

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
NATIONAL OCEAN SERVICE

## DESCRIPTIVE REPORT

*Type of Survey* .....

*Field No.* .....

*Registry No.* .....

### LOCALITY

*State* .....

*General Locality* .....

*Sublocality* .....

\_\_\_\_\_  
\_\_\_\_\_  
CHIEF OF PARTY

### LIBRARY & ARCHIVES

DATE .....

NOAA FORM 77-28 (11-72) <p style="text-align: center;">U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION</p> <p style="text-align: center;"><b>HYDROGRAPHIC TITLE SHEET</b></p>	REGISTRY No  <b>H11556</b>
<b>INSTRUCTIONS</b> –The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.	FIELD No. <b>NRT3-5-01-06</b>
<p><b>State:</b> Washington</p> <p><b>General Locality:</b> Everett</p> <p><b>Sub-Locality:</b> Approach to Everett</p> <p><b>Scale:</b> 1:5000 <span style="float: right;"><b>Date of Survey:</b> March 29 – October 17, 2006</span></p> <p><b>Instructions dated:</b> February 17/March 27, 2006 <span style="float: right;"><b>Project No. :</b> OPR-N411-NRT3-06</span></p> <p><b>Vessel:</b> NOAA Survey Launch S1212</p> <p><b>Chief of party:</b> Kathryn Simmons</p> <p><b>Surveyed by:</b> Kathryn Simmons, Janice Landsfeld, Matthew Foss</p> <p><b>Soundings by echo sounder, hand lead, pole</b> <b>Single Beam and Multibeam</b> Echosounders</p> <p><b>Graphic record scaled by:</b> NRT-3</p> <p><b>Graphic record checked by:</b> NRT-3 <span style="float: right;"><b>Automated Plot:</b></span></p> <p><b>Verification by:</b></p> <p><b>Soundings in</b> fathoms feet <u>meters</u> at MLW <u>MLLW</u></p>	
<p><b>REMARKS:</b> <i>All times UTC.</i></p> <p><i><b>Bold, Red, Italic notes were made during office processing.</b></i></p>	

# Descriptive Report to Accompany H11556

Scale 1:5000

2006

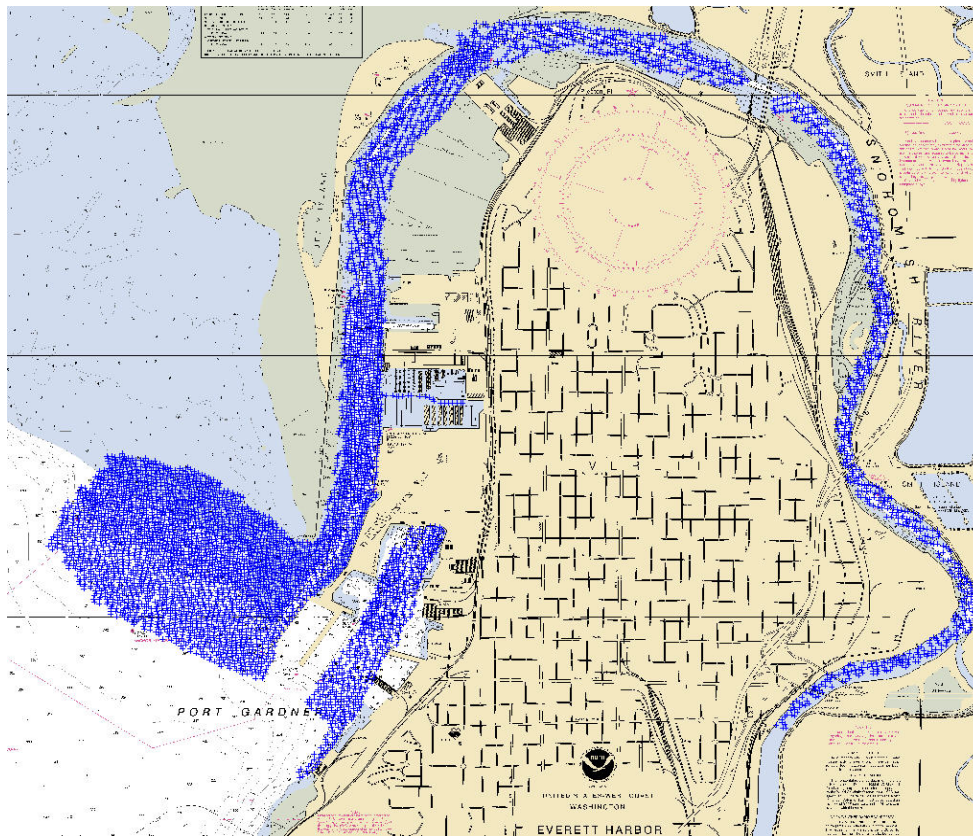
Navigation Response Team 3

Team Leader: Kathryn Simmons

## A. AREA SURVEYED

This basic hydrographic survey was conducted in accordance with Port Instructions OPR-N411-NRT3-06\*, Washington, Everett, Approach to Everett, issued February 17, 2006, and Change No. 1 dated March 27, 2006. Everett is a developing port as well as home to Naval Station Everett and has been identified by the Office of Coast Survey as a critical survey area requiring bathymetry and shoreline updates. Additionally, the Puget Sound Pilot Association requested updated bathymetry in the Snohomish River.

The area surveyed extends from latitude 48°01'17.2"N, southward to latitude 47°58'22.7"N, and from longitude 122°15'15.1"W, eastward to longitude 122°10'05.1"W. The total area of hydrography is approximately 1.6 square nautical miles as shown below.



H11556 is the only hydrographic survey in Project OPR-N411-NRT3-06 and includes hydrographic data and side scan data.

*\*Filed with original field records.*

## B. DATA ACQUISITION AND PROCESSING

Data acquisition was conducted from March 29, 2006 (*DN 089*) through October 17, 2006 (*DN 290*).

### B1. Equipment and Vessels

At the beginning of this survey NRT3's survey vessel, NOAA Survey Launch S1212, was equipped with an Odom single beam echosounder and a Klein side scan sonar system and was used to acquire single-beam echosounder data and side scan sonar data. Following initial completion of hydrographic data collection on May 5, 2006, the vessel underwent structural modifications to accommodate installation of a Simrad multibeam system. The refit, vessel survey and repainting were approaching completion when, in the early morning hours of July 5, a massive fire occurred at NOAA's Pacific Marine Center which destroyed the NRT office trailer and all of its contents, including all of the side scan data and almost all of the hydrographic data. The lost data were reacquired with the reconfigured vessel. *Concur.*

Launch S1212, a 27-foot, SeaArk Commander (SAMA115510000), was acquired in January 2001. In August 2004 the hull was extended to 30 feet to accommodate the weight of the two 150-horsepower Yamaha four-stroke outboards which power the vessel. The launch is eight feet wide, displaces 4.8 tons, has a static draft of 0.4 meters and is equipped with a Dell Pentium II PC for running the primary acquisition software. *Concur.*

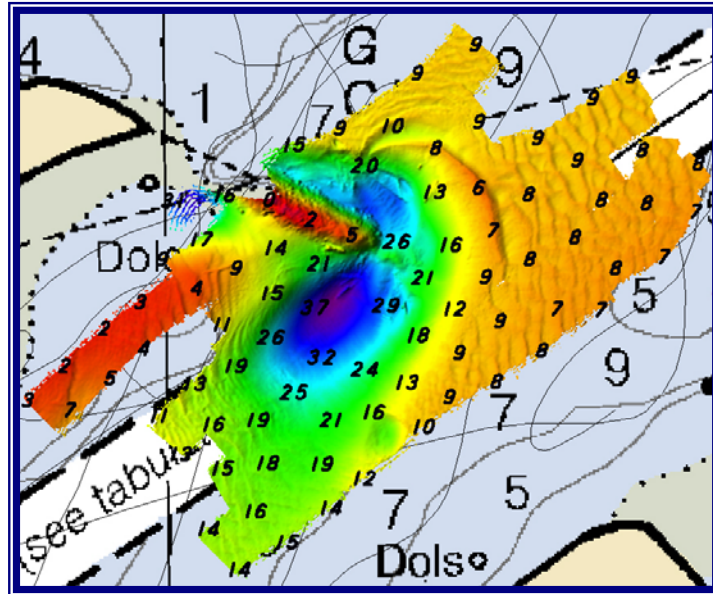
Trimble backpack DGPS systems were used to position fixed aids to navigation and other high water features. These positions have been submitted directly to the Marine Chart Division via NRB's Fast Track procedure. *Concur.*

See Data Acquisition and Processing Report (DAPR\*).

### B2. Quality Control

In the Snohomish River Channel, single beam data acquired along the river contours serve as crossline checks for data acquired across the contours. Because these lines were acquired prior to the acquisition of a multibeam system, they also serve to illustrate the dynamic changes in the river bottom over time. As an example, the strong tide and river currents in the estuary around the rock outcrop/submerged jetty at the northern tip of Jetty Island create shifting sand waves. The large sand wave just north of the shoal, visible on the graphic below, was surveyed by single beam echosounder on DN's 108 and 115 in April 2006. The same sand wave surveyed by multibeam echosounder in September 2006 (*DN 271*) had shifted approximately 15 meters to the northeast. The dynamic conditions are apparent over shorter periods of time as well; i.e., multibeam data acquired on separate days only one week apart (*DN 271 and DN 278*) indicate a 1.3-meter movement of the sand wave to the southwest during that time. See graphic below. *Concur.*

*\*Filed with original field records.*



In the northwest corner of the charted settling basin in the vicinity of latitude  $48^{\circ}00'09.3''$  N, longitude  $122^{\circ}13'34.5''$  W, single beam soundings from March and April 2006 (*DNs 089 and 103*) are 0.3 to 0.5 meters deeper than multibeam data from September (*DN 264*). Elsewhere in the settling basin and throughout the rest of the data for the same days, single beam depths agree with multibeam depths. The conclusion of the hydrographer is that the discrepancy reflects actual changes in the bottom due to highly dynamic river and tide conditions. This situation is found again in the section of the river between the northern tip of Jetty Island and the railroad swing bridge, *Concur.*

Sound velocity errors occurred in the multibeam data acquired on *DN's 261, 264, and 268*. The affected data, all on the outer beams, were deleted. *Concur.*

On March 30 (*DN 089*) the BIN files (fathogram images) for two lines of single beam hydrography (*line nos. 006\_1824 and 007\_1904*), were truncated at the beginning of the lines. The two lines were over 30 minutes long, and the imagery appears to have been lost due to file size constraints. The digitization for the periods of missing imagery is clean and unambiguous and was retained. *Concur.*

See also Data Acquisition and Processing Report\*.

### B3. Corrections to Echo Soundings

See Data Acquisition and Processing Report\*.

True heave data were not acquired on DN 269. *Concur.*

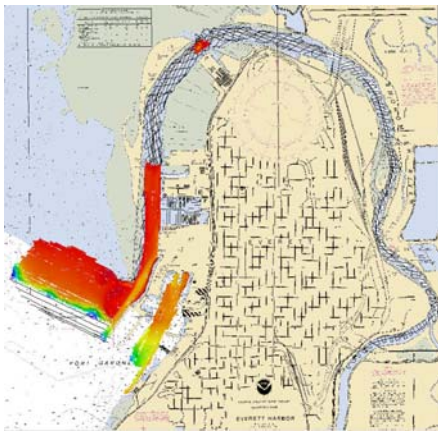
*\*Filed with original field records.*

## B4. Data Processing

See also Data Acquisition and Processing Report\*.

