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Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey *Hydrographic*
Field No. Office No. *2114*

LOCALITY

State *Washington*
General locality *Washington*
Locality *Sound.*

1891

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CHIEF OF PARTY

W.P. Ray U.S.N.

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U. S. COAST AND GEODETIC SURVEY.

T. C. Mendenhall, Superintendent.

State: *Washington.*

DESCRIPTIVE REPORT.

Hydrographic Sheet No. 2114.

LOCALITY:

Washington Sound.

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CHIEF OF PARTY:

Lieut. W. P. Ray, U.S.N.

Descriptive Report of Sheet No. 12.
Sec. XI. Washington Sound, Wash.

- I. Hyd. Sheet No. 12. Sec. XI. U. S. G. & G. S. - East, West & Lopez Sounds and vicinity. Statistics of field work have been forwarded.
- II. Hyd. Sheet No. 12 includes East, Lopez & West Sounds, Harney Chan., Wasp passage & vicinity & San Juan Chan., San Juan Ids., Washington Sound, Wash. The finished work comprises East, Lopez & West Sounds, Harney Channel, Wasp passage & vicinity & Deer Harbor. - The sheet has following geographical limits: Lat. $48^{\circ}24' N.$ to $48^{\circ}42' N.$ - Long $122^{\circ}48' W.$ to $123^{\circ}02' W.$ The islands are hilly & are similar in general appearance, with abrupt shores and well defined points. Near the water they are covered with thick forests of fir, spruce & cedar. The slopes & summits of knolls & mountains are usually devoid of trees & are covered with a thick carpet of mountain grass, presenting from seaward a bright yellow appearance during the autumn & winter. Approaching the islands from the Straits of Fuca or the Gulf of Georgia the principal landmarks are Mt Constitution in Nth part of Orcas Id, Entrance Mountain to the Sth & to the Wth the Turtle Back, & a very well defined & symmetrical cone, known as Orcas knob.
- Along the shore line are a great many clearings & the Islands are being rapidly settled. On the entire sheet deep water may be obtained close up to the shore, and there are very few dangers to navigation. There are no rivers of importance but numerous rapid streams & cascades, affording good but discolored water at all seasons.
- A line of small steamers carrying passengers & light freights connects villages on this sheet with Port Townsend & Bellingham Bay, and at times with Victoria and Anacortes. Occasional steam schooners & small sailing crafts pass through these waters, usually laden with lumber from the water power saw mill on Cascade Bay, East Sound.

The U. S. mail is tri-weekly.

III. The general aspect of the coast is bold & rocky & of the most picturesque & variegated appearance. The approaches to the channels & sounds enclosed by the San Juan, Orcas & Lopez Islands are as follows: - From the Straits of Fuca, The middle chan. leading mag. N.N.W. between the Whale rocks to the E^d & Salmon bank to the W^d & passing through the narrow channel between Lopez & San Juan Islands, leaving Goose Id close to on the port hand. This part of the sheet was not sounded out during the season of 1891. From the S^d & W^d the principal entrances from San Juan chan. to East, West & Lopez sounds are the Upright channel between Lopez & Shaw Ids & the Wasp passage a narrow channel running between Shaw Id to the S^d & Crane & adjacent Ids to the N^d. The entrance to the Upright chan. lies between Flat point, a low sand spit & Canoe Id., a high rocky Id fringed with kelp & covered with stunted firs. The course through this channel is N.N.E. (mag) & vessels should pass midway between Canoe Id & Flat point, in 20 to 25 fths of water. The channel at this point is about $\frac{3}{8}$ mile wide. $1\frac{3}{4}$ miles to the N^d & E^d Upright channel leads into Harney channel to the W^d and East & Lopez sounds to the E^d. On the W. side of this channel between Canoe Id & Hankin Point the shore is steep to & close in shore lies a narrow fringe of kelp. The 3 fths curve runs close in shore and generally parallel with it. On the E. side from Flat Pt to Upright Pt the shore just to the E^d of Flat Pt is low with flat sand and gravel beach. Approaching Upright Pt the shore becomes steep with yellow bluffs & landslides from 80 to 100 ft high.

