

Thirteenth Coast Guard District

Waterways Analysis and Management System



Central Oregon Coast- 200100122142

Willapa Bay

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I. Purpose.

The purpose of this Waterways Analysis Management System (WAMS) study is to serve as the primary tool for managing the Aids to Navigation (ATON) in our waterways in a systematic manner. As outlined in COMDTINST M16500.7 (series), WAMS reports ensure:

1. All aids are required as necessary elements of the ATON system.
2. Changes to augment and/or reduce aids are made when needed to meet changing needs in the waterway.
3. Aids conform to the system criteria in the Aids to Navigation Manual – Administration.
4. Aids and the ATON system provide their required operational characteristics; waterways are examined for the effectiveness of traffic management mechanics to assist the Program Manager in fulfilling waterways management responsibilities.

II. Information Collection

This study encompasses the following bodies of water: Willapa Bay, Willapa River, South Willapa Bay, Nahcotta Channel, Stanley Channel and Bay Center Channel. All federal and private ATON were included in this study.

Public comments were solicited through Local Notice to Mariners, in person visits to marinas, email distribution and phone conversations. The announcement in the Local Notice to Mariners included a link to the Coast Guard D13 WAMS website where the questionnaire was located. Questionnaires were also directly mailed or emailed to over 30 different waterway users. D13 Public Affairs published a press release.

A user ride was conducted with USCG STA GRAYS HARBOR on November 8, 2018 and with Coast Seafood on February 26-27, 2019.

Narrative Description:

Willapa Bay entrance is 24 miles north of the Columbia River entrance. Primarily fishing and oyster boats use the bay. No deep-draft vessels have entered Willapa Bay since 1976. Oyster beds cover much of the shallower areas of the bay. Lumber, fish and other seafoods are shipped by rail and truck from South Bend and Raymond. A Federal project provides for a 26-foot channel over the bar at the mouth of Willapa Bay, and a 24-foot channel from deep water in Willapa Bay to just above both forks of Willapa River at Raymond. The channel over the bar into Willapa Bay is subject to frequent change.

Cape Shoalwater the north point at the entrance terminates in a low bluff about 50 feet high. The cape is sandy and the north portion is covered with trees to within 300 yards of the point.

The north shore of the entrance to the bay is marked by timbered bluffs and ridges, several hundred feet high. In the daytime, scars on the cliffs often are visible before the light can be seen. The termination of the tree line on Leadbetter Point is sharply defined.

The entrance is in the north part of the bay and has two arms; the south arm is 18 miles long and the east is 10 miles long. Both arms are filled with extensive shoals; large areas that bare at low water. The south arm is separated from the ocean by a strip of low sand and sand dunes, averaging 1.5 miles in width and covered with trees until within 2.2 miles of Leadbetter Point. Numerous cottages and summer resorts are along the seaward face of the narrow peninsula. The shore of the bay elsewhere is composed of low, rolling hills, 100 to 200 feet high and covered with dense growths of timber.

Willapa Bar extends about 3 miles outside of a line joining Cape Shoalwater and Leadbetter Point. The bar channel is continually shifting and depths over it vary from season to season. The buoys marking the channel over the bar are non-lateral and moved from time to time because of the shifting sands and changing channel. Dredging range lights are temporarily established at the entrance at times during dredging operations. The entrance buoys and the dredging range lights do not necessarily mark the best water. The major channels in the bay are marked by aids to navigation.

Willapa River flows into the east arm of the bay. Lights, daybeacons and a lighted range mark the channel through the east arm and Willapa River to South Bend and Raymond.

South Bend is on the south bank of Willapa River, 8 miles above Toke Point. The principal industries are lumbering, oystering and fishing; two canneries operate here. Willapa Harbor Airport is on the north bank of the river about 2.5 miles northwest of South Bend. Raymond the principal town, is on the south bank of Willapa River at the junction of the South Fork, 3 miles above South Bend. There are sawmills here and large quantities of lumber are shipped out

Tokeland on Toke Point is a summer resort. There is a dredged entrance channel and small-craft basin on the north side of the point. A light is on the outer end of a jetty on the south side and a daybeacon is on the north side of the entrance. In 2002, the controlling depth was 13.1 feet in the entrance channel to the basin; thence in 2000, the basin had depths of 9 to 13 feet, except for lesser depths along the southwest edge. Berths, gasoline, diesel fuel, water and ice are available either at the basin or nearby; a launching ramp is at the basin.

North River, which enters the east arm 2 miles east of Toke Point, is navigated by small logging launches. The channel is marked by private daybeacons and is navigable at high water to Eatons Ranch 3 miles above the last daybeacon.

The south part of Willapa Bay is used by light-draft vessels. Bay Center is a village just south of Goose Point (46°38.2'N., 123°57.5'W.). It is one of the many oyster places in this bay with some fishing and crabbing. There are floats here for mooring fishing vessels; gasoline is available.

The channel to Bay Center leads from deep water in Willapa Bay about 1.4 miles west-northwest of Goose Point, thence north of Goose Point, thence south into Palix River to the basin at Bay Center. The channel is marked by lights and daybeacons, and is subject to continual change.

Palix River on the east side of the bay, is navigable for small logging tugboats and fishermen for about 1 mile up each of the three forks above their junction. The fixed highway bridge, about 1 mile below the forks, has a clearance of 25 feet.