Five CARIS BASE surfaces were created from the survey data: 1) A 0.5 meter resolution BASE surface of multibeam data for shallower areas which constitute most of the area surveyed; 2) a 1.0 meter resolution BASE surface of multibeam data for the deepest area surveyed, the southwesternmost portion; 3) a 0.5 meter resolution BASE surface for single beam data only; 4) a 1.0 meter BASE surface combining the above three; and 5) The combined BASE surface, finalized. *Concur.*

(1) H11556\_0p5m



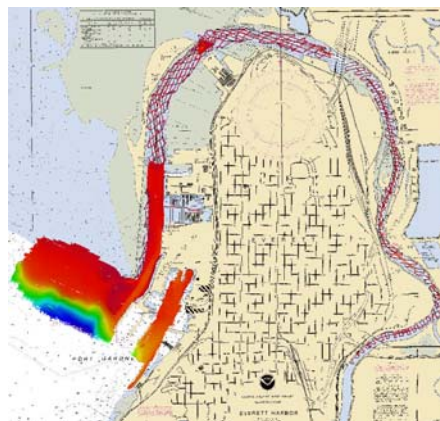
(2) H11556\_1m



3) H11556\_0p5m\_SB



(4), (5) H11556\_Combined\_1m



Specific depth thresholds were not employed; instead, survey lines were selected manually for inclusion in each BASE surface. For the BASE surface at 0.5-meter resolution the selected lines were predominantly in depths shallower than 10 meters. For the BASE surface at 1.0 meter resolution, the lines were mostly in depths beyond 10 meters. *Concur.*

*\*Filed with original field records.*



## C. VERTICAL AND HORIZONTAL CONTROL

### C1. Tides and Water Levels

See Data Acquisition and Processing Report\*.

### C2. Horizontal Datum

The horizontal control datum for this project is North American Datum of 1983 (NAD83).

*See Evaluation Report.*

### C3. Position Control

See Data Acquisition and Processing Report\*.

## D. RESULTS AND RECOMMENDATIONS

### D1. Chart Comparison

Survey results were compared primarily with Chart 18444, the largest scale chart covering the survey area, and cursorily compared to Chart 18443.

Chart No.	Date	Edition	LNМ	Scale
18443	January 2004	16 <sup>th</sup>	29/06	1:40,000
18444	September 2004	16 <sup>th</sup>	24/06	1:10,000

**ENC Cell US5WA50M does not include the survey area; therefore, ENC comparison was limited to US5WA51M.**

ENC Cell	Last Update	Version	Edition
US5WA51M	10/20/05	2	2

### Comparison of Soundings

Survey soundings were compared with the charts through contour line and sounding plot comparisons, using CARIS Field Sheet Editor and Mapinfo/Vertical Mapper.

In the vicinity of latitude 47°58'55.66"N, longitude 122°14'01.21"W, immediately west and south of the Navy's Wharf A, the 60-foot depth contour on chart 18443 is in agreement with this survey but the same contour on Chart 18444 is charted as much as 100 meters to the north.

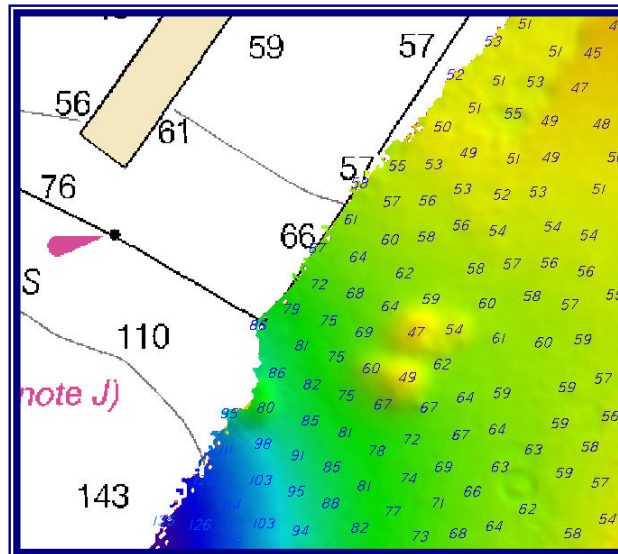
*Concur.*

*\*Filed with original field records.*

To the west of the channel entrance in the survey area centered at latitude 47°59'13"N, longitude 122°14'29"W, contours are in general agreement with the chart. One significant exception is at the south end of the jetty where scouring has occurred and minimum depths now reach 25 feet at latitude 47°59'15.176"N, longitude 122°13'50.703"W. Apparently, the scoured material is being deposited on the west side of the jetty where the depths have shoaled substantially. *Concur.*

Just north of the boat launch ramp in the vicinity of latitude 48°00'20.83"N, longitude 122°13'25.63"W, some shoaling has occurred shifting the 6-foot contour to the west and closer to the maintained channel. *Concur.*

Two mounds were located inside the Navy basin each rising about ten feet above surrounding depths. A least depth of 49 feet was acquired on the southmost mound at latitude 47°58'43.694"N, longitude 122°13'41.320"W, and a depth of 47 feet was located on the northmost mound at latitude 47°58'44.740"N, longitude 122°13'40.932"W. These depths plot over the charted 60-foot contour. See graphic below:



Surveyed depths within the maintained channel are consistent with, or deeper than, the tabulated depths. *Concur.*

#### Comparison of Non-Sounding Features

Detached positions of high water features, as well as positions of high water features acquired with the Trimble TSC1 backpack and GeoXT units, were imported into Notebook and have been submitted directly to Marine Chart Division. *Concur.*

AWOIS Items

Thirty-three AWOIS items are included in this survey. Of these, nineteen were investigated with side scan sonar as well as visual inspection. Three were investigated with multibeam echosounder only and the remaining eleven were investigated visually. Survey findings and charting recommendations are discussed in Pydro and included in the Pydro-generated Feature Report\*(*Appendix II*). *Concur.*

*\*Filed with original field records.*

Dangers to Navigation

One Danger to Navigation was found during the course of this survey. See Appendix I\*. *Concur.*

**D2. Additional Results**Shoreline

The zero-curve was obtained where it could be safely acquired. Near shore high water features and fixed aids were positioned with Trimble TSC1 backpack and GeoXT units for direct submission to Marine Chart Division via Navigation Response Branch, NSD. Detached positions were acquired on some offshore high water features; these were imported into Notebook for submission with other high water features. *Concur.*

Comparison with Prior Surveys

The following prior surveys are the primary sources for charted soundings and features.

Registry No.	Year Surveyed	Scale
H10662	1996	1:5000
H08174	1955	1:10,000
H08173	1954	1:5000
H01728	1886	1:20,000

H10662 was the source for most of the AWOIS items throughout the survey; see the Feature Report for investigation discussions and disposition recommendations.. Given the age of the other prior surveys, they were not compared to the current survey which is adequate to supersede all prior surveys in their common areas. *Concur.*

Aids to Navigation

New positions were acquired on all fixed aids to navigation using the Trimble GeoXT unit. The updated position and attribute data have been submitted directly to NOAA's Marine Chart Division. A text file of the positions is included in Appendix IV. *Concur with clarification, the text file of positions is not included with the field submitted records.*

Bridges, Cables, Pipelines

Charted bridges, cables, and pipelines were visually confirmed. Uncharted or mischarted bridges were positioned with the Trimble GeoXT Unit for direct submission to Marine Chart Division.

***Concur.***

***\*Filed with original field records.***

Statistics

<b>Description</b>	<b>Quantities</b>
Total Linear Nautical Miles	106.13
Mainscheme Multibeam	48.23
Mainscheme Singlebeam	44.52
Side Scan Sonar	1.50
Development	3.23
Crosslines	8.65
Square Nautical Miles Hydrography	1.60
Square Nautical Miles SSS	0.16
Velocity Casts	13
Bottom Samples	0
AWOIS Items	33
Tide Stations Installed	0
Position Control Stations Established	0

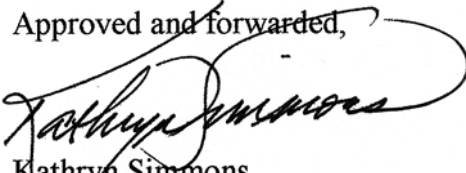
**E. APPROVAL SHEET**

Standard field surveying and processing procedures were followed in producing this survey in accordance with the Navigation Response Branch Operations Manual, the Field Procedures Manual and NOS Hydrographic Surveys Specifications and Deliverables.

The data were reviewed daily during acquisition and processing.

The digital data and supporting records have been reviewed by me, are considered complete and adequate for charting purposes, and are approved. All records are forwarded to Atlantic Hydrographic Branch and should be attached to H11556 for final review and processing.

Approved and forwarded,



Kathryn Simmons  
Team Leader

## APPENDIX I

### DANGERS TO NAVIGATION REPORT

# H11556 - Dangers to Navigation

**Registry Number:** H11556  
**State:** Washington  
**Locality:** Approaches to Everett  
**Sub-locality:** Everett Harbor  
**Project Number:** OPR-N411-NRT3-06  
**Survey Date:** 09/26/2006

## Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
18444	16th	09/01/2004	1:10,000 (18444_1)	USCG LNM: 06/03/2008 (06/03/2008) CHS NTM: None (05/30/2008) NGA NTM: None (06/07/2008)
18423	35th	05/01/2005	1:80,000 (18423_15) 1:40,000 (18423_17)	[L]NTM: ?
18443	16th	01/01/2004	1:40,000 (18443_1)	[L]NTM: ?
18441	45th	04/01/2006	1:80,000 (18441_1)	[L]NTM: ?
18440	28th	12/01/2005	1:150,000 (18440_1)	[L]NTM: ?
18003	20th	11/01/2006	1:736,560 (18003_1)	[L]NTM: ?
18007	32nd	07/01/2005	1:1,200,000 (18007_1)	[L]NTM: ?
501	12th	11/01/2002	1:3,500,000 (501_1)	[L]NTM: ?
530	31st	06/01/2005	1:4,860,700 (530_1)	[L]NTM: ?
50	6th	06/01/2003	1:10,000,000 (50_1)	[L]NTM: ?

\* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

## Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Dton #1	Shoal	14.44 m	47° 58' 44.7" N	122° 13' 40.9" W	---

**1 - DR\_DToN**



**1.1) DtoN #1****DANGER TO NAVIGATION****Survey Summary**

**Survey Position:** 47° 58' 44.7" N, 122° 13' 40.9" W  
**Least Depth:** 14.44 m (= 47.38 ft = 7.897 fm = 7 fm 5.38 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.902$  m ; **TVU (TPEv)**  $\pm 1.075$  m  
**Timestamp:** 2006-269.20:35:21.737 (09/26/2006)  
**Survey Line:** h11556 / s1212\_simrad / 2006-269 / 017\_2035  
**Profile/Beam:** 77/7  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

**Remarks:**

AWOIS Item 52352 was investigated with 200% SSS and SWMB. Two large mounds were found approximately 40 meters northeast of AWOIS position. The mounds are 40-50 feet in diameter and rise 5-6 meters above surrounding depths. The least depth of 14.4 meters/47 feet was selected as designated sounding 77/7. A depth of 53 feet is charted 32 meters to the east.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h11556/s1212_simrad/2006-269/017_2035	77/7	0.00	000.0	Primary

**Hydrographer Recommendations**

Chart the 47-foot sounding.