There are no dangers in this passage. The water is generally over 20 fths deep except in the centre where it shoals to a circular 9 fths patch.

The Wasp passage is very narrow & of variable depth.

It may be entered through several narrow passages between the Islands of the Wasp group and is not recommended without local knowledge as there are frequent rocks and kelp patches. And the channels to avoid dangers are sinuous & difficult to describe.

IV.

Several passages lead into East & Lopez sounds from the Rosario Straits. They are as follows: Obstruction, Tea Vine, Thatcher & Lopez. These passes have been surveyed & described by the C. & G. Survey during previous seasons.

From the Gulf of Georgia the sounds may be entered through the President, San Juan & Upright channels to the W^d, or with a pilot or good local knowledge through the Wasp passage which is shorter and leads directly into Harney Channel.

The entrances to the sounds from the E^d are enumerated above, connecting the Rosario Straits with the inland waters. The soundings throughout are deep & variable, & in places give little indication of the proximity of a ship to rocks or shoal patches.

The lights are as follows: Obstruction Id Post light, S.W. end of Obstruction Id. Pole pass - Post light, Orcas Id. N. side of Pole pass. Battle Point Post light S.E. end San Juan Id. entrance to San Juan channel.

East Sound;

V.

A narrow arm of the sea nearly bisecting Orcas Id. The water is deep & soundings regular, particularly in its Nth end.

On the E. side from Obstruction Id to Arbutus Point at head of Sound, the shore is generally steep, with several valleys, landslides & bluffs. One mile to the Nth of Obstruction pass is situated the town of Olga, a new town site with a small wharf fit for the mooring of small vessels. To the E^d of Olga and running in a Nth and

The direction is Stockade Bay, a shoal bay usually uncovered at low springs. At its head is a fresh water stream. Anchorage may be obtained off the mouth of this bay in from 7 to 8 fths of water. Good holding ground. From Obstruction pass to Olga, the 10 fths curve runs about $\frac{3}{8}$ mile from shore. From Olga to Cascade Bay deep water is held close in shore, and the shores are very steep with masses of rocks & traces of white quartz. At the head of Cascade Bay, which is almost semi circular, is situated a dock and saw mill which is worked by water power, carried down in mairies from a lake on Mt Constitution.

Vessels of average draft may at high water lie at this dock along its S face and the facilities for watering ship are excellent. A good anchorage may be obtained in the centre of this bay in from 10 to 12 fths of water, muddy bottom. From Cascade Pt which is bold and rocky to Arbutus Pt at the head of East Sound the bottom is remarkably uniform, varying from 17 to 10 fths & shoaling very gradually on approaching the shores, and is generally muddy. A good anchorage may be obtained anywhere in this locality.

Arbutus Pt a rocky promontory divides the head of East Sound in two parts. To the E^d is Ship Bay, the N^d shore of which is a low sandy flat, terminating in a gravel beach. This flat is uncovered at low water for a distance of about $\frac{1}{8}$ mile from the shore & affords an excellent place for hauling up & cleaning boats. To the E^d of Ship Bay are several fine ranches where the ordinary fruit & vegetables may be procured.

In the bight to the W^d of Arbutus Pt the water is deeper and the bottom is less regular & vessels are advised not to approach much nearer than the S end of Arbutus Pt where anchorage may be obtained in from 7 to 8 fths of water. In the centre of

this bight is a small island connected with the main land by a sandy beach. East Sound is a Post and Money Order Office & is fast becoming a popular summer resort. The land in the vicinity is extensively cultivated.

