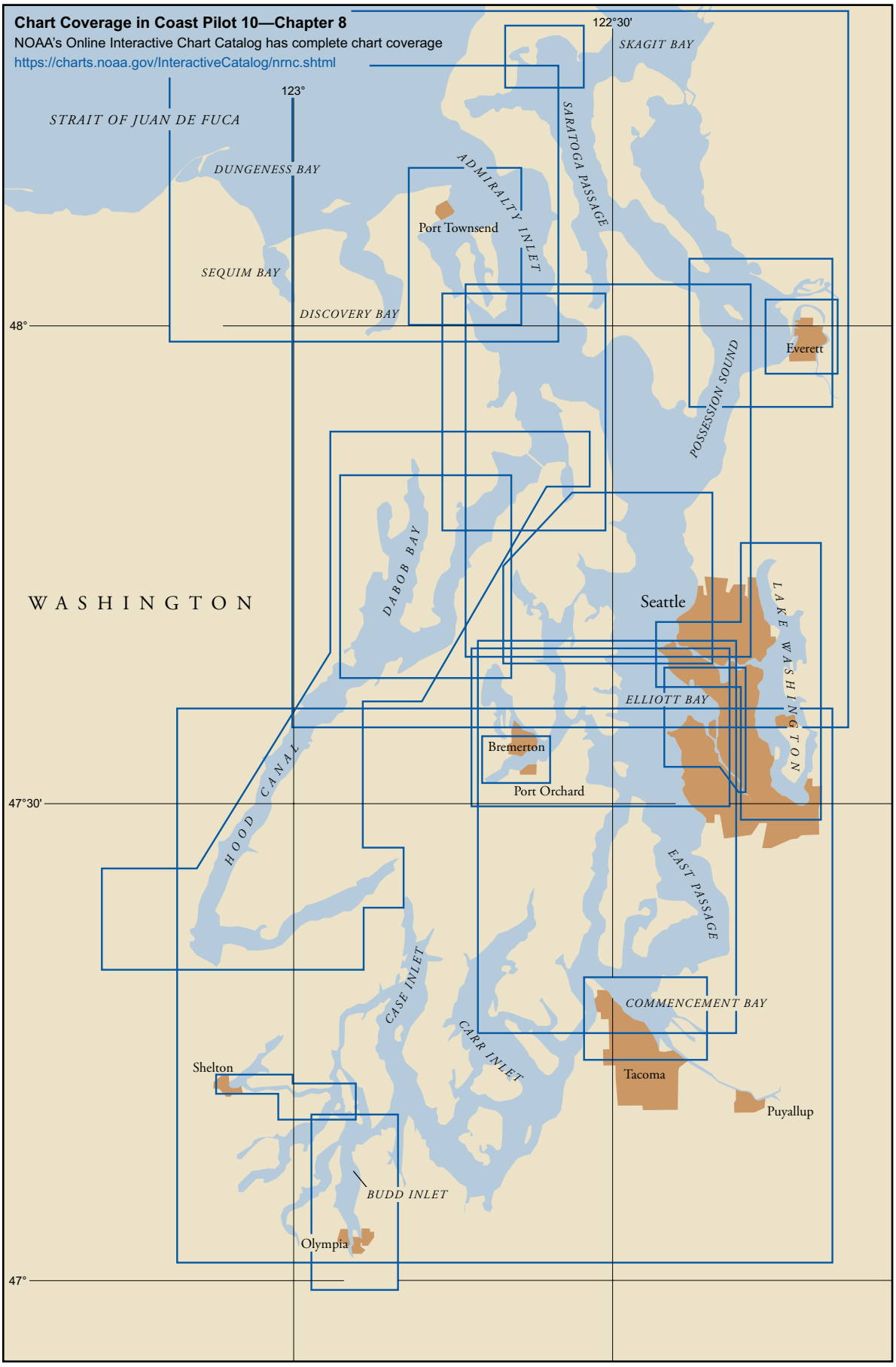
Chart Coverage in Coast Pilot 10—Chapter 8
NOAA's Online Interactive Chart Catalog has complete chart coverage
https://charts.noaa.gov/InteractiveCatalog/nrnc.shtml
122°30'
123°
48°
47°30'
47°
STRAIT OF JUAN DE FUCA
DUNGENESS BAY
SEQUIM BAY
DISCOVERY BAY
ADMIRALTY INLET
SARATOGA PASSAGE
SKAGIT BAY
Port Townsend
Everett
POSSESSION SOUND
WASHINGTON
DABOB BAY
Seattle
LAKE WASHINGTON
ELLIOTT BAY
Bremerton
Port Orchard
HOOD CANAL
EAST PASSAGE
CASE INLET
CARR INLET
COMMENCEMENT BAY
Shelton
Tacoma
Puyallup
BUDD INLET
Olympia

Puget Sound, Washington

(1) This chapter describes Puget Sound and its numerous inlets, bays and passages and the waters of Hood Canal, Lake Union and Lake Washington. Also discussed are the ports of Seattle, Tacoma, Everett and Olympia, as well as other smaller ports and landings.

(2)

COLREGS Demarcation Lines

(3) The International Regulations for Preventing Collisions at Sea, 1972 (72 COLREGS) apply on all the waters of Puget Sound and adjacent waters, including Lake Union, Lake Washington, Hood Canal and all tributaries. (See **33 CFR 80.1395**, chapter 2.)

(4)

Puget Sound

(5) **Puget Sound**, a bay with numerous channels and branches, extends about 90 miles south from the Strait of Juan de Fuca to Olympia. The north boundary of the sound is formed, at its main entrance, by a line between Point Wilson on the Quimper Peninsula and Point Partridge on Whidbey Island; at a second entrance between West Point on Whidbey Island, Deception Island and Sares Head on Fidalgo Island; at a third entrance, at the south end of Swinomish Channel between Fidalgo Island and McGlinn Island. Puget Sound was named by George Vancouver for Lieutenant Peter Puget, who explored the south end in May 1792. Deep-draft traffic is considerable in the larger passages, and small craft operate throughout the area. Unusually deep water and strong currents characterize these waters.

(6) Navigation of the area is comparatively easy in clear weather; the outlying dangers are few and marked by aids. The currents follow the general direction of the channels and have considerable velocity. In thick weather, because of the uncertainty of the currents and the great depths that render soundings useless in many places, strangers are advised to take a pilot.

(7) The **Marine Exchange of Puget Sound**, located in Seattle, has a Vessel Monitoring/Vessel Reporting service that tracks the arrival of a vessel from a time prior to arrival at the pilot station to a berth at one of the Puget Sound ports. Constant updates of the ship's position and estimated time of arrival are maintained through a variety of sources. This information is available to and is passed to the vessel's agents and to other interested activities. These services continue until the vessel passes the pilot station on her outbound voyage.

(8) Other services offered by the Marine Exchange include a daily newsletter about future marine traffic in the Puget Sound area, communication services, and a variety of coordinative and statistical information. The office monitors VHF-FM channels 20 for Grays Harbor traffic, 9 for Strait of Juan de Fuca traffic to Protection Island, and 20 for Puget Sound traffic from Protection Island, 24 hours a day. The Marine Exchange may also be contacted by phone, 206–443–3830 or toll free 800–562–2856.

(9) **Vessel Traffic Service Puget Sound**, operated by the U.S. Coast Guard, has been established in the waters of the Strait of Juan de Fuca, Rosario Strait, Admiralty Inlet, Puget Sound and the navigable waters adjacent to these areas. (See **33 CFR 161.1** through **161.23** and **161.55**, chapter 2, for regulations, and the beginning of chapter 7 for additional information.)

(10) The **U.S. Coast Guard** and the **Puget Sound Harbor Safety Committee** have developed and adopted a Harbor Safety Plan that formally establishes a set of Standards of Care for Puget Sound and surrounding waters. The standards and protocols contained in the **Puget Sound Harbor Safety Plan** complement and supplement existing federal, state and local laws. The Harbor Safety Plan is not intended to take the place of or otherwise intended to replace the good judgment of a ship's master in the safe operation of his/her vessel. These standards and protocols were developed and adopted by local experts for ensuring greater safety. Some sections of the plan provide important safety info for professional mariners transiting Puget Sound, while the Standards of Care formalize and document good marine practice. The Harbor Safety Plan can be obtained from the Marine Exchange of Puget Sound website at *marexps.com/puget-sound-harbor-safety-committee/* or contact 206–443–3830.

(11)

Regulated navigation area

(12) Due to heavy vessel concentrations, the waters of the Strait of Juan de Fuca, the San Juan Islands, the Strait of Georgia and Puget Sound and all adjacent waters, are a regulated navigation area. (See **33 CFR 165.1** through **165.13** and **165.1301**, chapter 2, for regulations.)

(13) Floating logs and **deadheads** or **sinkers** may be encountered anywhere in Puget Sound; caution should be exercised.

(14)

Anchorages

(15) General, explosives and foul weather anchorages have been established. (See **33 CFR 110.1** and **110.230**, chapter 2, for limits and regulations.)

(26)

Washington State Requirements—Reporting Oil Spills and Vessel Emergencies
All vessels must report oil spills or potential oil spills to both Washinton State (800–258–5990) and the National Response Center (800–424–8802). Tank vessels and cargo and passenger ships 300 gross tons or larger must make notifications to Washington State for vessel emergencies, including a loss or serious degradation of propulsion, steering, means of navigation, electrical generating capability and seakeeping capability constituting a substantial threat of pollution affecting Washington state natural resources. In addition to any notifications to the USCG, the owner or operator must notify the state of any vessel emergency that results in the discharge or substantial threat of a discharge of oil to state waters or that may affect the natural resources of the state within one hour of the onset of the emergency.

Tug Escorts for Laden Tankers
Any laden oil tanker, whether enrolled or registered, proceeding east of a line extending from Discovery Island Light (British Columbia, CN) south to New Dungeness Light (Washington State, US) must be escorted by a tug or tugs with an aggregate shaft horsepower equivalent to five percent of the deadweight tons of that tanker. For additional details see Washington state law at 88.16 Revised Code of Washington (RCW).

Emergency Response Tug at Neah Bay
An industry-funded emergency response tug is located at Neah Bay at the entrance to the Strait of Juan de Fuca. The tug is available 24 hours a day and can be underway within twenty minutes of a decision to deploy. The purpose of the tug is to assist vessels having propulsion and steering failures or that are directed by either the US or Canadian Coast Guards to obtain towing assistance. Among other capabilities, the tug is intended to be able to make up to, stop, hold, and tow a drifting or disabled vessel of 180,000 metric dead weight tons in severe weather conditions. The tug can be contacted through the USCG VTS or the Puget Sound Marine Exchange.

Washington State Vessel Inspections
The Washington State Department of Ecology regulates cargo and passenger vessels and tank vessels operating in Washington waters. A cargo vessel is any self-propelled vessel in commerce that is 300 gross tons or more. A passenger vessel is any vessel 300 gross tons or more with a fuel capacity of at least 6,000 gallons that carries passengers for compensation. A tank vessel is a ship that is constructed or adapted to carry, or that carries, oil in bulk as cargo or cargo residue. Washington State Ecology inspectors may conduct vessel inspections on regulated cargo, passenger, and fishing vessels when in Washington waters. Additional information—
www.ecology.wa.gov/regulations-permits/guidance-technical-assistance/guidance-for-oil-industry/vessel-information.

Oil Transfer Requirements
Safe bunkering procedures must be followed during fueling operations. For vessels 300 gross tons or greater, Washington State Ecology inspectors may conduct inspections of these regulated oil transfers on vessels receiving fuel for propulsion within Washington waters. Details can be found in state regulations at Washington Administrative Code (WAC) 317-40. Additional information—
www.ecology.wa.gov/regulations-permits/guidance-technical-assistance/requirements-for-bunkering.

Tank vessels delivering oil in bulk to a non-recreational vessel or facility within Washington waters must meet state oil transfer requirements. They may also be subject to Washington State oil transfer inspections for these regulated oil transfers. Details can be found in WAC 173-184. Additional information—
www.ecology.wa.gov/regulations-permits/compliance-enforcement/oil-transfers.

For a transfer of more than 100 gallons of bulk oil to a facility or non-recreational vessel, the delivering vessel must submit an Advance Notice of Transfer (ANT) report to Ecology. This ANT must be submitted 24 hours prior to the transfer for facilities or within the timeframe required by local USCG Captain of the Port. The ANT report can be made either: online using the State website at: *https://secureaccess.wa.gov/ecy/ants*, by e-mail to *OilTransferNotifications@ecy.wa.gov*, or by fax to 360–407–7288 or 800–664–9184.

Contingency Plan Requirements
Tank vessels and cargo and passenger ships 300 gross tons or larger transiting Washington waters must either have a Washington State Department of Ecology approved oil spill contingency plan or be a member of a non-profit cooperative that provides oil spill response capabilities consistent with their Washington State approved contingency plan. The non-profit cooperative for the Columbia River is the Maritime Fire & Safety Association (MFSA) and for Puget Sound and Grays Harbor is Washington State Maritime Cooperative. Also available is the National Response Corporation, a multiple vessel plan. Additional information—
www.ecology.wa.gov/regulations-permits/plans-policies/contingency-planning-for-oil-industry.

(16)

Dangers

(17) Restricted areas have been established. (See **33 CFR 334.1200**, chapter 2, for limits and regulations.)

(18) The large tides of Puget Sound are very complex and variable; use of the Tide prediction service available at *tidesandcurrents.noaa.gov* is advised. Links to a user guide for this service can be found in chapter 1 of this book.

(19)

Currents

(20) In Admiralty Inlet and Puget Sound, the tidal currents are subjected to daily inequalities similar to those of the tides. Velocities of 2 to 7 knots occur from Point Wilson to Point No Point. In the more open waters of the sound south of Point No Point the velocities are much less.

(21) At Point Wilson and at Marrowstone Point, slack water occurs from one-half to 1 hour earlier near shore than in midchannel.

(22) In the winter, when south winds prevail, there is generally a north surface drift that increases the ebb current and decreases the flood current. This effect is about 0.5 knot between Nodule and Bush Points.

(23) The tidal currents in the south entrance of Possession Sound are weak and variable.

(24) Between Foulweather Bluff and Misery Point, the tidal currents have a velocity of about 0.8 knot, while in the south part of Hood Canal, the velocity is only about 0.5 knot; at times of tropic tides, however, the greater ebbs may attain velocities more than double these values.

(25) The tidal currents have velocities up to about 6 knots or more in Agate Passage and in The Narrows. See the Tidal Current prediction service at *tidesandcurrents.noaa.gov* for specific information about times, directions, and velocities of the current at numerous locations throughout the area. Links to a user guide for this service can be found in chapter 1 of this book.

(27)

Weather (Winds and Visibility), Puget Sound

(28) Puget Sound is open to the north and south and protected to the west and east by mountains. Winds are mainly southeast through southwest from September through April and northwest through north in late spring and summer. From fall through spring, lows moving through or near the Puget Sound are responsible for the mainly south flow. Intense storms can generate sustained winds of 40 knots with 50-knot gusts over the area. These strong winds are almost always from a south direction. In the Seattle area, sustained winds of 56 knots and gusts of 60 knots have been recorded. Winds are strongest in winter and early spring, on the average. Also, calm conditions are frequent in fall and winter, reflecting the lull between storm passages. In late spring and summer, winds flow into Puget Sound from the Pacific High. Often, winds are light and variable at night, then pick up to 8 to 15 knots during the afternoon, reflecting a sea breeze effect over the sound. Occasionally, a low or front will bring a return to a southerly flow during the summer, and these winds remain the strongest, on the average.

(29) Fog in the Puget Sound area causes visibility problems on about 25 to 40 days each year. It most likely hinders navigation in autumn and again during January and February. This fog is mainly a land type that forms on cool, clear, calm nights, drifts out over the water, then dissipates during the day. It can hang on for several days if a stagnant condition develops. Fog can form in any month but is least likely during May, June and July.

(30) Poor visibilities are encountered more often north and south of Puget Sound than in the sound itself. In Admiralty Inlet, fog lowers visibilities on this part of the coast to less than 0.5 mile (0.9 km) on about 4 to 8 days per month. South of Point Robinson, in the East Passage, the sound signals operate about 8 to 15 percent of the time in fall and mid-winter. In Puget Sound, sound signals, even during the heart of the season, blow less than 8 percent of the time; less than 5 percent in Elliot Bay. Waters of Point Wells and Three Tree Point are among the most fog free in the area; sound signals there operate just a few hours a month for most of the year. In the Seattle area, visibility falls below 0.5 mile (0.9 km) on about 3 to 6 days per month during the foggy season. Detailed information on heavy weather to Puget Sound ports may be found in the **Puget Sound Area Heavy Weather Port Guide** published by the Marine Meteorology Division, Naval Research Laboratory, Monterey, CA 93943 and available at *nrlmry.navy.mil/pubs.html.*

(31)

Point Wilson to Kilisut Harbor

(32) **Point Wilson** is the west point to Admiralty Inlet and Puget Sound.

(33) **Point Wilson Light** (48°08'39"N., 122°45'17"W.), 51 feet above the water, is shown from a white octagonal tower on a building on the east extremity of the low point.

(34) Shoals extend 0.5 mile northwest of Point Wilson to the 5-fathom curve over irregular bottom; these are generally indicated by kelp. The east edge of the shoals rises rather abruptly from deep water. Heavy tide rips extend north of these shoals, being especially heavy with a west wind and ebb current. A buoy marking the shoals is about 0.7 mile northwest of Point Wilson Light.

(35) In approaching Point Wilson in thick or foggy weather, vessels should obtain soundings constantly.

(36) **Fort Worden State Park**, formerly an Army base, is about 0.8 mile south-southwest of Point Wilson. The park has 120 feet of dock space and two launching ramps.

(37) **Port Townsend**, immediately south of Point Wilson, is entered between Point Hudson and Marrowstone Point. It extends in a general south-southwest direction for 2.5 miles and then turns south-southeast for 3 miles, with a reduced width to its head. Inside Point Hudson, depths generally range from 5 to 20 fathoms. It is an excellent harbor and is easily entered; however, mariners are warned to be aware of strong side currents that exist in

Admiralty Inlet. The prevailing winds in summer are from west to southwest and in winter are generally in the southeast quadrant.

(38) **Point Hudson**, on the west shore 1.7 miles south-southeast of Point Wilson, is low, sandy and marked by a light. The outer limits of the shoal making out from the point are marked by a lighted bell buoy northeast of the light.

(39) **Marrowstone Point**, the east point at the entrance to Port Townsend, is low at its extremity but rises abruptly to a bluff about 120 feet high. The buildings of the former Fort Flagler, now a recreation area of the Washington Parks system, are about 0.5 mile to the south. The fort pier, with depths of about 20 feet at its face, is in poor condition. A fish haven is near the pier in about 48°05'28"N. 122°41'23"W. **Marrowstone Point Light** (48°06'06"N., 122°41'16"W.), 28 feet above the water, is shown from a 20-foot white square structure on the east edge of the point. Pilings from former piers and anchor pilings for wartime submarine nets extend up to 500 yards offshore 0.6 and 1.6 miles west of the light.

(40) **Midchannel Bank**, covered 4¾ to 10 fathoms, extends northwest from Marrowstone Point about 2 miles toward Point Wilson. The bank has several submerged obstructions and large boulders on the bottom. Due to the nature of the bottom and the existence of cross-currents from Admiralty Inlet, the bank is unsuitable for safe anchorage.

(41) **Port Townsend**, the principal town, is on the west shore immediately west of Point Hudson. The depths at the wharves range from 8 to 30 feet along the faces. The only commercial traffic, other than fishing boats and ferries, is at Port Townsend Paper Corporation papermill southwest of the town at Glen Cove.

(42)

Anchorage

(43) The usual anchorage is about 0.5 to 0.7 mile south of the railroad ferry landing in 8 to 10 fathoms, muddy bottom. In south gales better anchorage is afforded closer inshore off the north end of Marrowstone Island or near the head of the bay in moderate depths, muddy bottom. Two **explosives anchorages** are in the bay. (See **33 CFR 110.1** and **110.230**, chapter 2, for limits and regulations.)

(44)

Pilotage, Puget Sound

(45) Pilotage is compulsory for all vessels except those under enrollment or engaged exclusively in the coasting trade on the west coast of the continental United States (including Alaska) and/or British Columbia. Pilotage for Puget Sound is provided by the **Puget Sound Pilots** (See Pilotage, Strait of Juan de Fuca and Puget Sound, indexed as such, chapter 12, for detail.)

(46)

Towage

(47) Tugs are not available at Port Townsend but may be obtained on advance notice from Port Angeles or Seattle through ships' agents.

(48)

Quarantine, customs, immigration and agricultural quarantine

(49) (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

(50) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.)

(51) Port Townsend is a **customs port of entry**.

(52) The graystone Custom House-Post Office Building, built in 1893, is conspicuous on the bluff overlooking the waterfront. This building was the customs headquarters for Puget Sound until 1913, when headquarters was moved to Seattle. Deep-draft vessels and tugs are inspected alongside the pulpmill wharf. Small craft report their arrival by telephone (800–562–5943).

(53) **Point Hudson Harbor**, just west of Point Hudson, is protected by jetties at the entrance. Transient berths, electricity, water, ice and a launching ramp are available. A customs office is also in the harbor.

(54) The terminus of the Port Townsend-Keystone ferry is 0.4 mile west-southwest of Point Hudson Harbor.

(55) **Port Townsend Boat Haven**, 1.1 miles southwest from Point Hudson, is operated by the Port of Port Townsend; the entrance is marked by lights. There is space for 475 commercial and recreational vessels. The marina in the basin can provide gasoline, diesel fuel, transient berths, water, ice, marine supplies, launching ramp, winter storage and pump-out facility. A full-service boatyard adjacent to the marina has a 300-ton marine lift and can provide full repairs.

(56)

Supplies

(57) Gasoline and diesel are available at Port Townsend Boat Haven. Water, ice, groceries and marine supplies are available at these facilities and in the town.

(58)

Repairs

(59) Only minor above-the-waterline repairs can be made to large vessels. Travel lifts to 300 tons are available at Port Townsend Boat Haven; a 20-ton travel lift is at Point Hudson Harbor. Hull, engine and electronic repairs can be made.

(60)

Communications

(61) A passenger and automobile ferry operates between Port Townsend and Keystone Harbor, just east of Admiralty Head, Whidbey Island. Another ferryboat operates between Port Townsend, Victoria, BC, Friday Harbor and Seattle from late April through mid-October.

(62) **Glen Cove**, about 2.2 miles southwest of Point Hudson, is the site of the Port Townsend papermill, at the north end of the cove. The 480-foot-long pier has reported depths of 30 feet alongside and a deck height of 18 feet. A slight current may be encountered, and the use of an anchor is recommended in docking. Fuel oil tankers use the north side of the wharf; paper products

are shipped from the south side. The large white building and tall stacks of the mill are prominent, as is the smoke.

(63) A floating security barrier, marked by private lights, surrounds a naval restricted area in the east part of the harbor off **Walan Point** on **Indian Island** (48°04'18"N., 122°44'47"W.). (See **33 CFR 334.1270**, chapter 2, for limits and regulations.)

(64) **Irondale**, on the west shore about 1.5 miles from the head of the bay, is the site of a former iron foundry. Shoal water extends up to 0.3 mile from the shoreline near the town.

(65) **Port Hadlock**, a village at the head of the harbor, has landings with depths of 10 and 12 feet. The Port of Port Townsend maintains a mooring float during the summer. Gasoline is available in the town. Submerged pilings are in the vicinity of the mooring float, and local knowledge is necessary to avoid them.