**Cartographically-Rounded Depth (Affected Charts):**

47ft (18444\_1)

7  $\frac{3}{4}$ fm (18441\_1, 18440\_1, 18003\_1, 18007\_1, 530\_1)

7fm 5ft (18423\_17, 18443\_1, 18423\_15)

14.4m (501\_1, 50\_1)

**S-57 Data**

**Geo object 1:** Sounding (SOUNDG)

**Attributes:**      EXPSOU - 2:shoaler than range of depth of the surrounding depth area  
                          TECSOU - 3:found by multi-beam  
                          VERDAT - 12:Mean lower low water

## Office Notes

Concur with clarification, chart a 47 ft sounding.

Sounding is currently charted on the continual update raster as of 09/02/2008. Retain as charted

**APPENDIX II**  
**SURVEY FEATURES REPORT**

# H11556 - AWOIS Items

**Registry Number:** H11556  
**State:** Washington  
**Locality:** Approaches to Everett  
**Sub-locality:** Everett Harbor  
**Project Number:** OPR-N411-NRT3-06  
**Survey Dates:** 09/18/2006 - 10/17/2006

## Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
18444	16th	09/01/2004	1:10,000 (18444_1)	USCG LNM: 06/03/2008 (06/03/2008) CHS NTM: None (05/30/2008) NGA NTM: None (06/07/2008)
18423	35th	05/01/2005	1:80,000 (18423_15) 1:40,000 (18423_17)	[L]NTM: ?
18443	16th	01/01/2004	1:40,000 (18443_1)	[L]NTM: ?
18441	45th	04/01/2006	1:80,000 (18441_1)	[L]NTM: ?
18440	28th	12/01/2005	1:150,000 (18440_1)	[L]NTM: ?
18003	20th	11/01/2006	1:736,560 (18003_1)	[L]NTM: ?
18007	32nd	07/01/2005	1:1,200,000 (18007_1)	[L]NTM: ?
501	12th	11/01/2002	1:3,500,000 (501_1)	[L]NTM: ?
530	31st	06/01/2005	1:4,860,700 (530_1)	[L]NTM: ?
50	6th	06/01/2003	1:10,000,000 (50_1)	[L]NTM: ?

\* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

## Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	SOUNDING	AWOIS	[no data]	[no data]	[no data]	---
1.2	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.3	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.4	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.5	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.6	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---

1.7	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.8	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.9	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.10	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.11	UNKNOWN	AWOIS	[no data]	[no data]	[no data]	---
1.12	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.13	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.14	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.15	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.16	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.17	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.18	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.19	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.20	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.21	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.22	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.23	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.24	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.25	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.26	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.27	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.28	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
1.29	UNKNOWN	AWOIS	[no data]	[no data]	[no data]	---
1.30	#52357 - Obstruction 2093/122	Obstruction	6.12 m	47° 58' 58.9" N	122° 13' 30.9" W	52357
1.31	#52353 - Sounding 435/30	Shoal	4.63 m	47° 59' 22.6" N	122° 14' 29.5" W	52353
1.32	#52214 - M/V ALINDESKA SEA 1057/16	Wreck	48.01 m	47° 59' 02.2" N	122° 14' 46.9" W	52214

**1 - DR\_AWOIS**

## 1.1) AWOIS #52215 - SOUNDING

### No Primary Survey Feature for this AWOIS Item

**Search Position:** 48° 01' 09.2" N, 122° 12' 56.2" W  
**Historical Depth:** 0.91 m  
**Search Radius:** 75  
**Search Technique:** ES, DI, S2  
**Technique Notes:** [None]

**History Notes:**

HISTORY ■ H10662/96--ROCKS DISPROVED BY 10 METER LINE SPACING. 10 METER HIGH SPIKES NEAR BUOY "5A" WHICH APPEAR TO BE AN EXTENSION OF THE POINT OF JETTY ISLAND. A 3 FT DEPTH WAS LOCATED, GP PROVIDED IN LAT 48-01-09.19N, LONG 122-12-56.21W. (UPDATED 3/97 EJS) ■ DESCRIPTION ■ ROCKS OFF NORTHEAST CORNER OF JETTY ISLAND, NEAR BUOY "5A", REPORTED ■ VERBALLY TO PHP (LT FLETCHER) BY LOCAL TUG COMPANY, APRIL 1995. POSITION ESTIMATED. (ENTERED 5/95 EB)

### Survey Summary

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

**Remarks:**

AWOIS# 52215--SOUNDING over rocks off northeast corner of Jetty Island

Pile ruins and a rocky outcrop are visible at low tide - probably remnants of a jetty (charted feature). See photo. The shoal was developed with SWMB. The charted 3-foot sounding was not verified; a shoal depth of 4 feet/1.18 meters was located at the AWOIS location just shoreward of the 3-foot charted depth.

The shoal area is marked by Snohomish River Buoy "7" as charted, not by buoy "5A" as described in the AWOIS database.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52215	0.00	000.0	Primary
h11556/s1212_simrad/2006-271/newlinec	296/108	3.95	190.9	Secondary
h11556/s1212_simrad/2006-271/newlined	325/8	71.36	256.7	Secondary

## Hydrographer Recommendations

Delete 3-foot sounding. Chart soundings from current survey. Note in AWOIS database that it is buoy 7, not buoy "5A".

### S-57 Data

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** INFORM - AWOIS Item #52215  
QUASOU - 1:depth known  
TECSOU - 3:found by multi-beam  
VERDAT - 12:Mean lower low water

### Office Notes

Do not concur. There are currently no charted rocks in this location. Retain rocks as not charted. With the application of Final Tides the LD over the charted 3FT depth is 3FT. Retain charted 3FT sounding.



## 1.2) AWOIS #52216 - OBSTRUCTION

### No Primary Survey Feature for this AWOIS Item

**Search Position:** 47° 58' 35.3" N, 122° 13' 35.1" W  
**Historical Depth:** [None]  
**Search Radius:** 50  
**Search Technique:** ES, DI, S2, VS  
**Technique Notes:** [None]

**History Notes:**

HISTORY ■ CL616/68-- DOLPHIN ON NORTHWEST CORNER OF PIER. POSITION ìCOMPUTED FROM RASTER IMAGE. (ENTERED 5/95 EB)

### Survey Summary

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

**Remarks:**

AWOIS #52216--Dolphin on northwest corner of pier, from raster chart

The charted dol was not visible and because it was shoreward of two large mooring platforms, could not be investigated with side scan or SWMB. See Field Exam F00518

### Feature Correlation

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52216	0.00	000.0	Primary

### Hydrographer Recommendations

Chart submerged.

### S-57 Data

[None]

## Office Notes

F00518 has not been submitted yet. Retain Dols as currently charted.

### 1.3) AWOIS #52217 - OBSTRUCTION

#### No Primary Survey Feature for this AWOIS Item

**Search Position:** 47° 58' 55.9" N, 122° 13' 09.1" W  
**Historical Depth:** [None]  
**Search Radius:** 50  
**Search Technique:** ES, DI, S2, VS  
**Technique Notes:** [None]

**History Notes:**

HISTORY ■ CL451/77--ITEM CONSISTS OF TWO 3-PILE DOLPHINS, ONE NORTH OF THE OTHER. POSITION GIVEN IS FOR NORTHERN OF TWO. POSITION COMPUTED FROM RASTER IMAGE. (ENTERED 5/95 EB)

#### Survey Summary

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

**Remarks:**

AWOIS #52217--Two 3-pile dolphins. Position is northern of two.  
 Charted Dols confirmed. Positions will be updated in Field Exam F00518.

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52217	0.00	000.0	Primary

#### Hydrographer Recommendations

See Field Exam F00518.

#### S-57 Data

[None]

## Office Notes

F00518 has not been submitted yet. Retain Dols as currently charted.

## 1.4) AWOIS #52218 - OBSTRUCTION

### No Primary Survey Feature for this AWOIS Item

**Search Position:** 47° 58' 57.6" N, 122° 13' 08.9" W  
**Historical Depth:** [None]  
**Search Radius:** 50  
**Search Technique:** ES, DI, S2, VS  
**Technique Notes:** [None]

#### History Notes:

HISTORY ■ CL451/77-- 5-PILE DOLPHIN AT END OF SMALL PIER. POSITION COMPUTED FROM RASTER IMAGE. (ENTERED 5/95 EB)

### Survey Summary

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

AWOIS #52218--5-pile dolphin at end of small pier.  
 Dolphin confirmed.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52218	0.00	000.0	Primary

### Hydrographer Recommendations

See Field Exam F00518 for updated position.

### S-57 Data

[None]

### Office Notes

F00518 has not been submitted yet. Retain Dol as currently charted.

## 1.5) AWOIS #52219 - OBSTRUCTION

### No Primary Survey Feature for this AWOIS Item

**Search Position:** 47° 59' 17.8" N, 122° 13' 04.1" W  
**Historical Depth:** [None]  
**Search Radius:** 50  
**Search Technique:** ES, DI, VS, S2  
**Technique Notes:** [None]

#### History Notes:

HISTORY■ BP11521/80--NANCI: PILE INDICATED OFF NORTHERN END OF NAVY iRESERVE PIER. POSITION COMPUTED FROM RASTER IMAGE. (ENTERED i5/95 EB)

### Survey Summary

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

AWOIS #52219--Pile at northern end of pier.  
 Feature is large platform. Updated in Field Exam F00518.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52219	0.00	000.0	Primary

### Hydrographer Recommendations

See Field Exam F00518.

### S-57 Data

[None]

### Office Notes

F00518 has not been submitted yet. Retain Pile as currently charted.

## 1.6) AWOIS #52220 - OBSTRUCTION

### No Primary Survey Feature for this AWOIS Item

**Search Position:** 47° 59' 20.3" N, 122° 13' 13.0" W  
**Historical Depth:** [None]  
**Search Radius:** 25  
**Search Technique:** ES, DI, VS, S2  
**Technique Notes:** [None]

#### History Notes:

DESCRIPTION ■ UNKNOWN SOURCE: VISIBLE PILE FIRST APPEARED ON CHARTS IN 1975.  
 POSITION COMPUTED FROM RASTER IMAGE. (ENTERED 5/95 EB)

### Survey Summary

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

AWOIS #52220-- UNKNOWN SOURCE: VISIBLE PILE FIRST APPEARED ON CHARTS IN 1975. POSITION COMPUTED FROM RASTER IMAGE. (ENTERED 5/95 EB)

Pile is neither charted nor visible.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52220	0.00	000.0	Primary

### Hydrographer Recommendations

Retain area as charted.

### S-57 Data

[None]

## Office Notes

File is not currently charted. Retain as not charted.