Along the Wd shore of East Sound the bottom is fairly regular but vessels are advised to keep outside the 10 fms curve as inside the curve the soundings become irregular & there are numerous rocks and kelp patches close to the shore. Close to the W. shore & lying W. 7/8 S. (mag) from the village of Olga are the Twin Ids, two bad, rocky islets covered with grass formerly used by the Indians as a burying ground. Between the Twin Ids & Diamond Pt. ^{the} curve turns to the E $\frac{d$, running in this direction half way across the sound. It then turns to the S $\frac{d$ & W $\frac{d$ and running close in shore as it reaches Diamond Pt. Deep vessels are cautioned to give the shore between Twin Ids and Diamond Pt a good berth.

The entrances to Obstruction & Pea Vine Passes are clear of dangers and vessels should hold a mid-channel course. The S $\frac{e$ end of East Sound terminates in a large deep water area being the junction of East & Lopez Sounds, Harney and Upright Channels, the Obstruction & Pea Vine passes.

Lopez Sound is included between Lopez Id to the W $\frac{d$ & Blakely & Decatur Ids to the E $\frac{d$. The soundings are less regular than in East Sound and it contains several Ids, rocks & shoal patches. The S $\frac{e$ end terminates in two bays, Hunters Bay to the W $\frac{d$ & Mud Bay forming the extreme S $\frac{e$ extremity. The water in both bays is very shoal, Muddy bottom & they should not be entered except by light draught vessels. The N $\frac{e$ entrance to Lopez Sound lies between Upright Pt., Lopez Id and N. end Blakely Id. To the E $\frac{d$ of Upright Pt. lies a rocky point precipitous on its W $\frac{d$ face and covered with patches of vegetation. This point or rocky promontory is connected with Lopez Id by a narrow

grassy neck of land and encloses with Upright Point an almost rectangular bay known as Shoal bay, $\frac{3}{4}$ mile long by $\frac{5}{8}$ mile wide which affords an excellent anchorage for vessels of average draught. Deep water in this bay lies close in along its Eth shore. The bay terminates in a low rocky and sandy beach which bares at low water. A very good anchorage in this bay & affording excellent protection is found close in under its Eth shore in 5 to 7 fths of water just off the S end of the first bluff on E. side. E. Tang. Upright Pt bears N. W. $\frac{1}{2}$ W. (mag.) The land at the Sth end of this bay is well cultivated, & boats may land at a float running out from shore to the low water line & secured in place by stakes.

Vessels entering Lopez Sound from the Nth are cautioned to avoid a shoal patch marked by kelp & known as the Entrance shoal. The mag. bearings of shoalest spot from well defined points in the vicinity are as follows: N. tang. Upright Pt. W. S. W. $\frac{1}{2}$ W. Stake light Obstruction Id. N x E. $\frac{1}{8}$ E. Barrel beacon on Shag rocks W. N. W. E. tang. Frost Id N. N. W. $\frac{1}{8}$ W. The general direction of the shoal is N. N. W. & S. S. E. mag. & inside the 10 fths curve is in length $\frac{3}{16}$ mile, in width is $\frac{1}{16}$ mile. The shoalest sounding is 10 feet near its Sth extremity. It lies nearest the Blakely Id shore & may be passed on either hand. Vessels passing to the Wth of shoal should keep E shore Frost Id closed in on W. shore Orcatur Id. and those passing to the Eth should keep close in to the Blakely Island shore. From Entrance shoal to Frost Id the water is uniformly deep, from 22 to 30 fths. Vessels going from Lopez Sound to Thatcher Pass may go on either side of Steep Id. The narrow channel between Steep & Blakely Islands holds 16 fths water.

