ft.		
Hardpan	15	15
Sand and gravel, cemented	25	40
Sand and clay	20	60
Clay, sandy, and sand	40	100
Sand	100	200
Sand, streaks of gravel and peat, some water	20	220
Sand	15	235
Sand, fine, water-bearing	60	295
32/1W-24G1. Glenn Darst. Altitude 220 ft. Drilled by A. G. Kounkel, 1958. Screen, 14-slot, 263-283 ft.		
Sand and gravel	40	40
Clay, brown	25	65
Hardpan	5	70
Sand, fine, brown	45	115
Clay, brown	15	130
Sand, brown	58	188
Silt, blue (water-level, 182 ft)	12	200
Clay, blue	34	234
Sand, coarse (water-level, 218 ft)	3	237
Clay, brown	13	250
Clay, blue	10	260
Sand, dirty, gray (water-level, 220 ft)	5	265
Sand, clean, fine water-bearing (water-level, 220 ft)	17	282
Clay, blue	115	397
32/1W-24J1. Bell brothers. Altitude 250 ft. Drilled by Angus Scurlock, 1951. Screen, 14-slot, 259-265 ft.		
Topsoil	2	2
Hardpan	43	45
Hardpan, sandy	39	84
Conglomerate, brown	26	110
Silt, brown	119	229
Clay, blue	2	231
Silt, black	8	239
Sand, fine, some water	16	255
Sand, medium, "granitic," water-bearing	5	260
Sand, medium, water-bearing	5	265

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1W-24R1. Bell brothers. Altitude 261 ft. Drilled by N. C. Jannsen, 1929.		
Hardpan, and small boulders	30	30
Sand and gravel	40	70
Sand	10	80
Sand and sandy clay	20	100
Sand	119	219
Sand and sandy clay	24	243
Sand, water-bearing below 245 ft.	22	265
32/1W-25E1. C. F. Larsen. Altitude 60 ft. Drilled by Lambert Vander Stoep, 1964. Screen, 20-slot, 91-96 ft.		
Topsoil	1	1
Clay, hard, sandy	6	7
Clay	18	25
Clay, sandy	5	30
Clay	7	37
Clay, gravelly	4	41
Clay, sandy	9	50
Sand, dirty	17	67
Sand, coarse, water-bearing	29	96
Sand, medium, water-bearing	--	96+
32/1W-25J1. D. J. Sell. Altitude 65 ft. Drilled by Lambert Vander Stoep, 1956. Screen, 14-slot, 65-70 ft.		
Gravel and cobbles	8	8
Hardpan, sandy, blue	16	24
Clay, blue	5	29
Clay, sandy	10	39
Sand, brown	7	46
Clay, muddy	8	54
Sand, brown	16	70
Clay, blue	--	70+
32/1W-25M1. Pondilla Estates. Altitude 119 ft. Drilled by Lambert Vander Stoep, 1965.		
Gravel, thin hard clay at base	150	150
Gravel, water-bearing	7	157
Clay	1	158
Gravel, yields saline water, (test pumped 350 gpm, 5 min; 150 gpm, 8 hr)	17	175
Gravel, water-bearing	80	255
Clay	2	257
Clay, gravelly	2	259

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1W-25M1 - Continued		
Gravel, tight	5	264
Clay	6	270
Sand, black, yields saline water, strong odor	5	275
32/1W-36D1. U. S. Coast Guard, Ft. Ebey. Altitude 80 ft. Drilled by A. G. Kounkel, 1940. Screen, 62-72 ft.		
Sand and gravel	30	30
Clay	10	40
Sand, gravel and boulders	10	50
Sand and gravel	25	75
Sand and fine gravel	145	220
Sand	85	305
Sand, fine, silty	90	395
Clay and silty sand	19	414
Sand, fine	--	414+
32/1-1B1. U. S. Naval Air Sta. (well 3). Altitude 82 ft. Drilled in 1942		
Clay, gravel and sand	25	25
Sand, compressed, "quicksand"	15	40
"Quicksand," water-bearing (1gpm)	2	42
Clay, sandy	26	68
"Quicksand," water-bearing (10 gpm)	7	75
Clay	15	90
"Quicksand"	12	102
Clay	18	120
Clay, sandy	7	127
"Quicksand"	13	140
Sand, coarse, water-bearing (210-300 gpm)	85	225
Clay	80	305
Clay, sandy	77	382
Clay	42	424
Sand, gravel and boulders, marine fossils (yields water and gas)	55	479
32/1-1B2. U. S. Naval Air Sta. (well 3A). Altitude 80 ft. Drilled by J. J. Bell, 1943.		
Topsoil	2	2
Clay, brown, with "rock" and gravel	24	26
Sand, fine, brown, and gravel	14	40
Clay, blue	20	60
Sand, fine, blue	18	78
Clay, blue	12	90
Sand, fine	4	94

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-1B2 - Continued		
Clay, blue	1	95
Sand, fine	8	103
Clay, blue	17	120
Sand, fine, silty	21	141
Sand, medium to coarse	84	225
32/1-1C1. U. S. Naval Air Sta. (well 5). Altitude 181 ft. Drilled in 1942.		
Gravel, clay and boulders	35	35
Sand, coarse, and gravel; water-bearing	88	123
Clay, sandy	45	168
"Shale" [clay]	6	174
"Quicksand"	5	179
Clay	20	199
Sand, coarse, and fine gravel	29	228
Clay	4	232
Sand, coarse	32	264
Sand, coarse, and gravel; water-bearing (175 gpm)	9	273
Gravel	2	275
32/1-2B1. Town of Oak Harbor. Altitude 85 ft. Drilled by L. R. Gaudio, 1954.		
Hardpan	28	28
Sand, brown	45	73
Sand, fine, brown, water-bearing	15	88
Sand, fine, blue	12	100
Clay, blue	35	135
32/1-2D1. Polard. Altitude 52 ft. Drilled by Lambert Vander Stoep, 1956.		
Old well, no log	26	26
Hardpan, sandy, gray	49	75
Gravel, water-bearing	1	76+
32/1-2D2. Gerald Toler. Altitude 45 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 20-slot, 93-98 ft.		
Topsoil	2	2
Hardpan, gravelly	25	27
Clay, gravelly	8	35
Sand and gravel, some water	1	36

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-2D2 - Continued		
Hardpan, with sand and gravel	54	90
Sand, water-bearing	8	98
Clay	--	98+
32/1-2D3. Standard Oil Co. Altitude 40 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 12-slot, 110-115 ft.		
Topsoil	--	--
Clay with gravel and sand	--	25
Hardpan, hard, gravelly	21	46
Hardpan, soft, sandy	4	50
Clay, sandy	15	65
Gravel	1	66
Clay, sandy, silty	29	95
Sand and gravel, clean, (water-level, 5 ft; set 20-slot screen, 93-98 ft, pumped 3 gpm)	1	96
Sand, silt, and gravel, with clay	9	105
Clay, sandy	5	110
Sand and gravel (water-level, 5 ft)	5	115
Sand, dirty	--	115+
32/1-2D4. Chris Fakkema. Altitude 58 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 20-slot, 67-72 ft.		
Topsoil	--	--
Hardpan, gravelly	--	34
Clay, sandy	3	37
Hardpan	26	63
Sand and gravel, water-bearing	3	66
Sand and gravel, clean, water-bearing	6	72
Sand, dirty	--	72+
32/1-2D5. H. J. Wichers. Altitude 63 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 30-slot, 66-70 ft.		
Old well, incomplete record; water-bearing sand and gravel at 35 ft.	57	57
Hardpan	9	66
Gravel, water-bearing	4	70
32/1-2G1. Unknown. Altitude 18 ft. Drilled by N. C. Jannsen, 1928.		
Hardpan	7	7
Hardpan and boulders	18	25

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-2G1 - Continued		
Sand, loose	30	55
Clay, sticky, blue	113	168
Clay, blue, with small stones	12	180
"Shale" or clay, blue, some water	65	245
Clay, silty, blue	13	258
Clay, blue, mixed with gravel, water-bearing at 265 ft.	27	285
Sand and gravel, hard, mixed with clay (water-level, 255 ft)	9	294
Clay, sand, and gravel	17	311
Clay	7	318
Clay, blue, and sand	27	345
Clay	10	355
Clay and sand, some water	8	363
Clay and gravel	2	365
Sand, coarse, and gravel	6	371
Clay, sandy	29	400
Sand	11	411
Sand and boulders	11	422
"Shale" silt and blue clay	4	426
Sand and boulders	15	441
Sand and gravel	9	450
Sand	5	455
Gravel, yields saline water	7	462
Sand, coarse, and gravel; yields gas	6	468
Sand and gravel	3	471
Clay, blue	4	475
Clay, sticky, with streaks of soft black "rock" [peat?]	10	485
Clay, blue, streaks of gravel	9	494
Clay, blue	6	500
Clay with sand streaks	20	520
Clay, sticky	12	532
Clay with sand streaks	8	540
Clay, sticky	2	542
Sand (water-level, 10 ft)	5	547
Gravel, cemented	7	554
Sand, coarse	6	560
Clay, blue	15	575
Clay, blue, and "shale" (silt?)	7	582
Clay, blue; gravel streaks at 585 ft, water-bearing	11	593
Clay and "shale" (silt?)	6	599
"Shale" (silt?), blue, mixed with gravel	5	604
Clay and "shale" (silt?)	19	623
Clay	2	625
Clay mixed with gravel and "rock"	5	630
"Rock," black, mixed with clay	2	632
Clay mixed with gravel	10	642
Clay and "shale" (silt?)	5	647
Clay and "shale" (silt?) mixed with gravel	37	684
Clay and "shale" (silt?)	16	700

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-2G2. Unknown. Altitude 18 ft. Drilled by N. C. Jannsen, 1928. Perforations, 45-67 ft.		
Dug well, no log	32	32
Gravel and boulders, cemented	17	49
Boulders, "granitic"	2	51
Sand, gravel, and boulders	1	52
Gravel and boulders, cemented	8	60
Sand, coarse, water-bearing	10	70
"Quicksand"	7	77
Gravel	5	82
Gravel and boulders, cemented	10	92
Gravel and sand, cemented	7	99
Gravel, cemented	5	104
Sand and gravel, cemented	38	142
"Rock" (boulders)	10	152
Sand	10	162
Sand and boulders, water-bearing from 172-180 ft	23	185
Sand, hard, and gravel	15	200
Sand and gravel, water-bearing at 210 ft	10	210
Sand, cemented	10	220
Gravel, hard	8	228
Sand, coarse	5	233
Sand, cemented	12	245
Sand and gravel, cemented, some water	7	252
Clay, blue	13	265
32/1-2M1. Allan Vanderzicht. Altitude 15 ft. Drilled by N. C. Jannsen, 1928.		
Hardpan and gravel	21	21
Sand and gravel, water-bearing, flowing	8	29
32/1-2N1. B. J. Reinstra. Altitude 8 ft. Drilled by N. C. Jannsen, 1930.		
Sand and gravel, loose	13	13
Sand, "beach," and gravel, yields saline water	12	25
Sand, gravel, and clay, water-bearing gravel below clay at 34 ft	27	52
Gravel, cemented, clam shells, water-bearing	1	53
Gravel, cemented; loose fine gravel	10	63
Gravel, clay, hardpan; loose gravel, water-bearing	20	83
Sand, water-bearing	7	90
32/1-3A1. Cleo Murray. Altitude 80 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 20-slot, 104-109 ft.		
Topsoil	3	3
Hardpan	39	42

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-3A1 - Continued		
Clay	16	58
Clay, sandy	1	59
Sand, clayey, water-bearing	1	60
Clay, gravelly	17	77
Clay, sandy	12	89
Hardpan, gravelly to clayey	3	92
Sand and gravel, water-bearing	1	93
Hardpan, gravelly	13	106
Gravel (water-level, 30 ft)	3	109
Hardpan, gravelly	--	109+
32/1-3A2. Assembly of God Church. Altitude 88 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 105-110 ft.		
Topsoil with gravel at base	5	5
Hardpan, gravelly	10	15
Sand and gravel, dirty	3	18
Gravel and sand, clayey, water-bearing at 20 ft, and 65 ft.	47	65
Hardpan, soft, sandy	40	105
Gravel, water-bearing	4	109
Hardpan	1	110
32/1-3A3. First Reformed Church. Altitude 86 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 8-slot, 115-120 ft.		
Topsoil, soft, gravelly	3	3
Hardpan	7	10
Hardpan, soft	4	14
Sand and gravel, water-bearing	2	16
Hardpan	12	28
Clay	6	34
Hardpan, sandy	8	42
Hardpan, hard to soft	17	59
Sand and gravel, water-bearing	4	63
Clay and sand	5	68
Hardpan, sandy, gravelly	2	70
Hardpan, hard	10	80
Sand and gravel, water-bearing	2	82
Hardpan, sandy	25	107
--------, water-bearing	13	120
32/1-3B1. Branco. Altitude 130 ft. Drilled by Lambert Vander Stoep, 1956. Screen, 10-slot, 96-101 ft.		
Topsoil	2	2
Hardpan	6	8

Table 11 -Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-3B1 - Continued		
Hardpan, sandy	18	26
Clay, blue and brown, with sand layers	34	60
Sand, water-bearing below 66 ft (2 gpm)	20	80
Clay	4	84
Sand, fine, brown to gray, water-bearing	17	101
32/1-3B2. Town of Oak Harbor (well 10). Altitude 141 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 8-slot, 137-158 ft.		
Topsoil, gravelly	4	4
Hardpan	21	25
Clay, sandy	6	31
Clay, yellowish-green, green, gray, and brown	29	60
Clay, sandy, brown	38	98
Sand, dirty	4	102
Sand, dirty, water-bearing	9	111
Sand, clean, water-bearing	8	119
Sand, clayey	9	128
Clay, sandy	4	132
Sand (water-level, 101.5 ft, yields 5 gpm per ft drawdown)	18	150
Sand, contains charcoal	7	157
Sand, hard	10	167
Clay, bluish-gray	6	173
Sand, clayey, water-bearing	19	192
Clay, blue	58	250
32/1-3B3. Bud Zylstra. Altitude 130 ft. Drilled by Lambert Vander Stoep, 1956. Screen, 10-slot, 89-94 ft.		
Hardpan	30	30
Clay, brown	11	41
Sand, water-bearing below 61 ft	53	94
32/1-3C1. Town of Oak Harbor (well 8). Altitude 232 ft. Drilled by Lambert Vander Stoep, 1961. Screen, 12-slot, 210-215 ft; 14-slot, 215-221 ft; 12-slot, 221-226 ft; 10-slot, 226-237 ft; 8-slot, 237-258 ft.		
Topsoil	2	2
Hardpan	63	65
Sand, dirty	30	95
Clay, sandy	41	136
Sand, water-bearing	4	140
Clay	5	145
Silt, sandy	35	180
Sand	8	188
Sand, water-bearing	19	207
Sand, water-bearing, with traces of clay	1	208