## 1.7) AWOIS #52221 - OBSTRUCTION

### No Primary Survey Feature for this AWOIS Item

**Search Position:** 47° 59' 21.0" N, 122° 13' 18.7" W  
**Historical Depth:** [None]  
**Search Radius:** 25  
**Search Technique:** ES, DI, VS, S2  
**Technique Notes:** [None]

**History Notes:**

SURVEY REQUIREMENTS COMMENT ■ 25M SEARCH RADIUS APPLIES TO EACH PILE.  
 ■■HISTORY■ CL1710/73--NOS COAST PILOT RECON: ITEM CONSISTS OF TWO PILES 1ALONG  
 NORTHERN LIMIT OF EAST WATERWAY. POSITION IDENTIFIES 1EASTERNMOST OF TWO. POSITION  
 COMPUTED FROM RASTER IMAGE. 1(ENTERED 5/95 EB)

### Survey Summary

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1,  
 530\_1, 50\_1

**Remarks:**

AWOIS #52221--NOS COAST PILOT RECON: ITEM CONSISTS OF TWO PILES ALONG NORTHERN  
 LIMIT OF EAST WATERWAY. POSITION IDENTIFIES EASTERNMOST OF TWO. POSITION COMPUTED  
 FROM RASTER IMAGE. (ENTERED 5/95 EB)

Piles are neither visible nor charted. Remains of piles cut off at base were found at AWOIS location which is  
 non-navigable water shoreward of the floating docks in the Everett Naval Station marina.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52221	0.00	000.0	Primary

### Hydrographer Recommendations

Retain as charted.

### S-57 Data

[None]

## Office Notes

Item is not currently charted. Retain as not charted.

## 1.8) AWOIS #52222 - OBSTRUCTION

### No Primary Survey Feature for this AWOIS Item

**Search Position:** 47° 59' 20.5" N, 122° 13' 21.0" W  
**Historical Depth:** [None]  
**Search Radius:** 25  
**Search Technique:** ES, DI, VS, S2  
**Technique Notes:** [None]

**History Notes:**

SURVEY REQUIREMENTS COMMENT ■ 25M SEARCH RADIUS APPLIES TO EACH PILE. ■■■HISTORY ■  
 CL1710/73--NOS COAST PILOT RECON: ITEM CONSISTS OF 6 PILES IN iA ROW RUNNING NE TO SW  
 ALONG WEST EDGE OF EAST WATERWAY. iPOSITION IDENTIFIES NORTHERNMOST OF 6. POSITION  
 COMPUTED FROM iRASTER IMAGE. (ENTERED 5/95 EB)

### Survey Summary

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

**Remarks:**

AWOIS #52222--Six piles in row running northeast to southwest along west edge of east waterway. POSITION IDENTIFIES NORTHERNMOST OF 6  
 Piles are neither visible or charted. A pile lying on the bottom was seen at the AWOIS location. Pile remnants are visible among the riprap along the west shore of the marina.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52222	0.00	000.0	Primary

### Hydrographer Recommendations

Retain as charted

### S-57 Data

[None]

## Office Notes

Item is not currently charted. Retain as not charted.

## 1.9) AWOIS #52223 - OBSTRUCTION

### No Primary Survey Feature for this AWOIS Item

**Search Position:** 47° 59' 14.4" N, 122° 13' 24.8" W  
**Historical Depth:** [None]  
**Search Radius:** 25  
**Search Technique:** ES, DI, VS, S2  
**Technique Notes:** [None]

**History Notes:**

SURVEY REQUIREMENTS COMMENT ■ 25M SEARCH RADIUS APPLIES TO EACH PILE. ■■■HISTORY ■  
 CL1710/73--NOS COAST PILOT RECON: ITEM CONSISTS OF 6 PILES IN A ROW RUNNING NORTH TO  
 SOUTH ALONG WEST EDGE OF EAST WATERWAY. POSITION IDENTIFIES NORTHERNMOST OF 6.  
 POSITION COMPUTED FROM RASTER IMAGE. (ENTERED 5/95 EB)

### Survey Summary

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1,  
 530\_1, 50\_1

**Remarks:**

AWOIS #52223--6 piles in row running north to south along west edge of east waterway. POSITION IDENTIFIES  
 NORTHERNMOST OF 6

Piles confirmed - Positions updated in Field Exam F00518.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52223	0.00	000.0	Primary

### Hydrographer Recommendations

See Field Exam F00518.

### S-57 Data

[None]

## Office Notes

F00518 has not been submitted yet. Retain Piles as currently charted.

**1.10) AWOIS #52224 - OBSTRUCTION**

**No Primary Survey Feature for this AWOIS Item**

**Search Position:** 47° 59' 01.5" N, 122° 13' 33.0" W  
**Historical Depth:** [None]  
**Search Radius:** 25  
**Search Technique:** ES,DI, VS S2  
**Technique Notes:** [None]

**History Notes:**

SURVEY REQUIREMENTS COMMENT ■ 25M SEARCH RADIUS APPLIES TO EACH PILE. ■ ■ HISTORY ■  
 CL1710/73--NOS COAST PILOT RECON: ITEM CONSISTS OF 10 PILES ìIN A ROW ALONG NORTH SIDE  
 OF FOOT OF NAVY PIERS. POSITION ìIDENTIFIES EASTERNMOST OF 10. POSITION COMPUTED  
 FROM RASTER ìIMAGE. (ENTERED 5/95 EB)

**Survey Summary**

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1,  
 530\_1, 50\_1

**Remarks:**

AWOIS #52224--10 piles in row along north side of foot of Navy piers.  
 Piles positioned in Field Exam F00518.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52224	0.00	000.0	Primary

**Hydrographer Recommendations**

See Field Exam F00518.

**S-57 Data**

[None]

## Office Notes

F00518 has not been submitted yet. Retain Piles as currently charted.



**1.11) AWOIS #52272 - UNKNOWN**

**No Primary Survey Feature for this AWOIS Item**

**Search Position:** 47° 59' 28.3" N, 122° 13' 51.0" W  
**Historical Depth:** [None]  
**Search Radius:** 75  
**Search Technique:** VS, SD, DI  
**Technique Notes:** [None]

**History Notes:**

HISTORY ■ BP 156842/95--NOS CRS: UNIDENTIFIED WRECK AT POSITION i47-59-28.3N, 122-13-48.2W. POSITION ESTIMATED. (ENTERED 12/95 iEBC) ■ H10662/96--VISIBLE WRECK LOCATED (UNCOVERS 6 FT MLLW), POSITION iGIVEN IN LAT 47-59-28.33N, LONG 122-13-50.99W. (UPDATED 3/97 iEJS)

**Survey Summary**

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

**Remarks:**

AWOIS #52272--Unidentified wreck; VISIBLE WRECK LOCATED (UNCOVERS 6 FT MLLW).  
 Wreck location was not accessible but a large wreck could not be seen from a distance of 350 yards. From the attached aerial photo, it appears the wreck may have broken apart with only remnants remaining.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52272	0.00	000.0	Primary

**Hydrographer Recommendations**

Retain as charted.

**S-57 Data**

**Geo object 1:** Wreck (WRECKS)  
**Attributes:** CATWRK - 2:dangerous wreck  
 CONVIS - 1:visual conspicuous  
 INFORM - AWOIS Item #52272

STATUS - 1:permanent

TECSOU - 10:photogrammetry

VERDAT - 12:Mean lower low water

WATLEV - 2:always dry

## Office Notes

Do not concur. Update charted VIS WK to Subm Wk.

## 1.12) AWOIS #52352 - OBSTRUCTION

### No Primary Survey Feature for this AWOIS Item

**Search Position:** 47° 58' 43.3" N, 122° 13' 43.4" W  
**Historical Depth:** 24.38 m  
**Search Radius:** 75  
**Search Technique:** ES, S2  
**Technique Notes:** [None]

#### History Notes:

HISTORY ■ H10662/96--TEN METER LINE SPACED ECHOSOUNDER DEVELOPMENT WAS  
 ìPERFORMED OVER A SIDE SCAN SONAR CONTACT. A 2.6 METER HIGH ìOBSTRUCTION WAS  
 LOCATED WITH AN ECHOSOUNDER LEAST DEPTH OF 80 FT ìAT MLLW WITH A POSITION GIVEN IN  
 LAT 47/58/43.33 N, LONG ì122/13/43.39 W. IN LIEU OF THE OBSTRUCTION, A SOUNDING APPROX. 50  
 METERS ■WEST WAS RECOMMENDED FOR CHARTING WITH A DEPTH OF 79 FT AT MLLW,  
 POSITION■GIVEN IN LAT 47/58/43.27 N, LONG 122/13/46.63 W. (ENTERED 03/97 EJS)

### Survey Summary

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1,  
 530\_1, 50\_1

#### Remarks:

AWOIS #52352--A SIDE SCAN SONAR CONTACT - 2.6 METER HIGH OBSTRUCTION WAS LOCATED  
 WITH AN ECHOSOUNDER LEAST DEPTH OF 80 FT AT MLLW - LAT 47/58/43.33 N, LONG 122/13/43.39  
 W. IN LIEU OF THE OBSTRUCTION, A SOUNDING APPROX. 50 METERS WEST WAS RECOMMENDED  
 FOR CHARTING WITH A DEPTH OF 79 FT AT MLLW at LAT 47/58/43.27 N, LONG 122/13/46.63 W.

Investigated with 200% SSS and SWMB. Two large mounds were found approximately 40 meters northeast of  
 AWOIS position. The mounds are 40-50 feet in diameter and rise 5-6 meters above surrounding depths. The least  
 depth of 14.4 meters/47 feet was selected as designated sounding 77/7.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52352	0.00	000.0	Primary

### Hydrographer Recommendations

Chart depths from current survey.

### **S-57 Data**

[None]

### **Office Notes**

Concur. No item is currently charted. Retain as not charted. Chart current survey soundings.

**1.13) AWOIS #52354 - OBSTRUCTION**

**No Primary Survey Feature for this AWOIS Item**

**Search Position:** 47° 59' 11.9" N, 122° 13' 43.4" W  
**Historical Depth:** 9.75 m  
**Search Radius:** 50  
**Search Technique:** DI, ES, S2  
**Technique Notes:** [None]

**History Notes:**

SURVEY REQUIREMENT COMMENTS--■ THIS ITEM SHOULD BE CONSIDERED FOR DEVELOPMENT BY MULTIBEAM ECHOSOUNDER AS THE TECHNOLOGY BECOMES AVAILABLE. CONTINUED POOR VISIBILITY IS LIKELY TO MAKE DIVER INVESTIGATION IMPRACTICAL. ■■ HISTORY ■ H10662/96--AN ECHOSOUNDER DRIFT SEARCH OVER A SIDE SCAN SONAR CONTACT WAS PERFORMED. AN OBSTR EXTENDING APPROX 1.8 METERS OFF THE BOTTOM WAS LOCATED WITH AN ECHOSOUNDER LEAST DEPTH OF 32 FT AT MLLW ■ WITH A POSTION GIVEN AT LAT 47/59/11.94 N, LONG 122/13/43.41 W. ■ (ENTERED 03/97 EJS)

**Survey Summary**

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

**Remarks:**

AWOIS #52354--SSS contact from previous survey, 1.8 meters high, least depth 32 feet.

Developed with SWMB. No real feature was found over the AWOIS area which is characterized by a very soft bottom. The least depth obtained over the AWOIS radius is 11.2 meters/36 feet and selected as designated sounding 3468/4.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52354	0.00	000.0	Primary
h11556/s1212_simrad/2006-264/029_2217	3468/4	5.05	003.6	Secondary

**Hydrographer Recommendations**

Delete obstruction symbol; chart soundings from this survey. Remove from AWOIS Database.

## S-57 Data

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** INFORM - AWOIS Item #52354  
QUASOU - 1:depth known  
TECSOU - 3:found by multi-beam  
VERDAT - 12:Mean lower low water

## Office Notes

Concur. Remove charted 32FT Obstn.