(66) A marina is 0.4 mile southwest of the north entrance to Port Townsend Canal and can provide gasoline, diesel fuel, transient berths, electricity, water and pump-out facility.

(67) **Port Townsend Canal**, a dredged passage giving access to Oak Bay to the southeast, is marked by lights and daybeacons at both ends. The canal is crossed by a fixed highway bridge with a clearance of 58 feet. Power cables nearby have clearances of 90 feet. (See **33 CFR 162.235**, chapter 2, for rules, regulations, and use of the canal.)

(68) Currents through the canal are strong at times, although there is no particular danger from them as the channel is wide and straight; there are, however, strong eddies at the south end on the ebb current.

(69) **Kilisut Harbor**, between Indian Island on the west and **Marrowstone Island** on the east, is a narrow inlet extending about 4 miles in a south-southeast direction. The entrance to Kilisut Harbor is 2.5 miles west-southwest of Marrowstone Point. The entrance channel is winding. **Fort Flagler State Park** is on the northeast side of the entrance channel. Two boat ramps and a small-craft float are at the park. Water is available. Inside the harbor is good anchorage in 4 to 5 fathoms. At the south end of the harbor the two islands are connected by an earth-filled causeway. The village of **Nordland** is on the east side of **Mystery Bay**, a small shallow cove midway on the east side of Kilisut Harbor. A small-craft float is maintained in the cove by the Washington State Park System. Water and pump-out station are available. The short pier of an oyster company is just southeast of the state park float. The head of the cove is used as a log dump. Caution should be exercised to avoid two concrete blocks located 20 to 30 feet off the east end of the State Park pier.

(70)

Admiralty Inlet to Double Bluff

(71) **Admiralty Inlet** extends from the Strait of Juan de Fuca to Foulweather Bluff. A **naval restricted area** is at the north entrance of Admiralty Inlet, extending west and northwest from Admiralty Head. (See **33 CFR 334.1210**, chapter 2, for limits and regulations.)

(72) **Admiralty Head**, 80 feet high, on Whidbey Island, is the east entrance point of Admiralty Inlet and the southeast extremity of a succession of light bare bluffs that extend north of Point Partridge, where they attain their highest elevation. About 0.5 mile north of Admiralty Head an abandoned lighthouse tower 39 feet high stands on top of a bluff.

(73) **Admiralty Bay**, east of Admiralty Head, is used only occasionally as an anchorage as it is exposed to southwest winds and has a hard bottom and strong currents.

(74) **Keystone Harbor** is entered through a dredged channel just northeast of Admiralty Head. A state ferry landing is at the head of the harbor. This landing is the Whidbey Island terminus of the passenger and automobile ferry that operates to Port Townsend. A breakwater, marked by a light, protects the east side of the entrance. A private light on a concrete pile marks the west side of the entrance. A launching ramp is on the east side of the harbor.

(75) A tall, narrow, grayish green tank is prominent on **Lagoon Point**, 5.5 miles south-southeast of Admiralty Head. Dredged canals give access to private moorings.

(76) **Bush Point**, 8 miles south-southeast of Admiralty Head, is marked by a light at the end of a low sandspit. Back of the spit the land shows as a low timbered point from north or south. The flood current is reported to set strongly toward Bush Point. In 1983, Puget Sound Traffic Lane Separation Lighted Buoy SC, about 1.1 miles west of Bush Point, was reported to submerge during periods of strong currents. (See the Tidal Current prediction service at *tidesandcurrents.noaa.gov* for specific information about times, directions, and velocities of the current at numerous locations throughout the area. Links to a user guide for this service can be found in chapter 1 of this book.) Several rocks lie nearly 0.2 mile offshore 1.1 miles southeast of Bush Point.

(77) **Oak Bay** is a cove on the west side of Admiralty Inlet, west of the south ends of Marrowstone and Indian Islands. A 1½-fathom shoal, marked by a light, extends south from Kinney Point.

(78) **Mutiny Bay**, between Bush Point and Double Bluff, affords temporary anchorage near the center in 10 to 20 fathoms. This anchorage is useful if overtaken by fog. The extremities are clay bluffs, and the center is low with extensive flats. Several sport fishing resorts are in the bay. Some have marine railways and can make minor repairs to outboard engines, and most have gasoline, water and ice. Strong tide rips, at times dangerous for small craft, occur off Double Bluff, particularly on the ebb with strong northwest winds. There is frequently an eddy in Mutiny Bay; see the Tidal Current prediction service at *tidesandcurrents.noaa.gov* for specific information about the times, directions, and velocities of the current at numerous locations throughout the area. Links to a user guide for this service can be found in chapter 1 of this book.

(79) **Double Bluff**, marked by a light, consists of bare, white cliffs, 300 to 400 feet high on its southeast face, but much lower on its northwest face. A lighted buoy marks the extremity of the shoals 600 yards west of the bluff. The shoals are usually marked by kelp.

(80)

Foulweather Bluff to Point No Point

(81) **Foulweather Bluff**, on the east side of the entrance to Hood Canal, is one of the most prominent cliffs in Puget Sound. The north face, which is bare, is 0.5 mile broad and consists of vertical, grayish sand and clay bluffs, 225 feet high, sloping off on the east side to a bluff 40 feet high, but on the Hood Canal side the point is steep and high. A marsh, enclosed by a sandspit and marked by a light, extends about 500 yards from the base of the bluff on the Hood Canal side. The top of the bluff is fir and underbrush. There are several boulders that bare within 100 yards north of the highest part of the bluff, and a shoal covered 2 to 18 feet extends 200 yards east from the extremity and in line with the face of the bluff. If overtaken by fog, a vessel can find temporary anchorage 0.5 mile north of Foulweather Bluff, in not less than 60 feet. A lighted bell buoy marks the shoal 0.4 mile north of the bluff.

(82) At times the tide rips north of and around Foulweather Bluff are sufficiently heavy to be dangerous to small craft and to break up log rafts. This is most dangerous when the ebb current from the main body of Puget Sound meets that of Hood Canal off the point, and particularly so with the ebb against a strong north or northwest wind.

(83) **Klas Rock**, 0.2 mile from the west shore and 0.7 mile south-southeast of **Olele Point**, marks the entrance to Mats Mats Bay to the west and to **Port Ludlow** to the south. It is of small extent and awash at high water. The rock, marked by kelp, is surrounded by deep water with depths up to 100 feet between it and the shore. Klas Rock is marked on the east side by a light.

(84) **Mats Mats Bay**, southwest of Klas Rock, is a small, nearly landlocked lagoon offering excellent protection from the wind to small craft. The entrance to the bay is about 100 yards wide at high water. A dredged channel, marked by a **261.3°** lighted range, buoys and lights leads from the entrance to the northeast corner of the bay. In 1977, the controlling depth in the entrance channel was 5 feet for a midwidth of 100 feet. Good anchorage may be had in the bay with general depths of 4 to 12 feet.

(85) A boat ramp and 200 feet of transient moorage, maintained by the Port of Port Townsend, are on the southeast side of the bay.

(86) The three **Colvos Rocks**, 0.7 mile south of Klas Rock and about 0.3 mile off the west shore, mark the north extremity of the bank covered by 7 to 28 feet that extends in an arc south to **Tala Point**. The northwest rock, 28 feet high and of small extent with deep water around it, is marked by a light. The southeast point of the shoal extending southeast from the rocks is also marked by a light. Tala Point is a bluff, wooded and about 310 feet high. A light is about 200 yards northeast of the point.

(87) **Snake Rock** is 0.4 mile southwest of the west Colvos Rock and 300 yards offshore.

(88) The entrance to **Port Ludlow**, in the west part of Admiralty Inlet, is just west of Colvos Rocks on the west side at the entrance to Hood Canal. From the broad entrance the bay extends in a general south direction 2.5 miles, terminating in a basin 0.5 mile in diameter. The basin affords good anchorage in 40 to 50 feet, soft bottom; the shores are fairly steep.

(89) **Burner Point**, marked by a light, is on the north side of the entrance to the inner portion of the bay. A **speed limit** of 5 knots is enforced southerly of a line extending due east from Burner Point to the east shore.

(90) The town of **Port Ludlow**, once a major Puget Sound lumber port, is on the north shore of the inner portion of the bay. The former Port Ludlow townsite is now occupied by a housing development and resort of the same name. A series of exposed piles are on the northwest side of the inner bay. Several private small-craft floats are in the bay.

(91) A marina is on the north side of the bay and just west of Burner Point. The marina can provide transient berths, gasoline, diesel fuel, electricity, water and ice. The entrance to the fuel dock is reported to shoal on the right side at low tide.

(92) **The Twins** are two islands at the extreme southwest end of Port Ludlow. The small bay south of The Twins is sometimes used as an anchorage for small craft in rough weather. A reported depth of 10 feet is in the entrance to the bay between the islands.

(93) **Hansville**, about 2.5 miles east-southeast of Foulweather Bluff, is a small village with a general store. Berthage and dock facilities are not available.

(94) **Norwegian Point**, low and rounding, is about 0.2 mile northwest of Hansville. A conspicuous privately owned lighthouse, 210 feet above the water and built from plans of the original lighthouse at Mukilteo, is about 1 mile west of Hansville.

(95) **Point No Point**, on the west shore of the sound about 3.5 miles southeast of Foulweather Bluff, is a low sandspit. **Point No Point Light** (47°54'44"N., 122°31'37"W.), 27 feet above the water, is shown from a 20-foot white octagonal tower on the end of the point.

(96)

Useless Bay to Cultes Bay

(97) **Useless Bay**, indenting Whidbey Island east of Double Bluff, is open to the southwest. The shores are bluff, brush covered and low with a marshy area surrounding the bay. The north and southeast sides of the bay are spotted with homes. At night, the lighted antenna about 2 miles northeast of the head of Useless Bay is prominent.

(98) **Scatchet Head** and **Possession Point**, at the south end of Whidbey Island, are both prominent, especially

from south; the white bluffs are visible for a considerable distance. A lighted bell buoy is 0.5 mile south of Possession Point. A fish haven is close west of the lighted bell buoy. Shoals extend 0.5 mile offshore immediately west of Scatchet Head and over 0.2 mile offshore from the head to Possession Point. A lighted gong buoy is about 0.5 mile off Scatchet Head. **Cultus Bay**, just west of Possession Point, is shoal; much of the bay bares at low water. A channel, marked by lights at the entrance, leads to a private mooring basin on the east side of the bay. The channel has a reported depth of 3 feet. A mooring float and launching ramp are just north of the mooring basin on the east side of the bay.

(99) Possession Sound and its tributaries are described later in this chapter.

(100)

Apple Point Cove to Richmond Beach

(101) **Apple Cove Point** is a low sandspit projecting 220 yards from the high, wooded land of the peninsula. The point is steep-to, but a shoal makes out nearly 0.5 mile southeast from it. Just off the point is a light. Heavy tide rips caused by strong northwest winds and a strong ebb current are encountered in the vicinity of the light.

(102) A microwave tower on the high ground about 0.6 mile southwest from Apple Cove Point Light is prominent from offshore.

(103) **Appletree Cove** is the open bight on the west side of the sound about 1.5 miles south of Apple Cove Point. It affords anchorage in 30 to 60 feet inside the line of the entrance points, with some shelter from winds drawing in or out of the sound, but not from north and southeast.

(104) **Kingston**, a town on the north side of the cove, has a large, well-equipped small-craft basin, a 420-foot long fishing pier, and a pier with a ferry slip at its end. The ferry runs between Kingston and Edmonds. The basin is used by tugs, fishing boats and pleasure craft. The harbor is protected by a stone breakwater that extends about 340 yards southwest from the ferry pier; the end of the breakwater is marked by a light. Services available include electricity, gasoline, diesel fuel, water, ice, pump-out facility, surfaced launch ramp and marine supplies. The marina has space for 262 small craft including about 49 transient berths.

(105) **Edwards Point** is a high, wooded point on the east side of Puget Sound 3.6 miles east-southeast of Apple Cove Point. It is a turning point for vessels running from Seattle north into Possession Sound and adjoining waters.

(106) **Edmonds** is an incorporated city 1 mile northeast of Edwards Point with a small boat basin and marina under the administration of the **Port of Edmonds**. The protected basin is entered from the northwest at about the midpoint of the marina; the entrance is marked by lights and a light is on the southwest corner. The reported depth is 9 feet alongside the piers. There are open and covered berths for about 600 craft up to 50 feet, including 20 transient moorings; berth assignments are made by the harbormaster. Services available include electricity, gasoline, diesel fuel, water, ice, marine supplies and pump-out station, and full repairs can be made. A 50-ton marine travel lift and 5-ton fork lift are also available at the marina. The marina monitors VHF-FM channel 69.

(107) Just north of the boat basin are a fish haven and fishing pier, the Edmonds and Kingston ferry landing and a scuba diving area north of the landing. The fish haven is marked by private buoys near the boat basin breakwater north section; private buoys also mark the west side of the scuba diving area.

(108) A **037°01'-217°01' measured nautical mile** is on the shoreline 1 mile northeast of Edmonds. The front markers are on short metal poles atop the seawall that protects the railroad tracks; the rear markers are about 20 yards southeast of the front markers. The bluff is 60 feet high behind the northeast pair of markers and 12 feet high behind the southeast pair of markers. All four markers are white wooden triangular daymarks.

(109) **Point Wells** is a low, sandy point projecting 450 yards from the high land 1.5 miles south of Edwards Point on the east side of the sound; it is distinguished by prominent oil tanks. A facility on the point is used as a marine fuel and asphalt distribution center, operated by Paramount Petroleum Corporation. The wharf is 1,054 feet long and has a deck height of 21 feet. Depths of 40 to 70 feet were reported alongside.

(110) The current at Point Wells is unpredictable, being inconsistent for similar tidal conditions; however, a vessel making a port landing on a flood tide may expect to be set off the pier. The use of an anchor is recommended when docking in high wind. Deep-draft vessels approaching the wharf for a starboard landing during a flood tide must guard against being set on to the shoal south of the wharf.

(111) **Richmond Beach** is a community on the east shore just south of Point Wells. A tall, charted radio tower (KCIS), marked by aircraft warning lights, is about 1.5 miles inshore from Richmond Beach; it is an excellent landmark, especially at night. A fish haven is off the mouth of **Boeing Creek**, about 1.9 miles south of Point Wells.

(112)

Bainbridge Island to Restoration Point

(113) **Bainbridge Island**, 9 miles long and heavily wooded, forms part of the west shore of Puget Sound. There are several towns on the island.

(114) **Port Madison** indents the west shore between the north end of Bainbridge Island and **Point Jefferson**. It is about 2.5 miles long and very deep; not until within 0.5 mile of the beach can anchorage be found in 90 to 100 feet, sticky bottom. Its southwest part connects with Port Orchard through Agate Passage.

(115) The north shore is formed by broken white bluffs, with low beaches between, and bordered by sand and shingle beaches that bare in some cases as much as 0.2 mile offshore. **Indianola**, a village on the north shore,

has a long pier. The water east of the end of the pier is shoal. The bluffs on the west shore are moderately low; the buildings of the small town of **Suquamish** near the entrance to Agate Pass are prominent.

(116) **Miller Bay**, in the northwest part of Port Madison, is used by shallow-draft pleasure craft. The channel should not be used at low tide because of the very irregular bottom. In 2002, the reported depth in the channel along the docks at the south end of the bay was 5 feet.

(117) **Point Monroe**, the south point at the entrance of Port Madison, is a low, narrow sandspit, curving west and south. A small cove is between the sandspit and the shore to the south. The entrance dries at low water.

(118) The south shore of Port Madison is composed of broken bluffs, except where it is indented by the narrow arm extending 1 mile south. The entrance to this narrow arm is 0.7 mile west of Point Monroe.The town of **Port Madison** has many private piers but no fueling facilities. The narrow channel through the arm has a least depth of 16 feet, and local knowledge is necessary to keep in the best water. Two submerged rocks, covered 7 feet and are marked by a daybeacon (47°41'51"N., 122°32'08"W.), about 220 yards south-southwest of **Treasure Island**; caution should be exercised. An old ballast dump, nearly bare at low water, is 75 yards offshore 400 yards in from the east entrance point. Care should be taken to avoid the cluster of covered rocks 100 yards off the east entrance point. Sheltered anchorage for small craft may be had in up to 21 feet, mud bottom.

(119) **Meadow Point**, on the east side of Puget Sound nearly opposite Point Monroe, is a low, grassy point with a high tree and brush-covered bluff behind it. A lighted buoy is about 0.2 mile northwest of the point.

(120) **Murden Cove** is an open bight on the west side of the sound about 3.5 miles south of Point Monroe. An extensive flat that bares extends almost 0.5 mile from the head of the cove, and outside of it the depth increases rapidly. **Skiff Point**, the north entrance point, has low yellow bluffs to the south. A shoal, covered by kelp, extends about 250 yards from the point; this shoal is reported to be building out and should be given a wide berth. **Yeomalt Point,** the south entrance point, is a low, grassy sandspit, 150 yards wide, rising gradually to the general level of the high land. The radio towers about 0.9 mile southwest of Skiff Point are prominent from offshore.

(121) **Wing Point**, on the north side of the entrance to Eagle Harbor, is a narrow, bluff point 30 feet high, covered with trees to the edge. A flag pole is prominent on the point. A reef extends south-southeast for 0.5 mile from Wing Point and is generally marked by kelp. The south extremity of the reef is marked by a buoy. **Tyee Shoal**, 0.7 mile south-southeast of Wing Point, with a least depth of 14 feet, is marked by a light.

(122) Foul ground extends as much as 500 yards off the south point at the entrance; a light and buoy mark its outer limits.

(123) **Eagle Harbor** indents the east shore of Bainbridge Island opposite Elliott Bay. It is 2 miles long and affords excellent anchorage in 30 to 39 feet, muddy bottom. It narrows at the head to 300 yards.

(124) The entrance is deep, but caution is necessary in entering because the natural channel is only 200 yards wide between the reef south of Wing Point and the spit on the west side of the channel entrance. The channel is marked by lights and buoys. A wreck covered 18 feet is at 47°37'09"N., 122°31'11"W.

(125) A **regulated area**, prohibiting anchoring, dredging and bottom fishing among other activities, is in the eastern part of Eagle Harbor covering much of the entrance—see **33 CFR 165.1** through **165.40** and **165.1309**, chapter 2, for limits and regulations.

(126) **Winslow** is the largest town on Bainbridge Island. It is on the north shore of Eagle Harbor and is a major ferry port on the cross-sound routes to and from downtown Seattle. About 0.2 mile west of the ferry slip is a large building and two piers that are used by the Washington State Ferry System for ferry mooring and maintenance. About 0.3 mile west of the ferry slip is a city park with a float that offers 48-hour free moorage. Immediately west of the float is a launching ramp.

(127) There are several marinas located on the shores of Eagle Harbor. Numerous small craft are anchored in the upper half of Eagle Harbor.

(128) **Creosote**, a low flat extending 350 yards inland, then raising abruptly to over 200 feet, is on the south side of the entrance to Eagle Harbor. Two lights and a buoy mark shoals to the northwest and east. **Eagledale** is a small town with three marinas on the south shore about 0.5 mile west of Creosote.

(129) **Blakely Rock**, the highest of four rocks, is prominent in approaching Blakely Harbor; it is 0.7 mile north of Restoration Point and at high water shows about 15 feet at its highest point. It is 300 yards long, with shoal water, well marked by kelp, extending over 250 yards north. A light is on the south side of the rock.

(130) **Blakely Harbor** is a small inlet on the east shore of Bainbridge Island near its south end. It is 1 mile long. Depths range from 145 feet at the entrance to 25 feet near the head. The usual anchorage is near the entrance in 54 to 96 feet, sticky bottom, slightly favoring the south shore. There are many old pilings and dolphins in the shoal waters near the shores. There are no usable wharves in Blakely Harbor.

(131) **Restoration Point** is flat and about 10 feet high for 300 yards from the shore, then it rises abruptly to a wooded knoll about 100 feet high, on which a flagpole and a number of large buildings are prominent. **Decatur Reef**, partly bare, extends 300 yards east of Restoration Point. The outer end of the reef is marked by a lighted buoy.

(132)
Shilshole Bay to Duwamish Head

(133) **Shilshole Bay** is between Meadow Point and West Point. It is an open bight from which the Lake Washington Ship Canal is entered, and is the site of the largest marina in the Seattle area. Clay cliffs extend for about 0.5 mile south of the canal entrance. Golden Gardens Park, Seattle Department of Parks and Recreation is north of the marina and extends up to and includes Meadow Point.

(134) **Shilshole Bay Marina**, the small-craft basin just north of the canal entrance, is administered by the Port of Seattle. A 4,400-foot breakwater, marked at each end by a light, protects the basin on its west side. There is one entrance at the north end and one at the and south end. There are berths at the concrete floats for 1,400 craft to 250 feet long, including a guest pier and transient berths. The marina can provide electricity, gasoline, bio-diesel (#1 and #2), diesel fuel, water, ice, marine supplies and a pump-out station at the 600-foot pier at the midpoint of the basin. Two 3-ton hoists are at the south end, and one 3-ton and one 4-ton hoists are at the north end of the basin. A 55-ton marine travel lift, for haul-out, is available at the boatyard at the south end of the basin. Dry storage is available for 82 boats on movable trailers at the north end of the marina. A boat launching ramp is located immediately north of the marina in Golden Gardens Park. The marina can be contacted on VHF-FM channel 17.

(135) **West Point**, at the north entrance to Elliott Bay, is a low, sandy point that rises abruptly to an elevation of over 300 feet 0.5 mile from its tip. The edge of the shoal extending west-southwest from the point is marked by a lighted buoy. **West Point Light** (47°39'43"N., 122°26'09"W.), 27 feet above the water, is shown from a 30-foot white octagonal tower attached to a building on the end of the point; a mariner-radio-activated sound signal is at the station, initiated by keying the microphone five times on VHF-FM channel 81A. Prominent in the area are the sump tanks of a sewage treatment plant about 0.1 mile east of the light, a VTS antenna tower between the plant and the light and a large white dome about 1 mile east-southeast of the light.

(136) **Alki Point**, at the south entrance to Elliott Bay, is low with a small prominent wooded knoll about 80 feet high immediately back of it. East of the knoll, lowland extends for nearly 0.4 mile before rising to the high land extending south from Duwamish Head. **Alki Point Light** (47°34'35"N., 122°25'14"W.), 39 feet above the water, is shown from a 45-foot white octagonal tower attached to a building on the end of the point.

(137) **Elliott Bay** indents the east shore of Puget Sound just north of Duwamish Head. The entrance is between West Point on the north and Alki Point 5 miles south. The bay proper, lying east of a line between Magnolia Bluff and Duwamish Head, has a width of about 2 miles and extends southeast for nearly the same distance. The bay is deep throughout most of its area.

(138) **Magnolia Bluff**, largely bare, light colored, and rising in places to nearly 300 feet, extends along the north shore from West Point to Smith Cove. **Fourmile Rock** is 60 yards offshore, 1.7 miles south-southeast of West Point Light. A light is on the rock. A wreck, covered 56 feet, is about 0.5 mile west of Magnolia Bluff in about 47°38'25"N., 122°25'35"W.