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-3C1 - Continued		
Sand, water-bearing	13	221
Sand, water-bearing, with traces of clay	7	228
Sand, water-bearing	10	238
Sand, water-bearing, with traces of clay	20	258
Clay	42	300
32/1-3C2. Town of Oak Harbor (well 9). Altitude 214 ft. Drilled by Lambert Vander Stoep, 1961. Screen, 12-slot 201-206 ft; 10-slot, 206-217 ft; 8-slot, 217-227 ft; 12-slot, 238-243 ft.		
Gravel	2	2
Hardpan	79	81
Clay, sandy	38	119
Clay, gravelly	2	121
Clay	27	148
Clay, sandy	32	180
Sand, water-bearing (water-level, 173 ft)	63	243
Clay	--	243+
32/1-3E1. Norman. Altitude 190 ft. Drilled by Lambert Vander Stoep, 1961. Screen, 10-slot, 198-203 ft.		
Hardpan, soft, sandy	53	53
Clay, sandy	46	99
Sand, clayey	20	119
Clay, sandy, brown	21	140
Sand, clay	21	161
Sand, very dirty, water-bearing	14	175
Clay, sandy	6	181
Sand, dirty	10	191
Sand, fine, water-bearing	12	203
32/1-3H1. Sid Eelkema. Altitude 75 ft. Drilled by Lambert Vander Stoep, 1957. Screen, 67-72 ft.		
Gravel	3	3
Hardpan, soft, gravelly	25	28
Hardpan, hard	8	36
Hardpan, sandy, some water	2	38
Hardpan, very hard	5	43
Gravel, cemented	3	46
Hardpan with gravel	11	57
Hardpan, soft, sandy	3	60
Sand, brown, water-bearing	12	72

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-3L1. Bernard Lueck. Altitude 168 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 14-slot, 190-200 ft.		
Topsoil, gravelly	4	4
Hardpan	43	47
Clay, sandy	23	70
Sand, some water	4	74
Clay, sandy	78	152
Sand (water-level, 137 ft, yield 8 gpm)	15	167
Clay, yellow	2	169
Clay, blue	5	174
Sand, water-bearing, "charcoal" 199-200 ft	26	200
32/1-3L2. Bernard Lueck. Altitude 150 ft. Dug well drilled deeper by Lambert Vander Stoep, 1963. Screen, 14-slot, 158-163 ft.		
Dug well, no log	58	58
Clay, sandy	54	112
Sand, dirty	34	146
Humus and clay, sandy	9	155
Sand, water-bearing	8	163
Sand, clayey	--	163+
32/1-3N1. Harry Riepma. Altitude 190 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 14-slot, 176-181 ft.		
Topsoil	--	--
Hardpan, gravelly	--	35
Gravel	17	52
Sand, clean	47	99
Gravel	6	105
Clay, sandy	23	128
Gravel	8	136
Clay, sandy	39	175
Sand, water-bearing	6	181
Clay, sandy	--	181+
32/1-3N2. Herman Lange. Altitude 198 ft. Drilled by Lambert Vander Stoep, 1964. Screen, 12-slot, 184-189 ft.		
Gravel	2	2
Hardpan	55	57
Sand	43	100
Clay, dark-brown	7	107

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-3N2. - Continued		
Sand, dirty	23	130
Clay, sandy	15	145
Sand, dirty	4	149
Clay	4	153
Clay, sandy	33	186
Sand, water-bearing	3	189
Clay	--	189+
32/1-3P1. Al Nelson. Altitude 155 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 170-175 ft.		
Topsoil	3	3
Hardpan, sandy	23	26
Sand	6	32
Clay, sandy	44	76
Sand	4	80
Clay	8	88
Clay, sandy	8	96
Sand	8	104
Sand, dirty, water-bearing	6	110
Clay, blue	20	130
Clay, sandy, with sand and clay layers	34	164
Sand, water-bearing	11	175
32/1-3Q1. Esther Pennington. Altitude 140 ft. Drilled by Lambert Vander Stoep, 1957. Screen, 124-127 ft.		
Hardpan	4	4
Clay, sandy	30	34
Sand, water-bearing (water-level, 34 ft)	4	38
Clay	3	41
Sand	8	49
Clay	20	69
Sand, water-bearing (water-level, 82 ft)	25	94
Clay	30	124
Sand, water-bearing	3	127
32/1-3Q2. Urban Faber. Altitude 125 ft. Drilled by Lambert Vander Stoep, 1961. Screen, 113-118 ft.		
Topsoil, gravelly	8	8
Sand, dirty	36	44
Clay	6	50
Sand	12	62
Clay, sandy	13	75
Clay, gray	18	93
Sand, clean	11	104

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-3Q2 - Continued		
Sand, water-bearing	14	118
Peat	1	119
Clay	7	126
Clay, sandy	9	135
32/1-4A1. Whidbey Golf and Country Club. Altitude 115 ft. Drilled by M. C. Turley, 1943. Perforations, 90-130 ft.		
Topsoil, loam	2	2
Clay, sand, "stone"	40	42
Sand	33	75
Sand, water-bearing	55	130
32/1-4B1. Harold Reinstra. Altitude 155 ft. Drilled by Hilton Hayes, 1952. Screen, 10-slot, 160-165 ft.		
Sand, silty, gray	6	6
Clay, hardpan	19	25
Gravel	13	38
Sand, loose	13	51
Clay, gray	21	72
Sand, brown	5	77
Sand, grayish-brown, and clay	46	123
Sand, brown, water-bearing	42	165
32/1-4G1. Whidbey Golf and Country Club. Altitude 85 ft. Drilled by M. C. Turley, 1946. Perforations, 40-99 ft.		
Peat	2	2
Cobbles and sand	57	59
Sand, water-bearing	40	99
32/1-4P1. Richard Steele. Altitude 149 ft. Dug well drilled deeper by N. C. Jannsen, 1930.		
Dug well, no log	105	105
Clay, blue	15	120
Clay and sand, layered	27	147
Sand, water-bearing below 170 ft.	68	215
32/1-4R1. Vance Morgan. Altitude 150 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 14-slot, 160-165 ft.		
Topsoil, gravelly	3	3

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-4R1 - Continued		
Hardpan, soft	6	9
Hardpan, hard	27	36
Sand (water-level, 26 ft)	1	37
Hardpan	38	75
Sand, hard, brown	34	109
Sand, clayey	25	134
Sand	2	136
Clay	2	138
Sand and clay	10	148
Sand, water-bearing	17	165
32/1-5Q1. Bob Brumagin. Altitude 206 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 14-slot, 224-229 ft.		
Topsoil	--	--
Clay, sandy	--	41
Sand	47	88
Sand, clayey	50	138
Sand, peaty	7	145
Clay	1	146
Clay, sandy, peaty	14	160
Clay, sandy, contains much peat	6	166
Clay, sandy, light-brown	49	215
Sand, water-bearing	14	229
Sand, some water	--	229+
32/1-5Q2. Robert Peterson. Altitude 219 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 14-slot, 148-153 ft.		
Topsoil	2	2
Hardpan	102	104
Sand, dirty (water-level, 132 ft)	36	140
Sand and gravel	4	144
Mud	4	148
Sand, water-bearing	5	153
Clay	--	153+
32/1-7L1. R. K. Hetherington. Altitude 147 ft. Drilled by A. G. Kounkel, 1959. Screen, 14-slot, 190-195 ft.		
Clay	25	25
Hardpan	15	40
Sand and gravel, clayey	60	100
Clay	5	105
Sand and gravel, cemented	10	115
Sand, clayey, blue	13	128

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-7L1 - Continued		
Clay	51	179
Clay with some water-bearing sand	6	185
Sand, clean, water-bearing	10	195
32/1-9D1. L. C. Hutchinson. Altitude 165 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 20-slot, 64-69 ft.		
Topsoil	1	1
Hardpan with gravel	17	18
Hardpan, sandy	20	38
Hardpan, soft	19	57
Sand, brown, water-bearing	12	69
Clay	12	81
32/1-9E1. Richard Steele. Altitude 194 ft. Drilled by Buzz Nelson, 1964. Screen, 12-slot, 237-242 ft.		
Topsoil	6	6
Hardpan	19	25
Gravel, dirty	34	59
Clay, sandy, grayish-green	28	87
Clay, brown	11	98
Clay, sandy, gray	29	127
Clay, gravelly, some water	2	129
Clay, sandy, brown and gray	15	144
Sand	11	155
Clay, sandy	22	177
Sand, clean	11	188
Gravel, some water (4 gpm)	3	191
Clay, brown	13	204
Clay, sandy, gray	12	216
Sand, dirty, water-bearing (25 gpm)	26	242
Clay, gray	--	242+
32/1-10B1. Egbert Becksma. Altitude 130 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 10-slot, 129-134 ft.		
Fill	3	3
Clay, sandy	40	43
Sand, clayey	5	48
Clay, sandy	15	63
Sand, clayey	13	76
Clay, sandy	39	115
Sand (water-level, 98 ft)	2	117

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-10B1 - Continued		
Clay, sandy	10	127
Sand, water-bearing	7	134
Clay	--	134+
32/1-10B3. C. Gilmore. Altitude 75 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 14-slot, 68-73 ft.		
Hardpan	6	6
Clay, sandy	58	64
Sand, water-bearing	9	73
32/1-10B4. Peter Anderson. Altitude 71 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 14-slot, 64-69 ft.		
Old well, no log	49	49
Clay, sandy	13	62
Sand, water-bearing	7	69
Clay	--	69+
32/1-10C1. W. L. McCoy, Jr. Altitude 170 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 14-slot, 151-156 ft.		
Sand and gravel	6	6
Hardpan	22	28
Sand	19	47
Clay	1	48
Sand	47	95
Sand, water-bearing (water-level, 87½ ft)	1	96
Clay	13	109
Sand, clayey	36	145
Sand, clay balls at 150 ft, water-bearing	11	156
Clay	--	156+
32/1-10C2. P. E. Kieviet. Altitude 165 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 14-slot, 136-141 ft.		
Old well, no log	50	50
Sand	33	83
Clay	15	98
Clay, sandy	16	114
Sand, clean	12	126
Sand, clean, water-bearing	15	141

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-10G1. D. L. Gordon. Altitude 88 ft. Drilled by Lambert Vander Stoep, 1957. Screen, 10-slot, 138-143 ft.		
Sand	10	10
Clay	10	20
Sand and clay, mixed	10	30
Sand, clean	29	59
Clay	9	68
Sand (water-level, 55 ft)	1	69
Clay, sandy	18	87
Sand, fine, silty	4	91
Clay	7	98
Clay, sandy	8	106
Clay	14	120
Sand (water-level, 79 ft)	1	121
Clay	8	129
Sand (water-level, 60 ft)	1	130
Clay, sandy	8	138
Sand, water-bearing	5	143
Clay, sandy	--	143+
32/1-10G2. Harold Ramaley. Altitude 93 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 12-slot, 130-135 ft.		
Gravel	4	4
Sand, water-bearing	6	10
Clay, sandy	15	25
Sand, clayey (water-level, 53 ft)	33	58
Clay	14	72
Clay, sandy	23	95
Clay	27	122
Sand (water-level, 78 ft; yields 6 gpm)	3	125
Clay	2	127
Sand (water-level, 75 ft)	8	135
32/1-10J1. Dillon Kimple. Altitude 75 ft. Drilled by Lambert Vander Stoep, 1961. Screen, 14-slot, 93-98 ft.		
Topsoil	2	2
Hardpan	10	12
Sand	50	62
Clay	29	91
Clay, sandy	2	93
Sand, water-bearing	5	98
Clay	--	98+

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-10J2. Lloyd Cline. Altitude 69 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 85-90 ft.		
Hardpan	12	12
Clay, sandy	33	45
Sand, water-bearing (water-level, 45 ft)	7	52
Clay, sandy	6	58
Clay	10	68
Clay, sandy	8	76
Clay	4	80
Clay, sandy	2	82
Clay	2	84
Sand, water-bearing	4	88
Clay, sandy	2	90
32/1-10J3. Jim Flowers. Altitude 75 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 87-96 ft.		
Clay, sandy	17	17
Sand	5	22
Clay, sandy	11	33
Sand (water-level, 41 ft)	10	43
Clay	5	48
Clay, sandy	7	55
Clay, yellow	3	58
Sand	2	60
Clay, blue	14	74
Sand, dirty, water-bearing	8	82
Sand, water-bearing	14	96
32/1-10K1. E. Anderson. Altitude 178 ft. Drilled by Lambert Vander Stoep, 1961. Screen, 10-slot, 188-193 ft.		
Topsoil	2	2
Hardpan	22	24
Sand	4	28
Sand, coarse, clean	28	56
Sand, dirty	42	98
Sand, cemented	6	104
Clay, sandy, brown	18	122
Sand, clayey	7	129
Clay, blue, brown, and gray	3	132
Clay, sandy, dirty, brown	17	149
Clay, brown	6	155
Clay, sandy, gray	26	181
Sand, fine	3	184
Clay, sandy	2	186
Sand, water-bearing	7	193
Clay	--	193+

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-10K2. D. L. Gordon. Altitude 70 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 14-slot, 108-113 ft.		
Fill	4	4
Sand	7	11
Gravel	4	15
Sand	25	40
Clay and sand, mixed	13	53
Sand (water-level, 46 ft)	1	54
Clay	2	56
Clay, sandy	14	70
Sand (water-level, 57 ft)	5	75
Sand, compact, clayey	13	88
Clay	20	108
Sand, water-bearing	4	112
Clay	1	113
Sand, dirty	--	113+
32/1-12C1. U. S. Naval Air Sta. (well 4). Altitude 76 ft. Drilled by A. A. Durand & Son, 1943.		
Sand, compact	21	21
Clay	29	50
Clay and gravel	82	132
"Quicksand," water-bearing	8	140
Clay, gray	55	195
Gravel, water-bearing	7	202
Sand and gravel	2	204
"Shale" sandy	22	226
Sand and gravel	16	242
Clay and sand	15	257
Clay	18	275
Clay, silt, and gravel	155	430
Clay, gravel, and sand	27	457
Sand, water-bearing	8	465
Sand and clay to sandy clay	65	530
Clay, "shale"	45	575
Clay	232	807
Clay, "shale"	11	818
"Shale," sandy	89	907
Clay, "shale"	27	934
"Shale," sandy	1	935
Gravel and clay, cemented	38	973
Clay, "shale" to muddy clay	77	1,050
Sand	10	1,060
Clay, sandy	46	1,106
Clay, muddy, blue	145	1,251
"Shale," blue	21	1,272
Clay, sandy to sticky, blue, with wood	108	1,380
Clay, hard, blue	221	1,601