**1.14) AWOIS #52355 - OBSTRUCTION**

**No Primary Survey Feature for this AWOIS Item**

**Search Position:** 47° 59' 19.6" N, 122° 13' 37.5" W  
**Historical Depth:** 10.36 m  
**Search Radius:** 50  
**Search Technique:** DI, ES, S2  
**Technique Notes:** [None]

**History Notes:**

SURVEY REQUIREMENT COMMENTS--■ THIS ITEM SHOULD BE CONSIDERED FOR DEVELOPMENT BY A MULTIBEAM ECHOSOUNDER AS THE TECHNOLOGY BECOMES AVAILABLE. CONTINUED POOR VISIBILITY IS LIKELY TO MAKE DIVER INVESTIGATION IMPRACTICAL.■■ HISTORY■ H10662/96--AN ECHOSOUNDER DRIFT SEARCH WAS PERFORMED OVER A SIDE SCAN SONAR CONTACT. AN OBSTR WAS LOCATED EXTENDING 1.2 METERS OFF THE BOTTOM WITH AN ECHOSOUNDER LEAST DEPTH OF 34 FT AT MLLW WITH A POSITION GIVEN IN LAT 47/59/19.58 N, LONG 122/13/37.46 W. (ENTERED 03/97 EJS)

**Survey Summary**

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

**Remarks:**

AWOIS #52355--SSS contact from previous survey, height 1.2 meters, least depth 34 feet.

Investigated with SWMB and 200% SSS. A feature was found on the edge of the maintained channel rising 1.0 meter above surrounding depths. The surveyed least depth of 11.1 meters/36 feet was selected as designated sounding 38/100.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52355	0.00	000.0	Primary
h11556/s1212_simrad/2006-264/032_1905	38/100	6.81	209.0	Secondary
h11556/s1212sss_100/2006-271/sonar_data060929193900	0001	8.30	209.5	Secondary

**Hydrographer Recommendations**

Chart depths from current survey. Remove from AWOIS Database.

## S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** VALSOU - 10.3632 m  
WATLEV - 3:always under water/submerged

## Office Notes

Do not concur. Item is not currently charted, but is a real feature. Chart 34FT Obstn.



## 1.15) AWOIS #52356 - OBSTRUCTION

### No Primary Survey Feature for this AWOIS Item

**Search Position:** 47° 58' 55.5" N, 122° 13' 25.2" W  
**Historical Depth:** 9.75 m  
**Search Radius:** 50  
**Search Technique:** DI, ES, S2  
**Technique Notes:** [None]

#### History Notes:

SURVEY REQUIREMENT COMMENTS--■ THIS ITEM SHOULD BE CONSIDERED FOR DEVELOPMENT BY MULTIBEAM ECHOSOUNDER AS THE TECHNOLOGY BECOMES AVAILABLE. CONTINUED POOR VISIBILITY IS LIKELY TO MAKE DIVER INVESTIGATION IMPRACTICAL. ■■ HISTORY ■  
 H10662/96--AN ECHOSOUNDER DRIFT SEARCH WAS PERFORMED OVER A SIDE SCAN SONAR CONTACT. AN OBSTRUCTION WAS LOCATED EXTENDING APPROX. 1.5 METERS OFF THE BOTTOM WITH AN ECHOSOUNDER LEAST DEPTH OF ■32 FT AT MLLW AND A POSITION GIVEN AT LAT 47/58/55.50 N, LONG 122/13/25.18 W. (ENTERED 03/97 EJS)

### Survey Summary

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

AWOIS #52356--SSS contact from prior survey, height 1.5 meters least depth 32 feet

Developed with SWMB and 200% SSS. The harbor basin is littered with debris most likely from the numerous log booms towed in and out of the area. No significant feature was observed on side scan or with the SWMB. A least depth of 10.9 meters/36 feet, found within the search radius was selected as designated sounding 3134/93.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52356	0.00	000.0	Primary
h11556/s1212_simrad/2006-269/016_2023	3134/93	7.63	266.8	Secondary
h11556/s1212_simrad/2006-278/newlined	431/18	17.12	249.4	Secondary
h11556/s1212sss_100/2006-271/sonar_data060929202400	0004	18.08	336.8	Secondary
h11556/s1212_simrad/2006-278/newlined	352/80	28.62	324.8	Secondary
h11556/s1212_simrad/2006-269/016_2023	3273/12	33.78	237.9	Secondary

## Hydrographer Recommendations

Chart depths from current survey. Delete 32-foot obstruction and text "Obstn" from chart. Remove from AWOIS Database.

### S-57 Data

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** INFORM - AWOIS Item #52356  
QUASOU - 1:depth known  
TECSOU - 3:found by multi-beam  
VERDAT - 12:Mean lower low water

### Office Notes

Concur. Remove charted 32FT Obstn.

## 1.16) AWOIS #52358 - OBSTRUCTION

### No Primary Survey Feature for this AWOIS Item

**Search Position:** 47° 59' 00.6" N, 122° 13' 20.7" W  
**Historical Depth:** 7.32 m  
**Search Radius:** 50  
**Search Technique:** DI, ES, S2  
**Technique Notes:** [None]

#### History Notes:

SURVEY REQUIREMENT COMMENTS--■ THIS ITEM SHOULD BE CONSIDERED FOR DEVELOPMENT BY MULTIBEAM ECHOSOUNDER AS THE TECHNOLOGY BECOMES AVAILABLE. CONTINUED POOR VISIBILITY IS LIKELY TO MAKE DIVER INVESTIGATION IMPRACTICAL.■■ HISTORY ■■  
 H10662/96--AN ECHOSOUNDER DRIFT SEARCH WAS PERFORMED OVER A SIDE SCAN SONAR CONTACT. AN OBSTRUCTION WAS LOCATED WITH A 3 METER HEIGHT WITH AN ECHOSOUNDER LEAST DEPTH OF 24 FT AT MLLW AND A POSITION GIVEN IN LAT 47/59/00.60 N, LONG 122/13/20.69 W. (ENTERED 03/97 EJS)

### Survey Summary

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

AWOIS #52358--SSS contact from previous survey, height 3 meters, least depth 24 feet

Investigated with SWMB and 200% SSS. The harbor bottom is strewn with small debris, most likely from the numerous log booms that move in and out of the area. However no feature was located with a depth of 24 feet. Multiple pieces of debris found in vicinity. The least depth found in the vicinity of this AWOIS item is 9.8 meters/32 feet which is marked by designated sounding 3673/4.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52358	0.00	000.0	Primary
h11556/s1212_simrad/2006-278/newlinef	805/119	6.54	142.2	Secondary
h11556/s1212_simrad/2006-290/014_1759	81/114	16.69	354.7	Secondary
h11556/s1212_simrad/2006-269/016_2023	3673/4	26.21	105.7	Secondary

## Hydrographer Recommendations

Delete 24-foot obstruction; chart depths from current survey. Remove from AWOIS Database.

### S-57 Data

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** INFORM - AWOIS Item #52358  
QUASOU - 1:depth known  
TECSOU - 3:found by multi-beam  
VERDAT - 12:Mean lower low water

### Office Notes

Concur. Remove Charted 24Ft Obstn.

## 1.17) AWOIS #52359 - OBSTRUCTION

### No Primary Survey Feature for this AWOIS Item

**Search Position:** 47° 59' 04.4" N, 122° 13' 22.0" W  
**Historical Depth:** 7.01 m  
**Search Radius:** 50  
**Search Technique:** DI, ES, S2  
**Technique Notes:** [None]

#### History Notes:

SURVEY REQUIREMENT COMMENTS--■ THIS ITEM SHOULD BE CONSIDERED FOR DEVELOPMENT BY MULTIBEAM ECHOSOUNDER AS THE TECHNOLOGY BECOMES AVAILABLE. CONTINUED POOR VISIBILITY IS LIKELY TO MAKE DIVER INVESTIGATION IMPRACTICAL.■■ HISTORY ■  
 H10662/96--AN ECHOSOUNDER DRIFT SEARCH WAS PERFORMED OVER A SIDE ■SCAN SONAR CONTACT. AN OBSTRUCTION WAS LOCATED WITH A 2.9 METER HEIGHT AND AN ECHOSOUNDER LEAST DEPTH OF 23 FT AT MLLW AND A POSITION GIVEN IN LAT 47/59/04.42 N, LONG 122/13/21.98 W. (ENTERED 03/97 EJS)

### Survey Summary

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

AWOIS #52359--SSS contact from prior survey, height 2.9 meters, least depth 23 feet

Investigated with SWMB and 200% SSS. The harbor bottom is strewn with small debris, most likely from the numerous log booms that move in and out of the area. However no feature was located with a depth of 23 feet. The least depth found in the vicinity of this AWOIS item is 9.7 meters/32 feet, marked by designated sounding 995/27.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52359	0.00	000.0	Primary
h11556/s1212_simrad/2006-278/newlinec	1524/121	0.71	148.1	Secondary
h11556/s1212_simrad/2006-269/016_2023	995/27	13.26	063.8	Secondary
h11556/s1212_simrad/2006-278/newlinec	1570/104	19.61	354.3	Secondary

## Hydrographer Recommendations

Delete 23-foot sounding and text "Obstn." Chart depths from current survey. Remove from AWOIS Database.

### S-57 Data

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** INFORM - AWOIS Item #52359  
QUASOU - 1:depth known  
TECSOU - 3:found by multi-beam  
VERDAT - 12:Mean lower low water

### Office Notes

Concur. Remove charted 23FT Obstn.

**1.18) AWOIS #52360 - OBSTRUCTION**

**No Primary Survey Feature for this AWOIS Item**

**Search Position:** 47° 59' 07.9" N, 122° 13' 25.5" W  
**Historical Depth:** 5.49 m  
**Search Radius:** 50  
**Search Technique:** DI, ES, S2  
**Technique Notes:** [None]

**History Notes:**

SURVEY REQUIREMENT COMMENTS--■ THIS ITEM SHOULD BE CONSIDERED FOR DEVELOPMENT BY A MULTIBEAM ECHOSOUNDER AS THE TECHNOLOGY BECOMES AVAILABLE. CONTINUED POOR VISIBILITY IS LIKELY TO MAKE DIVER INVESTIGATION IMPRACTICAL.■■ HISTORY■ H10662/96--AN ECHOSOUNDER DRIFT SEARCH WAS PERFORMED OVER A SIDE SCAN SONAR CONTACT. AN OBSTRUCTION WAS LOCATED WITH A HEIGHT 3.8 METERS AND AN ECHOSOUNDER LEAST DEPTH OF 18 FT AT MLLW■WITH A POSITION GIVEN IN LAT 47/59/07.91 N, LONG 122/13/25.52 N. (ENTERED 03/97 EJS)

**Survey Summary**

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

**Remarks:**

AWOIS #52360--SSS contact from prior survey, height 3.8 meters, least depth 18 feet

The charted obstruction was not easily accessible - the area is occupied by moored barges and log booms. Side scan coverage of 100% was acquired and no obstructions were observed on the sonargram. SWMB coverage did not fully extend over the AWOIS radius. Least depth located in the vicinity is 22 feet located at latitude 47°59'08.266"N, longitude 122°13'25.032"W, and it is reasonable to assume that nearer shore depths would shoal to 18 feet.