(139) Elliott Bay Marina is located just west of Smith Cove (Pier 91) below Magnolia Bluff. A 2,700-foot breakwater, marked by private lights, protects the basin on its south side. The basin has entrances on the east and west ends and has a reported depth 23 feet in the approach with a depth of 10 feet alongside the berths. The marina can accommodate 1,200 vessels up to 200 feet long, including 20 transient berths; larger vessel moorage is at the east pier. Services available include electricity, gasoline, diesel fuel, water, ice and pump-out facility and engine and electrical repair. A yacht chartering firm is on site. VHF-FM channel 78A is monitored, and a heliport is located at the center of the breakwater. No commercial vessels, commercial work or major boat repairs are allowed.

(140) **Duwamish Head**, 1.8 miles northeast of Alki Point and rising to over 260 feet from the point, bounds Elliott Bay to the south. The bluff is tree covered but is interspersed with houses. The lights of the houses along the beach and on the bluff are conspicuous at night. A shoal, extending over 0.2 mile north of the point, is marked by **Duwamish Head Light.**

(141)
Seattle

(142) **Seattle**, the largest and most important city in the Northwest and one of the major ports of the Pacific Coast, extends as a densely populated greater metropolitan area from Everett, the city to its north, almost to Tacoma, the major city to the south, and east beyond the limits of Lake Washington and its shores. Seattle has many modern, fully equipped ocean terminals, excellent transportation facilities, several large shipyards and numerous large marine supply houses.

(143) Much of Seattle's shipping is in the Pacific Rim trade, and the city is a major industrial center. Seattle handles most of the waterborne commerce to Alaska Ports and is the terminus of several shipping lines operating to Alaska as well as other parts of the world. Almost 22 percent of Seattle's commerce is in the foreign trade, with British Columbia, Japan, Asia and Europe forming the cornerstone of the overseas commerce. Principal exports are grain and grain mill products, logs, petroleum products, food and vegetable products, lumber, waste and scrap, chemicals, cement, wood chips and fuel wood, fabricated metal products and sulfur. The principal imports are logs, lumber, sand and gravel, iron and steel, petroleum products, newsprint, bananas, cement, canned fish and shellfish, limestone, machinery, pulp and paper, asphalt and tar, radio and TV products and clay.

(163)

Structures across Duwamish Waterway

Name	Type	Location	Clearance (feet)		Information
			Horizontal	Vertical*	
Southwest Spokane Street bridge	swing	47°34'17"N., 122°21'14"W.	250	44 (55 at center)	Note 1
West Seattle bridge	fixed	47°34'15"N., 122°21'12"W.	150	140	
Burlington Northern Santa Fe Railroad bridge	bascule	47°34'12"N., 122°21'07"W.	150	7	Note 1
Overhead cable	power	47°33'49"N., 122°20'50"W.		174	
Overhead cable	power	47°32'35"N., 122°20'09"W.		160	
First Avenue South bridges	bascule	47°32'32"N., 122°20'04"W.	145	22 (32 for central 100 feet)	Note 1
16th Avenue/South Park bridge	bascule	47°31'47"N., 122°18'51"W.	125	29	Notes 1, 2 and 3
Overhead cable	power	47°30'56"N., 122°18'19"W.		134	

* Vertical clearance is referenced to mean high water
Note 1 – See **33 CFR 117.1** through **117.59** and **117.1041**, chapter 2, for draw bridge regulations.
Note 2 – In the open position, the draws overhang the channel at a height of 143 feet at the leaf tip.
Note 3 – Bridge tenders monitor VHF-FM channels 16 and 13, and work channel 13 or phone 206–549–2896.

(144) The **Port of Seattle** includes an outer and inner harbor. The outer saltwater harbor includes Elliott Bay; East, West and Duwamish Waterways; Shilshole Bay and the portions of Puget Sound adjacent to Ballard on the north and West Seattle to the south of the entrance of Elliott Bay. Seattle's freshwater inner harbor consists of Lakes Union and Washington, which are connected with each other and with Puget Sound by the Lake Washington Ship Canal. Most of the waterfront facilities of the inner harbor are privately owned.

(145) Of the nearly 60 piers and terminals in the outer harbor, the Port of Seattle owns more than 25, operating three and leasing out the others. These properties include 10 general cargo handling facilities and 1 major container handling terminal. The port also has four fully developed marine terminals, and a fifth in the construction phase, on the Duwamish Waterway south of Harbor Island in the Lower Duwamish Development District, a project that provides lease sites for terminal facilities and water-oriented industries. The Port of Seattle also operates Seattle-Tacoma International Airport, which is located about midway between Seattle and Tacoma.

(146) Although there are several deep-draft terminals on Elliott Bay, many of the piers and wharves are used by fisheries, ferry and tour boat operators and for entertainment facilities.

(147) **East Waterway** is separated from West Waterway by **Harbor Island**. Several important terminals are on the waterway. Most of the north side of Harbor Island is occupied by the piers and drydocks of a shipyard. A private light, shown from the northeast corner of Terminal 18, marks the west side of the entrance to East Waterway.

(148) **Note:** Vessels are cautioned against anchoring in the vicinity of pipeline and cable areas shown on the charts.

(149) Most of the east side of **West Waterway** and the area west of the entrance are occupied by the facilities of two large shipyards. The southwest side of the waterway is the site of the Port of Seattle's Terminal 5, which receives considerable deep-draft traffic. Several other wharves on the waterway also receive deep-draft vessels. (See **33 CFR 207.750**, Chapter 2, for regulations.)

(150) **Duwamish Waterway**, extending south from West Waterway, is fronted by factories and industrial plants for more than 4 miles. A number of log rafts are often anchored along the waterway around Kellogg Island and south of the 1st Avenue South Bridge.

(151)

Prominent features

(152) In clear weather the skyline of Seattle itself is unmistakable. From north to south the conspicuous features are the *Space Needle*, a legacy from the 1962 World Fair; the red lighted letter 'E' ' sign at pier 67; the 175-foot Seattle Great Wheel at the end of Pier 57 and the Columbia Center building, distinguishable from other skyscrapers by its greater height.

(153)

Channels

(154) Depths of 34 feet or more are available to the Seattle waterfront in Elliott Bay. A **federal project** provides for a depth of 34 feet in East and West Waterways. (See latest edition of charts for depths in East and West Waterways.) The project for Duwamish Waterway provides for a 30-foot channel from the south end of West Waterway to the 1st Avenue South Bridge, thence 20 feet for about 0.65 mile to 8th Avenue South, thence 15 feet to a point about 1.2 miles south of the 14th Avenue South Bridge, the end of the project. (See Notice to Mariners and latest editions of charts for controlling depths.)

(155)

Anchorages

(156) Four general anchorages are in Elliott Bay. (See **33 CFR 110.1** and **110.230**, chapter 2, for limits and regulations.)

(157)

Regulated Navigation Areas

(158) A **security zone** has been established at Pier 36 in Elliott Bay. (See **33 CFR 165.1** through **165.9**,

165.30, **165.33**, and **165.1334**, chapter 2, for limits and regulations.)

(159) A **safety** and **security zone** has been established around Pier 90 and 91 on the north side of Elliot Bay. (See **33 CFR 165.1** through **165.40** and **165.1324**, chapter 2, for limits and regulations.)

(160) A **safety zone** has been established around the mouth of West Waterway on the south side of Elliot Bay. The safety zone is only active at certain times. (See **33 CFR 165.1** through **165.40** and **165.1340**, chapter 2, for limits and regulations.)

(161) Two regulated areas have been established in Elliott Bay: southeast of Duwamish Head and on the east side of West Waterway. (See **33 CFR 165.1** through **165.13** and **165.1336**, chapter 2, for limits and regulations.)

(162) A regulated navigation area is in Slip 4 just off Duwamish Waterway. (See **33 CFR 165.1338**, chapter 2 for limits and regulations.)

(164)

Currents

(165) As a rule, the tidal **currents** in the harbor have little velocity. At times, however, with a falling tide an appreciable current will be found setting northwest along the waterfront. See the Tidal Current prediction service at *tidesandcurrents.noaa.gov* for specific information about times, directions, and velocities of the current at numerous locations throughout the area, including the Northern Part of Puget Sound. (Links to a user guide for this service can be found in chapter 1 of this book.

(166)

Weather, Seattle

(167) Seattle is on a hilly stretch of land overlooking the salt waters of Puget Sound to the west, and in an east direction, the waters of Lake Washington, an 18-mile-long (33 km) freshwater lake. The Lake Washington shoreline roughly parallels that of Puget Sound at distances varying from about 2.5 to 6 miles (5 to 11 km). Hills rise rather abruptly from both shorelines and reach elevations of more than 300 feet (92 m) in the central sections and more than 500 feet (153 m) in the extreme northern and the southwestern sections. The general north-south trend of the city is paralleled on the east by the Cascade Mountains, while to the west and northwest, at somewhat greater distance, the Olympic Mountains rise abruptly. The main commercial section of the city is along the east shore of Elliott Bay, an indentation in the Puget Sound shoreline.

(168) The climate is mild and moderately moist due to the prevailing west air currents, which advance inland from the Pacific Ocean, and to the shielding effects of the Cascade Mountains, which serve to exclude and deflect the cold continental air toward the east. Although the city is 90 miles distant from the ocean at the nearest point, the marine air penetrates readily inland, an effect that is aided by the extensive water surface of Puget Sound. The prevailing west air currents cross vast reaches of ocean, acquiring much water vapor and a temperature near that of the sea. This effect is received from the general currents of the ocean rather than from the Japanese Current, which curves far north into Alaskan waters. As a result of the rather steady influx of marine air, winters are comparatively warm and summers cool. Extremes of heat or cold are moderate and usually of short duration and the daily range in temperature small.

(169) The warmest summer and the coldest winter days come with north to east winds that have traveled under land influences from British Columbia or eastern Washington. In the summer, the number of days having maximum temperatures of 90°F (32.2°C) or above averages less than three, but these extreme temperatures have occurred in each month between May and September. Only once during the entire period of record has the temperature reached 100°F (37.8°C, July 1994). The average annual temperature is 52°F (11.1°C), with an average maximum of 59°F (15°C) and an average minimum of 44°F (6.7°C). Nighttime temperatures during the warmest months usually reach comfortable levels and very seldom remain about 65°F (18.3°C). During the winter, daily maximum temperatures fail to rise above the freezing point (0°C) on an average of only about two days per year, while the number of days having minimum temperatures of 32°F (0°C) or below averages only 15 per year. However, each month, October through May, has recorded sub-freezing temperatures, and single-digit temperatures have been recorded in each month from November through February. An extreme low temperature of 0°F (-17.8°C) was recorded in January 1950. In general, temperatures may vary by several degrees at any one time throughout the city, depending on wind direction, distance from shoreline and elevation.

(170) The normal precipitation of 38 inches (965 mm) is moderate compared with many points along the north Pacific Coast. Primarily this is due to the location of the city, which lies in the lee or dry side of the Olympic Mountains. The west or windward slopes of these mountains cause the moist marine winds to rise to cooler levels with heavy precipitation on the seaward slopes and diminished amounts east of the summits. A winter seasonal wet period along the Pacific Coast coincides with and is caused by the Aleutian Low. In summer this low pressure recedes north with higher pressures off the coast and results eventually in clear weather, rising temperatures and decreased humidities. The area has, therefore, a pronounced but not sharply defined wet season extending usually from October through April, a period in which about 82 percent of the total precipitation occurs, and a dry season, May through September, with 18 percent. Excessive precipitation is rare and the 24-hour extreme precipitation event is only 3.41 inches (86.6 mm), but in the wet season the continuance of light or moderate amounts is rather persistent. The average winter snowfall totals about 12 inches (305 mm), and snow seldom remains on the ground for more than 1 or 2 days at a time. Maximum recorded snow depths have ranged from as little as a trace in several instances to

(191)

Facilities in the Port of Seattle

Name	Location	Berthing Space	Depths*	Deck Height	Mechanical Handling Facilities and Storage	Purpose	Owned/Operated
Facilities on Elliott Bay							
Port of Seattle Terminal 91, Pier 91	47°37'35"N., 122°22'58"W.	2,495 (W side) 1,875 (E side) 357 (face)	16-30	18	• Open storage (45 acres) • Cold storage (4.5 million feet³)	Receipt of general cargo, automobiles, and seafood **(Note 3)**	Port of Seattle
Port of Seattle Terminal 91, Pier 90	47°37'35"N., 122°22'48"W.	1,875 (W side) 2,222 (E side) 295 (face)	22-30	18	• Covered storage (138,000 sq. feet) • Tank storage (198,000 barrels)	Receipt and shipment of fruit and petroleum products **(Note 3)**	Port of Seattle
Louis Dreyfus Corp. Terminal 86	47°37'24"N., 122°22'12"W.	1,400	70	20	• Grain elevator (4.2 million bushels) • Vessel loading spouts • Belt conveyors	Shipment of grain	Port of Seattle/ Louis Dreyfus Corp.
Total Terminals Terminal 46	47°35'48"N., 122°20'28"W.	1,874	39-43	18.5	• Open storage (70 acres) • Gantry cranes (40 tons)	Receipt and shipment of general cargo	Port of Seattle/ Total Terminals, Inc.
SSA Terminals Terminal 37	47°37'32"N., 122°20'33"W.	850	50	18.5 / 21	• Open storage (12 acres) • Lifts (15 tons)	Receipt and shipment of general cargo and steel products	Port of Seattle/ SSA Terminals, Inc.
Rainier Petroleum Corp. Equilon Enterprises	47°35'20"N., 122°21'12"W.	460 (W side) 460 (E side)	35-40	19	Tank storage (550,000 barrels)	Receipt and shipment of petroleum products	ExxonMobil Corp./ Rainier Petroleum and Equilon Enterprises, LLC
Facilities on East Waterway							
SSA Terminals Terminal 18 (Berths 1 to 5)	47°35'20"N., 122°21'12"W.	6,000	49	17	• Open storage (196 acres) • Tank storage (850,000 barrels) • Traveling cranes (50 tons)	Receipt and shipment of general cargo and Petroleum products	Port of Seattle/ SSA Terminals and Kinder Morgan Energy Partners
Trans Pacific Container Service Corp. Terminal 30	47°34'49"N., 122°20'35"W.	1,812	40–44	18.5	• Open storage (45 acres) • Container cranes (50 tons)	Receipt and shipment of general cargo	Port of Seattle/ Trans Pacific Container Service Corp.
SSA Terminals Terminal 25	47°34'32"N., 122°20'35"W.	1,580	42-44	18.5	• Open storage (37 acres) • Container cranes (40 tons)	Receipt and shipment of general cargo	Port of Seattle/ SSA Terminals
Facilities on West Waterway							
BP Oil Company Seattle Terminal (Pier 11)	47°34'57"N., 122°21'30"W.	460	32	20	Tank storage (617,800 barrels)	Receipt and shipment of petroleum products	BP Oil Company
American President Lines Terminal 5 Wharf	47°34'37"N., 122°21'41"W.	2,900	45-50 **(Note 1)**	19	• Open storage (130 acres) • Container cranes (50 ton)	Receipt and shipment of general cargo	Port of Seattle/ American President Lines
Pacific Terminals East and West Wharves	47°34'25"N., 122°21'35"W.	670	15	19	Covered storage	Receipt and occasional shipment of lumber; receipt of wood pulp and paper products **(Note 2)**	Puget Sound Freight Lines/Pacific Terminals, Ltd.
Facilities on Duwamish Waterway							
Ash Grove Cement Co. North Wharf	47°34'06"N., 122°20'44"W.	600	25	20	• Silo storage (54,500 tons) • Pneumatic pipelines	Occasional shipment of bulk cement	Ash Grove Cement Co.
Ash Grove Cement Co. South Wharf	47°34'03"N., 122°20'45"W.	360	25	20	• Open storage • Silo storage	Receipt of coal, gypsum, gravel, and limestone	Ash Grove Cement Co.
Birmingham Steel Corp. Terminal 105	47°33'54"N., 122°20'56"W.	660	40	17	Open storage (3.7 acres)	Receipt of scrap metal by barge	Port of Seattle/ Birmingham Steel Corp.
Lafarge Corporation Cement Wharf	47°33'19"N., 122°20'42"W.	645	32	25	Silo storage (68,250 tons)	Receipt and shipment of bulk cement	Lafarge Corp.
Lafarge Corporation Raw Materials Wharf	47°33'14"N., 122°20'35"W.	1,100	30	20	• Open storage (50,000 tons) • One traveling crane	Receipt of limestone, shale, coal, and slag	Lafarge Corp.
Glacier Northwest West Terminal Wharf	47°32'56"N., 122°20'25"W.	467	34	20	• Silo storage (50,000 tons) • Traveling cement unloader	Receipt of bulk cement	Glacier Northwest
Glacier Northwest Slip No. 2 Wharf	47°32'49"N., 122°20'16"W.	325	16–17	15	• Open storage (13,000 tons) • Belt conveyor system	Receipt of sand and gravel	Glacier Northwest
International Terminal Co. Terminal 115	47°32'54"N., 122°20'24"W.	925	30	20	• Open storage (6.4 acres) • One 50-ton gantry crane	Receipt and shipment of general cargo and forest products; receipt of steel products	Port of Seattle/ various operators

Facilities in the Port of Seattle

Name	Location	Berthing Space	Depths*	Deck Height	Mechanical Handling Facilities and Storage	Purpose	Owned/Operated
Northland Services 8th Avenue Terminal Wharf	47°32'05"N., 122°19'16"W.	1,035	13–15	18	• Open storage (20 acres) • Cranes to 150 tons	Receipt and shipment of general cargo	Crowley Marine Services/ Northland Services Inc.

Dimensions are given in feet
* The depths given above are reported. For information on the latest depths contact the port authorities or the private operators.

Note 1 – Mariners are advised to use caution when using this wharf as the South Berth shallows rapidly from the 250-foot mark to the end of the pier.
Note 2 – Two tugs are recommended when docking at East Wharf.
Note 3 – Safety and Security Zone, See **33 CFR §165.1324**, chapter 2, for limits and regulations.

over 21 inches (533 mm). The occurrence of light fog is most frequent during late fall and winter where, on average, 19 days report fog during the October through January period. Thunderstorms average about eight per year, lightning damage is very infrequent, and tornadoes have never been reported in the city.

(171) The National Weather Service maintains an office in Seattle; barometers may be compared there or by telephone/internet—see Appendix A for address.

(172)

Routes

(173) Vessels bound for the Strait of Georgia from Seattle can use the following routes: **via Rosario Strait—**an approximate midchannel course using the vessel traffic system outbound lane (see the beginning of chapter 7 for Traffic Separation Scheme information), through Puget Sound and Admiralty Inlet to the precautionary area north of Point Wilson, thence east of Partridge Bank, Smith Island and Davidson Rock to the precautionary area at the south end of Rosario Strait, thence north passing east of Belle Rock, Lydia Shoal and Peapod Rocks, thence leaving the vessel traffic system lanes at the precautionary area just north of Clark Island, and proceeding into the Strait of Georgia either north or south of Alden Bank; **via Haro Strait—**from Admiralty Inlet using the vessel traffic system outbound lane to the precautionary area north of Point Wilson, thence west of Partridge Bank leaving the vessel traffic system lanes at the precautionary area just southeast of Hein Bank, thence through Haro Strait and Boundary Pass to the Strait of Georgia.

(174) These routes are available for vessels of any draft. A range should be steered where available to ensure making the courses good.

(175) Between Admiralty Inlet and the entrance to Rosario Strait, the current on the flood has a tendency to set a vessel east toward Whidbey Island; it also sets strongly through Deception Pass and up Rosario Strait. There is a strong west set in this area on the ebb tide. Through Rosario Strait the currents run with considerable velocity. Heavy tide rips and swirls are found off Black Rock, Obstruction Pass, Peapod Rocks and Lawrence Point.

(176) In crossing from Admiralty Inlet to the entrance of Haro Strait, the tidal currents setting to and from Rosario Strait and San Juan Channel, with estimated velocities of 2 to 3 knots, should be kept in mind. From Henry Island to around Turn Point, heavy tide rips are found on the ebb. Particularly heavy and dangerous tide rips occur on the ebb between East Point and Patos Island and for 2 miles north in the Strait of Georgia. The flood from Rosario Strait, which is felt as soon as the passage between Orcas and Sucia Islands is open, is apt to set a vessel toward East Point. The ebb in this vicinity sets to the east even before the Strait of Georgia is well open.

(177)

Pilotage, Seattle

(178) Pilotage is compulsory for all vessels except those under enrollment or engaged exclusively in the coasting trade on the west coast of the continental United States (including Alaska) and/or British Columbia. Pilotage for Puget Sound is provided by the Puget Sound Pilots. (See Pilotage, Strait of Juan de Fuca and Puget Sound, indexed as such, chapter 7, for details.)

(179)

Towage

(180) Tugs up to 5,000 hp are available in Seattle. Arrangements should be made in advance through ship's agent.

(181)

Quarantine, customs, immigration and agricultural quarantine

(182) (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

(183) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.) The quarantine anchorage is just north of Harbor Island.

(184) Seattle is a **customs port of entry**.

(185)

Coast Guard

(186) The Thirteenth Coast Guard District Office and Sector Puget Sound is located in the Federal Building in downtown Seattle. (See Appendix A for addresses.) The Coast Guard moors vessels at the Pier 36 Slip (47°35'24"N., 122°20'31"W.)

(187)

Harbor regulations

(188) Harbor regulations are enforced by the Harbor Patrol Unit of the Seattle Police Department. The unit has two patrol boats to aid in the enforcement of the city ordinance prohibiting unlawful destruction by excessive speeds, disorderly behavior or unsafe seamanship. They

maintain constant radio contact with each other and the police "land cruisers" on 24-hour patrol. The police patrol all waters of the harbor.

(189)

Wharves

(190) The Port of Seattle has numerous piers and wharves on both the outer harbor (Elliot Bay and East, West and Duwamish Waterways) and the inner harbor (Lake Washington Ship Canal, Lake Union and Lake Washington.) Of the facilities listed in the table, nearly half are owned by the Port of Seattle and leased to private operators, including eight large general cargo facilities, a grain elevator and a large terminal for handling automobiles. Most of the facilities in the inner harbor are privately owned and handle barge traffic almost exclusively. Only the major deep-draft facilities are listed. The alongside depths given in the table are reported—for information on the latest depths contact the port authorities or the private operators.

(192) All facilities described have direct highway connections and most have plant trackage with direct railroad connections. Water is available at most of the wharves, but electrical shore power connections are available at less than half of the wharves. General cargo at the port is usually handled by ships' tackle. Mechanical handling equipment, if available, is mentioned in the table. Shore-based hoisting equipment with capacities up to 200 tons and floating cranes with capacities to 400 tons are available to the public at Port of Seattle.

(193)

Supplies

(194) Marine supplies of all kinds are available in Seattle. Bunker fuel, diesel oil and lubricants are available. Large vessels can be bunkered at Pier 91, Pier 15 (Rainer Petroleum Corp. and Equilon Enterprises) and at Pier 11 (BP Oil Co.). Bunkering may be done at other berths by tank barges. Water is available at most berths. North of Seattle, vessels may bunker at Point Wells or Edwards Point.

(195)

Repairs

(196) There are two large shipyards in the Seattle area, both on Harbor Island at the south end of Elliott Bay. The largest floating drydock, at a shipyard just east of the entrance to West Waterway, has a capacity of 40,000 tons, an overall length of 873 feet, a minimum clear inside width of 137 feet and a depth over the keel blocks of 30 feet. Gantry cranes to 150-ton capacity are available at the yard. Another shipyard, at the northwest end of Harbor Island, has a drydock that is only slightly smaller. Smaller shipyards are on the Duwamish River and on Lake Union, in the inner harbor. There are larger drydocks at the Puget Sound Naval Shipyard in Bremerton, available for private use under certain conditions when not required by the government.