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-12C1 - Continued		
Sand and clay, hard	54	1,655
"Sandstone" and "shale"	31	1,686
"Sandstone," hard	18	1,704
"Sandstone," hard, and "shale"	62	1,766
"Sandstone," hard	24	1,790
Clay, "shale"	40	1,830
Clay, "shale," muddy	57	1,887
"Sandstone," soft to hard	28	1,915
Clay, muddy	18	1,933
32/1-12F1. U. S. Naval Air Sta. (well 1). Altitude 90 ft. Drilled by International Water Supply Co., 1942.		
Hardpan	4	4
Sand, compact	2	6
Sand	20	26
Sand and clay	10	36
Sand	15	51
Clay	55	106
Clay, sandy	19	125
Clay	23	148
Gravel, water-bearing (35 gpm)	4	152
Sand, water-bearing (40 gpm)	18	170
Clay	31	201
32/1-14D1. Henry Koetje. Altitude 130 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 14-slot, 168-173 ft.		
Hardpan	12	12
Clay, sandy	26	38
Clay	1	39
Sand	11	50
Clay	2	52
Sand	3	55
Clay	3	58
Sand	2	60
Clay	12	72
Clay, sandy	5	77
Clay	3	80
Clay, sandy	8	88
Clay	6	94
Clay, sandy	5	99
Clay	7	106
Clay, sandy	4	110
Clay	6	116
Sand	6	122

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-14D1 - Continued		
Clay	5	127
Sand, water-bearing	9	136
Clay, brown	13	149
Clay, gray	14	163
Sand, water-bearing	10	173
32/1-14D3. Paul Sheppard. Altitude 153 ft. Dug well drilled deeper by Lambert Vander Stoep, 1956. Screen, 14-slot, 182-187 ft.		
Dug well, no log (water-level, 150 ft)	152	152
Sand, coarse	6	158
Sand, clayey, grayish-brown	12	170
Sand, gray, water-bearing	17	187
32/1-14E1. Mrs. Mary Kooyman. Altitude 140 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 12-slot, 172-177 ft.		
Old well, no log	139	139
Sand	1	140
Clay, sandy	4	144
Clay, brown with gray streaks	20	164
Sand, water-bearing	13	177
32/1-14M1. R. F. Kallam. Altitude 183 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 14-slot, 200-205 ft.		
Topsoil, gravelly	4	4
Sand	6	10
Clay, sandy	5	15
Clay	10	25
Hardpan	74	99
Clay, gravelly	41	140
Sand	35	175
Clay, sandy	23	198
Sand, water-bearing	7	205
32/1-14M3. Bonnie View Water Co., Inc. Altitude 155 ft. Drilled by Angus Scurlock, 1954. Screen, 10-slot, 160-164 ft; 14-slot, 164-174 ft.		
Topsoil	1	1
Clay	8	9
Boulders	28	37

Table 11-Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-14M3 - Continued		
Hardpan	24	61
Clay, sandy	49	110
Clay, brown	4	114
Clay, blue and brown	34	148
Silt	8	156
Sand, fine, some water	7	163
Sand, medium, water-bearing	8	171
Sand, coarse, water-bearing	3	174
32/1-14N1. R. W. H. Johnson. Altitude 214 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 30-slot, 280-290 ft.		
Topsoil, gravelly	2	2
Hardpan	54	56
Clay, sandy	9	65
Sand, water-bearing (water-level, 55 ft)	1	66
Clay	70	136
Clay, sandy	5	141
Hardpan, hard	2	143
Clay, sandy	82	225
Sand, water-bearing (water-level, 204 ft)	6	231
Clay	26	257
Sand, water-bearing	1	258
Clay, sandy	12	270
Clay	5	275
Sand and gravel, water-bearing	7	282
Gravel, water-bearing	8	290
Gravel, water-bearing	--	290+
32/1-15A1. Ray Walter. Altitude 160 ft. Drilled by Lambert Vander Stoep, 1957. Screen, 10-slot, 175-180 ft.		
Hardpan, soft, gravelly, gray	36	36
Gravel, sandy	10	46
Sand, fine, some water	20	66
Clay	4	70
Sand	20	90
Clay, gravel, and sand, dark-gray	9	99
Clay, blue	17	116
Sand, fine, clayey, brown	14	130
Sand, clean (water-level, 145 ft.)	33	163
Clay, black	11	174
Sand, water-bearing	6	180

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-15B1. Corwin Stanley. Altitude 165 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 10-slot, 170-175 ft.		
Topsoil, gravelly	2	2
Hardpan, gravelly	10	12
Hardpan, soft, sandy	38	50
Sand	59	109
Clay	3	112
Clay, sandy	8	120
Clay	2	122
Clay, sandy, gray	10	132
Clay	6	138
Sand	9	147
Clay	2	149
Clay, sandy	8	157
Clay, very sandy	1	158
Clay	10	168
Sand, water-bearing	7	175
Clay	--	175+
32/1-15E1. Grace Damon. Altitude 132 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 34-37 ft.		
Topsoil	3	3
Hardpan, gravelly to sandy	31	34
Sand and gravel, mixed, water-bearing	3	37
Hardpan, much clay	3	40
32/1-15E2. Richard Sherwood. Altitude 132 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 20-slot, 87-92 ft.		
Topsoil	--	--
Hardpan	--	42
Hardpan, gravelly	2	44
Sand, water-bearing (set 30-slot screen, 42-46 ft; yield 4 gpm)	1	45
Hardpan	19	64
Clay, sandy	20	84
Sand, water-bearing	8	92
Clay	--	92+
32/1-15G1. Ed Adamson. Altitude 205 ft. Dug well drilled deeper by N. C. Jannsen, 1933.		
Dug well, no log	140	140
No record	5	145
Sand	5	150

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-15G1 - Continued		
Sand and gravel	7	157
Clay, sandy	13	170
Sand, hard	20	190
Sand, water-bearing	2	192
No record	5	197
Sand	5	202
Sand, fine, and blue clay	8	210
32/1-15N1. M. D. Scoville. Altitude 162 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 14-slot, 163-168 ft.		
Gravel	7	7
Hardpan, gravelly	48	55
Hardpan, sandy	50	105
Clay, gravelly	10	115
Clay	14	129
Hardpan, soft, brown	14	143
Sand	12	155
Clay, sandy	7	162
Sand, water-bearing	6	168
32/1-16F1. George Dickson. Altitude 147 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 10-slot, 158-163 ft.		
Topsoil	1	1
Clay	19	20
Gravel	1	21
Clay, sandy	22	43
Clay, yellow	38	81
Hardpan	1	82
Clay, sandy	32	114
Clay	3	117
Sand, clayey	20	137
Clay, sandy (water-level, 130 ft)	9	146
Sand, water-bearing	4	150
Sand, clean, water-bearing	13	163
32/1-16G1. Mrs. George Dickson. Altitude 155 ft. Drilled by Lambert Vander Stoep, 1957. Screen, 14-slot, 201-208 ft.		
Fill	4	4
Hardpan	4	8
Sand and gravel	12	20
Sand, gravelly	12	32

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-16G1 - Continued		
Sand, water-bearing	1	33
Sand, fine, clayey	13	46
Clay, sandy, blue, and black clay	5	51
Clay, sandy, brown below 56 ft.	23	74
Sand and gravel, cemented	4	78
Clay, brown and blue	14	92
Sand, clayey	13	105
Sand, clean	2	107
Sand, blue (water-level, 109 ft)	15	122
Clay	1	123
Silt, sandy	10	133
Sand, clean, yields yellow water (water-level, 134½ ft)	28	161
Clay, peaty, brown	11	172
Clay, gravelly, peaty near base	8	180
Silt, sandy, peaty, and wood	17	197
Sand, coarse	9	206
Clay, wood at 207 ft	1	207
32/1-16G2. Mrs. George Dickson. Altitude 163 ft. Dug well drilled deeper by N. C. Jannsen, 1929. Gravel-filled, 177-193 ft.		
Dug well, no log	47	47
Sand	111	158
Sand, water-bearing	35	193
32/1-16J1. Robert Gamble. Altitude 162 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 14-slot, 158-163 ft.		
Old well, no log	60	60
Hardpan	10	70
Hardpan, soft, much sand	17	87
Clay, brown	5	92
Clay, sandy	28	120
Sand, clayey	5	125
Sand	22	147
Clay, sandy	9	156
Sand, water-bearing	7	163
32/1-16P1. John Deighton. Altitude 170 ft. Dug well drilled deeper by Lambert Vander Stoep, 1958. Screen, 200-205 ft.		
Dug well, no log	68	68
Silt, sandy	2	70

Table 11 -Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-16P1 - Continued		
Hardpan, sandy	7	77
Clay, gray	2	79
Clay, green	13	92
Sand, yellowish-green	6	98
Clay, yellow	4	102
Clay, blue	24	126
Sand, silty	4	130
Sand	5	135
Clay, brown	5	140
Sand	3	143
Clay with sand and gravel layers	17	160
Sand	11	171
Clay, sandy	26	197
Sand, water-bearing	9	206
32/1-16R1. Howard Haveman. Altitude 155 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 14-slot, 156-161 ft.		
Clay, hard, sandy	8	8
Hardpan, hard, gravelly	27	35
Hardpan, soft	80	115
Clay, sandy	3	118
Clay	7	125
Sand (water-level, 124 ft)	2	127
Clay, sandy	13	140
Sand	5	145
Peat and clay	8	153
Sand, water-bearing	8	161
32/1-17F1. Lawrence Bethel. Altitude 135 ft. Drilled by Lambert Vander Stoep, 1956. Screen, 8-slot, 74-79 ft.		
Clay	10	10
Hardpan, gravelly	10	20
Hardpan, very hard	18	38
Gravel and coarse brown sand	30	68
Sand, fine, gray, water-bearing	11	79
32/1-18A1. Mrs. Tex Howe. Altitude 164 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 14-slot, 151-156 ft.		
Topsoil, gravelly	--	--
Hardpan, gravelly	--	30
Gravel	6	36
Hardpan, sandy	37	73
Sand	9	82
Clay, sandy	6	88

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-18A1 - Continued		
Clay	2	90
Clay, sandy	5	95
Sand	1	96
Clay, sandy	2	98
Clay, bluish-gray	8	106
Sand	4	110
Clay, sandy	6	116
Clay, dark-brown	5	121
Clay, sandy, gray	15	136
Sand, gray, water-bearing	20	156
32/1-18E1. Hide A Way Water Co., Inc. Altitude 51 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 20-slot, 65-70 ft; 30-slot, 70-75 ft; 14-slot, 75-80 ft.		
Sand	6	6
Clay, sandy	19	25
Sand	10	35
Clay, sandy	19	54
Sand, coarse, and gravel; water-bearing	26	80
Clay	--	80+
32/1-18K1. John Semler. Altitude 157 ft. Drilled by owner, 1960. Screen, 157-162 ft.		
Sand and hardpan, interbedded	160	160
Gravel, coarse, water-bearing	2	162
32/1-18N1. G. Wittig. Altitude 210 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 10-slot, 170-180 ft.		
Topsoil and soft hardpan	25	25
Sand	23	48
Clay, gray to green	3	51
Sand, fine	20	71
Sand, coarse, clean	61	132
Sand, fine	28	160
Sand, water-bearing, with dirty streaks 172-174 ft, 177-178 ft	20	180
Clay, brown	--	180+
32/1-19D1. Henry Semler. Altitude 222 ft. Drilled by Lambert Vander Stoep, 1958.		
Old well, no log	80	80
Sand, coarse, brown	102	182

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-19D1 - Continued		
Sand, fine, silty, gray	4	186
Clay	28	214
Sand, coarse, blue	14	228
Clay	6	234
Sand	7	241
Clay	--	241+
32/1-20A1. Rolling Hills - Glencarn Community Service, Inc. Altitude 146 ft. Drilled by A. G. Kounkel, 1959. Screen, 20-slot, 170-180 ft.		
Clay, yellow	15	15
Clay, sandy	13	28
Gravel	32	60
Clay	10	70
Sand	19	89
Clay, blue	16	105
Sand	5	110
Sand, water-bearing	13	123
Clay, silty	42	165
Sand, fine, water-bearing	5	170
Sand, coarse, water-bearing	11	181
Clay, blue	--	181+
32/1-20P1. R. E. Stevenson. Altitude 155 ft. Dug well drilled deeper by Lambert Vander Stoep, 1963. Screen, 14-slot, 117-121 ft.		
Dug well, no log	83	83
Sand	22	105
Clay	8	113
Clay, sandy	5	118
Sand, water-bearing	3	121
Sand, dirty	--	121+
32/1-21A1. Gertrude Rip. Altitude 143 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 145-150 ft.		
Topsoil, gravelly	6	6
Clay mixed with gravel	12	18
Hardpan	47	65
Hardpan, sandy	60	125
Sand (water-level, 119 ft)	5	130
Peat and clay	9	139
Sand, clayey	3	142
Sand, water-bearing	8	150

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-21J1. Woodrow Cecil. Altitude 90 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 14-slot, 137-142 ft.		
Hardpan, hard	5	5
Hardpan, soft	9	14
Hardpan, hard with soft layers	72	86
Clay	9	95
Sand, cemented, soft from 96-100 ft (water-level, 84 ft)	10	105
Clay, very soft, gray and black	10	115
Clay, hard	11	126
Clay, black and brown	8	134
Sand, water-bearing	8	142
32/1-21P1. Jack Tanner. Altitude 115 ft. Drilled by Lambert Vander Stoep, 1961. Screen, 14-slot, 144-149 ft; 20-slot, 149-154 ft.		
Hardpan	42	42
Clay, brown and blue layers	34	76
Clay, sandy, brown to gray	10	86
Hardpan with sand and gravel	12	98
Sand	14	112
Sand (water-level, 100 ft)	15	127
Clay	4	131
Clay, sandy	7	138
Sand, water-bearing	16	154
32/1-21Q1. Parkhurst & Lange. Altitude 63 ft. Drilled by Lambert Vander Stoep 1958.		
Old well, no log	31	31
Sand, dirty	4	35
Hardpan, gravelly	3	38
Hardpan, sandy	9	47
Gravel, loose	1	48
Hardpan, sandy	15	63
Sand and gravel, water-bearing	8	71
32/1-21R1. Mrs. Ava Loers. Altitude 18 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 20-slot, 54-57 ft.		
Sand, hard	5	5
Clay	33	38
Hardpan	10	48
Gravel, dirty	6	54
Sand and gravel, water-bearing	3	57