Nemah River Channel 5 miles south of Goose Point, is marked by private aids. Controlling depths are about 4 feet to Daybeacon 20, thence 2 feet to Lynn Point, thence 1 foot to the junction of South and Middle Nemah Rivers.

Nahcotta Channel about 4.5 miles south of Goose Point, leads south between North Beach Peninsula on the west and Long Island Shoal and Long Island on the east to Shoalwater Bay. The channel is well marked and has depths greater than 20 feet.

Stanley Channel leads from Nahcotta Channel at Long Island Junction Light, thence east of Long Island and Stanley Peninsula to the mouth of Naselle River. Shallow-draft boats with local knowledge can cross Long Island Shoal.

Long Island 5.5 miles long in a northwest direction and of irregular width, lies in the south arm of the bay near the head. The island is wooded and rises to over 100 feet in elevation. The waters surrounding Long Island encompass the Willapa National Wildlife Refuge, the boundary of which is marked by numerous piles.

Nahcotta on the east side of North Beach Peninsula, is a small village 9 miles south of Leadbetter Point. There are several large oyster plants here. The boat basin at Nahcotta has floats for small craft; diesel fuel and dry winter boat storage are available. In 2004, the channel leading from deep water in Nahcotta Channel to the basin had a controlling depth of 5 feet, thence depths of 4 to 6 feet were available in the basin except for lesser depths along the north edge and shoaling to bare in the northwest corner. The entrance to the basin is marked by lights.

Naselle River on the east side of the bay, is navigable by boats of 5 feet or less draft, at half tide or higher water, as far as the bridge at the village of Naselle 10 miles above the mouth. This bridge marks the head of tidewater at ordinary high tides. The river has numerous snags and submerged logs, and is crossed by power cables with least clearance of 60 feet; passage should not be attempted without local knowledge. Small logging and fishing boats operate on the river.

Bear River enters at the southeast corner at the head of Shoalwater Bay. A long, tortuous, unmarked channel across the flats makes entrance to the river difficult. Vessels of 5-foot draft or less can make the fixed bridge about 1.5 miles above the mouth at half tide.

Facilities

Willapa Bay has two ports. The Port of Peninsula was established in 1928. It is located in Ocean Beach, WA, in the middle of the Long Beach Peninsula at Nahcotta on Willapa Bay. A brow hoist boat sling is available for lifting 30-foot or smaller boats, and a public boat launch ramp was constructed in Nahcotta in August 2000. Additionally, power and water are available, and the Port of Peninsula also has the only boat sewage pump out station and above ground commercial fueling facility on Willapa Bay.

The Port of Willapa Harbor was also established in 1928. It is broken up into three locations. The original site established in 1928 is 15-acres in Raymond. Facilities there include a 600-foot dock wharf and 750 foot of floats with lockable access, electrical outlets, fresh water service and two moorages for smaller boats. Additionally, the Port purchased a 32-acre site one mile south on Highway 101 in 1986. Another 50 acres on the Willapa River's South Fork was added in 1989 that has a 400-foot wharf.

Willapa Bay also has many smaller marinas. Tokeland Marina is located at the north end of Willapa Bay, approximately 20 miles west of Raymond and less than five miles from the ocean. This marina was established in 1965 and provides low-cost moorage for 45 vessels up to 45-feet long with limited space for larger vessels. Tokeland Marina facilities include a doublewide boat launch ramp and a 30-site recreational vehicle park.

Bay Center Marina is located 15 miles south of the Port of Willapa Harbor where the Palix River empties into Willapa Bay. The facilities include moorage for 20 vessels, a boat launch ramp and mooring floats.

Regulated Navigation Areas (RNA)

§165.1325 Regulated Navigation Areas; Bars Along the Coasts of Oregon and Washington. Willapa Bay, Wash.: From a point on the shoreline at 46°46'00" N., 124°05'40" W. westward to 46°44'00" N., 124°10'45" W. thence eastward to a point on the shoreline at 46°35'00" N., 124°03'45" W. thence northward along the shoreline around the north end of Leadbetter Point thence southward along the east shoreline of Leadbetter Point to 46°36'00" N., 124°02'15" W. thence eastward to 46°36'00" N., 124°00'00" W. thence northward to Toke point at 46°42'15" N., 123°58'00" W. thence westward along the north shoreline of the harbor and northward along the seaward shoreline to the beginning.

There is no regulated navigation area warning (rough bar) sign established. For bar crossing information, the nearest USCG station is Station Grays Harbor located to the north of Tokeland, in Westport and may be reached on VHF Channel 16, or by phone at (360) 268-0121. Also, check with Port of Willapa Harbor and Port of Peninsula for local Willapa Bay conditions.

Anchorage

There are no designated anchorage grounds, however, anchorage with good holding ground may be had at almost any point inside the bay. The anchorage generally used is off Toke Point in 30 to 40 feet.

Environmental Factors

This area has one of the mildest climates in the U. S. Snow is rare, and an average of 110 inches of rain falls each year.

Willapa Bay usually experiences fair-weather winds. Winds are typically directed from the south to southeast during October through April, and from the north to northeast during May through September. The strongest winds in Willapa Bay are still considered fair-weather winds speeds. These winds occur in November through February, with speeds of approximately 11 miles per hour.