(197)

Small-craft facilities

(198) In addition to the large Shilshole Bay Marina, mentioned earlier in this chapter, numerous small-craft facilities line the shores of Lake Union, Lake Washington, Lake Washington Ship Canal, Elliott Bay and Duwamish Waterway.

(199)

Ferries

(200) **Washington State Ferries** operates three ferry slips at the **Colman Ferry Terminal (Pier 52)** in about 47°36'09"N., 122°20'22"W. Ferries operate between Seattle/Winslow and Seattle/Bremerton 24 hours a day. For information on routes or schedules, visit: *wsdot.wa.gov/ferries* or call 206–464–6400.

(201)

Communications

(202) Ferry service for passengers and automobiles is available to many points on Puget Sound. Seattle is served by two important railroads and by many steamship and towing companies. Many airlines have passenger and freight service to Seattle-Tacoma International Airport. Seattle is the major port for Alaska commerce, by both water and air carriers.

(203)

Lake Washington Ship Canal to Sammamish River

(204) **Lake Washington Ship Canal** extends from Puget Sound through Shilshole Bay, Salmon Bay, Lake Union, Portage Bay and Union Bay to deep water in Lake Washington. The canal is the only entrance from Puget Sound to Lake Union and Lake Washington and is highly trafficked by recreational boats, fishing vessels and commercial vessels. The entrance to the canal is marked by lighted buoys. The **federal project** depths in the entrance are 34 feet and 30 feet through the canal. For detailed channel information and minimum depths as reported by the U.S. Army Corps of Engineers (USACE), use NOAA Electronic Navigational Charts. Surveys and channel condition reports are available through the USACE hydrographic survey website listed in Appendix A.

(205) A **speed limit** of 4 knots is enforced within the guide piers of the Hiram M. Chittenden Locks. A **speed limit** of 7 knots is enforced elsewhere in the Lake Washington Ship Canal, except in an area marked by four private buoys in the north part of Lake Union.

(206) The **Hiram M. Chittenden Locks**, a government-owned and -operated double lock, and a fixed dam are at the narrows of the entrance to Salmon Bay, 1.2 miles in from the sound. The large lock, a two-chamber structure, has a clear length of 760 feet, width of 80 feet, lift of 26 feet and depth over the lower miter sill of 29 feet. The small lock has a clear length of 123 feet, width of 28 feet, lift of 26 feet and depth over the lower sill of 16 feet.

(217)

Structures across Lake Washington Ship Canal and Lake Washington

Name	Type	Location	Clearance (feet) Horizontal	Clearance (feet) Vertical*	Information
Burlington Northern Railroad bridge	bascule	47°40'01"N., 122°24'08"W.	150	43	Notes 1, 2 and 3 Call sign KCE-201
Ballard bridge	bascule	47°39'35"N., 122°22'34"W.	150	29 (46 at center)	Notes 2 and 3 Call sign KJA-445
Overhead cable	power	47°39'09"N., 122°21'38"W.		160	
Overhead cables	power	47°38'58"N., 122°21'15"W.		160	
Fremont bridge	bascule	47°38'51"N., 122°20'59"W.	150 (120 open)	14 (31 for central 38 feet)	Notes 2 and 3 Call sign KJA-442
George Washington Memorial bridge	fixed	47°38'48"N., 122°20'50"W.	150 525	136 73	Over navigation channel Outside the navigation channel
Overhead cable	power	47°39'11"N., 122°19'23"W.		182	
Freeway bridge	fixed	47°39'11"N., 122°19'21"W.	250	127 (138 at center)	
University bridge	bascule	47°39'10"N., 122°19'13"W.	171 (157 open)	30 (45 at center)	Notes 2 and 3 Call sign KJA-441
Montlake bridge	bascule	47°38'50"N., 122°18'17"W.	146 (129 open)	32 (48 at center)	Notes 2 and 3 Call sign KJA-438
Evergreen Point bridge (western navigation channel)	fixed	47°38'36"N., 122°16'28"W.	142	44 (west span) 41 (east span)	There are two spans over this channel Bridge is under construction
Evergreen Point bridge (eastern navigation channel)	fixed	47°38'18"N., 122°14'36"W.	226	67	Bridge is under construction
Interstate 90 bridge (western navigation channel)	fixed	47°35'25"N., 122°17'03"W.	195	29	
Interstate 90 bridge (eastern navigation channel)	fixed	47°35'23"N., 122°15'19"W.	195	29	West side of Mercer Island
Interstate 90 bridge (fixed)	fixed	47°34'44"N., 122°12'02"W.	200	71	East side of Mercer Island

* Vertical clearance is referenced to mean water level of the lakes (21 feet above mean lower low water)

Note 1 – Vertical clearance is referenced to Mean High Water

Note 2 – See **33 CFR 117.1** through **117.59** and **117.1051**, chapter 2, for draw bridge regulations.

Note 3 – Bridge tenders monitor VHF-FM channels 16 and 13, and work channel 13 or phone 206–386–4251.

Passage time is less than 30 minutes for large vessels and 5 to 10 minutes for small vessels. The lock tenders monitor VHF-FM channel 13 and can be contacted at 206–783–7000 for additional information.

(207) A saltwater barrier extends across the east end of the east chamber of the large lock to reduce the intrusion of saltwater into Lake Washington and to conserve water. (See **33 CFR 207.750**, chapter 2, for navigation regulations for Lake Washington Ship Canal, the Hiram M. Chittenden Locks and the saltwater barrier.)

(208)

Depths

(209) Depths above Hiram M. Chittenden Locks are referred to low water of the lakes, which is 20 feet above the plane of mean lower low water of Puget Sound.

(210)

Heights

(211) Vertical clearances above Hiram M. Chittenden Locks are referred to the mean water level of the lakes, which is 21 feet above mean lower low water of Puget Sound.

(212) **Salmon Bay** extends for about 0.8 mile from the east end of the locks to the Ballard (15th Avenue) Bridge. There are numerous piers and floats with extensive small-craft facilities on the bay. Fishermen's Terminal, operated by the Port of Seattle, is immediately west of the Ballard Bridge. The terminal is the home port of a large commercial fishing fleet. Depths of 14 to 28 feet are alongside the piers. There are 700 berths for craft 27 to 176 feet long. Complete facilities for fishing boats are available at the 54-acre terminal, including electricity, gasoline, diesel fuel, water, net repair yards and all types of marine supplies. Marine railways at the terminal can handle craft to 300 tons for complete repairs. A travel lift to 46 feet is also available at the terminal.

(213) From Salmon Bay the canal leads southeast to **Lake Union**, which is about 1 mile long in a north-south direction and about 0.5 mile wide. Depths in the lake range generally from 37 to 41 feet. The lake is heavily utilized by recreational boaters, especially during the summer months. There is a 10-foot shoal about 200 yards offshore from the southwest end of the lake; it is marked by a buoy. Four private buoys in the north part of Lake Union mark an unrestricted speed zone, which is used by boat builders around the lake as a testing area. The buoys are frequently repositioned; caution is advised when transiting the area. Seaplane takeoff and landings are frequent on the east and west sides of the lake. Seasonal buoys (June–September) running the length of the lake show a quick flashing yellow light when seaplanes are present.

(214) There are numerous marinas and repair facilities and several commercial wharves from which various commodities are shipped by barge. A drydock company

has several floating drydocks, the largest of which has a lifting capacity of 3,600 tons.

(215) **Portage Bay**, east of Lake Union, has many slips and finger piers for small-craft; hull and engine repairs are available on the northeast shore.

(216) **Montlake Cut (Portage Cut)** leads from Portage Bay past the conspicuous buildings and athletic stadium of **University of Washington**, on the north side, thence into **Union Bay**, and thence into Lake Washington.

(218) **Lake Washington**, the large freshwater lake on Seattle's east side, provides deep and protected water over most of its length of nearly 16 miles. Significant bands of submerged aquatic vegetation exist around the periphery of the lake in the 10- to 20-foot depth range. These beds are particularly thick in the relatively flat, shoal areas at the north end of the lake and in the various coves and bays along the eastern shore. The shores of the lake are studded with private piers and landings, and there are marinas and small-craft repair places at many locations. Gasoline and diesel fuel are available at a yacht basin just south of Newport Shores on the east side of Lake Washington. There are few commercial installations. Except for a few oil wharves, commercial shipments are by barge.

(219) Combined **measured half nautical mile, nautical mile** and **2,000-meter measured courses** have been established along the pontoon bridge from Foster Island to Evergreen Point on a bearing of **102°30'-282°30'**. The half nautical mile and nautical mile courses are marked on the south side of the bridge by 18-inch circles resembling an engineers target; the half nautical mile markers have green and white quadrants, and the nautical mile markers have red and white quadrants. The 2,000-meter course is marked by 1- by 3-foot green markers with 3-inch white vertical stripes on both sides of the bridge.

(220) **Houghton**, at the northeast side of the lake just south of Kirkland, is the site of a former shipyard. There are several marinas catering to yachtsmen.

(221) **Juanita Bay**, north of Kirkland, is a summer recreational area with several small piers.

(222) Offices and storage facilities of the National Oceanic and Atmospheric Administration are at **Sand Point** on the west shore of the lake just northeast of Union Bay.

(223) **Kenmore**, at the north end of Lake Washington about 4.4 miles north of Sand Point, is the site of several marinas and a barge loading facility. A dredged channel, marked by lighted buoys, leads across the flats to a turning basin. A submerged wreck covered 16 feet is near the approach to the dredged channel in about 47°44'51"N., 122°15'58"W.

(224) A seaplane base is at Kenmore.

(225) **Sammamish River**, about 0.1 mile south of Kenmore, is entered through a dredged channel that branches northeast from the Kenmore channel. About 0.3 mile above the mouth of the river is a highway bridge under construction (2020).

(226)

Possession Sound to Meadowdale

(227) **Possession Sound** joins Puget Sound at the south point of Whidbey Island and extends in a general north direction for 10 miles to its junction with Saratoga Passage and Port Susan. From the entrance it extends for 3.5 miles with an average width of 2 miles and then expands into an irregular basin about 6 miles in diameter.

(228) The waters of the sound are generally deep. The northeast part of the sound is filled with extensive flats, many of which uncover and rise abruptly from deep water. These flats are intersected by several shifting channels, forming the mouth of the Snohomish River. An anchorage area for large vessels is just south of the flats and near the entrance channel to Everett, with depths ranging from 6 to 60 fathoms.

(229) **Meadowdale**, a residential area on Browns Bay, is on the east side of the sound about 4 miles south of Possession Point. There is a large dry storage boathouse here with a hoist that can handle craft to 24 feet. Several floats are available during the summer months; gasoline and covered storage for about 40 craft are also available. Reported depths of 5 feet can be carried to the hoist on the northwest face of the wharf. Norma Beach, about 3 miles south of Possesion Point, is on the east side of the sound. A boathouse with a marine railway can handle small craft to 20 feet; gasoline and dry storage are available.

(230)

Elliot Point to Clinton

(231) **Elliot Point**, on the east side of Possession Sound 4 miles northeast of Possession Point, is a low spit projecting some 200 yards from the high land. **Mukilteo Light** (47°56'55"N., 122°18'22"W.), 33 feet above the water, is shown from a 33-foot white octagonal tower on the point; a mariner-radio-activated sound signal is at the station, initiated by keying the microphone five times on VHF-FM channel 83A.

(232) **Mukilteo** is a town east of Elliot Point. An automobile ferry runs between Mukilteo and Clinton on Whidbey Island—a private light marks the approach to the ferry dock. A rail/barge transfer facility (Mount Baker Terminal) at 47°57'15"N., 122°17'19"W. is marked by a private light.

(233) **Gedney Island**, locally known as **Hat Island**, is prominent 3.5 miles north of Elliot Point. It is about 1.5 miles long in a southeast direction, high and wooded. From its southeast point, a shoal extends southeast, the 5-fathom curve being at a distance of 0.8 mile. Foul ground extends 0.2 mile from the south side of the east half of the island. A light is on the north side of the shoal area.

(234) A fish haven is about 0.5 mile south of Gedney Island in about 47°59'48"N., 122°18'30"W. A marina, protected by a breakwater, is on the northeast side of the island. The breakwater is marked by private lights.

(235) **Clinton**, a village on **Randall Point**, is the Whidbey Island terminus of the ferry from Mukilteo. The town has several stores; a restaurant is near the ferry slip. Gasoline is available.

(236)

Everett to Snohomish River

(237) **Everett**, an important wood products shipping port, is on the east side of **Port Gardner**, 4 miles northeast of Elliot Point. The Port of Everett's large alumina silo is prominent along the water.

(238)

Channels

(239) A dredged channel with two settling basins extends inside a training dike along the east side of **Jetty Island** and in the Snohomish River around the north half of the city to a lumbermill 6 miles above Port Gardner. The channel is marked by lights, buoys and lighted and unlighted ranges. The second settling basin is subject to continual shoaling. For detailed channel information and minimum depths as reported by the U.S. Army Corps of Engineers (USACE), use NOAA Electronic Navigational Charts. Surveys and channel condition reports are available through the USACE hydrographic survey website listed in Appendix A.

(240)

Anchorages

(241) The general anchorage area is west of the waterfront. (See **33 CFR 110.1** and **110.230**, chapter 2, for limits and regulations.) Vessels usually proceed to the wharves.

(242)

Pilotage, Everett

(243) Pilotage is compulsory for all vessels except those under enrollment or engaged exclusively in the coasting trade on the west coast of the continental United States (including Alaska) and/or British Columbia. Pilotage for Puget Sound is provided by the Puget Sound Pilots. (See Pilotage, Strait of Juan de Fuca and Puget Sound, indexed as such, chapter 12, for details.)

(244)

Towage

(245) Tugs up to 3,000 hp are available at Everett, and larger tugs may be obtained from Seattle. Arrangements should be made in advance through ships' agents.

(246)

Quarantine, customs, immigration and agricultural quarantine

(247) (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

(248) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.)

(249) Everett is a **customs port of entry**.

(250)

Harbor regulations

(251) Harbor regulations are enforced by the manager of the Port of Everett, who serves as **harbormaster** and port warden.

(252) **Naval Station Everett** is on the west and north end of the harbor. A naval restricted area, marked by a floating barrier and private lights, surrounds the docking facilities. (See **33 CFR 334.1215**, chapter 2, for limits and regulations.)

(253)

Wharves

(254) The Port of Everett operates three deep-draft piers on Port Gardner, and only the deep-draft facilities on those piers are described. The alongside depths are reported—for information on the latest depths, contact port authorities or the private operators. All the facilities described have both direct highway and railroad connections. Water is available at most of the wharves, and electrical shore power is available at all except Hewitt Wharf. General cargo at the port is usually handled by ships' tackle. Special handling equipment, if available, is mentioned in the description of the particular facility.

(255) **Port of Everett, South Terminal, Berth No. 1 and Dolphin Berth** (47°58'31"N., 122°13'38"W.): depth alongside, 38 feet; deck height, 20 feet; berthing space, 1,555 feet; 30 acres of paved open storage; receipt and shipment of conventional general cargo; shipment of logs; owned and operated by Port of Everett.

(256) **Port of Everett, Pacific Terminal Wharf** (47°58'47"N., 122°13'25"W.): depth alongside, 32 to 37 feet; deck height, 18 feet; berthing space, 600 feet; 8 acres of open storage; receipt and shipment of conventional and containerized general cargo in foreign and domestic trade; receipt and shipment of lumber and steel products; owned and operated by Port of Everett.

(257) **Port of Everett, Hewitt Avenue Terminal, Pier No. 1** (47°58'42"N., 122°13'22"W.): depth alongside, 38 feet (north side) and 42 feet (south side); deck height, 18 feet; berthing space, 140 feet (face), 600 feet (north side), 600 feet (south side); one 35-ton diesel crawler crane for handling containers; receipt and shipment of conventional and containerized general cargo; receipt and shipment of lumber and steel products; shipment of perishable food commodities; owned and operated by Port of Everett.

(258) **Port of Everett, Hewitt Wharf** (47°58'47"N., 122°13'12"W.): depth alongside, 20 feet; deck height, 18 feet; berthing space, 830 feet; one 36,000-square foot refrigerated building; shipment of perishable food commodities; owned and operated by Port of Everett.

(259) **Port of Everett, Hewitt Avenue Terminal, Pier No. 3** (47°58'53"N., 122°13'16"W.): depth alongside, 38 feet; deck height, 19 feet; berthing space, 120 feet (face), 800 feet (south side), 900 feet (north side); 15 acres of open storage, 55,000-ton covered storage dome, one mobile pneumatic unloader (rate of 600 tons per

(268)

Structures Across the Snohomish River, Steamboat Slough and Ebey Slough

Name	Type	Location	Clearances (feet) Horizontal	Vertical*	Information
Snohomish River					
BNSF Railroad bridge	swing	48°01'03"N., 122°11'20"W.	100	9	Horizontal clearance is for the north draw
Overhead cables	power/tv	48°01'02"N., 122°11'18"W.		74	
State Route 529 bridges	vertical lift	48°01'02"N., 122°11'15"W.	105	78 (up) 38 (down)	Note 1
Interstate 5 bridge	fixed	47°59'35"N., 122°10'48"W.	184	66	
US Highway 2 bridge	fixed	47°58'46"N., 122°10'52"W.	130	56	
US Highway 2 bridge	fixed	47°58'44"N., 122°10'58"W.	229	54	
Overhead cables	power	47°58'40"N., 122°11'03"W.		N/A	
Union Slough					
BNSF Railroad bridge		48°01'55"N., 122°11'06"W.	N/A	N/A	
Overhead cables	power	48°01'55"N., 122°10'59"W.		25	
State Route 529 bridges		48°01'54"N., 122°11'03"W.	10	3	
Steamboat Slough					
BNSF Railroad bridge	swing	48°02'09"N., 122°11'01"W.	100	7	
Overhead cables	power	48°02'10"N., 122°11'00"W.		53	
State Route 529 bridges	swing	48°02'10"N., 122°10'57"W.	N/A	N/A	Note 1
Overhead cables	power	48°02'11"N., 122°10'51"W.		53	
Interstate 5 bridge	fixed	48°02'09"N., 122°10'42"W.	100	41	
Ebey Slough					
Overhead cable	power	48°02'51"N., 122°11'02"W.		N/A	
Interstate 5 bridge	fixed	48°02'50"N., 122°10'58"W.	110	41	
BNSF Railroad bridge	swing	48°02'50"N., 122°10'51"W.		5	Bridgetender monitors VHF-FM channel 16 and works channel 13; call sign KZ-2475
Overhead cable		48°02'48"N., 122°10'40"W.		65	
State Route 529 bridge	fixed	48°02'46"N., 122°10'42"W.	110	16	

* Vertical clearances are referenced to Mean High Water
Note 1 – See **117.1 through 117.59 and 117.1059**, chapter 2 for limits and regulations

hour), 35-ton diesel crawler crane; receipt and shipment of conventional general cargo; shipment of lumber and logs; receipt of alumina; owned and operated by Port of Everett.

(260)

Supplies

(261) Water, provisions and some marine supplies can be obtained. Gasoline and diesel fuel are available for small craft at Everett Yacht Harbor. Fuel oil for large vessels is available only by Seattle-based tank barges.

(262)

Repairs

(263) There are no facilities for repairs to deep-draft vessels in Everett; the nearest such facilities are in Seattle.

(264) The **Port of Everett Marina** is about a mile northeast of the Snohomish River Channel's mouth. The marina consists of two separate north and south basins and has berths for more than 2,200 small craft including about 45 transient berths. The reported depths in the entrance to the south basin are 10 with 13 feet alongside and 12 feet in the entrance and alongside the berths in the north basin. Services available include electricity, gasoline, diesel fuel, water, ice, marine supplies, pump-out facility, launching ramps, full repairs (hull, engine, electrical) and a 75-ton marine lift. A harbormaster, whose office is on the south side of the harbor, assigns all berths.

(265)

Communications

(266) Everett is served by a railroad. The county airport, Paine Field, is 6 miles south-southwest of the city.

(267) **Snohomish River**, once heavily traveled by the light-draft river steamers and loggers, flows down through the dredged channel and settling basin near the yacht harbor and empties into Port Gardner just west of East Waterway. Traffic on the river above the yacht harbor consists of log tows, tugs and barges and pleasure boats. Several pulp, plywood and lumber mills are along the river.

(269) A marina is 0.5 mile upstream from the State Route 529 bridges. There is dry storage for over 1,000 craft to 40 feet long; transient mooring floats are available for visiting craft. Gasoline, water, ice, limited marine supplies, hull and engine repairs are available. A city park with a launching ramp is 1.2 miles upstream from the

State Route 529 bridges. The practical limit of navigation on the Snohomish River is 0.8 mile above the Interstate 5 bridge.

(270)

Steamboat Slough to Crescent Harbor

(271) The flats north of Everett at the mouths of **Steamboat Slough** and **Ebey Slough** are used for log storage. Navigation across the shallow flats should not be attempted without local knowledge. Local small craft navigate Ebey Slough to **Marysville**. A marina and boatyard are just east of the railroad bridge in the town. Marine supplies, winter boat storage, engine and hull repairs, a 4-ton hoist and launching ramp are available. There is a public launching ramp just west of the Interstate 5 highway bridge at Marysville.

(272) **Sandy Point**, the south point at the entrance to Saratoga Passage, is a low spit rising abruptly to 100 feet, with bluffs on each side; it is marked by a light.

(273) **Camano Head**, 1.5 miles north-northeast of Sandy Point, is the southeast point of Camano Island. A shoal, with a rock bare at low tide, extends nearly 0.2 mile southeast from the point and is marked by a light.

(274) **Tulalip Bay**, 4 miles northwest of Everett, is a small cove on the mainland. On the north side are the village of **Tulalip** and the agency buildings of the Tulalip Indian Reservation. The bay is shoal, with rocks extending more than 300 yards south and west from the point on the north side of the entrance. A light marks the edge of the shoal water west of the point at the south side of the entrance. Several small wharves and landing floats, mostly dry at low water, are at Tulalip; however, it has no public facilities. There are log-booming grounds in the south part of the bay. Mission Beach, immediately south of the bay, has several private boathouses and float landings.

(275)

Comano Island to Crescent Harbor

(276) **Camano Island** extends between Port Susan and Saratoga Passage. It is irregular in shape and 14 miles in length; the south portion consists of a long, narrow tongue that terminates in Camano Head, 340 feet high. At its north end it is separated from the mainland by **Davis Slough**, and South Pass and West Pass of the Stillaguamish River, all dry at low water. On the shores of the island are several resorts and unincorporated residential tracts.

(277) **Port Susan**, on the east side of Camano Island, extends about 11 miles in a northwest direction, terminating in flats that bare and extend over 3 miles wide at its head. There are several resort settlements. Deep water is throughout until nearing the head, where anchorage may be had off the extreme west edge of the flats in about 10 fathoms. Care should be used in approaching and anchoring, as the flats rise abruptly from deep water.

(278) **Stanwood** is in a dairying and farming district on the north side of the **Stillaguamish River** at the junction of **South Pass** and **West Pass**.