Swifts Bay is a wide shoal bay lying on W. side Lopez Sound between Frost Id and rocky promontory

forming the $E^{\frac{m}{2}}$ boundary of Shoal Bay. The soundings at the entrance are irregular. The 3 fths curve lies at an average distance of $\frac{3}{8}$ mile from the shore which is low and flat. This bay is separated from Shoal Bay by the narrow neck of land mentioned in the description of the latter. At the entrance to Swifts Bay and on a tangent between Frost Id & rocky promontory lying between Swifts & Shoal Bays lies a rocky shoal marked by kelp. Its mag. bearings to land marks in vicinity are as follows: East tang. Frost island S. E. x S. Stake light (just open to W. $\frac{1}{2}$ Blakely Id.) Abstruction Id, N. $\frac{3}{4}$ E. Barrel beacon Shag rocks N. W. $\frac{1}{4}$ N. - Between this shoal & Frost Id lies Scrub Id, a high rocky Id. with a shoal and smaller Id to the N. $\frac{1}{2}$, centre of shoal above described lies on range E edge Scrub Id. tang. to W. edge Frost Id. To enter Swifts Bay stand down on a S. S. E. course for centre of Frost Id. until N. tang. Scrub Id bears in range with N. $\frac{m}{2}$ edge high bluff on S. $\frac{m}{2}$ side Swifts Bay. From this point a S. W. x W. $\frac{3}{4}$ W. (mag.) course leads into centre of Swifts Bay. The lead should be constantly used. Swifts Bay may be approached & a good anchorage obtained by passing in mid-channel between Frost & Scrub Islands in from 10 to 15 fths of water. Steering mag. S. S. W. until Scrub Id is open to the E. $\frac{1}{2}$ of rocky promontory between Swifts & Shoal Bays. From this point a W. N. W. $\frac{3}{4}$ W. course passes between Scrub Id & high bluff on S. $\frac{m}{2}$ side Swifts Bay, in from 5 to 8 fths water. To the W. $\frac{1}{2}$ of Frost Id is a narrow channel which passes between Frost Id and a long triangular sand spit making out from Lopez Id. Vessels passing through this channel may hold 5 fths of water by keeping Frost Id close aboard. The currents run rapidly through this channel, and vessels are recommended to pass to the E. $\frac{1}{2}$ of Frost Id. From 25 to 30 fths are held at the entrance to Thatcher pass from Lopez

Sound and there are no dangers to navigation. From Frost Id to the S^d the water shoals and as far as Centre Id the bottom is flat & muddy in from 4 to 5 fths. The deepest water in this locality is found on the Decatur Id side from 12 to 15 fths being found close to Decatur Id shore as far S. as Trump Id. From Decatur Island to the W^d the water gradually shoals & the soundings are very regular. Decatur Id is generally mountainous & is thickly wooded. The shore line is usually abrupt, with patches of bluff & landslides. Vessels may pass on either side of Trump Id. The channel separating it from Decatur Id is about $\frac{3}{8}$ of a mile wide & holds from 6 to 7 fths in mid-channel. To the W^d of Trump Id and near its N^e end lies a shoal spot marked by kelp, and vessels passing to the W^d are cautioned to give Trump Id a berth of at least $\frac{1}{8}$ mile, where 11 fths of water is held as far as the S^m end of Trump Id & it rapidly shoals to from 5 to 6 fths. Between Trump & Centre Ids, the bottom is flat gradually increasing in depth as you approach the N. shore of Centre Id.

Between Centre & Decatur Ids the water is very shoal in from 5 to 6 ft of water & cannot be used except by small boats or very light sailing crafts. Vessels passing to the W^d of Centre Id hold from 7 to 8 fths of water close to & from 15 to 16 fths in the centre of channel, separating Centre Id from the mainland of Lopez Island.

To the S^d the water is deeper & the soundings less regular, and there are several islands & shoal patches. Between Decatur Id and peninsula running to the N^d of Lopez Id is Lopez pass, which holds 8 fths of water at its shoalest point; usual depth from 10 to 15 fths. To the N^d of Lopez pass & lying between it & Centre Id is a chain of small islands & rocks. The principal island and the one to the S^d of this