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-21R2. L. A. Dremolski. Altitude 19 ft. Drilled by Lambert Vander Stoep, 1961. Screen, 14-slot, 35-40 ft.		
Topsoil	5	5
Hardpan, soft, 13-16 ft	27	32
Sand, water-bearing; trace of clay at 38 ft	8	40
32/1-22L1. Penn Cove Park Water Dist. Altitude 150 ft. Drilled by A. G. Kounkel, 1958. Screen, 30-slot, 269-274 ft; 25-slot, 274-279 ft.		
Topsoil	4	4
Clay, yellow	14	18
Hardpan	32	50
Sand	22	72
Clay, yellow	16	88
Sand, clayey, dark-blue	7	95
Clay, yellow	15	110
Sand with yellow clay	11	121
Sand and some gravel	5	126
Clay, silty, blue	56	182
Clay, dark-brown	23	205
Sand, fine, dirty	11	216
Sand and silt, brownish-gray	34	250
Sand and gravel	21	271
Sand and some gravel	8	279
32/1-23D2. Mrs. Paull Smyth. Altitude 205 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 243-248 ft.		
Topsoil, gravelly	1	1
Hardpan	54	55
Clay, sandy	19	74
Clay	13	87
Hardpan	29	116
Clay, sandy	82	198
Clay	15	213
Sand, water-bearing (yielded gas)	22	235
Sand, water-bearing	13	248
Clay, sandy	--	248+
32/1-23E1. L. B. Muzzall. Altitude 205 ft. Drilled by N. C. Jannsen, 1929. Gravel-filled, 287-295 ft.		
Hardpan	10	10
Gravel and sand, cemented, some water at 27 ft	32	42
Sand, hard	12	54

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-23E1 - Continued		
Gravel, cemented	11	65
Gravel and boulders, cemented	10	75
Clay, hard, sandy	60	135
Sand with gravel streaks	21	156
Sand	39	195
Clay, sandy, dark, mixed with peat	17	212
Clay, brown, mixed with sandy streaks	5	217
Sand, fine, water-bearing	70	287
Clay, brown; sand at bottom	8	295
32/1-23E2. F. C. Forsberg. Altitude 199 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 8-slot, 246-251 ft; 10-slot, 251-256 ft.		
Topsoil	2	2
Hardpan	23	25
Sand	9	34
Sand, hard	10	44
Clay, sandy, brown to blue	26	70
Hardpan	16	86
Hardpan, sandy	14	100
Sand	12	112
Hardpan	20	132
Clay, sandy	46	178
Clay	2	180
Clay, sandy	51	231
Sand, water-bearing	25	256
32/1-28B1. Dr. Dexter Lufkin. Altitude 85 ft. Drilled by Lambert Vander Stoep, 1959.		
Topsoil	--	--
Clay, brown	--	33
Clay, blue	19	52
Clay, sandy	8	60
Clay, gray	16	76
Clay, sandy	4	80
Sand, clayey	9	89
Sand, dirty, water-bearing	2	91
Sand, clean, water-bearing	3	94
Sand, clayey	--	94+
32/1-28C1. Lambert Vander Stoep. Altitude 16 ft. Drilled by owner, 1959. Screen, 80-83 ft.		
Clay	12	12
Clam shells	1	13

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-28C1 - Continued		
Clay, sandy	5	18
Sand, water-bearing	5	23
Clay, sandy; peaty at base	10	33
Sand, water-bearing	7	40
Clay	4	44
Clay, sandy	9	53
Clay, brown to gray	26	79
Sand, water-bearing	4	83
Clay	--	83+
32/1-28C2. John Blattman. Altitude 18 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 10-slot, 56-61 ft.		
Clay	15	15
Clam shells	5	20
Clay, sandy	5	25
Sand, brown, water-bearing	3	28
Clay, sandy	15	43
Clay, peaty, brown	3	46
Clay, gray	6	52
Sand, water-bearing	9	61
32/1-29D1. San de Fuca, Fire Dept. Altitude 75 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 30-slot, 118-123 ft.		
Topsoil	6	6
Hardpan	52	58
Sand	4	62
Sand (water-level, 57½ ft)	4	66
Clay, soft, sandy, blue	48	114
Sand and gravel, water-bearing	9	123
32/1-29E1. Anna Fakkema. Altitude 25 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 14-slot, 66-71 ft.		
Topsoil and hardpan	3	3
Clay, gravelly to sandy, gray to yellow	60	63
Gravel, water-bearing	8	71

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-29E2. Ed Fakkema. Altitude 29 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 41-46 ft.		
Topsoil	1	1
Hardpan	3	4
Clay, yellow, with gravel	17	21
Clay, soft, bluish-gray	9	30
Gravel, cemented	1	31
Clay, gravelly	3	34
Sand, fine, water-bearing	12	46
32/1-30A1. Mrs. Alice Esterly. Altitude 135 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 14-slot, 116-128 ft.		
Old well, no log	111	111
Sand, water-bearing	15	126
Clay	--	126+
32/1-30G1. Melvin Grasser. Altitude 15 ft. Drilled by N. C. Jannsen, 1935. Perforations, 83-148 ft; screen, 148-190 ft.		
Sand	20	20
Clay	5	25
Sand	9	34
Clay and boulders	9	43
Sand	3	46
Gravel, cemented, water-bearing	10	56
Sand	9	65
Sand and gravel, some water, 83-86 ft, and 102-107 ft	65	130
Gravel, coarse	22	152
Sand, gravel, and clay	22	174
Sand	6	180
Clay, muddy, blue; boulder at 362 ft	262	442
32/1-30M1. A. R. Vogel. Altitude 55 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 14-slot, 61-66 ft.		
Gravel	4	4
Hardpan	4	8
Clay	20	28
Clay, sandy	4	32
"Soil," boggy, brown water	3	35
Clay	3	38
Sand	5	43
Clay, blue, water-bearing	33	76

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-30M3. Robert Dunn. Altitude 68 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 12-slot, 79-84 ft.		
Gravel	10	10
Sand and gravel	8	18
Hardpan, sandy	9	27
Clay	15	42
Clay, sandy	31	73
Clay	4	77
Sand, water-bearing	7	84
32/1-31A1. Capt. Whidbey Inn. Altitude 10 ft. Drilled by Angus Scurlock, 1948.		
Clay	24	24
Gravel, yields saline water	76	100
32/1-31A2. Capt. Whidbey Inn. Altitude 10 ft. Drilled by Hilton Hayes, 1952.		
Gravel, loam	1	1
Sand and gravel	5	6
Sand, clay, and boulders	13	19
Gravel, hardpan	15	34
Gravel, yields saline water	3	37
"Quicksand," brown, some water	43	80
Sand and gravel, brown, yields saline water	23	103
Sand and gravel	7	110
Gravel, fine, sand at bottom; yields saline water	3	113
Clay and sand mixed with gravel; yields saline water	--	113+
32/1-32N1. Libbey Const. Co. Altitude 90 ft. Drilled by Lambert Vander Stoep, 1964. Screen, 12-slot, 195-200 ft; 10-slot, 200-212 ft; 8-slot, 212-217 ft.		
Gravel	23	23
Sand and gravel	9	32
Hardpan	9	41
Clay	11	52
Clay, sandy	7	59
Sand, water-bearing	5	64
Humus, brown	2	66
Clay, gray	11	77
Clay, blue	21	98
Clay, tan	40	138
Clay, sandy	5	143
Sand, clayey	4	147
Clay	8	155

Table 11-Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-32N1 - Continued		
Clay, sandy	5	160
Clay, gray	3	163
Sand, water-bearing (water-level, 87 ft)	1	164
Clay	19	183
Clay, sandy	8	191
Sand, water-bearing	26	217
32/1-33G1. Town of Coupeville. Altitude 25 ft. Drilled by N. C. Jannsen, 1928. Perforations, 146-198 ft.		
Hardpan	16	16
Clay and boulders	16	32
Sand, gravel, and boulders	16	48
Clay	15	63
Clay, blue	20	83
Clay, blue, and gravel	37	120
Clay, blue	26	146
Sand, water-bearing (100 gpm)	2	148
Clay and sand	10	158
Sand, coarse, and gravel	30	188
Gravel and boulders, cemented	10	198
32/1-33J1. Town of Coupeville. Altitude 92 ft. Drilled by N. C. Jannsen, 1949. Perforations, 109-215 ft.		
Hardpan	22	22
Clay and gravel, blue	11	33
Hardpan with gravel	20	53
Hardpan layers, clayey	18	71
Clay, blue	47	118
Clay and gravel streaks, some water	9	127
Sand and gravel	15	142
Sand and gravel with clay	13	155
Clay, green	14	169
Sand and gravel	5	174
Clay, sandy	16	190
Sand and gravel, water-bearing	23	213
Clay and sand	27	240
32/1-34H1. Town of Coupeville. Altitude 205 ft. Drilled by Lambert Vander Stoep, 1964. Screen, 14-slot, 311-316 ft.		
Topsoil	1	1
Clay	2	3
Sand and gravel	127	130
Sand and some gravel	32	162

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/1-34H1 - Continued		
Clay, sandy	45	207
Sand, dirty, water-bearing	13	220
Clay	91	311
Sand, water-bearing	1	312
Clay, gravelly	2	314
Sand, water-bearing	2	316
Clay, sandy, gravelly, clam shells	4	320
Clay, over 75 percent; some sand and gravel	50	370
Clay	4	374
32/1-35G2. Long Point Manor Water Co. (well 2). Altitude 105 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 14-slot, 190-201 ft.		
Hardpan, gravelly, mostly gravel-sand mixture	48	48
Sand and some gravel	20	68
Clay, sandy, brown, gray	30	98
Clay, black	40	138
Clay, sandy	11	149
-----, water-bearing	2	151
Clay	27	178
Sand and gravel, water-bearing; some clayey layers, 179-182 ft, 185-190 ft	23	201
32/1-36N1. State Game Farm. Altitude 205 ft. Drilled by N. C. Jannsen, 1948. Perforations, 148-194 ft.		
Sand and gravel	8	8
Boulders	47	55
Sand and gravel	7	62
Sand	86	148
Sand, water-bearing	46	194
Clay	6	200
32/2-2A1. Fredrick Mitchel. Altitude 140 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 30-slot, 126-129 ft.		
Topsoil	2	2
Sand and gravel with clay	6	8
Clay, sandy, brown and gray layers	91	99
Clay and coarse sand	5	104
Sand, clayey (water-level, 70 ft; yield 1½ gpm)	2	106
Clay, gravelly	4	110
Hardpan, sandy	16	126
Sand and gravel, water-bearing	3	129
Clay, blue	--	129+

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/2-2E1. Hans Olson. Altitude 100 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 12-slot, 126-131 ft.		
Clay, gravelly	4	4
Clay, sandy	56	60
Clay	5	65
Sand, muddy	5	70
Clay, sandy	55	125
Sand, water-bearing	5	130
Sand, some water	1	131
32/2-3E1. John Schulz. Altitude 342 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 14-slot, 167-172 ft.		
Hardpan	3	3
Hardpan, gravelly	4	7
Hardpan	93	100
Gravel	6	106
Sand, some gravel	45	151
Sand, water-bearing	21	172
32/2-3M1. Lynn Duncan. Altitude 300 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 10-slot, 182-187 ft.		
Topsoil, gravelly	4	4
Hardpan, gravelly	23	27
Hardpan, loose	10	37
Sand and gravel	13	50
Hardpan	8	58
Hardpan, gravelly	6	64
Hardpan, sandy	4	68
Hardpan, gravelly	8	76
Clay, yellowish-brown, with sand and some gravel	30	106
Gravel and clay	23	129
Sand, dirty	46	175
Sand, water-bearing	12	187
32/2-3R1. John Eckstrom. Altitude 170 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 14-slot, 107-112 ft.		
Clay, sandy	12	12
Sand, clayey	27	39
Clay, sandy	43	82
Clay, blue	4	86

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
32/2-3R1 - Continued		
Clay, sandy	17	103
Clay	2	105
Sand, water-bearing	7	112
32/2-4J1. Leroy Bodin. Altitude 245 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 12-slot, 94-99 ft.		
Old well, no log	37	37
Hardpan, sandy	52	89
Sand, water-bearing	10	99
Clay, yellow	--	99+
32/2-4J2. R. G. Bruce. Altitude 320 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 14-slot, 148-153 ft.		
Topsoil	3	3
Hardpan	81	84
Gravel	14	98
Clay, sandy	5	103
Sand	26	129
Clay	1	130
Clay, sandy	5	135
Sand, water-bearing	18	153
32/2-4Q1. U. S. Naval Air Station, Polnell Point well. Altitude 105 ft. Drilled in 1943. Screen, 148-163 ft.		
Clay	20	20
Gravel and clay	12	32
Sand, to sand and boulders	13	45
Gravel and clay	5	50
Clay and sand	5	55
Gravel, water-bearing (1 gpm)	19	74
Gravel, coarse, with sand and clay	27	101
Silt	12	113
Gravel and clay, to gravel, water-bearing	50	163
33/1-1M1. Les Severide. Altitude 210 ft. Drilled by Lambert Vander Stoep, 1957. Screen, 20-slot, 135-140 ft.		
Hardpan	33	33
Clay, some sand and gravel	10	43

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-1M1 - Continued		
Clay, sandy	9	52
Sand, clean	6	58
Sand, dirty	6	64
Sand, clean	14	78
Sand, coarse, takes water	3	81
Sand, fine, dirty	12	93
Hardpan	26	119
Gravel, water-bearing	21	140
33/1-1M2. Glen Conway. Altitude 230 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 30-slot, 147-152 ft.		
Topsoil	2	2
Clay	10	12
Sand, hard	18	30
Sand, soft, clean	7	37
Clay, sandy, with clean sand layers	20	57
Sand, hard	11	68
Clay, sandy	12	80
Sand, clean	15	95
Sand, hard, gravelly	23	118
Hardpan, sandy to gravelly	6	124
Hardpan, sandy	13	137
Gravel, water-bearing	15	152
33/1-2F1. Mrs. Flanagan. Altitude 120 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 190-195 ft.		
Clay, gravelly	6	6
Clay	32	38
Sand with clay streaks	66	104
Clay, sandy	81	185
Sand, water-bearing	10	195
33/1-2K1. Karl Henni. Altitude 150 ft. Drilled by A. G. Kounkel, 1958. Screen, 20-slot.		
Gravel	3	3
Clay and hardpan	17	20
Clay, sandy	50	70
Clay, yellow	2	72
Clay, blue	8	80
Sand	40	120
Clay, blue	15	135
Clay, muddy, some sand	77	212

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-2K1 - Continued		
Clay, hard, blue	28	240
Gravel, water-bearing	3	243
Clay, blue	--	243+
33/1-2K2. Karl Henni. Altitude 135 ft. Drilled by A. G. Kounkel, 1958. Screen, 14-slot, 209-214 ft.		
Clay	70	70
Sand	50	120
Clay, blue	18	138
Sand, fine	19	157
Clay, muddy	23	180
Sand, fine, some water	31	211
Sand, medium, water-bearing	3	214
Sand, fine	--	214+
33/1-3J1. Moran Beach Comm. Altitude 14 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 30-slot, 104-109 ft.		
Sand	19	19
Gravel, dirty (water-level, 5½ ft)	2	21
Gravel, clean, water-bearing	5	26
Sand and gravel, some clay; water-bearing	24	50
Sand, water-bearing	2	52
Clay, sandy	3	55
Sand and gravel, cemented	2	57
Hardpan, sandy	11	68
Silt, sandy	4	72
Hardpan, sandy	12	84
Silt, sandy	2	86
Hardpan, sandy	8	94
Gravel, some sand and clay	12	106
Sand and gravel, water-bearing	3	109
Clay with gravel	--	109+
33/1-11C2. Washington Land Co. Altitude 125 ft. Drilled by Lambert Vander Stoep, 1956. Screen, 10-slot, 142-152 ft.		
Sand and gravel	8	8
Sand	70	78
Clay, brown to blue	12	90
Sand	19	109
Clay	4	113
Sand	10	123
Sand, fine, gray, water-bearing	29	152