(279) **Saratoga Passage**, on the west side of Camano Island, extends some 18 miles in a northwest direction from its entrance between Sandy Point and Camano Head. At its north end it connects with Penn Cove and Crescent Harbor and leads east into Skagit Bay. Depths in the passage are from 100 fathoms at the entrance to 15 fathoms at the Crescent Harbor entrance. There are few outlying dangers, and a midchannel course is clear.

(280) There is considerable traffic in these waters, mostly pleasure and fishing craft, with occasional tugs bound to or from Deception Pass. This is a resort area; along the shores of the islands are several small marinas that provide gasoline, launching ramps and lodgings, limited berths, scattered areas of private mooring buoys. Principal commercial products are lumber and fish.

(281) **Langley** is a small town on Whidbey Island about 1.2 miles west of Sandy Point. Tugs often anchor off the beach between Langley and Sandy Point. The South Whidbey Harbor at Langley is protected on the north and east sides by a timber breakwater marked by private lights. Transient berths, water, electricity, launching ramp and pump-out facility are available. In 2010, 12 feet was reported alongside the berths. The harbormaster monitors VHF channels 16 and 66A; telephone: 360–221–1120. The stores of the town business district are nearby; supplies may be obtained.

(282) **East Point**, 6 miles northwest of Sandy Point, is a low sandspit about 300 yards long and is marked by a light.

(283) **Elger Bay**, on the west shore of Camano Island across Saratoga Passage from East Point, is an open bight 1 mile wide. Tugs anchor here in west and northwest winds.

(284) **Holmes Harbor**, entered 8 miles northwest of Sandy Point, indents Whidbey Island 5 miles in a south direction. Except for a sand and gravel wharf and a large private boathouse at the head of the harbor, only private pleasure piers are on the shores of Holmes Harbor. Depths range from 30 to 40 fathoms off the entrance to 17 fathoms near the head, where good anchorage, except from north weather, may be had in mud bottom. A **general anchorage** is in Holmes Harbor. (See **33 CFR 110.1** and **110.230**, chapter 2, for anchorage limits and regulations.) **Rocky Point**, at the east side of the entrance, is low but rises abruptly to 500 feet. **Baby Island** is a small islet 0.2 mile off the point. Shoals, marked by a buoy, extend northwest from the island.

(285) **Greenbank**, a small farming settlement, is on the west side of Holmes Harbor at the entrance. It has a store and service station. Anchorage against west weather is available off Greenbank in 12 to 18 fathoms, muddy bottom. **Freeland**, the business center for this area, is a small town at the head of Holmes Harbor.

(286) **Camano**, a settlement on the east side of Saratoga Passage, is 3.5 miles northwest of **Lowell Point**. A light

is on **Onamac Point**, 0.8 mile north of Camano. A fish haven is northwest of the point.

(287) **Penn Cove** indents the west shore of the basin at the head of Saratoga Passage and extends west for about 3.5 miles. In most weather, the cove affords good protection in 5 to 15 fathoms, good holding ground.

(288) Off **Snatelum Point**, the south point at the entrance to Penn Cove, is a narrow spit extending north 0.5 mile, with ½ fathom near its end. The spit is marked by a buoy.

(289) **Blowers Bluff**, the north point at the entrance to Penn Cove, is bare, light-colored, high and rounding. Rocks lie offshore 200 yards at places along the bluff. The shoal extending off the southwest end of the bluff reaches almost one-third the distance across Penn Cove. Vessels should favor the south shore when passing this shoal.

(290) **Coupeville**, the county seat of Island County, is on the south shore of Penn Cove, about 2 miles from the head. The town has stores and service stations. A wharf here extends to about 12 feet. Berthage is available at floats attached to the east side of the wharf. Gasoline, diesel fuel and pump-out station are available at a fuel dock on the north side. A rock covered 15 feet is about 300 yards northeast of the wharf. A launching ramp is about 0.3 mile east of the wharf.

(291)

Oak Harbor to Crescent Harbor

(292) **Oak Harbor**, which indents the north shore of Saratoga Passage west of Crescent Harbor, is a semicircular cove about 1 mile in diameter. A foul area with several rocks awash extends about 0.5 mile southeast of **Maylor Point** on the east side of the harbor entrance. The natural entrance channel is marked by lights and lighted and unlighted buoys. The town of Oak Harbor is on the north shore of the harbor and has a seasonal dock with an entrance channel marked by pilings. A marina operated by the town is on the east side and can provide gasoline, diesel fuel, transient berths, electricity, water, ice, marine supplies, winter storage, launching ramp and pump-out facility. A 30-ton marine lift is available and full repairs can be made. The marina is protected on the west side by a breakwater marked by private lights.

(293) **Crescent Harbor**, immediately east of Oak Harbor, is a semicircular bight 2.5 miles wide, between **Forbes Point** and **Polnell Point**. Polnell Point is wooded and rather bold, and connected to the main island by low ground, giving the point the appearance of an island from a distance off. Foul ground surrounds these points, but otherwise the harbor is clear, affording anchorage in 10 to 11 fathoms, muddy bottom. Shoals and foul ground extend about 0.7 mile south of Forbes Point; the outer end of this area is marked by a lighted buoy. The harbor is exposed to the south. A T-pier with mooring dolphin, used for fueling navy vessels, is on the west side of the harbor; the pier can be used only with permission. A breakwater protects the mooring area on the southwest side. Services and/or provisions cannot be provided.

(294)

Skagit Bay to Mount Vernon

(295) The entrance to **Skagit Bay**, southern part, lies between Polnell Point and Rocky Point. The bay is about 12 miles long in a west-northwest direction. The greater portion of it is filled with flats, bare at low water, and intersected by numerous channels discharging the waters of Skagit River.

(296) A natural channel varying in width from 0.2 to 0.6 mile and marked by lights and buoys follows the east shoreline of Whidbey Island to the north end of the bay. Shoal water extends off for some 100 to 300 yards from the east shore of the island. The north part of Skagit Bay is described in chapter 7.

(297) The controlling elevation of the flats at the mouth of South Fork is about 2.5 feet above mean lower low water, and the controlling depth at low tide depends on the river stage, probably not exceeding 1 foot during periods of minimum flow. The diurnal range at the mouth of the river is 11.3 feet. The extreme range at this point is estimated to be 20 feet.

(298) A fixed highway bridge with a clearance of 10 feet crosses the South Fork at **Conway**, 4.8 miles above the mouth.

(299) **Utsalady**, a small village on the north shore of Camano Island about 1.2 miles east of Rocky Point, has a store. Vessels may anchor just east of **Utsalady Point** in a small inlet between the shoal water of the flats and the shore in 3 to 6 fathoms, muddy bottom, with shelter from south winds. In the 1860s Utsalady became the first shipbuilding port in Puget Sound.

(300) **Strawberry Point**, about 2.5 miles north of Utsalady Point, is marked by a light. Southwest of the light, dredged canals give access to private moorings.

(301) The **South Fork** channel leading into Skagit River winds through the flats north of Camano Island. Because of shoaling, however, the channel has largely been abandoned by boat traffic to Mount Vernon except for local outboard boats; **North Fork** is used instead. In 1971, the mouth of the North Fork bared 2 feet at MLLW. There are several small-boat moorings along the banks of the river at **Mount Vernon**.

(302)

Hood Canal

(303) The entrance to **Hood Canal** is at the lower end of Admiralty Inlet, between Foulweather Bluff and Tala Point, about 10 miles south of Marrowstone Point. It extends in a general southerly direction for about 44 miles and then bends sharply northeast for 11 miles, terminating in flats bare at low water. The head of Case Inlet, in the south part of Puget Sound, is less than 2 miles from the head of Hood Canal. The shores are high, bold and wooded, and the water is deep, except at the

heads of the bays and at the mouths of the streams. Many small craft ply these waters. There are mostly small float-landings and private docks in the canal.

(304) U.S. Highway 101 follows much of the west shore of Hood Canal, and connecting highways to Port Orchard follow the south shore of the south part of the canal around The Great Bend. There are road connections with Port Orchard and with the Puget Sound highway system from all the settlements on the east shore of the canal.

(305) Water traffic in general is confined to tugs with log rafts, naval vessels in the upper part, and many pleasure craft. Hood Canal is a vacation area. Numerous private houses and summer cottages with small piers, mooring buoys and floats are on both sides of the canal. There are relatively few public floats or piers, and the only commercial activities are logging and some oystering.

(306)

Tides and currents

(307) The **tidal currents** in Hood Canal at times attain velocities exceeding 1.5 knots. In some places in the canal the currents are too weak and variable to predict. At times there are heavy tide rips north of and around Foulweather Bluff, sufficiently heavy to be dangerous to small boats and to break up log rafts. This is most pronounced when the ebb current from the main body of Puget Sound meets that from Hood Canal off the point, and particularly so with the ebb against a strong north or northwest wind. Off Point Hannon and Hazel Point, tide rips occur at times sufficiently strong to be troublesome to tugs with log tows. Current observations taken at a station in midchannel east of Hazel Point show that directions of both flood and ebb vary considerably at that location. At times southwest winds from Hood Canal and north winds from Dabob Bay cause a chop dangerous for small boats. Under these conditions smoother water is found near either shore. (See the Tidal Current prediction service at *tidesandcurrents.noaa.gov* for specific information about times, directions, and velocities of the current at numerous locations throughout the area. Links to a user guide for this service can be found in chapter 1 of this book.)

(308) The dangers are few and generally close inshore. A few low sandspits from 100 to 300 yards long are difficult to see at night, but most of them have been made into resorts, and the buildings nearby show up well against the background of trees. Flats off the mouths of streams extend as much as 0.5 mile offshore and are extensive at the heads of some of the bays. A midchannel course is clear until reaching The Great Bend, where Hood Canal turns east. Here the north shore just east of Ayres Point should be favored to clear the flats extending from the east part of Annas Bay.

(309)

Twin Spits to Port Gamble

(310) **Twin Spits** are two long, low, sand points, 0.5 mile and 1 mile south of Foulweather Bluff. When waiting for smooth weather to round Foulweather Bluff, tugs with log tows often anchor in 50 feet 1 mile southeast of the south spit, in a bight known locally as **Races Cove**, with Colvos Rocks Light slightly clear of the end of the south point of Twin Spits.

(311) **Hood Head**, on the west side of Hood Canal about 3 miles south of the entrance, is almost an island, having only a narrow strip of low sand connecting it with the west shore. The head is 220 feet high, steep and wooded and is a prominent feature in the entrance.

(312) A rocky ledge, marked by some kelp and covered 4 to 26 feet, extends more than 500 yards south of Hood Head; rocks covered 4 feet are near the south end of this ledge about 325 yards south of Hood Head. An aquaculture site, marked by lighted private buoys, is about 0.4 mile south of Hood Head.

(313) **Coon Bay**, 2.5 miles south of Foulweather Bluff, is a small, nearly landlocked harbor offering excellent protection to small craft during periods of rough weather. The privately dredged entrance channel is narrow and has a reported controlling depth of about 3 feet. There are several private piers inside the entrance, but no facilities are available.

(314) **Point Hannon** is at the east extension of Hood Head; it is marked by a light. A low sandy spit with shoal water extends about 200 yards east of the light.

(315)

Local magnetic disturbance

(316) Differences of more than 2° from normal variation have been observed in Hood Canal at Point Hannon.

(317) **Termination Point**, 1.6 miles east of the village of **Shine**, is 1.7 miles southwest of Point Hannon. A lighted transformer substation is on Termination Point.

(318) **Hood Canal Bridge**, a pontoon highway bridge crossing the canal between Termination Point and Salsbury Point west of Port Gamble has two fixed openings; the clearance of the west opening is 35 feet, and that of the east opening is 50 feet (at all tide levels). In the 600-foot center opening there are pontoons that are retracted for larger vessels. The bridgetender monitors VHF-FM channel 16, works on channel 13 (call sign, WHD–721) and can be contacted at 360–779–3233. (See **33 CFR 117.1** through **117.59** and **117.1045**, chapter 2, for drawbridge regulations.) Anchor cables, extending from the bridge pontoons to the canal bottom, extend nearly 500 yards both north and south of the bridge; anchoring should not be attempted in this area.

(319) **Sisters**, two rocks 200 yards apart, 0.5 mile south of Termination Point, are awash at about half tide. A light is on the south rock, 0.4 mile from the north entrance point to **Squamish Harbor**, an open bight just southwest of Termination Point. Tugs frequently anchor near the head of the harbor in about 6 fathoms, muddy bottom.

(320) **Case Shoal**, partly bare at low water, is about 0.6 mile from and parallel with the west shore of Squamish Harbor. The shoal is marked at its north end by a daybeacon and on its southeast side by a light.

(321) **Port Gamble Bay** is a small bay on the east shore of Hood Canal 5 miles from the entrance. It is 2 miles long with a narrow entrance. A dredged entrance channel, marked by lights, leads from deep water in Hood Canal into Port Gamble Bay.

(322) **Port Gamble**, the town on the west shore at the entrance, is company owned and maintains all facilities including the local housing, church and store. The lumber mill had been in operation for more than a century and closed in 1995. The church steeple and flagpole in the town are prominent. Shoals covered 5 feet are about 250 and 500 yards northeast from the end of the wharf. Strong currents on both flood and ebb tide are experienced through the entrance channel to Port Gamble Bay.

(323) Excellent anchorage may be found in the bay between 24 feet and 54 feet, muddy bottom.

(324) Vessels should hold a midchannel course on entering Port Gamble Bay to avoid shoal water on the west side of the channel.

(325)

Caution

(326) The entrance channel to Port Gamble Bay is quite constricted by shoals on both sides of the channel. The two lights on the east side of the channel are in shoal water and do not mark the edge of the channel.

(327) A bridge pontoon storage area is on the west side of Port Gamble Bay about 0.4 mile south of Port Gamble.

(328)

Thorndyke Bay to Triton Head

(329) **Thorndyke Bay** is a small bight on the west side of Hood Canal about 4 miles south of Squamish Harbor. An **explosives anchorage** is south of the bay. (See **33 CFR 110.1** and **110.230**, chapter 2, for limits and regulations.)

(330) **Bangor Wharf** on the east side of the canal, 3.5 miles south of Thorndyke Bay, is the property of the Bangor U.S. Naval Submarine Base. A **naval security zone** and **restricted area** surrounds the wharf and other naval docking facilities along the east side of Hood Canal. (See **33 CFR 165.1302** and **33 CFR 334.1220**, chapter 2, for limits and regulations.) These wharves are also surrounded by floating security barriers marked by lighted buoys. A 500-foot radio tower, marked by red aircraft warning lights, is on Bangor Wharf and is prominent. A 459-foot red and white radio tower, marked by red aircraft warning lights, is on the wharf 0.3 mile north-northeast of Bangor Wharf; this tower is also prominent. It is reported that vessels southbound from Hood Canal Bridge can use the towers as a **200.6°** range. Strong currents are in the vicinity of the piers at Keyport Naval Undersea Warfare Engineering Station.

(331) A **naval operating area** is in the south part of Hood Canal. (See **33 CFR 334.1190**, chapter 2, for limits and regulations.) A **naval exercise area** extends north from the north boundary of the operating area to just off **South Point**, about 2.3 miles northeast of Thorndyke Bay.

(332) **Bangor**, a small residential community about 2 miles south of Bangor Wharf, has no facilities.

(333) **Seabeck**, about 6 miles southwest of Bangor, is a settlement and resort at the head of **Seabeck Bay**, a small cove on the east shore. A marina, protected by a breakwater awash at high water and marked by private lights, is on the south side of the bay. Berths, gasoline, diesel fuel, water, ice, supplies and a 1½-ton hoist are available. In 2005, the marina was reported to be closed. Shoal water extends 0.5 mile from the head of the bay. Good anchorage, well protected from southeast to southwest weather, is available in the bay in 35 to 50 feet. Shoal water extends more than 200 yards off **Misery Point**, at the west side of the entrance of the bay. A light is about 300 yards northeast of Misery Point, and a fish haven is close northwest of the light.

(334) **Oak Head**, 2 miles north-northeast of Misery Point and marked by a light, is the south point of **Toandos Peninsula. Hazel Point**, 1.8 miles east-northeast of Oak Head, is the turning point where the canal bends sharply from south to southwest.

(335) **Fisherman Harbor** is a cove on the south end of Toandos Peninsula, just east of Oak Head. It is very narrow, with a constricted entrance that is practically bare at low water. A sandspit extends partly across the entrance from the west shore.

(336) **Brinnon** is a village on the south side of Dosewallips River, 3.5 miles west of Oak Head, at the entrance of Dabob Bay. It has a general store and service station. Gasoline, water, and ice are available, but there is no landing pier. A log booming ground is close offshore at Brinnon.

(337) **Dabob Bay**, the largest inlet in the canal and separated from it by Toandos Peninsula, extends 9 miles in a north direction. The entrance is between **Tskutsko Point** and **Sylopash Point** just north of the mouth of Dosewallips River. A light is off Tskutsko Point. The west shore of Dabob Bay is particularly steep and bold, reaching an elevation of over 2,600 feet in less than 2 miles from the coast.

(338) A **naval operating area** is in the bay. Unlighted spherical yellow mooring buoys may be temporarily established within the bay. Navy–maintained warning lights are shown from **Whitney Point**, Pulali Point and Sylopash Point on the west side of the bay, from **Zelatched Point** on the east side of the bay and on the southeast side of Bolton Peninsula on the north side of the bay. Flashing amber lights indicate that naval operations are in progress and all craft should keep well clear of vessels engaged in testing. Flashing red lights will be shown when naval operations close the area to navigation. Craft on the bay during these periods should stop their screws and secure their engines and depth sounders. Mariners are advised to pass no closer than 1 mile of naval vessels engaged in bottom operations unless directed otherwise by radiotelephone or other signal from the shore, picket boat, or surveillance aircraft. (See **33 CFR 334.1190**, chapter 2, for limits and regulations.)

(339) A **restricted area** is off Whitney Point. (See **33 CFR 334.1260**, chapter 2, for limits and regulations.)

(340) **Quilcene Bay** is a small inlet on the west side of Dabob Bay north of Whitney Point. A light marks the east side of the entrance to the bay. The north half of the bay is filled with flats that bare. This part of the bay has two log booms and log storage areas. An oyster farm is on the east side of the bay just inside the entrance. There are rafts marked by lights and mooring buoys near the farm. **Quilcene**, a small town on the west side and near the head of the bay, is about 0.5 mile inland. The town has hotels, restaurants and stores.

(341) **Quilcene Boat Haven**, is on the west side of the bay about 1.4 miles south of the town. The entrance to the haven is protected by a stone breakwater; mooring floats for over 50 small craft and gasoline are available. The basin has a reported controlling depth of 10 feet. Two oyster farms are near the haven.

(342) **Pleasant Harbor** is a small cove on the west shore of Hood Canal about 3 miles west of Misery Point. It is about 300 yards wide and has a narrow shallow entrance. Owing to the narrowness of the entrance, boats should keep in midchannel until clear of the 6-foot shoal. Two marinas in the harbor have berths for about 250 craft and can provide electricity, gasoline, diesel fuel, water, ice, pump-out and limited marine supplies. Anchorage in about 36 feet, mud bottom is available inside the harbor. A state park pier is in the harbor.

(343) **Triton Head**, on the west shore, is 8.2 miles southwest of Oak Head. It is low, rocky and timbered, with a reef that bares extending 200 yards north from the point. **Triton Cove** is a small cove formed by the head and the west shore, that affords anchorage for small craft against south winds. Oyster beds, marked by stakes and brush, are about 0.8 mile north from Triton Head on the flat which extends off the mouth of **Fulton Creek**. Two resorts just south of Triton Head have berths, gasoline, diesel fuel, water, ice, dry storage and marine supplies. Hoists and railways to 10 tons are available, and outboard engine repairs can be made.

(344)

Holly to Lynch Cove

(345) **Holly** (47°33.5'N.,122°58.6'W.), on the east shore of Hood Canal, is a settlement on the south side of a small bight about 10 miles southwest of Oak Head. There are no facilities here. Shoal water extends about 300 yards north and east from the south shore of the bight. **Anderson Cove** is the shallow cove directly north of Holly.

(346) **Eldon** is a west shore settlement on the south bank of **Hamma Hamma River**, about 3 miles southwest of Holly. The delta flats of the Hamma Hamma River extend nearly 0.5 mile from shore. Unmarked jetties extend from the river through the flats into Hood Canal and constitute a potential hazard to small craft.

(347) **Lilliwaup** is a village on the south shore of **Lilliwaup Bay**, a small shallow cove on the west shore of Hood Canal about 6 miles southwest of Eldon.

(348) About 1 mile south, there is a resort at which berths, water, ice and marine supplies are available. A 3-ton elevator at the resort can handle craft to 19 feet long for hull and engine repairs.

(349) **Dewatto** is a small settlement on the south side of **Dewatto Bay**, a small, shallow cove on the east shore opposite Lilliwaup.

(350) **Hoodsport**, the largest town on Hood Canal, is on the west shore 4 miles southwest of Dewatto. It has a state fish hatchery and a public pier with floats.

(351) **Potlatch** is a small town on the west side of the canal about 2 miles south of Hoodsport and opposite **The Great Bend**,where Hood Canal turns northeast. The large gray building of a hydroelectric power plant, connected to a standpipe on the mountain above by three pipelines, is very prominent on the west shore 0.5 mile south of the town. **Potlatch State Park**, just south of the power plant, has a small-craft launching ramp, mooring buoys and water.

(352) **Union** is a town with several stores on the south shore of The Great Bend. A marina here can provide gasoline, diesel fuel, electricity, transient berths, pumpout, water, ice, launching ramp and winter storage. Depths alongside the floats are reported to be 25 feet; however, the marina should be approached from the northeast to avoid shoal water and snags. A large resort in the cove on the south shore 1.3 miles east of Union has a T-pier with a 600-foot face and reported depths of 20 feet alongside. Transient berths, electricity, pumpout, water and ice are available at the resort; a large motel and restaurant are here.

(353) **Annas Bay**, immediately west of Union, is a broad, open bight; the east half is flat and bare at low water. This flat extends about 0.2 mile into the canal immediately west of Union and is formed by the **Skokomish River**, which empties at the head of the bay.

(354) **Tahuya**, a small town on the north shore of The Great Bend 1.8 miles northeast of Union, has a resort with a pier and floats, about 0.75 mile west of the town; water and a launching ramp are available. Reported depths of 2½ feet are off the floats.

(355) Hood Canal terminates in **Lynch Cove**. Flats, mostly bare at low tide, extend for about 2.2 miles from the head of the cove.

(356)

Port Orchard to Brownsville

(357) **Port Orchard** is an extensive body of water, west of **Bainbridge Island**, 15 miles long. Its north end connects with Port Madison through Agate Passage. At its south end Port Orchard connects with Puget Sound through Rich Passage. The shores are moderately low and wooded. Villages and numerous cottages line the shores with many having private docks, moorings and platforms.

(358)

Current

(359) Current observations taken in midchannel about 1 mile south of **Tolo** indicate that the tidal current in that locality is very weak. See the Tidal Current prediction service at *tidesandcurrents.noaa.gov* for specific information about times, directions, and velocities of the current at numerous locations throughout the area. Links to a user guide for this service can be found in chapter 1 of this book.

(360) **Agate Passage** is the north entrance to Port Orchard and connects it with Port Madison. The channel extends about 1 mile in a southwest direction with a depth of about 20 feet. The passage is straight with shores that are wooded and fairly steep-to. The shoreline is mostly rocky and fringed with kelp to Point Bolin. The currents have velocities up to 6 knots; the flood sets southwest and the ebb northeast.