Additionally, the charted pier(?) does not exist and there are no indications that it ever did.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52360	0.00	000.0	Primary

**Hydrographer Recommendations**

Retain charted sounding. Delete charted pier.

## S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** INFORM - AWOIS Item #52360  
QUASOU - 6:least depth known  
TECSOU - 2,3:found by side scan sonar,found by multi-beam  
VALSOU - 5.4864 m  
VERDAT - 12:Mean lower low water  
WATLEV - 3:always under water/submerged

## Office Notes

Concur with clarification. Retain charted 18FT Obstrn. Defer to MCD for charting recommendation for charted pier.



## 1.19) AWOIS #52361 - OBSTRUCTION

### No Primary Survey Feature for this AWOIS Item

**Search Position:** 47° 59' 08.6" N, 122° 13' 22.6" W  
**Historical Depth:** 7.62 m  
**Search Radius:** 50  
**Search Technique:** DI, ES, S2  
**Technique Notes:** [None]

#### History Notes:

SURVEY REQUIREMENT COMMENTS--■ THIS ITEM SHOULD BE CONSIDERED FOR DEVELOPMENT BY MULTIBEAM ECHOSOUNDER AS THE TECHNOLOGY BECOMES AVAILABLE. CONTINUED POOR VISIBILITY IS LIKELY TO MAKE DIVER INVESTIGATION IMPRACTICAL.■ HISTORY■ H10662/96--AN ECHOSOUNDER DRIFT SEARCH WAS PERFORMED OVER A SIDE SCAN SONAR CONTACT. AN OBSTRUCTION WAS LOCATED WITH A HEIGHT OF 1.9 METERS AND AN ECHOSOUNDER LEAST DEPTH OF 25 FT AT MLLW WITH A POSITION GIVEN AT LAT 47/59/08.62 N, LONG 122/13/22.59 W. (ENTERED 03/97 EJS)

### Survey Summary

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

AWOIS #52360--SSS contact from prior survey, height 1.9 meters, least depth 25 feet

Investigated with SWMB and 200% SSS. The harbor bottom is strewn with small debris, most likely from the numerous log booms that move in and out of the area. However no feature was located with a depth of 25 feet. The least depth found in the vicinity of this AWOIS item is 8.8 meters (29 feet), marked by designated sounding 744/15.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52361	0.00	000.0	Primary
h11556/s1212_simrad/2006-269/015_2020	214/122	6.53	143.9	Secondary

### Hydrographer Recommendations

Delete charted 25-foot depth and "Obstn" text; chart soundings from current survey. Remove from AWOIS Database.

## S-57 Data

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** INFORM - AWOIS Item #52361  
QUASOU - 1:depth known  
TECSOU - 3:found by multi-beam  
VERDAT - 12:Mean lower low water

## Office Notes

Concur. Remove charted 25FT Obstn.

## 1.20) AWOIS #52362 - OBSTRUCTION

### No Primary Survey Feature for this AWOIS Item

**Search Position:** 47° 59' 07.6" N, 122° 13' 16.5" W  
**Historical Depth:** 7.32 m  
**Search Radius:** 50  
**Search Technique:** DI, ES, S2  
**Technique Notes:** [None]

#### History Notes:

SURVEY REQUIREMENT COMMENTS--■ THIS ITEM SHOULD BE CONSIDERED FOR DEVELOPMENT BY MULTIBEAM ECHOSOUNDER AS THE TECHNOLOGY BECOMES AVAILABLE. CONTINUED POOR VISIBILITY IS LIKELY TO MAKE DIVER INVESTIGATION IMPRACTICAL.■■ HISTORY■  
 H10662/96--AN ECHOSOUNDER DRIFT SEARCH WAS PERFORMED OVER A SIDE SCAN SONAR CONTACT. TWO OBSTRUCTIONS WERE LOCATED IN CLOSE PROXIMITY. THE SHOALEST OBSTRUCTION HAS AN ECHOSOUNDER LEAST DEPTH OF 24 FT AT MLLW WITH A POSITION GIVEN IN LAT 47/59/07.62 N, LONG 122/13/16.53 W. THE OTHER OBSTRUCTION HAS AN ECHOSOUNDER LEAST DEPTH OF 27 FT AT MLLW WITH A POSITION GIVEN IN LAT 47/59/08.10 N, LONG 122/13/16.69 W. ONLY THE SHOALEST OBSTRUCTION WAS RECOMMENDED FOR CHARTING. (ENTERED 03/97 EJS)

### Survey Summary

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

AWOIS #52362--2 SSS contacts in close proximity from prior survey, height not given, least depth 24 and 27 feet  
 Investigated with SWMB and 200% SSS. The harbor bottom is strewn with small debris, most likely from the numerous log booms that move in and out of the area. No significant feature was found; however, least depths were designated over two small features found among the debris: 10.0 meters/33 feet (designated sounding 348/39) and 10.3 meters/34 feet (designated 1680/17).

### Feature Correlation

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52362	0.00	000.0	Primary
h11556/s1212_simrad/2006-269/016_2023	348/39	11.71	028.3	Secondary
h11556/s1212_simrad/2006-278/newlined	1680/17	14.32	186.7	Secondary

## Hydrographer Recommendations

Delete 24-foot charted depth and "Obstn" text. Chart soundings from current survey. Remove from AWOIS Database.

### S-57 Data

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** INFORM - AWOIS Item #52362  
QUASOU - 1:depth known  
TECSOU - 3:found by multi-beam  
VERDAT - 12:Mean lower low water

### Office Notes

Concur. Remove charted 24FT Obstn.

**1.21) AWOIS #52363 - OBSTRUCTION**

**No Primary Survey Feature for this AWOIS Item**

**Search Position:** 47° 59' 05.6" N, 122° 13' 18.0" W  
**Historical Depth:** 8.84 m  
**Search Radius:** 50  
**Search Technique:** DI,ES, S2  
**Technique Notes:** [None]

**History Notes:**

SURVEY REQUIREMENT COMMENTS--■ THIS ITEM SHOULD BE CONSIDERED FOR DEVELOPMENT BY MULTIBEAM ECHOSOUNDER AS THE TECHNOLOGY BECOMES AVAILABLE. CONTINUED POOR VISIBILITY IS LIKELY TO MAKE DIVER INVESTIGATION IMPRACTICAL. ■ HISTORY ■ H10662/96--AN ECHOSOUNDER DRIFT SEARCH WAS PERFORMED OVER A SIDE SCAN SONAR CONTACT. A 2.3 METER HIGH OBSTRUCTION WAS LOCATED WITH AN ECHOSOUNDER LEAST DEPTH OF 29 FT AT MLLW WITH A POSITION GIVEN IN LAT 47/59/05.60 N, LONG 122/13/17.96 W. ■(ENTERED 03/97 EJS)

**Survey Summary**

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

**Remarks:**

AWOIS #52363--SSS contact from prior survey, height 2.3 meters, least depth 29 feet

Investigated with SWMB and 200% SSS. The harbor bottom is strewn with small debris, most likely from the numerous log booms that move in and out of the area. No significant features were found; least depths within the AWOIS radius were designated: 10.2 meters/33 feet,(designated sounding 1440/36), 9.3 meters/30 feet (designated sounding 1282/24).

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52363	0.00	000.0	Primary
h11556/s1212_simrad/2006-278/newlined	1440/36	2.25	283.0	Secondary
h11556/s1212_simrad/2006-278/newlinee	2249/118	32.58	308.3	Secondary
h11556/s1212_simrad/2006-278/newlinec	1282/24	40.14	142.4	Secondary

## Hydrographer Recommendations

Delete 29-foot charted depth and "Obstn" text. Chart soundings from current survey. Remove from AWOIS Database.

### S-57 Data

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** INFORM - AWOIS Item #52363  
QUASOU - 1:depth known  
TECSOU - 3:found by multi-beam  
VERDAT - 12:Mean lower low water

### Office Notes

Concur. Remove charted 29FT Obstn.

## 1.22) AWOIS #52364 - OBSTRUCTION

### No Primary Survey Feature for this AWOIS Item

**Search Position:** 47° 59' 14.9" N, 122° 13' 06.1" W  
**Historical Depth:** 5.49 m  
**Search Radius:** 50  
**Search Technique:** DI, ES, S2  
**Technique Notes:** [None]

**History Notes:**

SURVEY REQUIREMENT COMMENTS--■ THIS ITEM SHOULD BE CONSIDERED FOR DEVELOPMENT BY MULTIBEAM ECHOSOUNDER AS THE TECHNOLOGY BECOMES AVAILABLE. CONTINUED POOR VISIBILITY IS LIKELY TO MAKE DIVER INVESTIGATION IMPRACTICAL.■ HISTORY ■ H10662/96--AN ECHOSOUNDER DRIFT SEARCH WAS PERFORMED OVER A SIDE SCAN SONAR CONTACT. A 3.4 METER HIGH OBSTRUCTION WAS LOCATED WITH AN ECHOSOUNDER LEAST DEPTH OF 18 FT AT MLLW WITH A POSITION GIVEN IN LAT 47/59/14.95 N, LONG 122/13/06.09 W. (ENTERED 03/97 EJS)

### Survey Summary

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

**Remarks:**

AWOIS #52364--SSS contact from prior survey, height 3.4 meters, least depth 18 feet

The feature is not charted but the area was investigated with 100% SSS. This is a log storage area and the bottom is strewn with small debris; however no significant feature was observed on the sonargram. The area was not accessible for multibeam hydrography.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52364	0.00	000.0	Primary

### Hydrographer Recommendations

Item is not a charted feature. Retain area as charted.

### **S-57 Data**

[None]

### **Office Notes**

Item is not currently charted. Retain as not charted.



## 1.23) AWOIS #52365 - OBSTRUCTION

### No Primary Survey Feature for this AWOIS Item

**Search Position:** 47° 59' 15.9" N, 122° 13' 09.0" W  
**Historical Depth:** 7.92 m  
**Search Radius:** 50  
**Search Technique:** DI, ES, S2  
**Technique Notes:** [None]

#### History Notes:

SURVEY REQUIREMENT COMMENTS--■ THIS ITEM SHOULD BE CONSIDERED FOR DEVELOPMENT BY MULTIBEAM ECHOSOUNDER AS THE TECHNOLOGY BECOMES AVAILABLE. CONTINUED POOR VISIBILITY IS LIKELY TO MAKE DIVER INVESTIGATION IMPRACTICAL. ■ HISTORY ■ H10662/96--AN ECHOSOUNDER DRIFT SEARCH WAS PERFORMED OVER A SIDE SCAN SONAR CONTACT. A 1.7 METER HIGH OBSTRUCTION WAS LOCATED WITH AN ECHOSOUNDER LEAST DEPTH OF 26 FT AT MLLW WITH A POSITION GIVEN IN LAT 47/59/15.94 N, LONG 122/13/08.99 W. ■(ENTERED 03/97 EJS)

### Survey Summary

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

AWOIS #52365--SSS contact from prior survey, height 1.7 meters, least depth 26 feet

The feature is not charted but the area was investigated with 200% SSS and SWMB. No significant feature was observed on the sonargram; the least depth within the AWOIS radius is 8.7 meters/28 feet, marked by designated sounding 133/36.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52365	0.00	000.0	Primary
h11556/s1212_simrad/2006-269/012_2013	135/37	1.68	097.9	Secondary

### Hydrographer Recommendations

Chart soundings from current survey. Remove from AWOIS Database.