chain is called Ram Id. Off Ram Id to the S^d & W^d and in prolongation of its axis is a covered rock, distant from S. end of Ram Id a little over $\frac{1}{8}$ mile. Vessels may enter Lapez Pass between Ram Id & this shoal, keeping Ram Id at a distance of about $\frac{1}{16}$ mile. Vessels passing to the W^d of this shoal should keep E shore of Trump Id slightly to the W^d of the West shore of Centre Island, changing course to N^d & E^d to pass through centre channel of Lapez pass, when the latter is well open and favoring the Lapez Id side. The mag. bearings on shoal are as follows: - S. end Ram Id N. N. E. $\frac{1}{8}$ E. - Centre Fort Id S. x E. $\frac{1}{4}$ E. - W. tang. Centre Id N. N. W. Vessels of over average draughts are recommended to observe great caution in going to the S^d of Lapez pass. A constant use of the lead & a lookout for kelp & discolored water are advised - To the S^d of Ram Id and just N. of a remarkably round & symmetrical island known as Fort Id, from its close resemblance to a fortification, the 10 fms curve passes directly to the W^d across the sound. Near this line and slightly nearer the mainland of Lapez Id lies a shoal patch. - This patch lies on following range: S. tang. Ram Id in range extreme S. end Decatur Id. Its mag. bearings are as follows: S. end Decatur Id N. E. x N. - Centre of Fort Id E. S. E. $\frac{1}{4}$ E. W. tang. Centre Id N. $\frac{3}{4}$ W. Vessels may pass on either side of Fort Id. The deepest water is found to the E^d of the Id between it and small outlying rock lying to the W^d of the Lapez Id peninsula known as Skull Rk. A good anchorage may be obtained to the S^d & E^d of Fort Id in from 7 to 8 fms of water, and it was here the M^o Arthur anchored during part of the season of 1891 in from 7 to 8 fms of water. Muddy bottom. The 3 fms curve is semi circular in form & runs well to the N^d of the entrance to Hunters & Mud Bays.

The Harney Channel is a narrow but deep passage connecting the sounds to the E^d with West Sound and

Wasp Passage. Its general mag. direction is W. S. W. $\frac{7}{8}$ W. In this channel as far as Broken Point Shaw Island there are no danger for navigation & from 15 to 20 fths of water are found in mid: channel. - The channel is about $\frac{3}{16}$ of a mile wide at its narrowest part. To the E^d of the entrance to Harney channel & close to the Orcas Id shore is Shag Rk. an uncovered rock surrounded by kelp and is marked by a barrel beacon on spindle painted white. Vessels may pass on either side of it keeping clear of the kelp. From 7 to 8 fths are found between this rock & Orcas Id & to the S^d of rock 10 fths close to, rapidly increasing to 20 fths. To the W^d of this rock & between it & Foster Pt is a small bay free of dangers and with 7 fths of water in its centre. At the head of this bay is a fresh water stream.

To the W^d of Foster Point is Grindstone Bay, having a fresh water stream at its head. The soundings here are very irregular having several shoals marked by kelp. Strangers are advised not to enter it and in proceeding up and down Harney channel to give its mouth a wide berth as a shoal patch lies off its mouth at a little over $\frac{1}{8}$ mile from the shore. On the Shaw Id side & $\frac{1}{8}$ miles from Hankin Pt is Blind Bay about $\frac{7}{8}$ of a mile long. Its long axis lying ^{max} N. N. W. & S. S. E. The water is shoal & strangers in light draught vessels are advised to use great caution in entering it. At its mouth is a prominent land mark about 60 to 70 feet high, known as Knob Id. Dangers to navigation lie on both sides of this island and light vessels entering the bay should keep Knob Id close aboard. The best passage is to the E^d of Knob Id in 8 fths of water when Knob Id bears abeam rapidly shoaling to 4 or 5 fths as the bay is entered. At the Sth end of bay is a new wharf used at high water by the small local steamers plying on the Bellingham Bay & Port Townsend route.