(361) The passage is partially obstructed by a shoal near the middle of the north end with depths of 9 feet, with depths of 13 to 18 feet almost in midchannel.

(362) The north entrance is marked by a light on the west side of the channel opposite **Agate Point**; a lighted buoy marks the channel through the passage and a light marks a shoal northeast of **Point Bolin**.

(363) A fixed highway bridge, 0.7 mile south of Agate Point, has a clearance of 75 feet for a midwidth of 300 feet. Overhead power cables cross the passage on both sides of the bridge; least clearance is 96 feet.

(364) **Liberty Bay** is a narrow inlet extending about 4 miles in a north direction from the northwest part of Port Orchard. The southeast half of the bay is narrow and tortuous. The shores are low and wooded; the shoreline is mostly sand and gravel. There are mud flats at the head of the bay and in the small bight on the south side of the bay. Mud is the predominating bottom characteristic. The current velocity is 0.8 knot north of Keyport, in the narrow entrance to the bay. Velocities exceeding 1 knot occur at times.

(365) **The Keyport Naval Undersea Warfare Center (NUWC)** is on the west side of the entrance to Liberty Bay. A seaplane float extends 100 feet northwest from the end of the pier and mariners are requested not to exceed 3 knots when passing it. Several buildings are prominent at the station.

(366) A **torpedo test area** extends off the shore between Brownsville and Keyport NUWC. Flashing red lights on navy range vessels between Keyport and Brownsville and atop a building at the seaward end of the southern building at Keyport NUWC indicate torpedo firings, or that noise measurement tests are in progress, or that conditions are generally hazardous to mariners. When lights are flashing, mariners should not enter the test area. Mariners near the area should stop engines, or other equipment generating underwater noise, such as depth sounders, because some torpedoes are guided by noise and may be attracted to the boat noises. (See **33 CFR 334.1230**, chapter 2, for limits and regulations of the restricted area.)

(367) **Keyport** is on the south side of the passage leading to Liberty Bay. A power cable with a clearance of 90 feet crosses the passage at Keyport. There are two piers with floats that can accommodate about 42 small craft. A store with gasoline pumps is about a half block from the Keyport launching ramp. A marine railway that can handle craft to 42 feet is available for repairs; a 7-ton hoist is also available. Engine and hull repairs and salvage and towing services are available at Keyport.

(368) **Poulsbo**. a fishing and pleasure resort on the east shore at the head of Liberty Bay, is the principal town of the area. The small-craft harbor at Poulsbo, protected on the south and west sides by an angled timbered breakwater, can accommodate about 400 fishing boats and pleasure craft. The breakwater is well marked by private lights. Piers and floats are in the harbor with reported depths of 7 feet alongside. Supplies and services available at the harbor are electricity, gasoline, diesel fuel, water, a pump-out facility and electrical/engine repairs. A float with the edges painted yellow is on the northeast side of the harbor and has been reserved as a seaplane dock. A yacht club and marina are about 0.4 and 0.6 mile south-southeast of the small-craft harbor, respectively. Supplies of all types may be obtained in town. A tall church steeple on the hill northeast of the harbor is prominent.

(369) **Manzanita** is a settlement on the west side of Bainbridge Island in a small cove about 2 miles south from Agate Passage. **Manzanita Bay**, south of the town, affords an excellent anchorage for small craft in 27 feet, mud bottom. There are several private wharves, buoys and floats in the bay. Caution is urged to avoid rows of submerged piling on each side of the bay, about midway in from the entrance.

(370) **Battle Point**, a sandy spit on the east side of Port Orchard about 1.7 miles south of Point Bolin, marks the turn in the direction of the channel from southwest to south. A light is off the end of the spit.

(371) **Brownsville**, on the west shore of Port Orchard, is about 1.2 miles southwest of Battle Point. Brownsville is on the north side of the entrance to Burke Bay, which bares entirely at low tide but may be entered by small craft at about half tide. The Port of Brownsville has 310 permanent berths, 51 transient slips, and 2,000 linear feet of guest moorage. Depths range from about 8 feet alongside A-Dock near the boat ramp to approximately 25 feet along the breakwater. The marina provides gasoline, diesel, propane, electricity, fresh water, ice, marine supplies, and a pump-out station. The Port Office is located on the second floor of the main building.

(372)

Illahee to Beans Point

(373) **Illahee** is a small settlement on the west shore of Port Orchard about 3.0 miles south of Battle Point. The town has a wharf and stores. A fish haven, extending about 140 feet from the outer end of the wharf, provides marine habitat improvement for scuba diving and public fishing;

mariners are advised to use caution. About 1 mile south of Illahee at **Illahee State Park** is a public pier with floats for small craft and a launching ramp. A rock awash was reported about 50 yards southeast of the pier in about 47°35'59.8"N., 122°35'32.1"W.; caution is advised in the area.

(374) **Fletcher Bay** is a village on the east shore of Port Orchard about 1.2 miles south of Battle Point. Small boats can enter the bay at three-quarter tide and find anchorage in 12 feet, mud bottom; the swinging area is limited. The bar across the entrance bares at half tide.

(375) The east and principal approach to Port Orchard from Puget Sound is south of Bainbridge Island through Rich Passage, between Restoration Point and Blake Island. It is deep and almost free from dangers, except for **Bainbridge Reef**, covered 35 to 55 feet, and currents in the constricted west part of Rich Passage. Bainbridge Reef is marked at the southwest end by a lighted buoy.

(376) **Orchard Point**, the south point at the entrance to Rich Passage, is marked by a light with a mariner-radio-activated sound signal, initiated by keying the microphone five times on VHF-FM channel 81A. A **naval restricted area** is on the south side of the point, surrounding the pier projecting south from the shoreline. (See **33 CFR 334.1244**, Chapter 2, for limits and regulations.) A **general anchorage** is in the vicinity of the point. (See **33 CFR 110.1** and **110.230**, chapter 2, for limits and regulations.)

(377) **Rich Passage** is about 3 miles long, with a sharp bend near its west end, where it narrows to 0.2 mile. **Orchard Rocks**, some 400 yards in extent, are on the north side of the channel just inside the east entrance. A small area near the center of the reef, which uncovers, is marked by a daybeacon. The rocks are marked off their south end by a lighted buoy. The reef off **Point Glover** is marked by a light and a mariner-radio-activated sound signal, initiated by keying the microphone five times on VHF-FM channel 83A. **Waterman Point**, at the west entrance, is marked by a light and a mariner-radio-activated sound signal, initiated by keying the microphone five times on VHF-FM channel 81A. A light marks the south edge of the shoal extending from **Point White**, the north point at the west entrance. The town of **Waterman** has a pier and float in deep water about 1 mile southwest of Waterman Point.

(378)

Currents

(379) Continuous observations in midchannel between Point Glover and Point White and at other points in the passage indicate that current velocities increase from east to west in Rich Passage reaching a maximum average velocity of 2.4 knots on the flood and 3.1 knots on the ebb at the west end off Point White. The strongest observed currents were 4 knots on the flood and 5 knots on the ebb. Ferry pilots on the regular daily run between Seattle and Bremerton advised that on rare occasions they have experienced ebb currents of "at least" 6 knots in the vicinity of Light 10.

(380) Near the time of slack, the average period when the velocity does not exceed 0.2 knot is about 20 minutes. For strong currents these periods will be decreased; for weak currents they will be increased.

(381) In the channel off Orchard Point, at the east end of Rich Passage, the velocity of the flood is 0.8 knot and on the ebb, 1.1 knots. Off Pleasant Beach the velocity of the flood is 1.3 knots and on the ebb, 2.8 knots.

(382) On the flood, the lines of stream flow are nearly uniform except off the bight just northwest of Middle Point and in the large cove on the north shore opposite Point Glover. Eddies do form in those two places, but they do not extend outward to the usual vessel track. On the ebb, however, extensive eddies and countercurrents do occur, owing to the funnel-shaped configuration of the passage.

(383) Between Middle Point and Point Glover, an extensive eddy extends from shore almost to midchannel and will frequently be encountered by vessels on the track between Orchard Rocks and Point Glover buoys.

(384) An eddy fills the cove on the north shore opposite Point Glover but does not extend outward to the vessel track.

(385) An eddy occurs about 0.2 mile south-southwest of Point White and a little north of midchannel at the west entrance to the passage. A weak countercurrent occurs inshore along the southeast side of Point White.

(386) These eddies and countercurrents on the ebb greatly diminish the effective width of the passage and so increase the velocities in the channel.

(387) Mariners unfamiliar with the area should not attempt to navigate Port Orchard, and particularly Rich Passage, in thick weather because of the strong tidal currents. In clear weather, however, the navigation of these waters presents no unusual difficulty.

(388)

Caution

(389) **Rich Passage**, because of activities of the Puget Sound Naval Shipyard, has a large volume of traffic. Many ferries a day each way, tugs with hawser tows and various types of naval craft, all contribute to create a considerable collision hazard in the passage, particularly at the sharp bend off Point Glover. Strong tidal conditions prevail in this vicinity, and deep-draft outbound vessels making the sharp turn may be unavoidably set well over toward the east shore, necessitating a two-blast, starboard-to-starboard meeting with inbound vessels. Vessels approaching Point Glover from either direction should sound one long blast when within 0.5 mile of the point as a warning to any vessel approaching from the opposite direction.

(390) **Fort Ward**, formerly a military post and now a state park on Bainbridge Island, is near the east entrance to Rich Passage, just inside Beans Point. There is a wharf here built out to 18 feet. A fish pen off the end of the wharf

is marked by private lights. An aquaculture site, marked by private lights, is about 300 yards south-southwest of the wharf in about 47°34'30.5"N., 122°31'29.5"W. A rocky patch covered 11 feet, 150 yards south of the wharf, is dangerous to vessels approaching from southward. A radio tower just northeast of Fort Ward and a large white house on **Beans Point** are prominent from the east end of Rich Passage.

(391)

Sinclair Inlet to Bremerton

(392) **Sinclair Inlet**, site of the city of Bremerton and the Puget Sound Naval Shipyard, is entered from Rich Passage and Port Orchard on the east, and Port Washington Narrows on the north. The inlet is 3.5 miles long, extending in a west-southwest direction from **Point Herron**, which is at the junction of Port Washington Narrows and Port Orchard; the point is marked by a light. Several navy-maintained unlighted mooring buoys, used at times by unlighted craft, are in Sinclair Inlet. Mariners are advised to exercise caution at night.

(393) **East Bremerton** is the community back of Point Herron, on the east side of the Port Washington Narrows entrance. The fixed highway bridge crossing the narrows here has a clearance of 74 feet.

(394) Sinclair Inlet is a **naval restricted area.** (See **33 CFR 334.1240**, chapter 2, for limits and regulations.)

(395) **Annapolis** is a village on the south shore of Sinclair Inlet directly south of Point Herron. A foot pier extends out to a float that is used by a passenger ferry between the village and Bremerton. East of the ferry pier is a public float and launching ramp. The float grounds at low water. The buildings of a veterans' home on the bluff above the town are prominent.

(396) A flat that bares extends about 0.2 mile from shore in the bight between Annapolis and Port Orchard.

(397) The town of **Port Orchard** is on the south shore about 0.5 mile west of Annapolis. It has a ferry pier, float landing and a marina. Passenger ferry service is maintained with Bremerton every 15 minutes from 1600 to 2400 daily. A marina, protected on the west, north and east sides by a floating breakwater, is just west of the ferry pier. The entrance is at the northwest corner and is marked by private lights. There are covered and open berths for about 600 small craft. A yacht club has its moorings just inside the west breakwater. Transient berths for 50 small craft are on the east side of the marina; larger transient craft can moor on the inside or outside of the north and east parts of the breakwater. Gasoline, diesel fuel, electricity, water, ice, pumpout facilities and full repairs are available at the marina. The stores of the town business district are nearby and all types of supplies may be obtained.

(398) A marina and boatyard are on the west side of town; water, ice, limited marine supplies and diesel fuel are available. The yard has a marine railway that can handle craft up to 75 feet and a floating drydock with a 25-ton capacity. Hull and engine repairs can be done at the boatyard; a machine shop and carpentry shop are available. Port Orchard Yacht Club has its moorings west of the boatyard. A floating breakwater in ruins, a wreck and other sunken debris are about 75 yards off the ends of the Yacht Club floats. Another marina and boatyard, just west of Port Orchard Yacht Club, can accommodate about 25 vessels. A mobile hoist with a 30-ton capacity can handle craft up to 55 feet.

(399) A marina and boatyard, about 1.5 miles west of Port Orchard, has berths for about 50 fishing boats and small craft. Electricity, gasoline, water and limited marine supplies are available. The boatyard has three marine railways, the largest of which can handle craft to 30 tons for hull repairs.

(400) **Puget Sound Naval Shipyard** occupies most of the north shore of the inlet. The hammerhead crane near the offshore end of Pier 6 of the yard is one of the most conspicuous objects from any direction. The ends of Pier 4, Pier 5 and Pier 6 are equipped with radar reflectors. A floating security barrier, marked by lighted buoys, surrounds the waterfront of the naval shipyard.

(401) Navy Drydock No. 6 is one of the largest in the world. Its inside dimensions are 1,152 feet long, 165 feet wide at the entrance measured 6 feet over sill and 53 feet over the sill at mean high water. This facility was built to accommodate the largest supercarrier. When not committed to navy use, and under certain conditions, the drydock may be used by other ships that are too large for commercial docks.

(402) **Bremerton** adjoins the shipyard, and most of the city's business and affairs are keyed to the needs of the Navy establishment. The city limits include East Bremerton and Point Herron. Frequent ferry service connects with Seattle. Floats for small craft are adjacent to the north ferry slip. The floats are managed by the Port of Bremerton; water, electricity and overnight moorage are available.

(403)

Port Washington Narrows to Ostrich Bay

(404) **Port Washington Narrows**, 3 miles long, joins Sinclair and Dyes Inlets. Tidal currents in the narrows attain velocities in excess of 4 knots at times. See the Tidal Current prediction service at *tidesandcurrents.noaa.gov* for specific information about times, directions, and velocities of the current at numerous locations throughout the area. Links to a user guide for this service can be found in chapter 1 of this book.

(405) There are a number of petroleum distribution facilities with storage tanks and receiving wharves along the west shore of Port Washington Narrows between the south bridge over the narrows and Phinney Bay.

(406) Two fixed highway bridges and two power cables cross the narrows. The northerly of the two bridges has a clearance of 80 feet. An overhead power cable close east of the bridge has a clearance of 80 feet. The Manette

Bridge, in the south part of the narrows, has a clearance of 74 feet. A power cable with a clearance of 90 feet is about 0.3 mile north of the bridge.

(407) **Anderson Cove** is a small bight on the south shore about 1.5 miles above the East Bremerton Bridge. The cove is shoal; however, it has several private piers and a public launching ramp. A small-craft moorage is 250 yards east of Anderson Cove. Oil wharves are on both sides of the moorage.

(408) **Phinney Bay**, 0.8 mile long, makes into the west shore near the north end of the narrows. Bremerton Yacht Club has its moorage with floats on the west side of the bay. **Rocky Point** is on the west side of the north entrance of the narrows. There are tide rips off this point.

(409) **Dyes Inlet** extends about 3 miles north-northwest from the north end of the narrows to the village of **Silverdale** on the west side of the head of the inlet. The inlet is used by fishing boats and pleasure craft. There are several villages and many houses on its shores. A dock here has electricity, water, a pump-out station and limited marine supplies available. The facility is managed by the Port of Silverdale at the Silverdale Waterfront Park. Some local fishing boats are hauled out by crane for repairs. The village of **Tracyton** is on the east shore just north of the narrows. The village has a public boat launching ramp.

(410) **Chico** is a small residential town on the southwest side of Dyes Inlet, close west of Chico Bay; the log dump wharf here is in ruins.

(411) **Ostrich Bay** is an inlet in the southwest part of Dyes Inlet. A covered rock is reported in Ostrich Bay 500 yards south of **Elwood Point** inside the breakwater extending south of the point.

(412) Mariners are cautioned against anchoring, dredging, trawling or otherwise disturbing the bottom sediments in certain areas of Ostrich Bay due to possible existence of unexploded ordnance. Refer to the chart for locations. Additional information is available through Naval Base Kitsap Public Affairs Office at 360–627–4030.

(413) That part of the west shore of Ostrich Bay extending about 0.5 mile south from Elwood Point is an annex of the Puget Sound Naval Shipyard. The wharves and shops are no longer used and are in ruins.

(414) A depth of 6 feet can be carried from Ostrich Bay into **Oyster Bay** on midchannel courses. There is 4 feet or more in Oyster Bay.

(415)

East Passage to Gig Harbor

(416) **East Passage**, on the east side of Vashon and Maury Islands, extends from Alki Point south-southeast for 12.5 miles to Point Robinson, and thence southwest for 6 miles to Browns Point. The waters throughout are deep and free from dangers, which in no case extend as much as 0.5 mile from shore.

(417) **Fauntleroy Cove**, 3.5 miles south of Alki Point, is the site of the landing for the automobile ferry plying from there to Vashon Heights and Point Southworth.

(418) **Blake Island**, about 1 mile long, 249 feet high and covered with trees, is off the north entrance to Colvos Passage. Heavy tide rips, strongest with a flood current and strong south winds, are encountered at the north entrance to Colvos Passage south of Blake Island. Shallow, irregular bottom extends about 0.5 mile off the north shore of the island. A light is on the northeast point of the island. Just south of the northeast point of the island are the ruins of a wharf. A state marine park small-craft basin, protected by a breakwater, is at the northeast end of the island. The entrance to the basin is marked by a private light and daybeacons; a pump-out station is available. Several public mooring buoys are along the west, north and east sides of the island.

(419) **Yukon Harbor** is about 2 miles southwest of Blake Island and can afford anchorage in 30 to 50 feet, sticky mud and pebble bottom. The harbor is protected from south winds and can be used for anchorage in a variety of conditions. Much of the head of the harbor is bare at low tides. Several settlements and resort villages are along the shores of Yukon Harbor; mostly fishermen and pleasure boaters use these waterfront facilities.**Manchester** has a short wharf with a float landing and a launching ramp. A large fuel pier, just south of Orchard Point, is part of the U.S. Navy's Manchester Fuel Depot. The pier is a major fueling station for U.S. Government deep-draft vessels. A **naval restricted area** surrounds the fuel pier (See **33 CFR 334.1244**, chapter 2, for limits and regulations.) A **general anchorage** is between Blake Island and Manchester. (See **33 CFR 110.1** and **110.230**, chapter 2, for limits and regulations.) **Harper**, one mile west-northwest of Point Southworth, is the site of a former ferry pier. A ferry now operates from a pier on Point Southworth to Seattle, Fauntleroy and Vashon Island.

(420) **Vashon Island** is 11 miles long in a north direction. **Maury Island**, actually a peninsula of Vashon Island at its southeast extremity, is connected to it by a highway on a narrow neck of land. Maury Island is about 5 miles long.

(421) On these islands the land is of moderate rolling elevation and in places rugged, and most of the country is heavily wooded. The islands have numerous orchards and houses. There is some farming, and cattle and poultry are raised. The transmitting towers of Seattle broadcasting stations are on the islands; two groups of towers are on Vashon Island and two on Maury Island. The shores on all sides have numerous settlements. The county wharves, formerly used to ship farm produce, are no longer kept in repair, and shipments are now by truck.

(422) **Point Vashon**, the northwest tip of Vashon Island, is 305 feet high, steep and wooded. Shoal water extends 0.2 mile north from the point and nearly as far along the north shore as **Dolphin Point**, 1 mile east. A light is 300 yards north of Point Vashon.

(423) **Vashon Heights Landing**, 0.5 mile east-southeast of Point Vashon, has a combination ferry slip and landing wharf built out to 14 feet. An automobile ferry runs to Point Southworth and Fauntleroy.

(424) The tall radio towers of station KOMO are on Point Beals. The town of **Vashon** is on high land 1.5 miles southwest of Point Beals.

(425) A **159°58'-339°58' measured nautical mile** is east of Point Beals. The range markers are steel towers with round orange targets.

(426) **Three Tree Point**, about 7.8 miles south of Alki Point, is a sharp low spit, projecting 300 yards from the high land, which in 1 mile rises to an elevation of 430 feet. On the low part of the point is a grassy knoll, 30 feet high, with several trees on it. A light and a mariner-radio-activated sound signal are on the point, initiated by keying the microphone five times on VHF-FM channel 83A.

(427) **Tramp Harbor**, formed by the easternmost part of Vashon Island and the north end of Maury Island, has shoal water extending about 0.2 mile out from shore along its entire length. It is bounded on the north by **Point Heyer**, a sandspit behind which the ground rises rapidly. A shoal extends 0.2 mile southeast from the point. A radio tower on this point is about 450 feet high.

(428) **Portage** is a village extending over both sides of the low isthmus that connects Vashon and Maury Islands. Two radio towers about 526 feet high are 0.6 mile south of the isthmus, and three other radio towers are one mile southeast of the isthmus.

(429) The city of **Des Moines**, on the east shore of East Passage, operates a small-craft marina about 3.7 miles southeast of Three Tree Point. The marina, protected by a rock breakwater, offers shelter for over 700 craft including 50 transient berths. The entrance to the marina is from the west around the north end of the breakwater. Lights mark the north end and southwest corner of the breakwater. Services available include electricity, gasoline, diesel fuel, water, ice, pump-out station, wet and dry storage, marine supplies and a 25-ton marine lift; full repairs can be made.

(430) **Point Robinson**, the easternmost end of Maury Island and the major turning point in the passage, is a low spit projecting 140 yards from the wooded high land. **Robinson Point Light** (47°23'17"N., 122°22'28"W.), 40 feet above the water, is shown from a 40-foot white octagonal tower on the point; a mariner-radio-activated sound signal is at the station, initiated by keying the microphone five times on VHF-FM channel 81A.

(431) There are two barge-loading berths at the gravel pits about 1 mile southwest of Point Robinson. Conveyors load the barges. The gravel pits are prominent from the south end of East Passage. These facilities are the only commercial wharves on Vashon and Maury Islands, except for oil receiving wharves.

(432) **Redondo**, on **Poverty Bay**, about 6.8 miles south-southeast of Three Tree Point, is a suburban village. **Dumas Bay**, 2 miles west of Redondo, has a small wharf that bares alongside at low water.

(433) **Quartermaster Harbor** extends 5 miles north-northeast between the south parts of Vashon and Maury Islands, opposite Commencement Bay. The entrance is between **Neill Point** to the west and **Piner Point** to the south. Its shores are low and wooded, with numerous clearings, and several landings and private piers.

(434) Quartermaster Harbor affords excellent anchorage about 2 miles inside the entrance in 5 to 10 fathoms, muddy bottom. The harbor provides easy access; however, caution is advised to avoid charted obstructions and wrecks.

(435) A shoal just inside the entrance extends 300 yards from the east shore and is marked by a buoy. Several shoal areas with depths of 2 to 2¾ fathoms extend up to 400 yards off the west shore between Neill Point and Harbor Heights. Shoal areas with depths of 4¼ fathoms are near midchannel west of **Manzanita** and west of Dockton. In 2007, a wreck covered 8¾ fathoms was in this vicinity at 47°20'59"N., 122°29'01"W.

(436) Many settlements and summer resorts are along the shores of the harbor, but the landing wharves, for the most part, are in disrepair. There are several submerged hazards in the vicinity of the wharves.