### **S-57 Data**

[None]

### **Office Notes**

Item is not currently charted. Retain as not charted.

## 1.24) AWOIS #52366 - OBSTRUCTION

### No Primary Survey Feature for this AWOIS Item

**Search Position:** 47° 58' 56.6" N, 122° 13' 29.4" W  
**Historical Depth:** 8.84 m  
**Search Radius:** 50  
**Search Technique:** DI, ES, S2  
**Technique Notes:** [None]

#### History Notes:

SURVEY REQUIREMENT COMMENTS--■ THIS ITEM SHOULD BE CONSIDERED FOR DEVELOPMENT BY MULTIBEAM ECHOSOUNDER AS THE TECHNOLOGY BECOMES AVAILABLE. CONTINUED POOR VISIBILITY IS LIKELY TO MAKE DIVER INVESTIGATION IMPRACTICAL.■ HISTORY■ H10662/96--AN ECHOSOUNDER DRIFT SEARCH WAS PERFORMED OVER A SIDE SCAN SONAR CONTACT. A 1.0 METER OBSTRUCTION WAS LOCATED WITH AN ECHOSOUNDER LEAST DEPTH OF 29 FT AT MLLW WITH A POSITION GIVEN IN LAT 47/58/56.64 N, LONG 122/13/29.37 W. (ENTERED 03/97 EJS)

### Survey Summary

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

AWOIS #52366--SSS contact from prior survey, height 1.0 meter, least depth 29 feet

Developed with SWMB and 200% SSS. The harbor basin is littered with debris most likely from the numerous log booms towed in and out of the area. A number of mooring blocks for the Navy security fence are also in the AWOIS vicinity. No significant feature was observed on side scan or with the SWMB.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52366	0.00	000.0	Primary
h11556/s1212_simrad/2006-290/010_1826	669/28	15.40	077.1	Secondary

### Hydrographer Recommendations

Chart soundings from current survey. Remove from AWOIS database.

### **S-57 Data**

[None]

### **Office Notes**

Concur w/clarification. Item is not currently charted. Retain as not charted.

## 1.25) AWOIS #52368 - OBSTRUCTION

### No Primary Survey Feature for this AWOIS Item

**Search Position:** 47° 59' 03.5" N, 122° 13' 24.6" W  
**Historical Depth:** [None]  
**Search Radius:** 50  
**Search Technique:** ES,S2,DI  
**Technique Notes:** [None]

#### History Notes:

SURVEY REQUIREMENT COMMENTS--■ THIS ITEM SHOULD BE CONSIDERED FOR DEVELOPMENT BY MULTIBEAM ECHOSOUNDER AS THE TECHNOLOGY BECOMES AVAILABLE. CONTINUED POOR VISIBILITY IS LIKELY TO MAKE DIVER INVESTIGATION IMPRACTICAL.■■ HISTORY ■■  
 H10662/96--A POSSIBLE OBSTRUCTION WAS LOCATED BY SIDE SCAN SONAR WITH A POSITION GIVEN IN LAT 47/59/03.5 N, LONG 122/13/24.6 W. AN ECHOSOUNDER DRIFT SEARCH WAS PLANNED BUT ABORTED WHEN IT WAS DISCOVERED THAT THE ITEM WAS WITHIN A LOG BOOM AREA AND WAS UNREACHABLE. (ENTERED 03/97 EJS)

### Survey Summary

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

AWOIS #52368--Possible SSS contact from prior survey, height unknown

Developed with SWMB and 200% SSS. The harbor basin is littered with debris most likely from the numerous log booms towed in and out of the area. No significant feature was observed on side scan or with the SWMB. A least depth of 9.1 meters (30 feet) was located in the vicinity of the AWOIS position and marked by designated sounding 1985/40.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52368	0.00	000.0	Primary
h11556/s1212_simrad/2006-269/016_2023	1295/63	17.04	052.7	Secondary
h11556/s1212_simrad/2006-278/newlinea	1985/40	18.68	104.6	Secondary

### Hydrographer Recommendations

Remove from AWOIS Database. Chart depths from current survey.

## S-57 Data

**Geo object 1:** Sounding (SOUNDG)  
**Attributes:** INFORM - AWOIS Item #52368  
QUASOU - 1:depth known  
TECSOU - 3:found by multi-beam  
VERDAT - 12:Mean lower low water

## Office Notes

Concur w/clarification. Item is not currently charted. Retain as not charted.

## 1.26) AWOIS #52369 - OBSTRUCTION

### No Primary Survey Feature for this AWOIS Item

**Search Position:** 47° 59' 13.5" N, 122° 13' 20.1" W  
**Historical Depth:** 8.23 m  
**Search Radius:** 50  
**Search Technique:** DI, ES, S2  
**Technique Notes:** [None]

**History Notes:**

SURVEY REQUIREMENT COMMENTS--■ THIS ITEM SHOULD BE CONSIDERED FOR DEVELOPMENT BY MULTIBEAM ECHOSOUNDER AS THE TECHNOLOGY BECOMES AVAILABLE. CONTINUED POOR VISIBILITY IS LIKELY TO MAKE DIVER INVESTIGATION IMPRACTICAL.■■ HISTORY■ H10662/96--AN ECHOSOUNDER DRIFT SEARCH WAS PERFORMED OVER A SIDE SCAN SONAR CONTACT. A 1.4 METER HIGH OBSTRUCTION WAS LOCATED WITH AN ECHOSOUNDER LEAST DEPTH OF 27 FT AT MLLW WITH A POSITION GIVEN IN LAT 47/59/13.54 N, LONG 122/13/20.08 W. (ENTERED 03/97 EJS)

### Survey Summary

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

**Remarks:**

AWOIS #52369--SSS contact from prior survey, height 1.4 meters, least depth 27 feet  
 Investigated with SWMB and 200% SSS. A feature rising 0.9 meters above surrounding depths was located with a least depth of 8.16 meters (27 feet) and marked by designated sounding 395/15.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52369	0.00	000.0	Primary
h11556/s1212_simrad/2006-269/014_2019	395/15	13.55	340.5	Secondary

### Hydrographer Recommendations

Remove from AWOIS Database. Chart depths from current survey.

### **S-57 Data**

[None]

### **Office Notes**

Concur w/clarification. Item is not currently charted. Retain as not charted.



**1.27) AWOIS #52370 - OBSTRUCTION**

**No Primary Survey Feature for this AWOIS Item**

**Search Position:** 47° 59' 03.1" N, 122° 13' 26.1" W  
**Historical Depth:** [None]  
**Search Radius:** 50  
**Search Technique:** ES,S2,DI  
**Technique Notes:** [None]

**History Notes:**

SURVEY REQUIREMENT COMMENTS--■ THIS ITEM SHOULD BE CONSIDERED FOR DEVELOPMENT BY MULTIBEAM ECHOSOUNDER AS THE TECHNOLOGY BECOMES AVAILABLE. CONTINUED POOR VISIBILITY IS LIKELY TO MAKE DIVER INVESTIGATION IMPRACTICAL.■■ HISTORY■ H10662/96--A POSSIBLE OBSTRUCTION WAS LOCATED BY SIDE SCAN SONAR WITH A POSITION GIVEN IN LAT 47/59/03.1 N, LONG 122/13/26.1 W. AN ECHOSOUNDER DRIFT SEARCH WAS PLANNED BUT ABORTED WHEN IT WAS DISCOVERED THAT THE ITEM WAS WITHIN A LOG BOOM AREA AND WAS UNREACHABLE. (ENTERED 03/97 EJS)

**Survey Summary**

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

**Remarks:**

AWOIS #52370--Possible SSS contact from prior survey, height unknown

Developed with SWMB and 200% SSS. The harbor basin is littered with debris most likely from the numerous log booms towed in and out of the area. No significant feature was observed on side scan or with the SWMB; however, a least depth of 9.2 meters (30 feet) was located at the AWOIS position and marked by designated sounding 1364/41.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52370	0.00	000.0	Primary
h11556/s1212_simrad/2006-269/016_2023	1364/41	4.44	319.1	Secondary

**Hydrographer Recommendations**

Remove from AWOIS Database. Chart soundings from current survey.

### **S-57 Data**

[None]

### **Office Notes**

Concur w/clarification. Item is not currently charted. Retain as not charted.

**1.28) AWOIS #52371 - OBSTRUCTION**

**No Primary Survey Feature for this AWOIS Item**

**Search Position:** 47° 59' 03.7" N, 122° 13' 30.1" W  
**Historical Depth:** 4.88 m  
**Search Radius:** 50  
**Search Technique:** DI, ES, S2  
**Technique Notes:** [None]

**History Notes:**

SURVEY REQUIREMENT COMMENTS--■ THIS ITEM SHOULD BE CONSIDERED FOR DEVELOPMENT BY MULTIBEAM ECHOSOUNDER AS THE TECHNOLOGY BECOMES AVAILABLE. CONTINUED POOR VISIBILITY IS LIKELY TO MAKE DIVER INVESTIGATION IMPRACTICAL.■■ HISTORY■ H10662/96--AN ECHOSOUNDER DRIFT SEARCH WAS PERFORMED OVER A SIDE SCAN SONAR CONTACT. A 3.5 METER HIGH OBSTRUCTION WAS LOCATED WITH AN ECHOSOUNDER LEAST DEPTH OF 16 FT AT MLLW WITH A POSITION GIVEN IN LAT 47/59/03.69 N, LONG 122/13/30.08 W. (ENTERED 03/97 EJS)

**Survey Summary**

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

**Remarks:**

AWOIS #52371--SSS contact from prior survey, height 3.5 meters, least depth 16 feet  
 The item is located inside a log boom area and was not accessible for investigation.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 52371	0.00	000.0	Primary

**Hydrographer Recommendations**

Retain as charted.

**S-57 Data**

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** INFORM - AWOIS Item #52371

QUASOU - 6:least depth known

TECSOU - 2:found by side scan sonar

VALSOU - 4.8768 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

## Office Notes

Concur, retain 16FT Obstrn as charted.

**1.29) AWOIS #53310 - UNKNOWN**

**No Primary Survey Feature for this AWOIS Item**

**Search Position:** 48° 01' 10.7" N, 122° 12' 35.3" W  
**Historical Depth:** [None]  
**Search Radius:** 75  
**Search Technique:** S2, ES  
**Technique Notes:** [None]

**History Notes:**

LNM 04/05-- SUBMERGED DANGEROUS WRECK ADD AT 48/01/10.704N - 122/12/35.316W. (ENTERED CEH 12/05)

**Survey Summary**

**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

**Remarks:**

AWOIS #53310--Submerged dangerous wreck

The wreck was located at the charted position. It uncovers at mean high tide but is covered at high water: Photo 278\_259 was taken at 1.0 meter tide level at which time the wreck was exposed about 1.7 meters. Photo 100\_0645 was taken on August 27 in 2004 at a negative tide level of 0.5 meters. Photo 100\_0650 was taken the same day a tide level 3.3 meters. Photos DSC00314-315 were taken at tide level 2.66 meters. Mean tide range is 2.27 meters; mean tide level is 1.99 meters.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
Awois items	AWOIS # 53310	0.00	000.0	Primary

**Hydrographer Recommendations**

Retain charted wreck. Update attributes

**S-57 Data**

**Geo object 1:** Wreck (WRECKS)  
**Attributes:** CATWRK - 5:wreck showing any portion of hull or superstructure  
 HEIGHT - -1.7 m

INFORM - AWOIS Item #53310

VERDAT - 12:Mean lower low water

WATLEV - 4:covers and uncovers

## **Office Notes**

Concur with clarification. Retain as charted.