From Cape Shoalwater into the bay, strong chop is usually present that can make navigation difficult. Ocean waves break on the Willapa Bar, and on a regular yearly basis exceed 25 to 28 feet in height and last 12 to 20 seconds long.

Most of the waters in the Willapa Bay entrance are "DANGEROUS AREAS". This is due to extensive shoal water, effects of ocean wind and swells, and the fact that bars and shoals are constantly changing. The sea can break into dangerous surf at any time in this area. If your boat should swamp, help may not be able to reach you because the sea breaks into shoal water. The channel into Willapa Bay is subject to frequent changes. You should only attempt to cross Willapa Bay Entrance if you are intimately familiar with the entrance. Even the most recent chart of Willapa Bay will most likely not show the current shoals and channels. Shoaling at the entrance to Willapa Bay is constantly shifting. The nearest Coast Guard Station that can respond to distress calls is over one hour away to the north in Grays Harbor.

SOUTH SPIT: Located on your right as you enter Willapa Bay. During ebb currents, it generally breaks with swells 4 to 6 feet high. In addition to the danger of capsizing in this area, there is the added hazard of fouling your propeller on one of the many crab pot floats set by fishermen.

NORTH SPIT: Lies to your left as you enter Willapa Bay. This area is dangerous due to shallow water and there is generally an 8 to 10 foot swell running. During ebb currents it is usually breaking. Great caution should be used while fishing near this area as the drift rate is very fast and the turbulence may cause you to capsize.

The buoy system that serves the entrance to Willapa Bay is only meant to serve as a general guide. The buoys are yellow in color, not red and green because they are special purpose buoys. Because of the quickly shifting shoals, the buoys may or may not mark the best channel. With the frequent and severe storms that occur, it is normal for one or more of the buoys to break loose.

Marine Events

There are no permitted marine events that occur in Willapa Bay.

Fishing

Marine Area 2-1 includes Willapa Bay east of a line from Cape Shoalwater to Leadbetter Point.

Willapa Bay is a very popular small boat fishery especially for large Chinook salmon. Major access points include Tokeland and South Bend. Some anglers also launch at North River. The protected nature of bay allows small boats access to some exceptional salmon fishing. Most fishing occurs in August and early September before the commercial fishery commences. The crab fishery is typically open year-round, but check with the Washington Department of Fish and Wildlife as they determine the seasons.

Waterway Users

Pilotage

Pilotage for Willapa Bay is applied the same way as required for Grays Harbor. Pilotage is compulsory for all foreign vessels and U.S. vessels under enrollment and registered in foreign trade. Grays Harbor Bar Pilots serve Grays Harbor, Chehalis River and Willapa Bay, and maintains an office at Aberdeen, WA, and a station at Westhaven Cove, Westport, WA. The station and pilot boat monitor VHF-FM channels 12 and 16 and use 12 as working channel. The pilot boat, CHEHALIS, is 65 feet long and has an orange and green hull. The word "PILOT" is displayed on both sides of the boat, and the standard day and night signals are used when vessels are approaching from seaward. Arrangements for pilots can be made by ships' agents by telephone or radiotelephone.

A 24-hour advance notice of arrival is requested; any change in the estimated time of arrival requires a 4-hour advance notice to the pilots via the Marine Exchange, Seattle, WA or radiotelephone.

Vessels

Willapa Bay is primarily used by recreational and commercial fishing vessels, commercial oyster dredges, and a growing number of pleasure craft. Coast Guard vessels also operate in the area for search and rescue and in service of aids to navigation. No deep-draft vessels have entered the bay since 1976, two years after the USACE Seattle District discontinued dredging the entrance and river. The constantly shifting shoals made crossing the bar increasingly difficult. As a result, Weyerheuser, the logging company based out of Raymond, WA, shut down its chip production plant and eliminated all barge traffic in favor of transporting all lumber and chips by trucks. Since 1970, the lumber industry migrated to Grays Harbor, north of Willapa Bay, for shipments by barge.

Transit Frequencies

This waterway is used year-round, predominantly with the oyster fishery in the bay, but is also a popular salmon fishing and crabbing location. However, there have been salmon commercial fishing closures, reductions in the past few years, as salmon returns have not met the predicted return rates, and efforts in conversation are being made. There are a few commercial oyster dredges that relocate throughout the year having to cross the bar but not on a daily frequency.

Commodities Carried

The primary commodities carried on this waterway is recreational and commercial fisherman and seafood including oysters, crab and salmon. The Willapa Bay oyster fishery provides for about 25% of the United States oysters.

Casualty History:

Since the last WAMS completed in 2003, there were only 03 groundings reported and four cases involving vessel capsizes, a total loss of vessel and/or loss of life. Of these incidents four people were declared deceased.

It is of note however, that the reporting source data captured in the USCG MISLE database is that of only which is reported to the USCG. There are unofficially 50+ groundings a year within Willapa Bay that do not get reported by fisherman and oyster dredges as they pull themselves off the sandy bottom shoals without incident.