Vessels entering the bay and passing on the East side of Knob Id should keep this wharf open just to the $E^{\frac{1}{2}}$ of the E. shore of Knob Id. in order to clear a rock bearing mag. E. S. E. $\frac{1}{8}$ E. from the centre of Knob Id. distant about $\frac{3}{16}$ of a mile. At the date of this report this rock is marked by a spindle & white washed shape, but this is not a permanent beacon. It was built by the farmers in the vicinity for the convenience of local steamers.

To the $W^{\frac{1}{2}}$ of Blind Bay & distant from Knob Id $1\frac{5}{16}$ miles is Broken Pt., a high & well defined promontory connected to Shaw Id by a very narrow neck of land. North of this is the entrance to West Sound. On the Orcas Id shore the water is deep close in to shore and the shore line is fringed with kelp. On Orcas Id & near the entrance to West Sound is the Post Office of Orcas, a small town site recently platted containing a store at which the ordinary provisions may be purchased. There is a very fair wharf at Orcas P.O. with 10 feet of water on its $S^{\frac{1}{2}}$ face at low tide. A very good anchorage may be obtained off this dock in 12 fms of water. End of dock bearing N. W. $\frac{1}{4}$ W. To the $E^{\frac{1}{2}}$ of the Orcas wharf is a small shoal bay terminating in a sand flat with a fresh water stream at its head. Cord wood may be obtained at Orcas delivered on dock at \$2.50 per cord. From Broken Point to the $W^{\frac{1}{2}}$ the soundings are irregular and there are several shoals marked by kelp. In centre channel between Broken Point and Crane Island which divides Harney channel into two passes, Pole Pass and Wasp Passage, lies a small island in mid-channel, named by this party Sal Island. To the $E^{\frac{1}{2}}$ of Sal Island lies an extensive shoal with a buoy marking its $E^{\frac{1}{2}}$ extremity. To the $N^{\frac{1}{2}}$ of Sal Id and between it and a point locally known as Point Baldwin are two shoals both marked by kelp. The one to the $E^{\frac{1}{2}}$ is covered 6 feet at dead low water and that to the $W^{\frac{1}{2}}$ 11 feet. Vessels

passing to the W^d and intending to go through Pole Pass a narrow channel between Crane and Orcas Islands should keep Broken Point close aboard, then head for N. end of Sal Id, passing it close to preserving this course until Yellow Bluff on E. side of Deer Harbor is opened out just to the W^d of Stake light on Orcas Id. The course should then be changed for Pole Pass slightly favoring the Orcas Island side. The Pass abreast the Stake light is a little over $\frac{1}{16}$ mile wide with a depth of 4 fms at low water in shoalest spot. From the centre of Pole Pass a magnetic N. W. \times W. $\frac{1}{2}$ W. course should be preserved heading up for N. end of small island lying on W. side of Deer Harbor in order to clear a shoal to the N. of Crane Island. - As soon as S. end of Reef Island becomes tangent to N. end of Wasp Island the course should be changed to mag. W. $\frac{1}{2}$ S. to pass to the N. of 11 foot spot marked by kelp lying N. E. \times E. $\frac{5}{16}$ of a mile from the N. end of Reef Island and magnetic N. N. W. $\frac{1}{8}$ W. from W. end of Crane Island. When passage between Reef Island & Steep Point is opened out and when N. tang. Reef Id bears S. S. W. $\frac{1}{2}$ W. mag. course should be changed to head out between Steep Point and Reef Island, which leads into the San Juan channel to the W^d and the Spring Passage between Jones and Orcas Islands to the N^d . There are between 15 & 20 fms of water between Reef Id & Reef Pt. and the kelp in this vicinity is probably permanent. Vessels passing to the W^d through Wasp Passage should keep Broken Point close aboard and on passing it stand to the S^d & W^d ; to the S^d of buoy marking the E. extremity of the Sal Island shoal, and from the buoy on should preserve a mid-channel course through Wasp Passage in from 12 to 17 fms of water, sandy and rocky bottom. Vessels bound out into the San Juan channel may pass on either side of low Island. If passing to the S^d of