(437) **Burton** is a town on **Burton Peninsula** that projects east from the west side about 3 miles from the entrance. The town has several stores, and some marine supplies are available. There are numerous private mooring buoys in the harbor.

(438) An oil-receiving wharf and storage tanks are on the west side of the harbor about 0.7 mile north of Burton at the mouth of Judd Creek. The storage tanks are on the hill north of the harbor.

(439) The village of **Dockton** is in the bight on the east side about 2.5 miles from the entrance. A county park on the east side of the bight has a public dock with several piers and a boat ramp. There is a large mooring field off the village; numerous submerged obstructions, small wrecks and scattered debris litter the bottom in this area.

(440) In the upper part of the harbor, north of the Burton Peninsula, are several private wharves and floats.

(441) **Colvos Passage**, on the west side of Vashon Island, extends about 11 miles in a general south direction, with an average width of 1 mile. The passage is free of dangers. The north entrance is about 4.5 miles southwest of Alki Point, and the south entrance is abreast Point Defiance. The passage is used principally by tugs hauling logs for sawmills and by medium-sized vessels departing Tacoma. A midchannel course can be followed with safety. The passage is marked by lights.

(442) The current in Colvos Passage sets north on the ebb and flood, and at times advantage is taken of this fact by vessels bound from Tacoma to Seattle. The current in the middle of Dalco Passage and along the southwest shore of Commencement Bay sets west or northwest almost continuously.

(443) **Point Southworth**, on the west side of the north entrance, is high and wooded. A ferry slip is 0.2 mile northwest of the point. An automobile ferry runs to Fauntleroy and Vashon Heights.

(444) **Fragaria** and **Olalla**, on the west shore of Colvos Passage, are small residential communities. Only isolated

pilings remain of their former wharves. A rock that bares at half tide is 400 yards north of the former wharf at Olalla. Olalla has a small-craft float landing and a general store. Gasoline, water, ice and some marine supplies are available.

(445) **Cove** and **Lisabeula**, on the east shore, are summer resort areas. There are no facilities at either area. The wharf at Cove is in ruins. Several pilings, formerly used as moorings for log rafts, are adjacent to the wharf. Lisabeula consists of a single waterfront resort with no facilities for small craft.

(446) **Tahlequah** is a small residential community on the south shore of Vashon Island between Neill Point and Point Dalco. A ferry operates between Tahlequah and Tacoma.

(447) **Gig Harbor** is an inlet about 1 mile long on the west side of the south entrance to Colvos Passage abreast Point Defiance. A private light is on the south end of the sandspit, at the east side of the entrance, which makes out for 220 yards and constricts the entrance to less than 100 yards wide. A narrow 10-foot channel in the middle has currents of considerable velocity. Inside the entrance the basin has from 3 to 5 fathoms. An obstruction with a least depth of 8 feet was reported in the harbor in about 47°20'14"N., 122°35'06"W. The surrounding land, partially cleared of timber, slopes gently toward the shores and is thickly settled.

(448) The town of **Gig Harbor** extends along the west shore and the head of the harbor. It is the home port of many pleasure craft and fishing boats. The town has a boatyard with three marine railways and one crane. The larger of the three railways can handle craft to 150 tons for hull and engine repairs. There are many private piers and wharves, including one gasoline float. There are many marinas here. Berths, gasoline, diesel fuel, water, ice, launching ramps and marine supplies are available in the harbor. Most of the pleasure craft moor at one of the marinas at the head of the harbor.

(449) On entering Gig Harbor, hold midway between the spit on the east side and the west shore until just inside the entrance. Then swing right toward the east shore until past the short spit extending from the west shore, and steer a course just south of midchannel into the harbor.

(450)

Dash Point to Tacoma

(451) **Dash Point**, the east entrance of Commencement Bay, and the village of **Dash Point** are 1 mile northeast of Browns Point. There is a restaurant at the foot of the long pier that extends out from the north side of the point to a depth of 20 feet.

(452) **Point Defiance**, the west entrance of Commencement Bay, terminates in a very prominent dirt bluff, 160 feet high. A light is just west of the point. The terminal for the Point Defiance/Tahlequah ferry is approximately 1.8 miles south-southeast of the Point. A small boat launch ramp is just south of the terminal adjacent to a small-craft boat basin formed by a manmade peninsula. **Point Defiance Park** is wooded along its northeastern shore for 3.8 miles from the end of the point.

(453) **Commencement Bay** entrance lies 18 miles south of Alki Point and 56 miles south of Point Wilson. The bay is about 2.5 miles in length, easy of access, and free of dangers. Log storage grounds are off the northeast shore of the bay.

(454) A **regulated navigation area** is in Commencement Bay—see **33 CFR 165.1** through **165.13** and **165.1344**, chapter 2, for limits and regulations.

(455) **Tacoma**, the second city in size and importance on the sound, occupies the south and southwest shores of Commencement Bay, and its residential area has grown north into Seattle's south suburbs and to Steilacoom on the southwest.

(456) The **Port of Tacoma** is a rapidly expanding major port, second only to Seattle in maritime importance on Puget Sound. Its exports include lumber and other wood products, grain, refined metals, machinery and general and containerized cargo; imports include alumina and refined steel, automobiles, electronic equipment, rubber and meat. Much of the Alaska trade originates here.

(457)

Prominent features

(458) On entering Commencement Bay, either from the north via East Passage or Colvos Passage or from the south via The Narrows and Dalco Passage, Dash Point, Browns Point and Point Defiance are prominent. **Browns Point Light** (47°18'21"N., 122°26'39"W.), 38 feet above the water, is shown from a 35-foot white concrete house on Browns Point. Once inside the bay, numerous stacks, tanks and towers are visible.

(459) A **132°05'–312°05' measured nautical mile** is along the southwest shore of the bay about midway between Ruston and Tacoma.

(460) A fishing reef is along the southwest shore of the bay about midway between Ruston and Tacoma. In the same vicinity, a line of mooring buoys extends 0.7 mile along the southwest shore of the bay.

(461) From the southeast corner of Commencement Bay, the city waterfront extends northwest to the southeast corner of Point Defiance Park. Along here are numerous industrial plants with wharves to accommodate vessels drawing 30 feet or more.

(462) **Thea Foss Waterway** is the westernmost of the channels at the head of the bay; a light is on the east side of the entrance. Two deep-draft wharves and many oil storage tanks are on the east side.

(463) There are two bridges over the waterway—the South 11th Street vertical lift bridge, 0.5 mile from the entrance to the waterway, has vertical clearances of 64 feet down and 139 feet up. A fixed highway bridge near the head of the waterway has a vertical clearance of 28 feet.

(464) **Middle Waterway**, northeast of Thea Foss Waterway, and **St. Paul Waterway**, northeast of Middle Waterway, are not **federal projects**. The inner parts of

both waterways have shoaled and are not navigable; there is no deep-draft traffic. St. Paul Waterway is used for log storage by the large papermill that occupies the land on the northeast side.

(465) **Puyallup Waterway**, northeast of St. Paul Waterway, discharges the water of **Puyallup River**. The waterway has shoaled to such an extent that it cannot be used commercially. A lighted buoy marks a shoal area extending about 500 yards northwest of the entrance. A fixed bridge, with a clearance of 29 feet, crosses the waterway about 0.7 mile above the mouth. An overhead cable, just southeast of the bridge, has a clearance of 46 feet.

(466) **Sitcum Waterway**, northeast of Puyallup Waterway, is maintained at more than the project depth of 40 feet. The Port of Tacoma's Pier 7 is on the east side. A private light is just off the northwest end of Pier 7; it marks the northeast side of the entrance to Sitcum Waterway.

(467) The next two channels to the northeast of Sitcum Waterway, **Blair Waterway** and **Hylebos Waterway**, are maintained as **federal projects**. The entrance to Hylebos Waterway is marked by a lighted buoy off a shoal on the north side and a private light on the south side at the northwest end of Pier 25. The entrance to Blair Waterway is marked by a private lighted buoy on the southwest side. For detailed channel information and minimum depths as reported by the U.S. Army Corps of Engineers (USACE), use NOAA Electronic Navigational Charts. Surveys and channel condition reports are available through the USACE hydrographic survey website listed in Appendix A.

(468) The 11th Street bascule bridge over Hylebos Waterway has a clearance of 21 feet. (See **33 CFR 117.1** through **117.59** and **117.1061**, chapter 2, for drawbridge regulations.) The bridgetender monitors VHF-FM channel 16 and works on channel 13. Call signs: KZN-574, Hylebos Bridge. A power cable at the bridge has a clearance of 173 feet.

(469) **Security zones** are in the Sitcum Waterway and Blair Waterway areas—see **33 CFR 165.1** through **165.8**, **165.30** and **165.1321**, chapter 2, for limits and regulations. **Regulated navigation areas** are in the Thea Foss Waterway and Middle Waterway—see **33 CFR 165.1** through **165.13** and **165.1329**, chapter 2, for limits and regulations.

(470)

Anchorage

(471) A **general anchorage** is off the north shore of Commencement Bay. (See **33 CFR 110.1** and **110.230**, chapter 2, for limits and regulations.) The depths elsewhere in the bay, as a rule, are too great for convenient anchorage. In 2010, a wreck covered 54 feet (47°17'36"N., 122°26'06"W.) and a submerged obstruction (47°17'33"N., 122°26'00"W.) were reported near the northwest corner of the anchorage area.

(472) City regulations permit anchorage in any part of the bay outside the harbor lines so as not to interfere with vessels arriving or departing from their docks.

(473)

Currents

(474) The tidal currents in the harbor have little velocity, except in Hylebos Waterway where the NOAA Ship McARTHUR reported estimated currents of up to 2 knots in 1994. See the Tidal Current prediction service at *tidesandcurrents.noaa.gov* for specific information about times, directions, and velocities of the current at numerous locations throughout the area. Links to a user guide for this service can be found in chapter 1 of this book.

(475)

Pilotage, Tacoma

(476) Pilotage is compulsory for all vessels except those under enrollment or engaged exclusively in the coasting trade on the west coast of the continental United States (including Alaska) and/or British Columbia. Pilotage for Puget Sound is provided by the Puget Sound Pilots. (See Pilotage, Strait of Juan de Fuca and Puget Sound, indexed as such, chapter 7, for details.)

(477)

Towage

(478) Tugs up to 5,000 hp are available at Tacoma, and larger tugs may be obtained from Seattle. Arrangements should be made in advance through ships' agents.

(479)

Quarantine, customs, immigration and agricultural quarantine

(480) (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

(481) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.)

(482) Tacoma is a **customs port of entry**.

(483)

Harbor regulation

(484) Harbor regulations are administered by the **harbormaster**, whose headquarters are at the fire station at 901 South Fawcett Street. The general offices of the Port of Tacoma are in the Tacoma Building at the corner of 11th and A Streets; the Port of Tacoma terminal offices are at Pier 2.

(485)

Speed

(486) A city ordinance prohibits speeds in excess of 5 knots on any of the waterways and within 200 yards of any shore or pier in the harbor.

(487)

Wharves

(488) The Port of Tacoma operates three marine terminals and owns ten that are privately operated. In addition to the port-owned facilities listed in the table, there are several private deep-draft piers and wharves. Only the

(489)

Facilities in the Port of Tacoma

Name	Location	Berthing Space	Depths*	Deck Height	Mechanical Handling Facilities and Storage	Purpose	Owned/Operated
Facilities on Hylebos Waterway							
Trident Seafoods Corperation (Berths C and D)	47°16'58"N., 122°24'27"W.	1,258	18-25	18	• Open storage (4 acres) • Three gantry cranes	Receipt of frozen seafood	Port of Tacoma/ Trident Seafoods Corp.
Pioneer Americas (Docks 1 and 2)	47°16'49"N., 122°24'13"W.	940	25-28	19	• Tank storage (1.6 million gallons) • Open storage	• Receipt of bulk salt • Receipt and shipment of caustic soda	Pioneer Americas Inc.
City of Tacoma Coal Dock	47°16'36"N., 122°23'36"W.	250	30	-	Open storage (12,000 tons coal)	Receipt of coal by barge	City of Tacoma
Sound Refining	47°16'36"N., 122°23'10"W.	770	27	19	Tank storage (700,000 barrels)	Receipt and shipment of petroleum products	Sound Refining, Inc.
Atofina Chemicals	47°16'09"N., 122°22'28"W.	645	30	18	• Tank storage (5,360 tons) • Crane (½ ton)	Shipment of caustic soda and sodium chlorate	Atofina Chemicals, Inc.
Schnitzer Steel	47°16'05"N., 122°22'08"W.	850	32-35	18	• Open storage (26 acres) • Cranes to 250 tons	Receipt and shipment of scrap metal	Schnitzer Steel of Tacoma
Weyerhaeuser Company	47°15'48"N., 122°21'55"W.	1,100	34-37	19	Open storage (18 acres)	Receipt and shipment of logs	Weyerhaeuser Co.
Manke Lumber Company	47°15'52"N., 122°21'41"W.	320	30	18	• Open storage (10 million board feet) • Tank storage (21,360 tons)	• Receipt and shipment of lumber • Shipment of tallow	Manke Lumber Co. Inc./ Manke Lumber Co. Inc. and Pacific Northwest Terminals Inc.
Facilities on Blair Waterway							
Totem Ocean Trailer Express	47°16'28"N., 122°24'18"W.	790	40	11	Open storage (41 acres)	Receipt and shipment of general cargo	Port of Tacoma/ Totem Ocean Trailer Express
Tru-Grit	47°16'18"N., 122°24'02"W.	160	15-20	18	• Open storage (10,000 tons) • Belt conveyor	• Receipt of copper slag • Shipment of fabricated steel products	A.H. Powers Inc./ Jesse Engineering and Tru-Grit, Inc.
Graymont Western U.S.	47°16'11"N., 122°23'52"W.	335	32	20	• Open storage (15,000 tons) • Tank storage (1.3 million gallons) • Belt conveyor	• Receipt of limestone • Occasional shipment of calcium carbonate slurry	Graymont Western U.S., Inc.
Georgia-Pacific Gypsum Corperation	47°16'07"N., 122°23'45"W.	700	35	18	• Covered storage (32,000 tons) • Belt conveyor	Receipt of gypsum	Port of Tacoma/ Georgia-Pacific Gypsum Corp.
Weyerhaeuser Paper Company	47°15'43"N., 122°23'05"W.	800	40-51	20	• Open storage (185,000 tons) • Belt conveyors	Receipt and shipment of wood chips	Port of Tacoma/ Weyerhaeuser Paper Co.
Port of Tacoma (Berths A and B)	47°15'14"N., 122°22'42"W.	1,400	51	22	• Open storage (80 acres) • Covered storage (102,400 square feet)	• Receipt of automobiles • Receipt and shipment of lumber and general cargo	Port of Tacoma
Port of Tacoma Blair Waterway Terminal	47°15'35"N., 122°23'04"W.	1.200	51	22	Open storage (2 acres)	Shipment of logs	Port of Tacoma
Washington United Terminals	47°15'45"N., 122°23'23"W.	2,000	51	21.5	• Open storage (80 acres) • Four container cranes	Receipt and shipment of general cargo	Port of Tacoma/ Washington United Terminals
U.S. Oil & Refining Company (Docks 1 and 2)	47°16'04"N., 122°23'59"W.	1,095	40	18	Tank storage (2 million barrels)	Receipt and shipment of petroleum products	U.S. Oil & Refining Co.
Port of Tacoma (Terminal 4)	47°16'21"N., 122°24'21"W.	1,900	51	18	• Open storage (75 acres) • Six container cranes	Receipt and shipment of general cargo	Port of Tacoma/ Marine Terminals Corp.
Facilities on Sitcum Waterway							
Port of Tacoma (Terminal 7D)	47°16'16"N., 122°25'06"W.	900	51	18	• Open storage (33 acres) • Six container cranes	Receipt and shipment of general cargo	Port of Tacoma/ Husky Terminal & Stevedoring, Inc.
Port of Tacoma (Terminal 7C)	47°16'10"N., 122°24'58"W.	600	48	18	• Open storage (5 acres) • Covered storage (150,000 tons) • One 40-ton gantry crane	Receipt and shipment of miscellaneous bulk materials	Port of Tacoma/ Kaiser Aluminum & Chemical Corp.
Port of Tacoma (Terminals 7A and 7B)	47°16'04"N., 122°24'50"W.	1,200	48	18	• Open storage (6 acres) • Covered storage (180,000 square feet)	Receipt and shipment of containerized general cargo	Port of Tacoma
Maersk Pacific, APM Terminals	47°16'03"N., 122°24'58"W.	2,200	46	20	• Open storage (135 acres) • Five container cranes	Receipt and shipment of containerized general cargo	Port of Tacoma/ Maersk Pacific, Ltd.
Facilities on Thea Foss Waterway							

Facilities in the Port of Tacoma

Name	Location	Berthing Space	Depths*	Deck Height	Mechanical Handling Facilities and Storage	Purpose	Owned/Operated
ST Services/Shore Terminals	47°15'38"N., 122°26'09"W.	600	26	20	Tank storage (500,000 barrels)	Receipt and shipment of petroleum products	ST Services/Shore Terminals, LLC
Tosco Corporation	47°15'30"N., 122°26'03"W.	660	24-30	20	Tank storage (280,000 barrels)	Receipt of petroleum products	Tosco Corp
Tacoma Export Marketing Corporation	47°15'59"N., 122°26'35"W.	910	65	19.5	• Silo storage (3 million bushels) • Belt conveyor	Shipment of grain	Port of Tacoma/ Tacoma Export Marketing Co.

Dimensions are given in feet
* The depths given above are reported. For information on the latest depths contact the port authorities or the private operators.

major deep-draft facilities are listed. The alongside depths given in the table are reported. For information on the latest depths contact the Port of Tacoma general office or the individual operators. All the facilities listed have direct highway connections, and most have plant trackage with railroad connections. Water and electrical shore power connections are available at about 80 percent of the wharves. General cargo is usually handled by ships' tackle. Mechanical handling equipment, if available, is mentioned in the table. The Port of Tacoma operates its own belt line railroad with switching connections to two major railroads and has a 200-ton mobile crane and a 300-ton floating crane.

(490)

Supplies

(491) Most marine supplies and services are available at Tacoma. Bunker fuel, diesel oil, and lubricants are available. Gasoline and diesel fuel are available at the oil docks on Thea Foss Waterway. Large vessels are bunkered at their berths by barge. Water is available at most of the berths.

(492)

Repairs

(493) There are no facilities for major repairs to large oceangoing vessels in Tacoma; the nearest such facilities are in Seattle, WA. The largest marine railway in Tacoma is at a repair yard on the northeast side of the upper turning basin in Hylebos Waterway; the railway here is certified for 1,000 tons.

(494)

Small-craft facilities

(495) A public pier, owned by the city of Tacoma, is 0.6 mile southeast of the south marker of the measured mile course on the southwest side of Commencement Bay; small craft moor here temporarily. There are numerous other small-craft facilities on Hylebos, Blair and Thea Foss Waterways and on the northeast and southwest shores of Commencement Bay.

(496)

Communications

(497) Tacoma is served by two major railroads, Seattle-Tacoma Airport and Tacoma Narrows Industrial Airport.

(498)

The Narrows to Peale Passage

(499) South of Point Defiance are numerous inlets, passages and islands. At many of the towns, the landing wharves have fallen into ruins, all transportation following the highways. These waters are navigated by log tows and by pleasure craft. Deep-draft vessels call at Olympia for lumber and other forest products. The depths are generally great and the dangers are few. The shores are well wooded and moderately low. The beaches are sand and gravel, with boulders in places, and are often backed by steep, bare sand and gravel bluffs. Olympia and Shelton are the only cities, but there are many towns. Strangers bound through these waters at night are advised to take a pilot.

(500)

Currents

(501) In The Narrows current velocities exceed 5 knots at times. At the north end of The Narrows the current sets north most of the time on the east side of the passage and south most of the time on the west side. See Tidal Current prediction service at *tidesandcurrents.noaa.gov* for daily current predictions for a midstream position near the north end of The Narrows. Details of the current movement at other locations including the Southern Part of Puget Sound should be consulted for details of the complicated currents of this area. Links to a user guide for this service can be found in chapter 1 of this book.

(502) From Point Defiance to near Days Island, the east shore of**The Narrows** consists of high, bold bluffs. A tunnel is 1.7 miles southeast of Point Defiance; from it a railroad track follows the shoreline to Nisqually River.

(503) **Point Evans**, 2 miles south of Point Defiance on the west side of The Narrows, is marked by a light. Power cables with a clearance of 200 feet cross 200 yards south of the point. **Tacoma Narrows Bridge**, a dual-span highway suspension bridge, crosses The Narrows a mile south of Point Evans. The bridge has a clearance 160 feet at the piers and 180 feet at the center; private sound signals are located on each pier.

(504) **Days Island** is about 4.5 miles south of Point Defiance. The ferry slip and wharf here are in ruins. There are three marinas here, one on the east side of Days Island and two in the cove 150 yards east of the north end of

the island. A total of about 200 berths are at the marinas; electricity, gasoline, diesel fuel, water, ice, dry storage for over 500 craft and marine supplies are available. A 15-ton crane and hoists to 3 tons are available to handle craft for hull and engine repair. Obstructions covered 1 to 2¼ fathoms are 230 yards west of the former ferry slip.

(505) A small-boat channel, 1 foot deep, leads into **Days Island Lagoon**. The channel favors the Days Island side and under the bridge is 30 yards from the island shore. Local boats anchor in 3 feet in the lagoon. The floats of a private yacht club are on the south and west sides of the lagoon. Anchorage for small-craft may be had east of the north end of Days Island.

(506) Three miles south of Days Island, the shores consist of bare bluffs that are prominent from south.

(507) From here the route to Olympia continues southwest and west through **Balch Passage**, Drayton Passage and Dana Passage, thence south into Budd Inlet. This route is deep and generally free of dangers.

(508)

Caution

(509) The channel through Balch Passage is only about 100 yards wide between the 10-fathom curves, and the scale of the chart is small. Vessels should stay carefully in midchannel, traffic permitting.

(510) **Hale Passage**, between **Fox Island** and the mainland, enters on the west shore 5 miles south of Point Defiance. It is 4 miles to its junction with Carr Inlet. Near the west end the passage is crossed by a fixed highway bridge with a clearance of 31 feet. A shoal, marked on its northeast side by a buoy, is 350 yards southeast of the bridge and near the middle of the passage; the shoal is boulder strewn and bares. The channel is on the northeast side of the buoy. A good small-craft anchorage is on either side of Tanglewood Island. The current in Hale Passage attains a velocity in excess of 3 knots at times. The east (ebb) current is stronger than the west (flood) current. See the Tidal Current prediction service at *tidesandcurrents.noaa.gov* for specific information about times, directions, and velocities of the current at numerous locations throughout the area. Links to a user guide for this service can be found in chapter 1 of this book.

(511) **Fox Island** is a village in the small cove near the northeast end of Fox Island. It has a store and service station. **Tanglewood Island**, in the center of the cove, has a boys' camp, the buildings of which are prominent.

(512) **Wollochet Bay** is a small inlet about 2 miles long extending north from Hale Passage, about 1 mile inside the east entrance. The upper part is narrow and shoal. It affords an anchorage in midchannel about 0.3 mile inside the entrance in 11 to 12 fathoms, sticky bottom. There are many private piers and mooring buoys in the bay. A small-boat launching ramp is on the east side of the bay near the entrance.