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-11D1. A. H. Gabor. Altitude 97 ft. Drilled by N. C. Jannsen, 1930.		
Sand, gravel, and clay	43	43
Boulders, loose sand, and gravel	18	61
Sand and gravel	21	82
"Quicksand," water-bearing	69	151
"Quicksand," coarse, dark, water-bearing	7	158
Clay, blue	--	158+
33/1-11D2. Ralph Forman. Altitude 90 ft. Drilled by Lambert Vander Stoep, 1961. Screen, 10-slot, 85-95 ft.		
Topsoil, rocky	2	2
Sand and gravel, dirty	6	8
Hardpan	23	31
Sand, dirty	3	34
Sand, very dirty, gray to brown	38	72
Sand, clean, water-bearing	23	95
Sand, some water	--	95+
33/1-11R1. Fred Lang. Altitude 75 ft. Drilled by Lambert Vander Stoep, 1956. Screen, 14-slot, 87-92 ft.		
Old well, no log (water-level, 59 ft)	61	61
Sand, water-bearing	21	82
Sand and gravel, mixed, water-bearing	10	92
33/1-12H1. John Henni. Altitude 220 ft. Drilled by N. C. Jannsen, 1929. Perforations, 100-108 ft.		
Clay	7	7
Hardpan	8	15
Sand, loose, water-bearing at 100 ft	93	108
33/1-12H2. Ivan Norton. Altitude 225 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 150-155 ft.		
Topsoil	2	2
Gravel	4	6
Hardpan	4	10
Sand and gravel	10	20
Sand, some water	61	81
Clay, sandy	24	105
Hardpan, gravelly, brown	23	128

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-12H2 - Continued		
Hardpan, soft	3	131
Sand and gravel, water-bearing	24	155
33/1-12J1. John Van Every. Altitude 205 ft. Drilled by Lambert Vander Stoep, 1962.		
Gravel	46	46
Clay with gravel	8	54
Clay, sandy	36	90
Sand and gravel	4	94
Gravel	5	99
Hardpan, gravelly	13	112
Gravel, water-bearing	6	118
33/1-12M2. Andy Kammenga. Altitude 113 ft. Drilled by Lambert Vander Stoep, 1960.		
Gravel	33	33
Sand, red to brown	15	48
Clay	--	48+
33/1-12N1. Mrs. M. Prothero. Altitude 38 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 10-slot, 41-46 ft.		
Topsoil	--	--
Clay, brown	--	18
Clay, sandy	10	28
Sand, water-bearing	18	46
33/1-12N2. Ida Jenkins. Altitude 45 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 14-slot, 50-55 ft.		
Topsoil	3	3
Hardpan	21	24
Clay, sandy	11	35
Sand, gravelly near bottom	20	55
33/1-13Q1. Everett Bros. Const. Co. Altitude 125 ft. Drilled by Lambert Vander Stoep, 1961. Screen, 10-slot, 150-155 ft; 14-slot, 155-165 ft.		
Gravel	4	4
Clay, sandy	10	14

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-13Q1 - Continued		
Gravel	2	16
Hardpan	13	29
Clay, sandy	3	32
Sand, water-bearing	6	38
Clay, sandy, gray clay streaks	34	72
Clay, black	15	87
Clay, sandy	18	105
Sand, clayey	10	115
Sand, water-bearing	50	165
33/1-14D1. U. S. Naval Air Sta., Ault Field (well 6). Altitude 34 ft. Drilled by J. J. Bell. Screen, 146-156 ft.		
Topsoil	2	2
Sand, fine, brown, and clay, water-bearing	32	34
Sand, fine, blue, and clay, to very fine blue sand, to sand with wood, to coarser sand (less wood), to medium sand; water-bearing	122	156
33/1-14M1. U. S. Naval Air Sta., Ault Field (well 2) Altitude 28 ft. Drilled in 1942.		
Clay	23	23
Sand	11	34
"Quicksand"	22	56
Clay, sandy	24	80
"Quicksand"	68	148
Sand, coarse, and gravel, to coarse sand; water-bearing	17	165
Sand, fine	17	182
33/1-15Q1. U. S. Naval Air Sta., Ault Field (well 1). Altitude 42 ft.		
Gravel and boulders	34	34
Sand, water-bearing (15 gpm)	6	40
"Quicksand"	27	67
Gravel to sandy clay, water-bearing (30 gpm)	63	130
Gravel	5	135
Clay and gravel	30	165
Gravel and boulders, water-bearing (12 gpm)	7	172
Clay and gravel	63	235
Clay, sandy	90	325
Clay, to clay and gravel	23	348
"Sandstone"	3	351
Clay, sandy	7	358
Clay "shale"	22	380
Clay and "shale," cemented sand and gravel with marine fossils	35	415
Clay	30	445

Table 11 -Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-22C1. U. S. Naval Air Sta., Ault Field (well 4). Altitude 56 ft. Drilled in 1942. Gravel-packed; perforations, 62-94 ft.		
Clay; to clay and boulders, some water; hard clay	55	55
Sand, coarse, water-bearing	32	87
Gravel, coarse, water-bearing	7	94
Clay	4	98
33/1-22G1. U. S. Naval Air Sta., Ault Field (well 7) Altitude 30 ft. Drilled in 1942.		
Clay, blue	28	28
Clay and water-bearing gravel (7 gpm)	60	88
Sand and gravel, water-bearing (12 gpm)	5	93
"Shale," sandy	25	118
Clay, gray, and brown, some gravel	33	151
33/1-22Q1. U. S. Naval Air Sta., Ault Field (well 3). Altitude 154 ft. Drilled by J. J. Bell. Perforations, 134-140 ft.		
Gravel and hardpan	5	5
Clay and gravel	25	30
Sand and gravel, some clay; water-bearing (10 gpm)	20	50
Sand, brown, and clay-pebbles	4	54
Sand, fine, gray, and clay	14	68
Sand, hard, brown, and clay	57	125
Clay, sandy, fine, blue	2	127
Clay, yellow, and sand	7	134
Gravel and coarse sand, laminated; water-bearing (75 gpm)	5	139
Clay, white, sand, and silt	32	171
Clay, brown, and sand	25	196
Clay, blue-pebbles	56	252
Sand, cemented, with boulders	49	301
Clay, brown, sand, and rocks	19	320
Clay, hard, blue, muddy with sand and gravel	12	332
Clay, blue, and sandy brown gravel, to sandy clay with thin "shale" layers to clay with heavy "shale"	62	394
Clay, "gumbo," brown, with trace of sand	52	446
Sand, blue, with trace of coal and boulders; water-bearing (10 gpm)	42	488
Clay, sandy, blue	6	494
"Shale," gritty, blue, to clay with boulders	40	534
33/1-23N1. U. S. Naval Air Sta., Ault Field (well 5). Altitude 48 ft. Drilled in 1942.		
Sand and fine gravel	24	24
Clay and gravel, boulders	10	34
Sand and gravel	2	36

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-23N1 - Continued		
Sand, fine	48	84
Sand and fine gravel	7	91
Silt	9	100
Sand, very fine, and sandy clay	15	115
"Shale"	7	122
33/1-25B1. Ted Eden. Altitude 145 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 8-slot, 85-90 ft.		
Topsoil	3	3
Hardpan	10	13
Hardpan, very hard	9	22
Hardpan, sandy, some gravel	40	62
Sand, fine, water-bearing	28	90
33/1-25F1. Lake City Contractors. Altitude 162 ft. Drilled by Lambert Vander Stoep, 1960; deepened, 1961. Screen, 8-slot, 211-221 ft; 12-slot, 221-227 ft.		
Gravel	15	15
Gravel, clayey	14	29
Hardpan	64	93
Sand (water-level, 89 ft; set 10-slot screen, 102-107 ft; yield 15 gpm, 8 ft drawdown)	14	107
Clay	5	112
Clay, sandy	8	120
Sand, clean	5	125
Sand, fine, water-bearing	20	145
Sand, some water	4	149
Clay and wood	5	154
Clay, gray	10	164
Clay, sandy	5	169
Clay, sandy, yields combustable gas	3	172
Clay, sandy	6	178
Sand, water-bearing	75	253
Clay	--	253+
33/1-25F2. Curtis Const. Co. Altitude 157 ft. Drilled by Lambert Vander Stoep, 1961. Screen, 10-slot, 209-219 ft; 8-slot, 219-225 ft; 10-slot, 225-240 ft; 12-slot, 240-245 ft; 14-slot, 245-251 ft.		
Gravel	15	15
Hardpan, gravelly	51	66
Sand	37	103

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-25F2 - Continued		
Clay	5	108
Clay, sandy	7	115
Sand, water-bearing (water-level, 85 ft)	34	149
Clay	11	160
Clay, sandy	47	207
Sand, water-bearing	45	252
Clay	--	252+
33/1-25G1. Case Brothers. Altitude 90 ft. Drilled by Lambert Vander Stoep, 1957.		
Gravel	5	5
Hardpan and gravel	12	17
Hardpan, soft, sandy	12	29
Hardpan, silty (water-level, 13 ft)	4	33
Hardpan, gravelly	2	35
Hardpan, sandy	3	38
Hardpan, hard	6	44
Hardpan, soft (water-level, 38 ft)	22	66
Sand (water-level, 33 ft)	2	68
Hardpan, gravelly	10	78
33/1-25P1. J. R. Kennedy. Altitude 110 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 8-slot, 73-83 ft.		
Topsoil	3	3
Hardpan, gravelly	10	13
Hardpan, sandy	7	20
Sand	35	55
Clay, sandy	2	57
Clay	8	65
Sand, silty, water-bearing	18	83
33/1-26E1. Whidbey Sand & Gravel Co. Altitude 145 ft. Drilled by J. J. Bell. Screen, 10-slot, 172-202 ft.		
Gravel, loose	14	14
Sand, hard, and gravel, with much clay	19	33
Sand, gray, and clay	19	52
Sand, brown	3	55
Sand, gray	3	58
Sand, gray, and gravel, water-bearing (estimated, 100 gpm)	11	69
Silt, blue	16	85
Clay, blue	4	89
Silt, blue	21	110

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-26E1 - Continued		
Clay, blue	28	138
Sand, fine, blue, some water	20	158
"Sandstone"	4	162
Sand, fine, blue, and clay, water-bearing	18	180
Sand, fine, blue, some clay, water-bearing	22	202
33/1-26N1. Doug Traylor & Harry Van Nieuwenhuise. Altitude 155 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 10-slot, 173-178 ft.		
Topsoil, gravelly	4	4
Hardpan, gravelly	8	12
Sand and gravel	36	48
Sand (water-level, 81 ft; yield, 4 gpm)	39	87
Clay, sandy	11	98
Clay	17	115
Clay, sandy	23	138
Clay, light-gray	10	148
Clay, sandy	11	159
Sand, water-bearing	19	178
33/1-26N2. George Dickson. Altitude 109 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 10-slot, 62-67 ft.		
Topsoil	2	2
Hardpan, gravelly	31	33
Sand, compact	16	49
Gravel, water-bearing	6	55
Hardpan	7	62
Sand, water-bearing	5	67
Clay	--	67+
33/1-27B2. G. J. Pehling. Altitude 155 ft. Drilled by Angus Scurlock, 1959. Screen, 149-159 ft.		
Gravel	9	9
Hardpan	7	16
Sand	39	55
Clay, blue	7	62
Clay, brown	10	72
Silt, brown	49	121
Sand, brown	11	132
Sand and gravel	27	159

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-27C1. R. E. Struthers. Altitude 185 ft. Dug well drilled deeper by Lambert Vander Stoep, 1961. Screen, 14-slot, 180-185 ft.		
Dug well, no log	95	95
Sand, hard	4	99
Clay	13	112
Clay, sandy	11	123
Sand, clayey, brown	56	179
Sand, clean, water-bearing	6	185
Clay, gray	--	185+
33/1-27E1. Henry Zielstra. Altitude 175 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 20-slot, 166-171 ft.		
Old well, no log	75	75
Hardpan	9	84
Clay and gravel	6	90
Hardpan, sandy	28	118
Clay, sandy	1	119
Sand, dirty	40	159
Clay	1	160
Sand and gravel	7	167
Clay	1	168
Sand and gravel	3	171
Clay	--	171+
33/1-27F1. Lowell Harrington. Altitude 198 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 20-slot, 192-197 ft; 25-slot, 197-202 ft.		
Sand, gravel, and clay	20	20
Hardpan	5	25
Sand	26	51
Clay	17	68
Sand	116	184
Sand and gravel, mixed, water-bearing	18	202
Clay	--	202+
33/1-27J1. Whidbey Island Sportsmen's Club. Altitude 275 ft. Drilled by Lambert Vander Stoep, 1964. Screen, 20-slot, 232-236 ft.		
Topsoil	--	--
Sand and gravel	--	22
Hardpan	5	27
Sand and gravel, dirty	11	38

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-27J1 - Continued		
Sand and gravel, clean	54	92
Sand, gravelly, dirty	13	105
Hardpan, soft, sandy	51	156
Clay, gray	11	167
Clay, sandy	36	203
Hardpan, sandy	12	215
Hardpan, gravelly	17	232
Sand, water-bearing	4	236
Clay, gravelly	--	236+
33/1-27J2. Victor Scheer. Altitude 215 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 10-slot, 196-200 ft.		
Topsoil	--	--
Hardpan	--	6
Sand and some gravel	54	60
Sand	65	125
Sand, fine, silty (water-level, 112 ft)	10	135
Clay, blue to gray	30	165
Sand, gradational upper contact, water-bearing below 173 ft	35	200
33/1-27L1. Bert Roodzant. Altitude 260 ft. Drilled by N. C. Jannsen, 1928.		
Topsoil	6	6
Sand and gravel	4	10
Sand, gravel, and clay	10	20
Clay and hardpan	30	50
Clay and sand	120	170
Sand	50	220
Sand, fine, water-bearing	4	224
Sand and blue clay	16	240
Clay, blue	61	301
Clay mixed with gravel and small boulders	14	315
Clay and boulders	5	320
Clay	5	325
Sand and boulders, cemented	8	333
Clay, blue	5	338
Sand, water-bearing	3	341
Clay, sandy	14	385
Clay, muddy, blue	63	418