The following are reported incidents involving loss of life:

1. July 2019: 18 foot Bayliner- capsized off Washaway Beach, one deceased, one survived
2. May 2018: KELLI J- 43-foot crab boat, reported missing found sunk three miles northwest of Oysterville. One deceased.
3. September 2012: 24 ft P/C- capsized near Leadbetter Point, one deceased, two survived
4. December 2010: ELLA ANN: 30 foot fishing vessel, capsized and sank at mouth of Willapa Bay while Dungeness crabbing, one deceased, one survived

Charts and Surveys:

The primary chart used for WAMS is 18504. Army Corps of Engineers (USACE) conducts various surveys of Willapa Bay. The last surveys USACE performed were on the following dates:

1. Willapa Bay Entrance: April-May 2019
2. Willapa Bay Tokeland Reach: April-May 2019
3. Willapa Bay Nahcotta Reach: April-May 2019
4. Willapa Bay Center Reach: April-May 2019

Aids to Navigation

USCGC HENRY BLAKE: primary servicing unit for:

1. Willapa Bay Entrance Lighted Buoy C (LLNR 15186)
2. Willapa Bay Entrance Buoy D (LLNR 15187)

ANT Astoria: is primary servicing unit for all other federal aids in Willapa Bay.

The ATON constellation in Willapa Bay marks seven different segments of the waterway including Willapa Bay, Willapa River, South Willapa Bay, Nahcotta Channel, Stanley Channel, Bay Center Channel totaling 84 aids, of which 53 are federal and 31 are private aids. There are only two buoys remaining in this waterway, Willapa Bay Entrance Lighted Buoy C, a non-lateral yellow, 8x26, with an 18K sinker and Willapa Bay Entrance Buoy D, a non-lateral yellow, 1CR, with an 18K sinker. These buoys are set by HENRY BLAKE in an attempt to mark the best water in the channel inside of the bar.

Pending Projects:

While there are no currently approved ATON construction projects within Willapa Bay at this time, D13's Marine Information Specialist, Mr. Thom Booth has construction recommendations to replace the remaining wooden aquatic and decrepit steel structures. Reconstruction and possible relocation of the following aids are to be considered: South Willapa Bay Light 3, Willapa River Channel Light 56, Willapa River Channel Light 59, South Willapa Bay Daybeacon 8, Nahcotta Channel daybeacon 11, Nahcotta Channel Daybeacon 12, Stanley Channel Daybeacon 2, Stanley Channel Light 4, Stanley Point Junction Daybeacon, Nemah River Channel Entrance Daybeacon, Bay Center Channel Light 11, and Palix River Channel Light 15. For complete details and scope of recommendations see enclosure (11).

USACE: In an effort to help protect the Shoalwater Bay Indian Tribe, the U.S. Army Corps of Engineers, Seattle District, awarded a contract to repair a sand barrier dune in Willapa Bay near the Shoalwater Bay Indian Reservation. The contract was awarded to Manson Construction Corp of Seattle, Washington. Construction began in the summer of 2018 on a \$19.9 million federally funded dune repair project that provides coastal storm damage protection. In addition, the project will maintain habitat for the Pacific Coast western snowy plover and streaked horned lark, two bird species federally listed under the Endangered Species Act as threatened.

“Three major storms between December 2015 and October 2016 completely destroyed the northern portion of the sand spit and significantly eroded the remaining portion of the dune, threatening the Shoalwater Bay Indian Reservation, including culturally and ecologically significant wetland areas,” said Daryl Downing, Corps’ project manager for the repair effort.

Repair work includes dredging approximately 750,000 cubic yards of sand from a borrow site providing materials to rebuild the 12,500 foot-long protective berm.

The Corps consulted with U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Environmental Protection Agency, Washington Department of Ecology, Washington Department of Fish and Wildlife, Washington State Historic Preservation Office, and the Shoalwater Bay Indian Tribe.

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III. Criticality Determination

Willapa Bay has been previously determined an Environmentally Critical waterway. Virtually all waterways are considered environmentally sensitive. Environmentally critical waterways pose higher environmental risk levels, where a degradation of the aids to navigation system would present an unacceptable level of risk to general public safety or to the environment.

IV. Previous WAMS Action Items

Relocate, Change, and Rename South Willapa Bay Light 3 to a Preferred Channel mark (LLNR 15400): This aid was originally built in 1975 as a Buoys-to-Beacons project prior to the decommissioning of CGC TUPELO (180' WLB). Its original position was 46° 41' 09" N, 123° 59' 30" W, approximately 400 yards southeast at 131° T from its current location, in the same position as the buoy it replaced. Light 3 was destroyed in 1988 and rebuilt again in 1993 in its present position, 46° 41' 18" N, 123° 59' 42" W.

Since Light 3 was originally built in 1975, the shoals in the bay have shifted. ANT Astoria stated that Light 3 presently is misleading since, according to the last edition (64th) of Chart 18504, it is located in the middle of a two-fingered shoal; mariners transiting between Toke Point and South Willapa Bay could run aground if they were using this aid for navigation. However, since ANT Astoria responded to this survey, the 65th Edition of Chart 18504 was issued. The new 65th Edition shows Light 3 positioned almost in the center of the shoal that is located on the northeast corner of Ellen Sands, right where the Willapa River and Willapa Bay join (the previous gap of good water between the two fingers of shoal water is gone and the whole area is shoaled over). Just to the west of Light 3 is a 1-foot spot marked on the chart. If mariners were just using Light 3 to navigate and not also the chart, they could run aground.