of Low Island, the island should be kept close aboard to avoid a kelp patch with 14 feet at low water midway between Low & Shaw Islands. As soon as the W² end of Low Island bears N.N.W. mag. the course should be set mag. S.S.W. $\frac{1}{2}$ W. to clear an extensive shoal lying to the S^d & W^d of Shaw Island. - In passing between Wasp and Yellow Ids vessels should favor the Wasp island side to clear a 3 fths spot lying midway between Wasp and Yellow Islands. Vessels cruising in this vicinity should use the lead and keep a bright look out for shoal water, especially the latter, as in the vicinity of dangers the water shoals very rapidly and the lead is of little value. Vessels without pilots or local knowledge are not advised to use Wasp or Pole Passages in entering East and Lopez Sounds, but should stand to the S^d of Shaw Island through the San Juan and Upright channels which are free from dangers to navigation. The currents in the vicinity of Wasp Ids are very variable in strength & direction and from the peculiar conformation of the land there are numerous eddies. Special care is necessary in going through the narrow Pole Pass, especially in passing to the S^d and E^d with the Ebb tide which sets in this direction and tends to set a vessel into shoal water on the Crane Id shore.

West Sound, a long and deep arm, makes into the S. shore of Orcas Island between Orcas and Caldwell Points and N. of Broken Point, Shaw Island. Its general magnetic direction is N.W. and S.E. Its extreme length is $2\frac{3}{4}$ miles with an average width of about $\frac{3}{4}$ of a mile. From its mouth to Dot Point, a high rocky point separating its head into two large bays. The water is deep, the soundings very regular and the bottom green mud. There are numerous islands and rocks fringing the shores of West Sound. On the E. side are Oak and Sheep Islands and on the W. side Goat Island, a high rocky island in the extreme N.W. corner. To the S^d and just to the N^d

of Caldwell Point is the large Double Island with two small unnamed islands lying to the N^d and S^d. In the bay, forming the N.E. corner of West Sound, the bottom is flat with regular soundings. A good anchorage may be obtained in this bay to the N^d of a line between Dot and Sheep Islands in 6 fths of water, good holding ground. Into the vertex of this bay flows a large fresh water stream, and there is a small settlement at its mouth with store where provisions may be purchased. On the East side and in range with Dot Point just open to the S^d of Sheep Island is a wharf and steps forming a good boat landing with 5 feet of water close alongside at low tide. The entrance to the extreme end of West Sound lies between Indian and Dot Points. The water is deep with regular soundings and the 3 fths curve runs close to and parallel with the shore. A small group of rocks uncovered at low water and known as the Jenny Rocks lies at the entrance to this bay just N. of a line between Dot and Indian Points. Vessels entering this bay are cautioned keep either shore close to. On the E. side midway between Dot Point and the Vertex of bay a small bay makes in with a rock at its entrance and called Massacre Bay on the Admiralty charts.

The Jenny Rocks lies on following range: Centre Knob Island in range with W. tangent Orcas Point.

Deer Harbor. To the W^d of West Sound and N. of the Wasp Islands is a triangular bay known as Deer Harbor, where an excellent anchorage may be obtained to the N^d of a small island at its mouth in from 5 to 6 fths of water, muddy bottom. The W^d shore of Deer Harbor from Steep Point to a lagoon forming its extreme N^d extremity is steep and rocky with abrupt shore. To the E^d the shore is nearly

level except at a point midway between Stake light and lagoon where it rises and at this point terminates in a high, bright, yellow bluff. The lagoon is bare at low water and is surrounded by salt marsh. At high water small boats may ascend it for a distance of $\frac{1}{2}$ mile.

VI.

There are no regular pilots in this vicinity and cruising in the open waters of the Sound are unnecessary. The small steamers plying on these waters and passing through the numerous small channels are commanded by Masters having pilots certificates. There are no tow boats to be found in this locality nearer than Port Townsend, Bellingham Bay or Victoria. The channels are permanent and there will probably be few changes on this sheet except at heads of bays where the small streams deposit alluvial matter during the spring of the year. There are numerous anchorages on the sheet and a good lee may generally be selected. There are no harbor improvements in progress.