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-27L2. Bert Roodzant. Altitude 205 ft. Drilled by Lambert Vander Stoep, 1961. Screen, 10-slot, 184-189 ft.		
Topsoil	1	1
Hardpan, gravelly to sandy	36	37
Sand, dirty	31	68
Clay, sandy, light- to dark-gray	18	86
Clay, gravelly	13	99
Sand	21	120
Clay, sandy	15	135
Clay, soft, gray	15	150
Clay, sandy	20	170
Sand, clean	13	183
Sand, dirty, water-bearing	6	189
Clay	--	189+
33/1-27M1. W. P. Powell. Altitude 210 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 30-slot, 267-269 ft.		
Gravel	4	4
Hardpan	2	6
Gravel	10	16
Sand	33	49
Clay, sandy	38	87
Clay and gravel	16	103
Sand	5	108
Gravel	9	117
Sand	18	135
Sand, clean	26	161
Clay, sandy, brown to bluish-gray; thin layers of cemented sand at 245 ft	106	267
Sand and gravel, water-bearing	2	269
Clay	--	269+
33/1-27M2. John Roodzant. Altitude 201 ft. Dug well drilled deeper by Lambert Vander Stoep, 1963. Screen, 10-slot, 147-152 ft.		
Dug well, no log	138	138
Sand and clay, fill or caved material	7	145
Sand, water-bearing	7	152
Clay	--	152+

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-28A1. Axel Hallberg. Altitude 148 ft. Drilled by N. C. Jannsen, 1930. Perforations, 140-145 ft.		
Sand and gravel, big boulder at 13 ft	13	13
Clay, blue	5	18
Gravel, cemented	4	22
Gravel and small boulders, cemented	18	40
Sand, gravel, and boulders, cemented	10	50
Sand and gravel, cemented	7	57
Gravel and small boulders, cemented	5	62
Gravel, loose	8	70
Sand and gravel	24	94
Sand, gravel, and small boulders	9	103
Sand and gravel	12	115
Sand, fine, yellow, some water	23	138
Clay, blue	4	142
"Quicksand"	3	145
Sand, hard, water-bearing	5	150
Sand	5	155
Sand and boulders	2	157
Clay, muddy, blue	21	178
Gravel, cemented	15	193
"Sandstone," hard	12	205
"Rock," hard, looks like quartz	12	217
"Rock," hard	11	228
"Rock."	20	248
"Rock," soft, black	16	264
"Rock," very hard, blue	14	278
"Rock," hard, black	88	366
33/1-28A2. Axel Hallberg. Altitude 133 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 20-slot, 112-117 ft.		
Gravel	3	3
Clay, gravelly	48	51
Hardpan	23	74
Hardpan, sandy	38	112
Sand, water-bearing	5	117
Clay	--	117+
33/1-28J1. R. R. Vaughan. Altitude 152 ft. Drilled by Lambert Vander Stoep, 1957. Screen, 14-slot, 160-165 ft.		
Clay	20	20
Clay mixed with sand and gravel	20	40
Hardpan with much gravel	10	50
Hardpan, sandy	30	80

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-28J1 - Continued		
Clay	60	140
Clay, sandy	10	150
Hardpan with much sand and gravel	5	155
Sand and gravel, water-bearing	10	165
Sand, fine	2	167
33/1-28J2. Ed Cunningham. Altitude 145 ft. Drilled by Lambert Vander Stoep, 1957. Screen, 14-slot, 235-240 ft.		
Hardpan, soft	45	45
Hardpan, gravelly	22	67
Clay and gravel	8	75
Clay, gray	50	125
Clay, blue	11	136
Hardpan	4	140
Clay	2	142
Hardpan	10	152
Clay	20	172
Sand and gravel, very hard, cemented, water-bearing	2	174
Clay, sandy, bluish-gray	15	189
Clay with cobbles	48	237
Sand, water-bearing, yields gas	3	240
Clay	--	240+
33/1-28J3. L. S. Kollmorgan. Altitude 140 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 14-slot, 102-107 ft.		
Topsoil, gravelly	5	5
Hardpan, soft	13	18
Hardpan, hard	25	43
Hardpan, soft	28	71
Clay, gravelly, brown	2	73
Sand	11	84
Clay, sandy	2	86
Sand, clayey	4	90
Sand, water-bearing	17	107
Clay	--	107+
33/1-28L1. U. S. Naval Air Sta., Rocky Point (well 1). Altitude 146 ft.		
Clay	3	3
Sand	40	43
Silt, brown	28	71

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-28L1 - Continued		
Sand, coarse	13	84
Sand, fine	16	100
Gravel, coarse to fine, and clay	16	116
Boulders and gravel, to sand and gravel, to gravel	40	156
Sand	30	186
Sand and gravel	4	190
Clay, brown, and gravel	4	194
33/1-32G1. R. P. Sullivan. Altitude 75 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 10-slot, 198-203 ft.		
Old well, no log	48	48
Hardpan	24	72
Sand, water-bearing	3	75
Clay, bluish-gray	105	180
Clay, sandy, gravelly	4	184
Clay, sandy	7	191
Clay, hard	6	197
Sand, water-bearing	6	203
33/1-32G2. William Merrick. Altitude 35 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 30-slot, 115-120 ft.		
Topsoil	--	--
Hardpan	--	10
Hardpan, very hard	30	40
Gravel (water-level, 24 ft)	1	41
Hardpan, sandy, gravelly	73	114
Sand and gravel, water-bearing	6	120
33/1-32H1. R. P. Sullivan. Altitude 80 ft. Dug well drilled deeper by Lambert Vander Stoep, 1962. Screen, 30-slot.		
Dug well, no log	31	31
Gravel	17	48
Hardpan	--	48+
33/1-32H2. R. P. Sullivan. Altitude 77 ft. Drilled by Hilton Hayes, 1962. Screen, 31-51 ft.		
Sand, loam, brown	2	2
Hardpan, sandy, tan	25	27

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-32H2 - Continued		
Gravel, fine, firm, water-bearing	3	30
Gravel, medium to coarse	21	51
33/1-32L1. T. E. Ostrom. Altitude 23 ft. Drilled by Lambert Vander Stoep, 1964. Screen, 20-slot, 64-69 ft.		
Topsoil	3	3
Clay	4	7
Hardpan, alternating soft and hard	38	45
Clay, gravelly	15	60
Hardpan, sandy	6	66
Sand, water-bearing	2	68
Hardpan, gravelly	1	69
33/1-32L2. John Blattman. Altitude 15 ft. Drilled by Lambert Vander Stoep, 1964.		
Clay, sandy	9	9
Clay	7	16
Hardpan	26	42
Hardpan, soft	11	53
Hardpan, hard	20	73
Hardpan, soft	24	97
Clay, gravelly	3	100
Hardpan, gravelly (screen, 99-103 ft; yield 1 gpm; water cloudy)	3	103
Clay, gravelly	2	105
Hardpan, sandy	5	110
Clay, gravelly	8	118
Clay, slightly sandy	5	123
Hardpan, sandy	9	132
Clay, gravelly	2	134
Hardpan	8	142
Sand and gravel, mixed, water-bearing	2	144
Hardpan	--	144+
33/1-32N1. West Beach Vista. Altitude 18 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 14-slot, 65-75 ft.		
Gravel	5	5
Hardpan, gravelly, sandy	52	57
Sand, water-bearing (water-level, 5 ft)	18	75

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-32P1. T. E. Ostrom. Altitude 10 ft. Drilled by M. C. Turley. Gravel-pack; perforations, 50-75 ft.		
Clay, sandy, with few boulders	50	50
Sand, water-bearing	25	75
33/1-33A1. Mrs. V. A. Campbell. Altitude 140 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 10-slot, 109-114 ft.		
Topsoil	3	3
Hardpan, soft	17	20
Hardpan, gravelly	5	25
Gravel, cemented layers	5	30
Hardpan, yellow	22	52
Hardpan, gravelly, sandy	19	71
Sand	43	114
33/1-33A2. Mark DeAngelo. Altitude 130 ft. Drilled by Lambert Vander Stoep, 1964. Screen, 12-slot, 99-104 ft.		
Topsoil, gravelly	2	2
Hardpan	28	30
Clay, sandy	3	33
Clay	12	45
Hardpan	10	55
Sand, dirty	28	83
Sand, clean, water-bearing	21	104
Clay	1	105
33/1-33H1. Mike Jansma. Altitude 140 ft. Dug well drilled deeper by Lambert Vander Stoep, 1959. Screen, 10-slot, 118-123 ft.		
Dug well, no log	98	98
Sand, hard	5	103
Sand, water-bearing	20	123
Sand, fine	--	123+
33/1-33H2. D. L. Honsberger. Altitude 181 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 12-slot, 156-161 ft.		
Gravel	3	3
Hardpan	19	22
Gravel	48	70

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-33H2 - Continued		
Sand	12	82
Clay	20	102
Sand	38	140
Sand, water-bearing	21	161
33/1-33P1. Harry Fakkema. Altitude 150 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 14-slot, 131-136 ft.		
Loam, sandy	3	3
Clay, sandy	68	71
Clay, yellow to gray	17	88
Clay, sandy	31	119
Clay	2	121
Sand, water-bearing	15	136
33/1-33P2. Garner. Altitude 151 ft. Dug well drilled deeper by Lambert Vander Stoep, 1962.		
Dug well, no log	112	112
Sand	23	135
33/1-33Q1. Hillcrest Village Water Co. Altitude 219 ft. Drilled by Angus Scurlock, 1956. Screen, 10-slot, 209-232 ft.		
Gravel	19	19
Hardpan and rocks	94	113
Clay, blue	7	120
Silt and mud	67	187
Clay, brown	6	193
Sand, very fine	16	209
Sand, fine, water-bearing	23	232
33/1-33Q2. Hillcrest Village Water Co. Altitude 211 ft. Drilled by Angus Scurlock, 1958. Screen, 10-slot, 197-221 ft.		
Gravel and hardpan	85	85
Silt	6	91
Clay, brown and blue	60	151
Hardpan	26	177
Clay, brown	10	187
Sand, fine, water-bearing	34	221

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-33Q3. Hillcrest Village Water Co. Altitude 202 ft. Drilled by Lambert Vander Stoep, 1961. Screen, 12-slot, 186-196 ft; 10-slot, 196-211 ft; 8-slot, 211-216 ft.		
Topsoil	2	2
Hardpan, gravelly	38	40
Clay, sandy, brown	53	93
Clay, bluish-gray	12	105
Clay, sandy, brown	15	120
Clay, yellowish-brown	28	148
Clay, sandy, with gravel	26	174
Sand, water-bearing	43	217
33/1-34E1. V. A. Campbell. Altitude 140 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 10-slot, 127-137 ft.		
Topsoil	1	1
Hardpan	16	17
Clay, sandy	18	35
Clay	15	50
Clay, sandy	10	60
Sand, clayey	36	96
Clay, sandy	11	107
Sand, water-bearing	30	137
Sand, some water	--	137+
33/1-34E2. Lambert Vander Stoep. Altitude 140 ft. Drilled by owner, 1964. Screen, 10-slot, 126-131 ft.		
No record	8	8
Hardpan	6	14
Clay, sandy	16	30
Clay	19	49
Clay, sandy	4	53
Clay	6	59
Sand, dirty	22	81
Sand	15	96
Clay, sandy	11	107
Sand, water-bearing	25	132
33/1-34F1. John Wold. Altitude 174 ft. Drilled by Lambert Vander Stoep, 1957. Screen, 8-slot, 159-169 ft.		
Topsoil, brown	3	3
Gravel	6	9
Gravel, sandy	24	33

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-34F1 - Continued		
Clay, sandy	6	39
Sand	6	45
Sand, clayey	13	58
Clay, sandy	32	90
Sand	4	94
Clay	4	98
Sand, water-bearing	71	169
33/1-34Q1. Mrs. W. R. Gardner. Altitude 151 ft. Dug well drilled deeper by Lambert Vander Stoep, 1958.		
Dug well, no log	15	15
Hardpan, sandy, to clay and sand	22	37
Clay, gray	8	45
Sand	5	50
Sand, coarse	6	56
Clay	24	80
Sand, coarse	26	106
Clay	6	112
Sand, water-bearing	19	131
33/1-35A2. L. C. Logan. Altitude 175 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 12-slot, 115-120 ft.		
Hardpan	8	8
Gravel	19	27
Gravel, dirty	18	45
Clay	4	49
Clay, sandy	14	63
Sand	16	79
Sand, clean, water-bearing below 93 ft	41	120
33/1-35B1. Max Decker. Altitude 103 ft. Dug well drilled deeper by Lambert Vander Stoep, 1957.		
Dug well, no log	46	46
No record	10	56
Hardpan, very hard, sandy, gravelly	28	84
Clay and gravel, mixed	7	91
Sand, fine, blackish-gray, water-bearing	13	104
33/1-35B2. J. B. Murray. Altitude 100 ft. Drilled by Buzz Nelson, 1963. Screen, 97-102 ft.		
Hardpan, gravelly	12	12

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-35B2 - Continued		
Hardpan, sandy	9	21
Clay, gravelly	44	65
Gravel, clean, water-bearing (4 gpm)	2	67
Clay, gravelly	4	71
Sand, water-bearing (4 gpm)	2	73
Clay, gravelly	24	97
Sand, very fine, water-bearing	5	102
Clay	--	102+
33/1-35B3. Ben Rohaar. Altitude 60 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 25-slot, 24-29 ft; 20-slot, 29-34 ft.		
Clay, sandy	3	3
Hardpan	4	7
Clay and gravel	7	14
Hardpan	9	23
Gravel, water-bearing	11	34
Clay	--	34+
33/1-35B4. Barney Barnard. Altitude 135 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 8-slot, 125-135 ft.		
Old well, no log	46	46
Hardpan	46	92
Hardpan, sandy	8	100
Sand, some gravel (water-level, 70 ft; yield, 1 gpm)	6	106
Sand with clay streaks	8	114
Clay	7	121
Sand, fine, water-bearing	14	135
33/1-35B5. Richard Hartman. Altitude 117 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 14-slot, 86-91 ft; 12-slot, 91-96 ft.		
Gravel	3	3
Hardpan, with hard and soft sandy layers	72	75
Clay, sandy	11	86
Sand, water-bearing	10	96
Clay	--	96+

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-35D1. Charles Aus. Altitude 105 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 8-slot, 135-146 ft.		
Topsoil and sandy hardpan	25	25
Sand, water-bearing	2	27
Hardpan, hard, sandy	11	38
Clay, sandy	1	39
Hardpan	46	85
Clay	2	87
Sand, water-bearing	3	90
Sand, clayey	2	92
Clay	2	94
Sand, very fine	13	107
Clay	19	126
Sand, water-bearing	20	146
33/1-35E1. John Hoffelt. Altitude 99 ft. Drilled by Lambert Vander Stoep, 1957. Screen, 20-slot, 152-157 ft.		
Old well, no log (water-level, 31 ft)	36	36
Hardpan, sandy	44	80
Hardpan, soft, clayey	6	86
Hardpan, hard	21	107
Sand, water-bearing	1	108
Hardpan, much gravel (water-level, 52 ft)	8	116
Sand and gravel (open-hole, 112-117 ft; yield, 4 gpm)	1	117
Hardpan	7	124
Sand and gravel, cemented	1	125
Hardpan	27	152
Sand, coarse, and gravel; water-bearing	5	157
33/1-35E2. R. C. Carder. Altitude 77 ft. Drilled by Lambert Vander Stoep, 1957.		
No record	5	5
Hardpan, sandy	10	15
Hardpan, gravelly	15	30
Hardpan, sandy	8	38
Silt, sandy, and some gravel (screen, 10-slot; yield, 2 gpm)	3	41
Gravel, cemented	1	42
Hardpan, sandy	38	80
Sand, fine to coarse, poorly sorted, water-bearing (water-level, 36 ft)	1	81
Clay	2	83
Silt, sandy	6	89
Clay	2	91
Hardpan	20	111
Sand, fine, water-bearing	2	113