Since 1975, shoaling trends show low water moving northwest from Light 3's original position. Therefore, it is recommended to relocate Light 3 to approximate position 46° 41' 27" N, 124° 00' 15" W (relatively 950 yards northwest from its present position) to best mark the edge of this shoal. This relocation can be added to the combined Grays Harbor/Willapa Bay Term Pile Contract in FY-05 with the other planned six structure rebuilds. ANT Astoria agrees with this recommendation. (Issue 6.B)

ANT Astoria also recommended establishing a new preferred channel (junction) mark to distinguish the bifurcation where the Willapa River and South Willapa Bay split from Willapa Bay to assist mariners transiting east and south from the bay's entrance. ANT Astoria suggested the approximate position 46° 41' 43" N and 124° 00' 55" W for this new aid. Since the 65th Edition was issued, their suggested position now lies in good water.

However, a preferred channel mark would assist mariners in navigating south or east from the bay's entrance. Light 3 is a green light. Therefore, it is recommended to also change and properly rename Light 3 to a preferred channel mark. ANT Astoria also agrees with this recommendation. (Issue 7.C)

Modify Willapa Bay Entrance Buoy A (LLNR 15175), Entrance Buoy B (LLNR 15180), Entrance Buoy C (15186), and Entrance Buoy D (LLNR 15187): The President of the Gilnetters Association gave me the names of two fisherman who fish by the entrance to the bay. Mr. Tom Peterson and Mr. Andy Mipby are two career fishermen who fish for Dungeness crab at least 9 months of the year outside the entrance to Willapa Bay, especially in the winter months. I spoke with Mr. Peterson on the phone about Buoys A, B, C, and D. He stated that these four aids are important because crab fishermen use them for reference points when transiting in and out of the bay, even with the continual shifting conditions. He also stated that no additional aids are needed at the bay's entrance. Mr. Mipby agreed with Mr. Peterson's comments. It is not recommended to disestablish Buoys A, B, C, and D. (Issue 6.C)

If these aids weren't disestablished, LT Houck did have recommendations for servicing them (enclosure (13)).

On 28 September 2000, CGC COWSLIP touched bottom while entering Willapa Bay in transit from Buoy B to Buoy C. The weather at the time was 10-knot winds, calm sea waves, and occasional sea swell of 2 feet. LT Houck does not feel that HENRY BLAKE is the right platform to service Buoys A, B, C, and D. Although CGC FIR and CGC HENRY BLAKE both have navigational drafts of 13 ft, FIR's actual draft is approximately 13 ft. while HENRY BLAKE's is approximately 8 ft. Additionally, D13 does not have any other ATON asset with a smaller draft that could work these aids. The current D13 SOP states that: 1) Routine servicing [in Willapa Bay] will be scheduled for the 3rd or 4th quarter of each fiscal year, and 2) Routine servicing will not be attempted until a sounding survey conducted within the last two months is received from the Army Corps of Engineers. If HENRY BLAKE remains the primary servicing unit of these buoys, than FIR will be able to conduct more non-buoy operations, such as Law Enforcement. Therefore, it is recommended to maintain HENRY BLAKE as the primary servicing unit for Buoys A, B, C, and D. However, D13 (oan) staff will contact headquarters and research if Dor Mor or steel sinkers would not only hold these buoys better, but also be easier for HENRY BLAKE to pull up, inspect, and work.

These four aids are 1CRs, designed for the most exposed locations. Aid history since 1992 for these four buoys shows that they have been missing or adrift the following number of times: Buoy A – 5 times, Buoy B – 8 times, Buoy C – 7 times, and Buoy D – 3 times. These aids all have 18,000 lb concrete sinkers (even though the recommended sinker size for this buoy type is 8,500 lb concrete sinker).

The aid folders also show a prevalent history of the servicing units unable to work these aids due to weather and surf conditions, especially in the winter. Based on predominant weather pattern of constant 8 ft or larger swells during the winter, LT Houck made the reasonable assumption that swells will always be present in the area of Buoys A, B, C, and D, and recommended deferring any discrepancy response until the summer for these buoys. The response level for these aids is decision/deferred. However, just assuming that there will always be too poor of weather to service and not try to correct a discrepancy would not be good policy if either HENRY BLAKE or FIR were in a Bravo status ready to sail. Instead, if these buoys were maintained just from May to October instead of year-round, then the servicing unit would probably be able to correct discrepancies quicker instead of waiting months for good weather in the winter to respond. On the other hand, crab fishermen still transit across the bar and use these buoys when operating in the winter. Therefore, it is recommended to advertise in the Light List under the “Remarks” column that, due to heavy weather, Buoys A, B, C, and D will not be serviced from 01 October through 30 April. This way the servicing unit would not have to respond during the winter but the buoys would still provide some sort of reference for local crab fishermen.