(513) **Gibson Point**, the south tip of Fox Island and the north entrance point of Carr Inlet, is marked by a light. **Toliva Shoal**, nearly in midchannel 0.9 mile south of Gibson Point, consists of two rocks covered 3½ fathoms and is marked by a lighted bell buoy. An unmarked fish haven extends about 0.25 mile north from the shoal.

(514) **Carr Inlet** enters the west shore of the sound about 7½ miles south-southwest of Point Defiance. From the entrance, between Fox and McNeil Islands, it extends about 6 miles northwest and then trends north-northeast for 8 miles terminating in flats at the head. Good anchorage is available in the upper reaches in 6 to 15 fathoms, soft bottom and in several small coves on its south and east shores. From the entrance, a midchannel course is safe.

(515) A **naval restricted area** is in the south part of Carr Inlet. (See **33 CFR 334.1250**, chapter 2, for limits and regulations.)

(516) The Washington State penitentiary, on the southeast side of **McNeil Island** about 0.8 mile southwest of **Hyde Point**, is prominent from offshore. Vessel traffic is restricted within 100 yards of McNeil Island, that is prison property. The island is served by a ferry from Steilacoom which lands at the terminal on the south shore about a mile inside the east and of Balch Passage.

(517) **Wyckoff Shoal**, part of which bares, extends 0.8 mile northwest from the northwest part of McNeil Island. Lights on the west side of the shoal mark the east side of the channel leading into Pitt Passage.

(518) **Pitt Passage**, between Key Peninsula and McNeil Island, connects Drayton Passage and Carr Inlet. It is obstructed about midway of its length by **Pitt Island** and its surrounding rocks and shoals. Only the passage east of Pitt Island is used by small craft with local knowledge. In this passage the ebb (north current) is stronger than the flood and attains a velocity of 2.5 knots or more at times.

(519) **Lakebay**, at the head of **Mayo Cove** on the southwest shore of Carr Inlet, is a village with a store and several small private piers. A marina here has a long pier and floats with berthage for about 35 craft; electricity, gasoline, water and ice are available. About 7 feet can be carried to the marina pier, but the channel to the pier is difficult to navigate; strangers are advised to proceed cautiously and obtain local advice. On the east side of Mayo Cove, along **Penrose Point**, a state park has a small float with moorage for about 10 small craft. Water and a pump-out station are available at the state park.

(520) **Home**, a village on the west side of **Von Geldern Cove**, has a store and service station. A bridge crosses the cove at its head. A shoal extends from the north shore at the entrance to the cove.

(521) **Glencove** is a small settlement in Glen Cove on the west side of Carr Inlet, about 5 miles north of South Head. It is a summer recreational area with a private wharf and float. A small marina here has berths and gasoline.

(522) **Wauna** is a village at the head of Carr Inlet, where the spit enclosing **Burley Lagoon** joins the mainland. A county road extends along the spit and across the entrance to the lagoon over a fixed highway bridge to Rosedale and Gig Harbor. The bridge has a clearance of 12 feet (23 feet at center). A boat launching ramp is at Wauna just west of the bridge.

(523) **Rosedale** is a residential community on the cove on the east side of Carr Inlet and 180-foot-high **Raft Island**. There is an extensive shoal area around and between Raft Island and **Cutts Island**. Cutts Island is part of a state park. The shores of these islands are strewn with boulders. A fixed highway bridge and overhead cable extend from the south side of Raft Island to the mainland. The bridge clearance is 17 feet, and the cable, 48 feet.

(524) **Horsehead Bay**, about 1 mile long, is directly north of Green Point, at the west extremity of Hale Passage. This is a residential area with many private wharves.

(525) **Eagle Island**, small and wooded, is near the middle of Balch Passage, 0.2 mile from **Anderson Island**, and is marked on its north end by a light. Eagle Island is a state park.

(526) **Eagle Island Reef**, 300 yards west of Eagle Island, bares at low water at the south end and has a depth of 2 feet at the north end.

(527) **Drayton Passage**, between Key Peninsula and Anderson Island, is about 3 miles long in a north direction; at its north end, it connects with Pitt Passage and Balch Passage, and at its south end joins the west part of Nisqually Reach. With the exception of a spit extending 0.2 mile from the west shore, marked by a lighted buoy, the waters are deep and free of dangers. A small-boat launching ramp is 0.25 mile north of the light. Estimated current velocities of 1 to 2 knots occur at the southwest end of the passage.

(528) **Filucy Bay**, on the west shore opposite Balch Passage, is about 1.5 miles long and irregular in shape; it is 0.4 mile wide at the entrance. Good anchorage in 7 to 8 fathoms, muddy bottom, is available. There are numerous houses around the shores of this bay. **Longbranch**, a village in the small cove opposite the entrance, has a pier and floats for about 30 fishing and pleasure craft.

(529) **Steilacoom** is on the mainland about 9 miles south-southwest of Point Defiance. The town is of little commercial importance and has no waterfront facilities except for the ferry terminal that maintains service to Anderson, McNeil and Ketron Islands. Limited berthage for small craft, gasoline, water, ice and a hoist are available at the terminal. Limited engine repairs can be made. Indifferent anchorage may be had along the waterfront close inshore, but it is not recommended as the holding ground is poor and the currents have considerable velocity. Off Steilacoom there are tide rips which, with a wind opposing the current, are dangerous to small boats.

(530) There are two large, conspicuous sand and gravel pits on the bluffs about 1.5 miles north-northeast of Steilacoom. A pier is at the north pit and is served by a conveyor belt used for the shipment of sand and gravel. The pier is 520 feet long, 20 to 30 feet reported alongside, and has a deck height of 14 feet. Another pier, just north of the mouth of Chambers Creek, has been abandoned and is in ruins.

(531) **Ketron Island**, 10 miles south-southwest of Point Defiance, is privately owned and heavily wooded. A ferry from Steilacoom lands at the terminal on the northwest shore three times a day. **Cormorant Passage**, 0.5 mile wide, separates the island from the mainland south. The passage is clear but is little used.

(532) **Nisqually Reach** trends south and west around Anderson Island. The south shore is occupied for nearly 1 mile offshore by **Nisqually Flats**, the delta formed by the **Nisqually River**. The flats are very soft mud and bare at low water. A major portion is designated a National Wildlife Refuge; the boundaries are marked by signs. A section is also used for commercial aquaculture. A boat ramp at Nisqually Head is accessible only at high water. Two lights mark the steep north edge of the flats and are supplemented by a series of piles. A light marks the south tip of Anderson Island at Lyle Point. **Thompson Cove** on the west side of the point is a cable area and should not be used as an anchorage. An artificial reef is at the state park 2.7 miles west of Nisqually Head. The reef is marked by a private buoy.

(533) **Oro Bay**, in the southeast part of Anderson Island, is an irregular bight between **Cole Point** and **Lyle Point**. Most of the bay is shallow; it affords an indifferent anchorage in about 10 fathoms but is affected by the currents and affords little protection. A small shallow arm extends about 1 mile northwest on the west side of the bay and is marked by private buoys. An anchorage for small craft is here.

(534) **Devils Head**, the south point of Key Peninsula, is 280 feet high and heavily wooded. A light is shown off the south tip of Devils Head.

(535) **Johnson Point**, 2 miles west of Devils Head, is 90 feet high. A light is on the sandspit at the end of the point.

(536) A marina is on the west shore of Nisqually Reach about 0.8 mile south-southeast of Johnson Point. The marina provides open and covered berths with 6 transient berths. Services available include electricity, gasoline, diesel fuel, water, ice, marine supplies, launching ramp, pump-out station and a 3-ton marine lift.

(537)

Local magnetic disturbance

(538) Differences of as much as 3° from normal variation have been observed along Henderson Inlet.

(539) **Itsami Ledge**, covered 1 fathom, lies 1 mile west-southwest of Johnson Point. It is surrounded by kelp and marked by a light. This is a danger in entering Henderson Inlet or Dana Passage. A fish haven is close north of the light.

(540) **Henderson Inlet**, locally known as **South Bay**, immediately west of Johnson Point, extends about 4.5 miles in a south direction; the south part is an extensive flat. Good anchorage is inside the entrance in 5 to 6 fathoms, muddy bottom. A spit makes out about 0.2 mile north from the west point at the entrance; on the west shore, 0.8 mile south of the entrance point, is a long sandspit. Oyster beds abound in the south area of the bay.

(541) **Case Inlet**, a popular sport fishing and resort area, extends some 14 miles north from Johnson Point and forms the west side of Key Peninsula. The flats at its head

are only 2 miles from the head of Hood Canal. Depths range from 10 to 30 fathoms through the main body of the inlet with no off-lying dangers. Caution is advised along the shoreline of Case Inlet due to numerous uncharted private mooring buoys and floating docks nearshore of residential land.

(542) **Harstine Island** forms the west side of the south part of the inlet.

(543) A facility in Whiteman Cove, on the east side of the inlet about 3.7 miles north of Devils Head, has berthing, water and a launching ramp.

(544) A marina in Jarrell Cove at the north end of the island has berths, electricity, gasoline, diesel fuel, water, ice and some groceries. The pier here has 22 feet reported alongside. The 200-foot Jarrell Cove State Park pier is directly across the cove from the marina. A state park float, with a pump-out station, is farther up the cove.

(545) **Herron Island**, about 4 miles north of the entrance and 0.3 mile west of the east side, is a private island, with moorings for small craft. A ferry connects with the mainland at the village of **Herron**. The bar between the north end of Herron Island and the east shore has a least depth of about 5 feet, but with local knowledge a depth of 21 feet can be carried through by rounding the northeast tip of Herron Island some 300 to 500 yards off.

(546) **McMicken Island**, 1.1 miles southwest of Herron Island, is connected to Harstine Island by a sandpit that bares at low water. Anchorage with a rocky bottom and protection from south winds is on the northwest side of the island. Surrounding McMicken Island there is State Park Service public moorage available.

(547) **Pickering Passage** indents the west shore of Case Inlet, about 2 miles north of Herron Island. The passage extends in a general southwest to southerly direction for 8 miles, connecting at its south end with Peale Passage and Totten Inlet. The shores are generally low and wooded, and the depths vary from 1½ to 15 fathoms. The passage contains numerous sites of aquaculture farming and shoaling extends east from the mouth of Hammersley Inlet. A midchannel course is considered safe. In Pickering Passage the flood current sets from Case Inlet toward Hammersley Inlet and the ebb in the opposite direction. Strong currents are present throughout the inlet, especially near the south end approaching Hammersley Inlet, where velocities can reach 5 knots at times. The settlements are served by highway. A fixed highway bridge with a clearance of 31 feet crosses the passage from Graham Point to Harstine Island, about 2.6 miles north of the entrance to Hammersley Inlet. Private moorings can be found throughout the region in nearshore areas.

(548) **Stretch Island** is near the west shore of Case Inlet, just north of the entrance to Pickering Passage. There is no through channel west of this island. The north part of this island is partly cleared of trees and laid out in orchards; a winery and several grape juice factories, no longer operating, are here. At the northeast point of the island sits Stretch Point State Park, a public recreational beach that is only accessible by boat. There are State Park-owned mooring buoys along the shore that are available for purchase on shore or by phone. Additionally, there is a private landing wharf built out to 12 feet on the northwest end of the island. A fixed highway bridge with a clearance of 14 feet connects the mainland. **Grapeview** is a village opposite Stretch Island.

(549) **Reach Island**, 0.2 mile north of Stretch Island, has been subdivided for homesites and is known as **Treasure Island**. It is separated from the west shore by a shallow channel known locally as **Fair Harbor**. The channel is spanned by a fixed bridge with a clearance of 16 feet. There is a marina on the mainland 0.3 mile south of the bridge with about 70 berths, electricity, gasoline, water, ice, nautical supplies, hull and engine repair and a launching ramp. Approaches to the marina are recommended from the south. The remainder of the channel has reported depths of 2 feet when favoring the west shore. Caution is advised when navigating more than 150 feet north of the marina.

(550) **Vaughn** is a village on the north shore of **Vaughn Bay**, which lies on the east side of Case Inlet about 4 miles from the head. There is a public launching ramp here. The combined civic center for all the small towns on the entire peninsula is at Vaughn. A channel 1½ feet deep leads to deeper water in the bay. Follow the north shore for 200 yards after entering in midchannel off the end of the spit; then cross the bay parallel with the spit at a distance of 200 yards, heading toward the south shore; then follow the south shore at a distance of 200 yards, steering toward the head of the bay. Around the shores are numerous houses and orchards and a little-used log booming area.

(551) **Rocky Bay** is the shallow inlet north of Vaughn Bay. A channel 1.5 feet deep leads to the lagoon back of the sandspit near **Windy Bluff**. It is necessary to come around the small sand island north of the spit. Oysterbeds are in the east side of the bay north of the spit.

(552) **Allyn** is a village on the west side of Case Inlet near the head about 0.5 mile north of **Sherwood Creek**. A public pier and launching ramp are here. An oyster wharf is just north of Allyn.

(553) Good anchorage may be had anywhere north of Harstine Island, in 6 to 15 fathoms, muddy bottom.

(554) There are numerous farms and several small settlements whose chief industries are oyster culture, farming, and some logging. The flats near the head of the inlet are largely covered with oyster beds.

(555) **Peale Passage**, about 4 miles long, extends northwest between Harstine and Squaxin Islands, and connects with Pickering Passage. It has a controlling depth of about 10 feet. Strangers should not attempt it. The current at times attains a velocity of 2.0 knots in the narrow part of the passage and sets north on the flood.

(556)

Olympia

(557) **Dana Passage**, between **Brisco Point**, the south point of Harstine Island, and the mainland, is about 2 miles long. It is the main route to Budd Inlet and Olympia and also joins with three other bodies of water: Eld Inlet, Squaxin Passage and Peale Passage. Squaxin Passage leads to Totten and Hammersley Inlets, and Peale Passage leads to Pickering Passage.

(558) With the exception of Itsami Ledge near its east end and a fish haven about 0.3 mile north of Itsami Ledge Light 7, Dana Passage is clear and a midchannel course may be safely followed. The currents in Dana Passage frequently attain velocities of 3 knots or more.

(559) **Boston Harbor** is a village in the cove of the same name just east of Dofflemyer Point. A marina here can provide limited transient berths, gasoline, diesel fuel, electricity, water, ice, some marine supplies, launching ramp and pumpout facility.

(560) **Budd Inlet**, 29 miles by water from Tacoma, is about 6 miles long, extending south from Dana Passage and terminating in flats that bare at the head of **East Bay** and **West Bay**. The entrance is between Cooper Point and **Dofflemyer Point**; the latter is marked by a light. The entrance to Budd Inlet is deep except for a 25-foot shoal in the middle of the entrance. The shores are comparatively low and wooded. Depths along the shores of the inlet shoal abruptly on the west side and gradually on the east side. East Bay and West Bay are obstructed by flats and shoals that bare for about 0.8 mile, through which channels have been dredged to the Olympia waterfront.

(561) **Olympia**, the capital of the State of Washington is at the head of East and West bays at the south end of Budd Inlet. Traffic in the port is composed primarily of container vessels, roll-on/roll-off and break bulk.

(562)

Prominent features

(563) The capitol dome and the radio tower on the north end of the port fill area are prominent landmarks from outside the entrance channel.

(564)

Channels

(565) A **federal project** provides for a 30-foot channel from deepwater in Budd Inlet to a 30-foot turning basin off the west side of the port terminal near the head of West Bay—the channel is marked by lighted and unlighted buoys, lights and lighted ranges. Another channel, with a project depth of 13 feet, leads southeast from the 30-foot outer channel to a mooring basin on the east side of the peninsula at the head of East Bay—the channel is marked by lights. For detailed channel information and minimum depths as reported by the U.S. Army Corps of Engineers (USACE), use NOAA Electronic Navigational Charts. Surveys and channel condition reports are available through the USACE hydrographic survey website listed in Appendix A.

(566)

Anchorage

(567) Good anchorage may be had anywhere inside the entrance in muddy bottom.

(568)

Dangers

(569) **Olympia Shoal**, which bares, is about 0.4 mile off the west shore, 3 miles inside the entrance. A light is on the east side of the shoal, and on its west side are lights marking the approach to the dredged channel. There are numerous shoals, piles, dolphins and log booms on the east side of the harbor. A visible wreck, in about 47°05'14"N., 122°55'49"W., is near the approach to the dredged entrance channel to Olympia.

(570)

Regulated navigation area

(571) A security zone has been established in the turning basin of West Bay. (See **33 CFR 165.1321**, chapter 2, for limits and regulations.)

(572)

Pilotage, Olympia

(573) Pilotage is compulsory for all vessels except those under enrollment or engaged exclusively in the coasting trade on the west coast of the continental United States (including Alaska) and/or British Columbia. Pilotage for Puget Sound is provided by the Puget Sound Pilots. (See Pilotage, Strait of Juan de Fuca and Puget Sound, indexed as such, chapter 7, for detail.)

(574)

Towage

(575) Tugs to 5,000 hp are available from Tacoma and Seattle. No large tugs are stationed in Olympia.

(576)

Quarantine, customs, immigration and agricultural quarantine

(577) (See chapter 3, Vessel Arrival Inspections, and Appendix A for addresses.)

(578) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.)

(579) Olympia is a **customs port of entry**.

(580) There are two hospitals in Olympia.

(581)

Wharves

(582) The port terminal, owned and operated by the Port of Olympia, is on the east side of the turning basin near the head of West Bay; it is the only deep-draft facility in Olympia Harbor. The terminal has a 1,750-foot face with a deck height of 20 feet and alongside depths of 35 to 40 feet; contact the Port of Olympia (360–528–8000) for the latest depths. The terminal is served by two container gantry cranes, container toplifts, a rail car switcher and other cargo handling equipment. More than 59 acres of paved open storage is available.

(583)

Supplies

(584) Water, ice, groceries and some marine supplies can be obtained. Diesel fuel, gasoline and lubricants are available.

(585)

Repairs

(586) Only small craft can be repaired in Olympia. A large marina in the East Bay has a 77-ton lift that can handle craft up to 90 feet long. Machine shops are in the city. For repairs to larger vessels, the nearest facilities are in Seattle, WA.

(587)

Small-craft facilities

(588) There are many marinas at Olympia. Berths, electricity, gasoline, diesel fuel, water, ice, launching ramps, storage and marine supplies are available. Hull and engine repairs can be made at a marina just south of the port wharf. A private yacht club has its moorings at the head of West Bay 0.3 mile south of the turning basin.

(589)

Communications

(590) Olympia is served by two major railroads. Olympia Airport is 4.5 miles south of the city.

(591)

Eld Inlet to Oyster Bay

(592) **Eld Inlet**, locally known as **Mud Bay**, immediately west of Budd Inlet, is of little commercial importance. It affords good anchorage inside the entrance in 24 to 42 feet, soft bottom. A midchannel course is clear to the flats at its head. In entering, **Cooper Point**, the east point at the entrance, should be given a berth of not less than 0.2 mile. Some logging and oystering are done here.

(593) **Squaxin Passage** is south of **Squaxin Island** and **Hope Island**. This passage leads north to Totten and Hammersley Inlets. A light on Hunter Point marks the southwest entrance point of the passage. The north shore is foul; a shoal covered 19 feet is 150 yards off the west shore of Hope Island abreast Steamboat Island.

(594) The passage is narrow, and strangers should proceed with caution. The south shore should be favored, and, at the west end, the north point of Steamboat Island should be favored. The principal danger in the passage is a reef that bares at extreme low water, southeast of Hope Island; a buoy is near its south end. This reef is easily avoided by keeping the north point of Steamboat Island well open of the south point of Hope Island. Tide rips are said to occur in Squaxin Passage. The usual velocity of the current is about 1.5 knots.

(595) The passage between Hope and Squaxin Islands has a least depth of 9 feet in the middle; greater depths can be carried in the passage with local knowledge. However, bars migrate and the western passage around Hope Island should be taken by those unfamiliar with the region.

(596) **Steamboat Island**, covered with private homes, is connected with **Carlyon Beach** on the mainland by a roadway on piling. The island, practically a part of the mainland, has abrupt shores and is heavily wooded. The northwest end of the island terminates in a long sandspit marked on the end by a daybeacon. A private pier is on the northwest side of the island, and a pier and large building of a private yacht club are on Carlyon Beach just east of the roadway on piling. Public moorage surrounding Hope Island, provided by the Hope Island Marine State Park Service, is available as first come, first served with paid overnight available.

(597) **Totten Inlet** extends 8 miles southwest from the west end of Squaxin Passage. A depth of 30 feet can be carried to a point off the entrance to Skookum Inlet. A 3½-fathom shoal is about in midchannel at the entrance, 620 yards southwest of the south end of Steamboat Island. A spit extends northwest for about 200 yards from Steamboat Island. In entering the inlet, favor the west shore to avoid the spit and shoal. The inlet shoals gradually to near **Burns Point**, 100 feet high, on the south shore, where it bares at low tide. Scattered areas of private and public mooring buoys line the shores of the inlet.

(598) **Oyster Bay**, south of Burns Point, is an extensive mudflat; oysters are grown in this area, and there are log booms. South of the entrance to **Little Skookum Inlet**, along the shores of Totten Inlet, are rock or concrete walls enclosing the oysterbeds. The walls are a danger to navigation, and the oyster industry discourages boatmen from entering these waters. Oyster-processing wharves are on the north side of the inlet. Local knowledge is required to get to them. Good anchorage may be had anywhere inside the entrance of Little Skookum Inlet.

(599)

Hammersley Inlet to Oakland Bay

(600) **Hammersley Inlet** indents the west shore of the sound about 1 mile north of the west end of Squaxin Passage. It is about 6 miles long, expanding at its head into **Oakland Bay**, which is 3.5 miles long in a northeast direction. The inlet is obstructed by shoals, particularly at its mouth, where there is an extensive bar. The rocky shoals have been partly removed. The channel, marked by lights on **Libby Point** and **Church Point** has a controlling depth of about 8 feet to the town of Shelton on Oakland Bay. It is navigated only by small craft and by tugs with log rafts and railroad car floats; local knowledge is required. Tidal current velocities may reach 5 knots at times in the constricted parts of the inlet. See the Tidal Current prediction service at *tidesandcurrents.noaa.gov* for specific information about times, directions, and velocities of the current at numerous locations throughout the area. Links to a user guide for this service can be found in chapter 1 of this book. Vessels enter on the flood, usually after half tide, and leave on the ebb, usually before maximum strength. Hammersley Inlet is considered dangerous for strangers.

(601) Vessels with sharp rise of bilge should avoid the inlet as there is danger of capsizing in the strong current in case of grounding.

(602) **Arcadia** is a small settlement on the south point of the entrance of Hammersley Inlet. It has a public ramp for launching small pleasure craft.

(603) **Shelton**, at the head of the inlet, is a town of some commercial importance. Extensive logging, lumber and lumber product manufacturing interests are centered here. The west end of **Oakland Bay** is used primarily as a storage area for logs trucked in from the Olympic Peninsula to be used by the mills at Shelton. Hammersly Inlet receives little commercial traffic. Shelton is on a branch of the Burlington Northern Railroad; lumber is shipped largely by rail; however, some railroad car ferrying is done. Railway trestles used as log dumps extend east across the flats from the Shelton waterfront. The Port of Shelton marina, 0.3 mile from the head of the Shelton waterfront and on the north shore, can provide transient berths, gasoline, diesel fuel, electricity, water, ice and pumpout facility. A yacht club has its facilities at the marina. Some marine supplies are available in the town. There are no haulout or repair facilities at Shelton. Oysters are cultivated in the shoal portions of Oakland Bay.