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-35E2 - Continued		
Clay with gravel	6	119
Clay, sandy	11	130
Sand, water-bearing	2	132
Clay, brown	3	135
Clay, gray, with gravel	6	141
Sand, water-bearing	1	142
Clay, brown	1	143
Clay, gray, with gravel	2	145
Sand, water-bearing	1	146
Gravel with clay	1	147
Sand and gravel (screen, 14-slot, 145-150 ft; water-level, 45 ft; yield, 5 gpm, drawdown 9 ft)	3	150
Clay, sand, and silt, in thin layers, with some gravel	19	169
33/1-35E3. R. C. Carder. Altitude 77 ft. Drilled by Lambert Vander Stoep, 1957. Open-hole, 36-44 ft.		
Topsoil and gravelly hardpan	6	6
Hardpan, hard, sandy, gravelly	25	31
Gravel, cemented	13	44
33/1-35E4. R. C. Carder. Altitude 77 ft. Drilled by Lambert Vander Stoep, 1957. Screen, 14-slot, 27-32 ft.		
Topsoil, gravelly	6	6
Hardpan and sand	12	18
Hardpan, gravelly	10	28
Sand, silty, water-bearing	4	32
Hardpan	6	38
Sand	2	40
Hardpan	10	50
33/1-35E5. Irvin Faber. Altitude 73 ft. Dug well drilled deeper by Lambert Vander Stoep, 1957. Screen, 14-slot, 35-40 ft.		
Hardpan	37	37
Sand, water-bearing	3	40
33/1-36A1. Henry Mouw. Altitude 30 ft. Dug well drilled deeper by Lambert Vander Stoep, 1958.		
Dug well, no log	12	12
Hardpan, sandy	23	35

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-36A1 - Continued		
Hardpan, gravelly	3	38
Hardpan, sandy	21	59
Sand and silt, water-bearing	9	68
33/1-36D1. Island County Cemetery District 1. Altitude 182 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 14-slot, 243-253 ft.		
Topsoil, gravelly	2	2
Hardpan	6	8
Hardpan, soft, sandy	110	118
Sand and gravel	6	124
Sand, water-bearing	21	145
Clay, sandy	21	166
Sand, water-bearing	10	176
Clay, sandy	21	197
Sand, fine, water-bearing	12	209
Sand, hard, gravelly	9	218
Clay, sandy	10	228
Sand, water-bearing	25	253
Sand, some water	--	253+
33/1-36N1. Town of Oak Harbor (well 5). Altitude 171 ft. Drilled by Layne Boulder, 1943.		
Topsoil	2	2
Sand, hard, dry, and boulders	10	12
Sand, fine, gray	14	26
Sand, coarse, gray	66	92
Sand and gravel, coarse, gray	20	112
"Clay-shale," sandy, bluish-gray	10	122
Sand and boulders, hard, gray	41	163
Sand, hard, fine, gray	10	173
Sand, coarse, compact, water-bearing	55	228
Sand, fine and coarse, compact, water-bearing	49	277
"Clay-shale," blue	26	303
33/1-36P1. U. S. Naval Air Sta. (well 2). Altitude 125 ft. Drilled in 1942.		
Loam and topsoil	2	2
Clay	38	40
Sand	40	80
"Quicksand," water-bearing	16	96
Clay, sandy	14	110
"Quicksand"	9	119

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/1-36P1 - Continued		
Clay	13	132
"Quicksand," water-bearing (31 gpm)	5	137
Sand, medium to coarse	8	145
Clay	13	158
"Quicksand," water-bearing (208 gpm)	23	181
Sand, coarse, and gravel; water-bearing	7	188
33/1-36P2. U. S. Naval Air Sta. (well 2a). Altitude 122 ft.		
Clay	36	36
Sand and gravel	8	44
"Quicksand," water-bearing	23	67
Clay	16	83
Sand and some clay, water-bearing	102	185
33/2-5C1. Delmon Anderson. Altitude 240 ft. Drilled by Lambert Vander Stoep, 1956. Screen, 10-slot, 155-160 ft.		
Gravel	5	5
Hardpan	9	14
Clay	46	60
Sand	28	88
Clay, yellow	7	95
Sand	15	110
Gravel	10	120
Clay, brown	5	125
Gravel	20	145
Sand	15	160
35/2-6D2. Ed Armstrong. Altitude 354 ft. Dug well drilled deeper by N. C. Jannsen, 1930.		
Dug well, no log	102	102
Clay, white	10	112
Clay, hard, white, mixed with gravel	15	127
Clay, hard, mixed with gravel and sharp sand	15	142
Sand, sharp, yellow	53	195
Sand, coarse, light- to dark-yellow	6	201
Sand, sharp, black, and fine gravel	11	212
Sand and gravel	14	226
Gravel, coarse, clean	14	240
Gravel and some clean sand	15	255
Sand, coarse, water-bearing	11	266
"Quicksand," water-bearing	6	272

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/2-7D1. Robert Lane. Altitude 288 ft. Drilled by Lambert Vander Stoep, 1956. Screen, 20-slot, 211-216 ft.		
Old well, mostly gravel	72	72
Gravel	4	76
Sand	26	102
Sand, coarse	32	134
Clay	3	137
Sand	8	145
Clay, brown to blue	23	168
Hardpan, with thin layers of sand and gravel	10	178
Sand and gravel, water-bearing below 199 ft.	38	216
Clay	--	216+
33/2-7E1. John Henni. Altitude 203 ft. Drilled by Lambert Vander Stoep, 1957. Screen, 134-139 ft.		
Clay, sandy, brown	14	14
Clay, gray	4	18
Clay, sandy, brown	2	20
Sand, clean	46	66
Clay, sandy	14	80
Clay, very sandy, gray	10	90
Hardpan, gravelly	28	118
Gravel, water-bearing	21	139
33/2-7J1. Ann Wier. Altitude 35 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 30-slot, 42-47 ft.		
Topsoil	2	2
Gravel	6	8
Humus and mud	14	22
Clay	8	30
Clay, sandy	5	35
Sand, water-bearing	2	37
Gravel, yields water with high iron content	10	47
Clay, soft, gray	133	180
33/2-7J2. Joe Hallberg. Altitude 110 ft. Drilled by Lambert Vander Stoep, 1964. Screen, 14-slot, 34-39 ft.		
Gravel, loose	3	3
Hardpan, gravelly	10	13
Gravel, loose	11	24
Sand, water-bearing	15	39

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/2-7K1. Marion Christensen. Altitude 77 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 14-slot, 71-76 ft.		
Topsoil and dirty gravel	22	22
Clay	3	25
Clay, sandy	11	36
Clay, sandy, contains much peat	10	46
Clay	19	65
Sand, water-bearing	11	76
33/2-8E1. Van Rooy. Altitude 75 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 30-slot, 31-36 ft.		
Gravel	5	5
Clay, sandy	4	9
Sand	1	10
Hardpan, hard	14	24
Sand and gravel, water-bearing	12	36
33/2-17G1. S. M. & K. J. Ducken. Altitude 80 ft. Dug by owner, 1961.		
Topsoil	2	2
Sand and gravel, mixed	2	4
Clay, hard, and gravel	8	12
Sand, fine, clean, water-bearing	20	32
33/2-17K1. Hilbert Christensen. Altitude 290 ft. Drilled by Lambert Vander Stoep, 1961. Screen, 30-slot, 56-61 ft.		
Gravel, to gravelly hardpan	56	56
Gravel, water-bearing	3	59
Clay, sandy	12	71
33/2-17R1. Wayne Chapman. Altitude 390 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 14-slot, 310-320 ft.		
Topsoil	1	1
Hardpan	17	18
Clay	32	50
Sand grading to gravel	20	70
Gravel	111	181
Clay, gravelly	16	197

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/2-17R1 - Continued		
Clay, sandy	6	203
Sand, brown, water-bearing below 232 ft	37	240
Clay	7	247
Clay, sandy	19	266
Sand, clayey	20	286
Sand, water-bearing	34	320
Sand, very fine	--	320+
33/2-18F1. C. W. Everson. Altitude 65 ft. Drilled by Lambert Vander Stoep, 1964. Screen, 20-slot, 79-84 ft.		
Topsoil	1	1
Clay, sandy	33	34
Clay	12	46
Clay, sandy	24	70
Sand, dirty	5	75
Gravel, water-bearing	9	84
33/2-18F2. Midge Waniski. Altitude 60 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 20-slot, 70-75 ft.		
Old well, no log	10	10
Peat and clay	50	60
Sand, brown to gray, water-bearing	11	71
Sand and gravel, water-bearing	2	73
Sand, water-bearing	2	75
33/2-19A1. Frank Shughart. Altitude 365 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 14-slot, 277-282 ft.		
Topsoil	2	2
Hardpan, sandy	8	10
Hardpan, gravelly	61	71
Hardpan, sandy, some water	4	75
Clay	21	96
Hardpan	7	103
Gravel	66	169
Clay, sandy	49	218
Clay, yellow	36	254
Clay, sandy, brown and gray	10	264
Sand, water-bearing	18	282

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/2-19C1. Paul Faranda. Altitude 280 ft. Drilled by Lambert Vander Stoep, 1964. Screen, 14-slot, 200-210 ft.		
Topsoil	2	2
Hardpan	24	26
Cobbles	8	34
Hardpan, soft	26	60
Hardpan, hard	40	100
Hardpan, sandy	15	115
Sand	65	180
Clay, sandy	17	197
Sand, water-bearing (screen, 212-217 ft; yield, 5 gpm; water, yellow)	22	219
Clay, sandy	29	248
Clay	4	252
Clay, sandy	53	305
33/2-19K1. Ed Samonia. Altitude 225 ft. Drilled by N. C. Jannsen, 1929.		
Hardpan, cemented, gravel and boulders	22	22
Sand, some water	3	25
Sand, boulders, and gravel	7	32
Gravel and boulders, cemented	10	42
Gravel, cemented, some sand, and boulders	28	70
Sand, gravel, and small rocks	10	80
Gravel, cemented, and boulders	5	85
Sand and gravel, cemented	5	90
Gravel and boulders	2	92
Sand and gravel	10	102
Sand, gravel, and boulders	16	118
Clay	7	125
"Shale," sandy	3	128
Gravel, cemented	27	155
"Quicksand"	50	205
33/2-19Q1. George Pittam. Altitude 179 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 30-slot, 100-105 ft.		
Topsoil	2	2
Hardpan	85	87
Sand, water-bearing (water-level, 80 ft)	5	92
Hardpan	5	97
Gravel, water-bearing	8	105
Hardpan	--	105+

Table 11 -Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/2-19R1. Harry Balda. Altitude 260 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 14-slot, 73-178 ft.		
Topsoil	3	3
Sand	3	6
Clay	5	11
Hardpan	2	13
Hardpan, sandy	12	25
Hardpan, sandy to gravelly	19	44
Gravel	8	52
Hardpan, gravelly	10	62
Gravel	10	72
Clay, sandy	10	82
Sand, coarse	32	114
Clay, sandy	6	120
Sand, fine (water-level, 99 ft)	2	122
Clay, gray	9	131
Clay, sandy, gray, yellow, and green; peat at 143 ft	30	161
Sand, fine to coarse, water-bearing	17	178
33/2-20B1. Hubert Bogue. Altitude 347 ft. Drilled by Lambert Vander Stoep, 1958.		
Old well, no log	28	28
Hardpan, sandy	6	34
No record	20	54
Hardpan, very hard	3	57
No record	7	64
Gravel, water-bearing (3 gpm)	5	69
Hardpan	18	87
Clay	2	89
Hardpan, sandy	31	120
Clay	30	150
Sand	44	194
Clay, yellow	13	207
Clay, green	17	224
Clay, yellow; sand streaks	4	228
Clay, sandy, yellow	17	245
Sand, water-bearing	15	260
33/2-20D1. Chambers. Altitude 352 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 14-slot, 260-266 ft.		
Old well, no log	114	114
Gravel, loose	--	--
Hardpan	--	141
Gravel, loose	7	148

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/2-20D1 - Continued		
Gravel, sandy	4	152
Clay, yellow	3	155
Sand, brown	29	184
Clay, sandy	5	189
Clay, yellowish-brown	37	226
Clay, sandy	2	228
Clay	6	234
Clay, very sandy	12	246
Clay, sandy, coarse	1	247
Sand, water-bearing	19	266
33/2-20E1. Walt Taylor. Altitude 360 ft. Drilled by Angus Scurlock, 1954. Screen, 10-slot, 208-218 ft.		
Hardpan and rocks	186	186
Silt, some water	8	194
Sand, fine, water-bearing	24	218
33/2-20M1. W. E. Warren. Altitude 350 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 10-slot, 206-211 ft.		
Topsoil	1	1
Hardpan	7	8
Hardpan, sandy	18	26
Clay, sandy	13	39
Sand, fine	20	59
Gravel	11	70
Hardpan with much gravel	8	78
Gravel	80	158
Clay	3	161
Sand	51	212
Clay	--	212+
33/2-20N1. H. E. Evans. Altitude 263 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 12-slot, 128-133 ft.		
Topsoil, gravelly	4	4
Hardpan, hard	2	6
Hardpan, sandy	6	12
Hardpan, hard	18	30
Gravel	40	70
Clay, sandy	9	79
Sand, clayey	48	127
Sand, clean, water-bearing	6	133

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/2-20N2. Louis Mataczynski. Altitude 283 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 10-slot, 132-137 ft.		
Gravel	6	6
Hardpan	2	8
Clay, sandy	7	15
Hardpan	7	22
Sand and gravel, mixed	52	74
Clay	8	82
Sand	8	90
Clay, sandy	6	96
Sand	32	128
Sand, water-bearing	10	138
Clay	--	138+
33/2-21M1. Bernard Nienhuis. Altitude 386 ft. Drilled by Lambert Vander Stoep, 1956. Screen, 10-slot, 227-232 ft.		
Old well, no log	65	65
Sand	5	70
Hardpan with gravel	25	95
Clay, yellow	85	180
Sand, yellowish-brown	35	215
Sand, medium, brown, water-bearing	17	232
Clay, blue	--	232+
33/2-26C1. Don Davis. Altitude 70 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 14-slot, 50-55 ft.		
Topsoil	--	--
Clay, sandy	--	25
Sand	11	36
Clay, gray	12	48
Sand and clay, brown	2	50
Sand and some clay	2	52
Sand, water-bearing	3	55
Clay, blue	--	55+
33/2-28C2. Don Davis. Altitude 15 ft. Drilled by Lambert Vander Stoep, 1959.		
Clay	5	5
Clay, gravelly	2	7
Clay, blue	31	38