According to the ATON Administration Manual, two years is the normal period between mooring inspections for all buoys, however, in known areas exposed to the full force of the seas (such as the entrance to Willapa Bay), inspections will be conducted as frequently as is deemed necessary by the servicing unit. Based on the assumption that the moorings for Buoys A, B, C, and D will be sanded in hard every year, LT Houck recommended leaving the moorings for Buoys A, B, and C on station for three years or until they fail, whichever comes first. This is a more reactive than proactive solution though. After reviewing the history of Buoys A, B, C, and D and also the ATON Servicing Interval Flowchart (ATON SIF), it is recommended to adjust the mooring inspection of Buoys A, B, C, and D from biennially to annually and to treat these four buoys as “bar buoys” as per the D13 SOP, conducting an annual inspection including an annual mooring inspection. This way these buoys can also be position-checked annually. It is also recommended to reflect this change in the D13 SOP. (Issue 6.C)

C. Upgrade sinkers for Bay Center Channel Buoy 4 (LLNR 15497), Buoy 10 (LLNR 15510), and Palix River Buoy 16 (LLNR 15526): One user commented that the Bay Center buoys, especially Buoy 4, always seem to be adrift. Buoy 4 has a cast-iron sinker, Buoy 8 has a 140 lb. Dor-Mor sinker, Buoy 10 has a 70 lb. Dor-Mor sinker, and Palix River Buoy 16 also has a 70 lb. Dor-Mor sinker. These four buoys are all 6NFRs, which require a 500 lb. sinker (equivalent of a 70 lb. Dor-Mor). However, part of the problem with these aids is that oyster-fishermen sometimes move them themselves to better mark the channel. Therefore, it is recommended to increase the sinkers of Buoy 4, Buoy 10, and Buoy 16 to 140 lb. Dor-Mors. Additionally, an advertisement educating and reminding mariners that it is illegal to move federal aids to navigation was published in Local Notice to Mariners 23/03 . (Issue 6.D)

D. New gated pair – (Re) establish South Willapa Bay Light 5 (previously discontinued LLNR 15405) with a new, gated red aid: Light 5 was originally established in 1975 as a Buoys-to-Beacons project along with Willapa Bay Light 3. In May 1999, this daybeacon was discovered destroyed (missing) and disestablished.

ANT Astoria requested this aid be reestablished in its previous approximate position 46° 39' 32" N, 123° 59' 37" W and a red aid in approximate position 46° 40' 53" N, 124° 01' 10" to form a gated pair. They cited that there is 5 NM gap between South Willapa Bay Light 3 and South Willapa Bay Light 7. The east side of South Willapa Bay is more stable than the west side. Shoaling has not changed very much on the east side of the channel as on the western, unstable side. Since the Coast Guard presently marks the east side with federal aids to navigation, an additional aid between Light 3 and Light 7 would only help to better mark the channel. Therefore, it is recommended to (re) establish Light 5 in position 46° 39' 32" N, 123° 59' 29" W to further better mark the stable side of the channel.

It is also recommended to establish a temporary, red buoy on the west side of South Willapa Bay (opposite Light 5) in approximate position 46° 39' 32" N, 123° 59' 55" W. This was ANT Astoria's suggestion during the WAMS conference call. They will use two sinkers for the buoy to see if the temporary buoy will hold (and ultimately, a permanent buoy). It is recommended to add this new, temporary buoy to the Light List, but not advertise its position in the Light List or on the chart but instead use wording that states "Position frequently shifted with changing conditions."

V. Comments and Suggestions

The comments found in this section are a paraphrased collection of all the comments received from the surveys, conversations at marinas and businesses, dock walks, LNM, user rides with industry, and online research. There were a total of eight surveys returned via email and or mail. A copy of all returned surveys can be found in enclosure (7).

1. Request for a buoy between Pine Island and Willapa River
2. Operator of 45' oyster dredge from Bay Center navigates by memory and alder stakes.
3. Operator of 43' oyster dredge from Bay Center has problems navigating waterway because channel markers have been removed. Wants channel markers reestablished.
4. Operator of 18' sport fisher indicates navigating Bay Center Channel is a problem. Needs better markings, the depths have changed. The current Bay Center Channel aids need to be relocated to be more accurate.
5. Operator of 62' oyster dredge from South Bend states most issues are dynamic within the bay. LED lights are much easier to see. Requests an updated chart, not updated for many years. Requests additional lights/day markers past Nahcotta to south end of Long Island. Wants Willapa Bay Entrance Light 13 replaced.
6. Operator of 60' oyster dredge from South Bend mentions not enough lighted markers down channels. Request more lights on day markers to fill in gap between lighted aids. Request lights in South Bay that they (Coast Seafood) can maintain. Request a buoy that they can maintain at Bay Center Channel entrance.
7. Operator at Coast Seafoods requests more lights in general, specifically on Cedar River Flats Daybeacon 2 and Willapa River Daybeacon 44.

8. Operator of 34' crab boat commented that the charts are as good as can be expected, since Willapa changes all the time.
9. Other comments made about wanting the Entrance Buoys back and a whistle buoy.
10. There are 50-60 groundings in various locations out of south bend during salmon fishing season due to fog that go unreported.
11. Nahcotta Marina basin only 6-7 feet deep, restricts vessels from leaving at a negative tide.
12. Bay Center entrance a major problem.

VI. Analysis

Willapa Bay is subject to constant shifting and changing shoals over the past many decades and is a difficult waterway to maintain accurate aids to navigation in. Since 1978, USACE no longer dredged a deep draft channel, as there was a noted reduction in commerce and associated deep draft commercial vessels. The timber industry also transitioned to rail and truck shipping. Willapa Bay Entrance Buoy A and Entrance Buoy B that used to mark the entrance to the bar crossing were disestablished in 2010. This was due to their inability to maintain station caused by dangerous breaking surf conditions, shallow depths, and the risk it posed to USCGC HENRY BLAKE while servicing them using charts that are known to be inaccurate based on the constantly shifting shoals. Four buoys were also disestablished in 2013 at Bay Center Channel due to the inability for a channel no longer being clearly defined and ANT Astoria having great difficulty accessing the buoys in their 20' TANB that draws a 13" draft. The buoys were constantly going off station, and local fisherman would place them to best mark the current channel, which was problematic and illegal for them to relocate a federal aid.