VII.

The tidal currents on the sheet are of moderate strength and usually set fair with the channels. On the heads of East, West and Lopez Sounds the currents are inappreciable, the water rising and falling with little horizontal motion. On account of the numerous channels, island and peculiar conformation of the coast line the currents are very variable in direction and there are numerous whirls and eddies, and during the season of 1891 very few observations were taken to determine their velocity and direction. The strongest currents are found in Pole and Wasp Passages, Harney channel and the various passes connecting Lopez Sound with the Rosario Straits through Wasp and Pole Passes and Harney Channel. The Ebb current sets to the E $\frac{1}{2}$ and on passing

Shaw Island joins the ebb current from East Sound and Abstraction Passes and sets to the S^d through the Upright channel joining the San Juan current setting to the S^d through the middle channel between San Juan & Lopez Islands. Current observations taken during one tide in Wasp Passage gave a maximum velocity: Ebb currents 2.5 knots and flood tide a little less. Currents setting fair with the channel. Extended tidal observations are necessary in this locality.

VIII.

Ice is never met with in this vicinity. During the winter and spring fog is of frequent occurrence though much lighter than in Puget Sound. During the spring and early summer low fog banks are of common occurrence during the forenoon. The freshets have little effect in this vicinity except a discoloration of the water.

IX.

The winds during the summer are light & variable and during the winter blow strong from the S.E. and S.W. From the S.E. quarter bringing mist and rain. Occasional strong winds blow from the N^d & E^d but they are usually of short duration and haul to the S^d. The weather clearing and strength moderating as they haul to the W^d with a rising barometer. Among the islands of Washington Sound the winds follow the direction of channels and frequently blow in strong variable gusts & williwaws. Vessels wishing to anchor during a storm in these inland waters may easily find good lee. The sea is never rough enough to ^{be dangerous} any but small row boats.

X.

No wrecks have been reported in this vicinity. There are no life saving stations, hospitals or wrecking facilities.

XI. There are numerous fresh water streams and vessels may be watered by filling their boats at the mouths of streams. Vessels of moderate draught may be easily watered at the saw mill dock in Cascade Bay, where the water comes down in mains from a mountain lake and is of excellent quality. Ordinary supplies in small quantities may be obtained at several points on the sheet, but no ship chandler stores can be obtained nearer than Port Townsend, Bellingham Bay or Victoria.

Good wood fuel may be purchased at reasonable rates and the best coal at Victoria sent on board in lighters or alongside dock.

Nearest repair shops at Victoria, Bellingham Bay and Seattle.

XII. There are small wharves at East Sound, Cascade Bay, Olga and Orcas Post Office. The water alongside these wharves is shoal and they are lightly constructed.

XIII. No signal station on sheet. The nearest signal station is at Point Wilson light house, Port Townsend. The nearest Time Ball is at Seattle.

XIV. There are no branch Hydrographic Offices and the nearest stations for reporting ships is at Point Wilson, Port Townsend.

XV. The nearest docks are at Victoria and Tacoma.

XVI. A small line of passenger steamers connect villages on this sheet with Port Townsend and Bellingham Bay. The U. S. mail is tri weekly. There are no telegraphic facilities. The Post Offices on the finished portion of this sheet are Olga, Cascade, East Sound and Orcas.

The last two are money order offices.

XVII. The nearest custom house is at Roache Harbor, N. End of San Juan Island.

XVII. The Islands on this sheet are being rapidly settled and at present have a regular county organization known as San Juan County with Friday Harbor on the San Juan Channel as the County seat.

The soil is adapted to the cultivation of fruit and is very productive. As a rule the farms or ranches are scattered. East Sound is the most important settlement on the finished portion of the sheet.

Very respectfully,
 W. P. Ray
 Lieut. U. S. N.
 Comd. "McArthur"