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/2-28C2 - Continued		
Clay, hard, slightly sandy	16	54
Clay, soft, blue	106	160
33/2-26D1. McLean. Altitude 90 ft. Drilled by Lambert Vander Stoep, 1959. Screen, 94-99 ft.		
Gravel	2	2
Clay	13	15
Hardpan	15	30
Clay, sandy	10	40
Clay, sandy, to mostly sand	25	65
Sand, clean	8	73
Sand, water-bearing	26	99
Clay	--	99+
33/2-26P1. Carol Borgman. Altitude 180 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 20-slot, 76-81 ft.		
Clay, hard	28	28
Hardpan	42	70
Gravel, water-bearing	1	71
Hardpan	1	72
Gravel, water-bearing	9	81
33/2-26R1. Albert Carlson. Altitude 156 ft. Drilled by Angus Scurlock, 1957. Screen, 14-slot, 102-107 ft.		
Hardpan and rocks	103	103
Gravel, water-bearing	4	107
33/2-27E1. Harold Seligmiller. Altitude 455 ft. Drilled by Lambert Vander Stoep, 1964. Screen, 12-slot, 269-274 ft.		
Sand	12	12
Cobbles	2	14
Sand and gravel	7	21
Sand, dirty	63	84
Clay	20	104
Clay, sandy	17	121
Gravel, dirty	123	244
Clay, sandy	13	257
Gravel, sandy, water-bearing	15	272
Sand, water-bearing	2	274

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/2-27Q1. McDonald. Altitude 440 ft. Drilled by Lambert Vander Stoep, 1959.		
Gravel and hardpan	6	6
Clay, sandy	4	10
Sand, water-bearing	30	40
Sand, hard	16	56
Clay, sandy	8	64
Sand, water-bearing	20	84
Sand, fine, water-bearing	--	84+
33/2-27R1. Scully. Altitude 373 ft. Drilled by Lambert Vander Stoep, 1962.		
Sand	19	19
Clay, sandy	18	37
Clay	4	41
Clay, sandy	13	54
Clay, gravelly	1	55
Gravel, clean	39	94
Clay with gravel	4	98
Gravel, clean	2	100
33/2-28D1. R. R. Lander. Altitude 340 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 10-slot, 188-193 ft.		
Topsoil, gravelly	4	4
Hardpan	60	64
Sand and gravel, dirty	2	66
Hardpan	13	79
Sand and gravel	52	131
Clay, sandy	11	142
Clay	13	155
Clay, sandy	13	168
Sand, coarse grading downward to fine, water-bearing	25	193
33/2-29M1. Chuck Bos. Altitude 190 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 12-slot, 171-174 ft.		
Topsoil, gravelly	--	--
Clay	--	8
Clay, sandy	14	22
Hardpan	55	77
Sand and gravel (water-level, 71 ft)	1	78
Hardpan, gravelly to sandy	49	127
Clay, with gravel layers	44	171
Sand, water-bearing	3	174

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/2-29N1. R. L. Dickey. Altitude 165 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 20-slot, 73-78 ft.		
Topsoil	--	--
Clay	--	6
Clay, sandy	8	14
Hardpan	14	28
Gravel, very clean	12	40
Sand and gravel, mixed	2	42
Hardpan, sandy	5	47
Gravel with clay	9	56
Sand and gravel, dirty	1	57
Hardpan, gravelly	13	70
Sand and gravel, mixed, water-bearing	8	78
33/2-30A1. Roy Hoffman. Altitude 248 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 12-slot, 163-168 ft.		
Old well, no log	31	31
Hardpan, hard	19	50
Hardpan, soft	10	60
Hardpan, hard	16	76
Sand, water-bearing below 90 ft	18	94
Clay, sandy, brown	25	119
Clay, sandy, blue, with clay layers	21	140
Sand and gravel, water-bearing	3	143
Sand, medium to fine, poorly sorted, water-bearing (screen, 10-slot, 141-146 ft; yield, 5 gpm, drawdown 20 ft)	3	146
Clay	12	158
Sand, water-bearing	10	168
Sand, some water	--	168+
33/2-30A2. Bill Winters. Altitude 250 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 12-slot, 112-117 ft.		
Topsoil, sandy	4	4
Hardpan, gravelly, soft and hard layers	34	48
Hardpan, soft	6	44
Hardpan	51	95
Clay	3	98
Gravel and hardpan	13	111
Sand, water-bearing	6	117
Clay	--	117+

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/2-30A3. Woodworth. Altitude 251 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 14-slot, 162-167 ft.		
Topsoil, gravelly to sandy	8	8
Hardpan, hard	2	10
Hardpan, soft, sandy	20	30
Hardpan, gravelly	5	35
Hardpan, soft	7	42
Hardpan, gravelly	8	50
Clay, sandy	25	75
Sand, clayey	13	88
Clay, sandy	2	90
Clay, yellow to blue	7	97
Clay, sandy, to blue clay	32	129
Sand, fine	3	132
Sand, coarse (screen, 12-slot, 130-135 ft; yield 2 gpm)	3	135
Clay, gray with green streaks	24	159
Sand, water-bearing	8	167
33/2-30C1. Al Hills. Altitude 150 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 30-slot, 59-64 ft.		
Old well, no log	45	45
Sand and silt	3	48
Hardpan	11	59
Gravel, water-bearing	5	64
Hardpan	--	64+
33/2-30D1. F. C. Dempsey. Altitude 120 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 25-slot, 36-41 ft.		
Topsoil	3	3
Clay, gravelly	33	36
Sand, water-bearing	5	41
Clay	--	41
33/2-30D2. Joe Schrindel. Altitude 130 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 10-slot, 120-125 ft.		
Topsoil and gravel	4	4
Clay and gravel, mixed	10	14
Hardpan, gravelly	15	29
Clay	1	30
Hardpan	28	58

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/2-30D2 - Continued		
Sand, dirty	1	59
Hardpan	11	70
Sand, dirty	1	71
Hardpan with several thin sand layers	31	102
Clay	12	114
Sand, water-bearing	11	125
33/2-30E1. A. B. Sheppard. Altitude 118 ft. Drilled by Lambert Vander Stoep, 1961. Screen, 12-slot, 103-108 ft.		
Topsoil, gravelly	3	3
Hardpan, gravelly	7	10
Sand, dirty	8	18
Hardpan	36	54
Gravel, dirty	21	75
Clay, bluish-gray	18	93
Clay, sandy	3	96
Sand and some clay, water-bearing	4	100
Sand, clean, water-bearing	8	108
33/2-30H1. G. V. Cook. Altitude 210 ft. Drilled by Lambert Vander Stoep, 1956.		
Old well, no log (water-level, 51 ft)	85	85
Hardpan, gravelly	2	87
Hardpan, sandy	14	101
Hardpan, gravelly	3	104
Gravel, loose	1	105
Sand and gravel	5	110
Clay, gray	2	112
Hardpan	10	122
Clay, sandy	18	140
Clay	35	175
Sand, water-bearing	5	180
33/2-30H2. Arlan Cook. Altitude 235 ft. Drilled by Lambert Vander Stoep, 1961; deepened, 1963. Screen, 14-slot, 199-204 ft.		
Sand	20	20
Hardpan	25	45
Hardpan, soft	9	54
Clay	3	57
Hardpan, alternate soft and hard layers	68	125
Clay, sandy	34	159

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/2-30H2 - Continued		
Sand, water-bearing; clay at 16 ft (water-level, 106 ft; yield, 6 gpm)	4	163
Clay, sandy	17	180
Sand, fine grading to coarse, water-bearing	15	195
Sand, coarse, water-bearing	9	204
33/2-30J1. Erling Frostad. Altitude 180 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 20-slot, 230-234 ft.		
Topsoil	1	1
Hardpan	57	58
Clay	5	63
Hardpan	35	98
Hardpan, clayey	37	135
Hardpan, sandy	10	145
Hardpan, soft	13	158
Clay, sandy	12	170
Sand, dirty, muddy	4	174
Clay with few gravel layers	21	195
Clay, sandy	33	228
Gravel, fine, water-bearing	6	234
33/2-31D1. D. L. Gordon. Altitude 50 ft. Drilled by Lambert Vander Stoep, 1963. Screen, 14-slot, 55-60 ft.		
Topsoil	2	2
Hardpan	23	25
Sand	19	44
Sand, dirty	12	56
Sand, water-bearing	4	60
33/2-31D2. Lola Park. Altitude 75 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 10-slot, 80-85 ft.		
Topsoil	2	2
Hardpan; thin water-bearing layer at 31 ft	36	38
Hardpan, sandy, water-bearing	14	52
Hardpan	10	62
Hardpan, soft	6	68
Hardpan, hard	1	69
Sand, water-bearing	16	85

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
33/2-35A1. Youngblood. Altitude 170 ft. Drilled by Lambert Vander Stoep, 1961. Screen, 30-slot, 126-131 ft.		
Clay	13	13
Hardpan, gravelly to sandy	42	55
Sand, clayey	4	59
Clay, sandy towards bottom	8	67
Hardpan	51	118
Gravel, water-bearing	13	131
33/2-35R1. Alma Matsen. Altitude 170 ft. Drilled by Lambert Vander Stoep, 1960. Screen, 20-slot, 175-180 ft.		
Topsoil	2	2
Clay, hard, brown, with sand and gravel	13	15
Sand, some clay, and gravel	39	54
Clay, sandy, gray	117	171
Sand, water-bearing	9	180
34/1-35F2. Deception Pass State Park. Altitude 45 ft. Drilled by N. C. Jannsen, 1933. Gravel-pack, 52-150 ft; screen, 52-74 ft.		
Clay and gravel	3	3
Hardpan	20	23
Clay and gravel	12	35
Sand and gravel, water-bearing	23	58
Sand, water-bearing	12	70
Sand and gravel	20	90
Gravel and clay	5	95
Clay, muddy, blue	10	105
Clay, sandy	7	112
Gravel, hard, and clay	8	120
Gravel, clay, and sand	4	124
Clay	26	150
34/1-35F3. Deception Pass State Park. Altitude 27 ft. Drilled by L. R. Gaudio, 1961. Screen, 30-slot, 79-85 ft; 15-slot, 96-112 ft.		
Topsoil	5	5
Sand and gravel, water-bearing	8	13
Clay, silty, bluish-gray, with some gravel	19	32
Silt, clayey, bluish-gray, with some sand and gravel	47	79
Sand and gravel, water-bearing	4	83
Sand and gravel, cemented	16	99

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
34/1-35F3 - Continued		
Sand and gravel, water-bearing, some silty, tight, layers	13	112
Silt, clayey, with some sand and gravel	18	130
Clay with some gravel	3	133
Hardpan with boulders	12	145
34/1-35G1. Nordland. Altitude 48 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 14-slot, 102-107 ft.		
Rocks, large	12	12
Sand	9	21
Hardpan, sandy	12	33
Clay, gravelly	3	36
Clay, sandy	24	60
Sand and gravel, water-bearing	1	61
Clay and gravel, mixed	19	80
Sand and gravel, water-bearing (2 gpm)	2	82
Clay and gravel, mixed	20	102
Sand (water-level, 26 ft; yield, 15 gpm)	5	107
Hardpan, very hard	--	107+
34/1-35K1. Harry Walters. Altitude 115 ft. Drilled by Lambert Vander Stoep, 1958. Screen, 30-slot, 146-150 ft.		
Gravel	4	4
Hardpan, gravelly	16	20
Hardpan, sandy	15	35
Clay	1	36
Hardpan, sandy, gray	12	48
Hardpan, sandy, brown	2	50
Clay	1	51
Sand, fine, gray	11	62
Clay	5	67
Clay, sandy	33	100
Clay	18	118
Sand, very fine, water-bearing	2	120
Clay, soft, blue	17	137
Clay, hard, gray	6	143
Clay, soft, sandy	3	146
Gravel, water-bearing	2	148
Gravel and clay, peat	2	150

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
34/1-36B1. Bill Thueson. Altitude 65 ft. Drilled by Lambert Vander Stoep, 1961. Screen, 8-slot, 169-174 ft.		
Sand	10	10
Hardpan	6	16
Sand and gravel	5	21
Clay, sandy	33	54
Clay with gravel	94	148
Sand, water-bearing	1	149
Clay, sandy	20	169
Sand, water-bearing	5	174
34/1-36M1. Harlan Baker. Altitude 220 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 14-slot, 122-127 ft.		
Topsoil	--	--
Clay	--	6
Hardpan, gravelly to sandy	51	57
Sand	5	62
Hardpan, gravelly	29	91
Hardpan, sandy	4	95
Sand, clayey	22	117
Sand, water-bearing	10	127
Clay	--	127+
34/2-32E1. N. H. Koetje. Altitude 150 ft. Drilled by Lambert Vander Stoep, 1961. Screen, 20-slot, 54-59 ft.		
Sand and gravel	20	20
Hardpan, gravelly	17	37
Sand and gravel, water-bearing	22	59
Clay	--	59+
34/2-32P1. T. L. Graf. Altitude 240 ft. Drilled by Lambert Vander Stoep, 1962. Screen, 30-slot, 241-246 ft.		
Topsoil	2	2
Hardpan	91	93
Hardpan, sandy	20	113
Hardpan, gravelly	14	127
Clay with some sandy layers	63	190
Sand and gravel, mixed	30	220
Clay	1	221

Table 11 - Drillers' logs of representative wells, Whidbey Island - Cont.

Materials	Thickness (feet)	Depth (feet)
34/2-32P1 - Continued		
Clay, sandy	7	228
Sand and gravel, clean	7	235
Gravel, water-bearing	11	246
Clay	--	246+

Table 12 - Data from pumping test of Ault Field well 4 (33/1-22C1), Sept. - Oct. 1964 a/

Date	Hour	Hours and minutes pumped	Water-level below land surface (ft)	Drawdown (ft)
9-28	1029	0:00	39.2	0.0
	1030	Pump started		
	1315	2:45	44.1	4.9
	1620	5:50	44.0	4.8
	2120	10:50	44.2	5.0
9-29	1845	32:15	44.5	5.3
9-30	1830	56:00	44.6	5.4
10-1	2215	83:45	45.0	5.8
10-2	1840	104:10	45.2	6.0
10-3	1845	128:15	45.8	6.6
10-4	1825	151:55	45.7	6.5
10-5	1830	176:00	45.8	6.6
10-6	1845	200:15	45.7	6.5
10-7	1830	224:00	45.7	6.5
10-8	1300	Pump stopped		

a/ Pumping rate about 175 gpm.