Currently, of greatest concern is the annual servicing of the last two remaining floating aids in this area: Entrance Lighted Buoy C and Entrance Buoy D. Willapa Bay is home to many recreational and commercial fisherman who still use these non-lateral aids as a general reference, however the continued servicing of these aids continues to put the USCGC HENRY BLAKE at increased risk. Over the last 20 years, the Commanding Officers of HENRY BLAKE have continued to voice concern over the risk involved with servicing these aids and their notes may be read in Enclosure (9). Over the years inspection intervals have been adjusted from 12 to 24 to 36 months in an attempt to reduce risk in going into the waterway, however the 18,000 pound sinkers are still being sanded in, resulting in an inability to pull on deck and service. In 2019, the moorings were cut due to the failed annual servicing attempt and there are potentially many moorings in the general vicinity of these two buoys. The bar continues to shift and shoal, and with the USACE not dredging, creates a continued risk for the USCGC HENRY BLAKE to cross the bar in order to attempt to service the "C" and "D" buoys. There are guidelines in place by District Thirteen's standard operating procedures, requiring a USACE survey be completed within 2 months of servicing and also a helicopter overflight with the HENRY BLAKE's Commanding Officer to assess the channel from an aerial perspective. This is the only location in D13's area of responsibility that requires such precautions to service ATON.

Based on the history of HENRY BLAKE's Commanding Officer's concerns, lack of dredging, reduced commerce, and such a high-risk evolution to D13's only 175' buoy tender, it is recommended that Willapa Bay Entrance Lighted Buoy C and Entrance Buoy D be disestablished. Further discussions are needed with the commercial fleet to determine if there is a desire for any PATON to service this area and if there are any vessels that are already within Willapa Bay of size that could maintain any floating aids to better mark the ever-changing entrance channel. Also, recommend establishing infrastructure to establish E-AIS as virtual aids to mark assigned positions for buoys A, B, C, and D. It is of note that Coast Seafoods and other commercial operators seemed willing to update navigation equipment in order to receive AIS data if virtual aids were established.

Continuing East through the channel towards Tokeland, Willapa Bay Entrance Light 13 was destroyed in September 2016 due to an eroding sand bar. What once was marking a 12-15ft shoal is now showing a bottom depth of 50-60 feet in vicinity of where Light 13 was. Based on the new bottom depth and lack of shoal, it is recommended that Willapa Bay Entrance Light 13 be disestablished.

To assist mariners with their transit with the absence of Light 13 and to better mark the ever-growing shoal of the Northeast corner of Ellen Sands, it is recommended that South Willapa Bay Light 3 be relocated to the northeast corner of the shoal. This aid should also be renamed as appropriate to mark the beginning of the preferred channel in Willapa River as a red junction light with 03-degree arc and a range that can be seen from the vicinity of the location of Entrance Buoy D. There are currently no obstructions or shallow areas within line of sight from the location of Buoy D and the Northeast corner of Ellen Sands. If Buoy D and Light 13 are disestablished, this proposed junction light would assist when transiting towards Tokeland passing Willapa Bay Entrance Light 11 and prior to establishing visual contact with Willapa Bay Channel Light 15.

The entrance to Bay Center Channel known as the “milk bottle” to locals, is also problematic in that if a mariner were to navigate by the current federal ATON configuration, one has a high chance of running aground when navigating past Bay Center Channel Light 1 towards Bay Center Channel Light 6. Local fisherman in the oyster industry have marked the "best" channel entrance with a large white plastic jug and it's gated opposite a large spherical orange buoy. They continually adjust the location of these “buoys” to best mark the entrance as it changes weekly. In 2013 Palix River Buoy 16 (LLNR 15526), Bay Center Buoy 10 (LLNR 15510), Bay Center Buoy 8 (LLNR 15505) and Bay Center Buoy 4 (LLNR 15497) were disestablished due to not being able to mark the constantly shifting channel and inability to maintain station. The same problem is occurring at the mouth of Bay Center Channel in vicinity of Bay Center Channel Light 1 (LLNR 15495) and the USCG is taking on additional liability in marking an inaccurate approach into Bay Center Channel. Based on the USACE survey data of 2019, the channel is extremely narrow and averages about 10 ft. deep from Bay Center Marina to Bay Center Channel Light 6. Fisherman indicated that Bay Center Channel Light 6 (LLNR 15500), Bay Center Channel Light 11 (LLNR 15515) and Bay Center Channel Palix River Light 15 (LLNR15525) are still very useful but it takes local knowledge to safely navigate the channel due to the shifting bottom depths, however they still want them as a reference. With constant dredging funding issues, this channel may become more of a liability in the future and conversation may be needed for future disestablishment of these fixed aids, incorporating PATON in their place. Recommend keeping Bay Center Channel Light 1 but renaming it to South Willapa Bay Light 5 to mark the edge of the channel in conjunction with the other three aids in South Willapa Bay. This would also recognize that aid as not being the entry point to Bay Center Channel. Recommend working with Bay Center Marina and the oyster industry in establishing permitted PATON in the location of the Bay Center Channel entrance, which is already being marked with plastic jugs and buoys. Continuing with the best marking of Bay Center Channel by industry would be a much safer and accurate method than the current federal fixed aids.

It was mentioned during the user ride with Coast Seafoods that the west side of Long Island, south of Nahcotta Marina, is a narrow, dark passage and would benefit greatly with some lighted ATON. This southern reach of Nahcotta Channel terminates into mudflats at Shoalwater Bay and is used for oyster farming. It is currently marked with retroreflective oyster stakes. There is no federal ATON south of Nahcotta Marina as it is a dead-end channel and the greater majority of users in this area is Coast Seafoods and their oyster dredges. While the USCG typically does not establish ATON in a low use waterway served by a single user group, there are multiple chartered pilings in the area that appeared able to support a light. Recommend assisting Coast Seafoods in establishing permitted PATON lights and possibly identify owners of chartered pilings in the area for establishing these lights on.

Willapa Bay will continue to shift and change and the USCG will continue to mark the waterway as best possible while weighing the risk to our primary servicing assets. The problematic areas that need to be addressed may be controversial to the local fisherman and waterway users, as nobody wants to see a reduction in federal aids. Based on the continued shifting changes of this bay and lack of support with dredging of the main channel, the USCG needs to reduce the risk facing USCGC HENRY BLAKE, and the liability of fixed federal ATON not appropriately marking safe water to transit. By implementing the below recommendations the USCG will be able to reduce the risk faced annually by USCGC HENRY BLAKE and allow industry to best mark particular areas of need, that the USCG is unable to support.

VII. Action Item Summary

<u>Approved</u>	<u>Not Approved</u>	
_____	_____	1. Consult with NOAA and USACE to update chart 18504 with most current survey information to update shoal locations and depth soundings.
_____	_____	2. Establish four Virtual AIS signals marking the best approach over the bar crossing to take the place of the previously disestablished Willapa Bay Entrance Buoy’s “A” and “B”, and the current “C” & “D” buoy locations.
_____	_____	3. Disestablish Willapa Bay Entrance Lighted Buoy C (LLNR 15186)
_____	_____	4. Disestablish Willapa Bay Entrance Buoy D (LLNR 15187)
_____	_____	5. Disestablish Willapa Bay Entrance Light 13 (LLNR 15210)
_____	_____	6. In order to ensure we have a stable platform to run AIS, Rebuild Light 11 (LLNR 15210)
_____	_____	7. Rename and relocate South Willapa Bay Light 3 (LLNR 15400) to mark the Northeast corner of Ellen sands, as Willapa River Junction Light, change dayboards to 4JR and light characteristics Fl R (2+1) 6s in approx. position 46-41-25.804N, 123-59-55.892W. (see Enc.11 for details)
_____	_____	8. Rename Bay Center Channel Light 1 (LLNR 15495) to South Willapa Bay Light 5

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- 9.** Assist Bay Center Marina and oyster industry in identifying appropriate permits for PATON buoys to mark the entrance to Bay Center Channel.
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- 10.** Assist Nahcotta Marina and oyster industry in identifying appropriate permits for lighted PATON on west side of Long Island to assist transit to mudflats of Shoalwater Bay.
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- 11.** Rebuild Willapa River Channel Light 56 (LLNR 15380) as a single pile steel structure. (see Enc. 11 for details)
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- 12.** Rebuild Willapa River Channel Light 59 (LLNR 15385) as a single pile steel structure (see Enc. 11 for details)
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- 13.** Rebuild South Willapa bay Daybeacon 8 (LLNR 15415) as a single pile steel structure (see Enc.11 for details)
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- 14.** Rebuild Nahcotta Channel Daybeacon 11 (LLNR 15425) as a single pile steel structure (see Enc. 11 for details)
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- 15.** Rebuild Nahcotta Channel Daybeacon 12 (LLNR 15430) as a single steel pile structure (see Enc.11 for details)
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- 16.** Rebuild Long Isand Junction Light (LLNR 15435) as a Single Pile Steel (SPS) with reduced header system. (see Enc. 11 for details)
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- 17.** Rebuild Nahcotta Channel Daybeacon 13 (LLNR 15440) as a Single Pile Steel (SPS) with reduced header system. (see Enc. 11 for details)
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- 18.** Rebuild Nahcotta Mooring Basin Light 2 (LLNR 15445) as a single pile structure (see Enc.11 for details)
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- 19.** Rebuild Stanley Channel Daybeacon 2 (LLNR 15475) as a single pile steel structure (see Enc. 11 for details)
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- 20.** Rebuild Stanley Channel Light 4 (LLNR 15480) as a single pile steel structure (see Enc. 11 for details)

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| _____ | _____ | 21. Rebuild Stanley Point Junction daybeacon (LLNR 15485) as a single pile steel structure (see Enc.11 for details) |
| _____ | _____ | 22. Rebuild Nemah River Channel Entrance Daybeacon 1 (LLNR 15490) as a single pile steel structure (see Enc. 11 for details) |
| _____ | _____ | 23. Rebuild Bay Center Channel Light 11 (LLNR 15515) as a single pile steel structure (see Enc. 11 for details) |
| _____ | _____ | 24. Rebuild Palix River Channel Light 15 (LLNR 15525) as a single pile structure (see Enc.11 for details) |