**1.30) #52357 - Obstruction 2093/122****Primary Feature for AWOIS Item #52357**

**Search Position:** 47° 58' 58.5" N, 122° 13' 30.2" W  
**Historical Depth:** 6.10 m  
**Search Radius:** 50  
**Search Technique:** DI, ES, S2  
**Technique Notes:** [None]

**History Notes:**

SURVEY REQUIREMENT COMMENTS--■ THIS ITEM SHOULD BE CONSIDERED FOR DEVELOPMENT BY MULTIBEAM ECHO SOUNDER AS THE TECHNOLOGY BECOMES AVAILABLE. CONTINUED POOR VISIBILITY ■IS LIKELY TO MAKE DIVER INVESTIGATION IMPRACTICAL.■■ HISTORY■ H10662/96--AN ECHOSOUNDER DRIFT SEARCH WAS PERFORMED OVER A ISIDE SCAN SONAR CONTACT. AN OBSTRUCTION WAS LOCATED 1.9 METERS IIN HEIGHT WITH AN ECHOSOUNDER LEAST DEPTH OF 20 FT AT MLLW WITH A IPOSITION GIVEN IN LAT 47/58/58.51 N, LONG 122/13/30.18 W. I(ENTERED 03/97 EJS)

**Survey Summary**

**Survey Position:** 47° 58' 58.9" N, 122° 13' 30.9" W  
**Least Depth:** 6.12 m (= 20.09 ft = 3.348 fm = 3 fm 2.09 ft)  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh)  $\pm 1.511$  m ; TVU (TPEv)  $\pm 0.539$  m  
**Timestamp:** 2006-269.20:27:26.013 (09/26/2006)  
**Survey Line:** h11556 / s1212\_simrad / 2006-269 / 016\_2023  
**Profile/Beam:** 2093/122  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

**Remarks:**

AWOIS #52357--SSS contact from previous survey, height 1.9 meters, least depth 20 feet

Investigated with SWMB and 200% SSS. A feature located within the radius of the 20-foot sounding rises less than a meter off the bottom. The least depth of 7.6 meters/25 feet was selected as designated sounding 2072/20.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h11556/s1212_simrad/2006-269/016_2023	2093/122	0.00	000.0	Primary
Awois items	AWOIS # 52357	19.87	311.6	Secondary

h11556/s1212_simrad/2006-278/newlinea	2575/123	22.78	314.2	Secondary
Awois items	AWOIS # 52367	46.17	218.8	Secondary
h11556/s1212_simrad/2006-278/newlinea	2369/99	64.01	233.9	Secondary (grouped)

## Hydrographer Recommendations

Chart depths from current survey. Delete 20-foot obstruction and text "Obstn" from chart.

### Cartographically-Rounded Depth (Affected Charts):

20ft (18444\_1)

3 ¼fm (18441\_1, 18440\_1, 18003\_1, 18007\_1, 530\_1)

3fm 2ft (18423\_17, 18443\_1, 18423\_15)

6.1m (501\_1, 50\_1)

## S-57 Data

**Geo object 1:** Obstruction (OBSTRN)

**Attributes:** QUASOU - 6:least depth known  
 TECSOU - 3:found by multi-beam  
 VALSOU - 6.122 m  
 VERDAT - 11:Nearly lowest low water  
 WATLEV - 3:always under water/submerged

## Office Notes

Do not concur. Update position of charted 20FT Obstn to current surveyed position.



**1.31) #52353 - Sounding 435/30**

**Primary Feature for AWOIS Item #52353**

**Search Position:** 47° 59' 22.6" N, 122° 14' 29.6" W  
**Historical Depth:** 4.27 m  
**Search Radius:** 50  
**Search Technique:** ES, S2  
**Technique Notes:** [None]

**History Notes:**

SURVEY REQUIREMENT COMMENTS--■ THIS SOUNDING SHOULD BE CONSIDERED FOR DEVELOPMENT BY A MULTIBEAM ECHOSOUNDER ìAS THE TECHNOLOGY BECOMES AVAILABLE. ■■■HISTORY■ H10662/96--ECHOSOUNDER DRIFT SEARCH OVER A SIDE SCAN SONAR CONTACT LOCATED ■A RISE IN THE BOTTOM TOPOGRAPHY OF APPROX. 1.5 METERS WITH A DEPTH OF 14 FT ■AT MLLW GIVEN IN LAT 47/59/22.63 N, LONG 122/13/29.63 W. ì(ENTERED 03/97 EJS)

**Survey Summary**

**Survey Position:** 47° 59' 22.6" N, 122° 14' 29.5" W  
**Least Depth:** 4.63 m (= 15.20 ft = 2.534 fm = 2 fm 3.20 ft)  
**TPU (±1.96σ):** THU (TPEh) ±1.413 m ; TVU (TPEv) ±0.203 m  
**Timestamp:** 2006-290.18:57:06.802 (10/17/2006)  
**Survey Line:** h11556 / s1212\_simrad / 2006-290 / 001\_1856  
**Profile/Beam:** 435/30  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

**Remarks:**

AWOIS #52353--SSS contact from previous survey, 1.5 meters high, least depth 14 feet.  
 Developed with SWMB. A mound was found with a least depth of 4.6 meters/15 feet (designated sounding 435/30); the mound rises 1.5 meters above surrounding depths and is 18-22 meters in diameter.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h11556/s1212_simrad/2006-290/001_1856	435/30	0.00	000.0	Primary
Awois items	AWOIS # 52353	2.09	097.7	Secondary

## Hydrographer Recommendations

Chart depths from current survey.

### Cartographically-Rounded Depth (Affected Charts):

15ft (18444\_1)

2 ½fm (18441\_1, 18440\_1, 18003\_1, 18007\_1, 530\_1)

2fm 3ft (18423\_17, 18443\_1, 18423\_15)

4.6m (501\_1, 50\_1)

## S-57 Data

**Geo object 1:** Sounding (SOUNDG)

**Attributes:** EXPSOU - 1:within the range of depth of the surrounding depth area

QUASOU - 1:depth known

TECSOU - 3:found by multi-beam

VERDAT - 12:Mean lower low water

## Office Notes

Concur. No item is currently charted. Retain as not charted. Chart current survey soundings.

**1.32) #52214 - M/V ALINDESKA SEA 1057/16****Primary Feature for AWOIS Item #52214**

**Search Position:** 47° 59' 01.9" N, 122° 14' 46.3" W  
**Historical Depth:** 50.90 m  
**Search Radius:** 150  
**Search Technique:** ES, S2  
**Technique Notes:** US NAVY DESIRES TO KNOW EXTENT, HEADING, AND DEPTH OF THIS WRECK.

**History Notes:**

HISTORY ■ LNM43/82--13TH CGD: WRECK OF THE M/V ALINDESKA SEA, ON HEADING APPROX 135 ■ DEG TRUE, CLEARANCE ABOUT 95 FEET, IN ABOUT 222 FEET OF WATER. REPORTED IN ■ LNM OCT 26, 1982, WITH POSITION GIVEN 47-58'58"N, 122-14'41"W (NAD27). ■ (ENTERED 5/95 EB) ■ H10662/96--SUB WRECK (167 FT AT MLLW) LOCATED, POSITION GIVEN IN ■ LAT 47-59-01.95N, 122-14-46.30W. (UPDATED 3/97 EJS)

**Survey Summary**

**Survey Position:** 47° 59' 02.2" N, 122° 14' 46.9" W  
**Least Depth:** 48.01 m (= 157.50 ft = 26.250 fm = 26 fm 1.50 ft)  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh)  $\pm 3.313$  m ; TVU (TPEv)  $\pm 1.876$  m  
**Timestamp:** 2006-261.19:35:08.154 (09/18/2006)  
**Survey Line:** h11556 / s1212\_simrad / 2006-261 / 062\_1931  
**Profile/Beam:** 1057/16  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

**Remarks:**

AWOIS# 52214--M/V ALINESKA SEA US Navy desires to know extent, heading, and depth of this wreck.

The wreck is located in depths greater than 200 feet and was fully investigated with five lines of multibeam development. A least depth of 157 feet/48 meters was obtained at the high point of the wreck (designated sounding 1057/16). The Alineska is lying on its starboard side with the bow oriented toward 131 degrees True. It is approximately 110 meters/360 feet long, 36 meters/120 feet wide from the superstructure to the keel and rises as much as 18 meters/70 feet above surrounding depths.

**Feature Correlation**

Address	Feature	Range	Azimuth	Status
h11556/s1212_simrad/2006-261/062_1931	1057/16	0.00	000.0	Primary

Awois items	AWOIS # 52214	14.43	296.7	Secondary
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## Hydrographer Recommendations

Chart depths from current survey.

### Cartographically-Rounded Depth (Affected Charts):

157ft (18444\_1)

26fm (18441\_1, 18440\_1, 18003\_1, 18007\_1, 530\_1)

26fm (18423\_17, 18443\_1, 18423\_15)

48m (501\_1, 50\_1)

## S-57 Data

**Geo object 1:** Wreck (WRECKS)

**Attributes:** CATWRK - 1:non-dangerous wreck  
 CONVIS - 2:not visual conspicuous  
 INFORM - AWOIS# 52214  
 OBJNAM - M/V ALINESKA SEA  
 STATUS - 1:permanent  
 TECSOU - 3:found by multi-beam  
 VALSOU - 48.006 m  
 VERDAT - 12:Mean lower low water  
 WATLEV - 3:always under water/submerged

## Office Notes

Concur w/clarification. Retain wreck as charted with updated least depth from current survey.

# H11556 - Charted Items

**Registry Number:** H11556  
**State:** Washington  
**Locality:** Approaches to Everett  
**Sub-locality:** Everett Harbor  
**Project Number:** OPR-N411-NRT3-06  
**Survey Dates:** 04/24/2006 - 09/28/2006

## Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
18444	16th	09/01/2004	1:10,000 (18444_1)	USCG LNM: 06/03/2008 (06/03/2008) CHS NTM: None (05/30/2008) NGA NTM: None (06/07/2008)
18423	35th	05/01/2005	1:80,000 (18423_15) 1:40,000 (18423_17)	[L]NTM: ?
18443	16th	01/01/2004	1:40,000 (18443_1)	[L]NTM: ?
18441	45th	04/01/2006	1:80,000 (18441_1)	[L]NTM: ?
18440	28th	12/01/2005	1:150,000 (18440_1)	[L]NTM: ?
18003	20th	11/01/2006	1:736,560 (18003_1)	[L]NTM: ?
18007	32nd	07/01/2005	1:1,200,000 (18007_1)	[L]NTM: ?
501	12th	11/01/2002	1:3,500,000 (501_1)	[L]NTM: ?
530	31st	06/01/2005	1:4,860,700 (530_1)	[L]NTM: ?
50	6th	06/01/2003	1:10,000,000 (50_1)	[L]NTM: ?

\* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

## Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Mooring Buoy 6097	Sounding	[None]	47° 59' 05.6" N	122° 14' 24.8" W	---
1.2	Dolphin 0086	Sounding	[None]	48° 00' 53.1" N	122° 13' 07.9" W	---

**1 - DR\_Charted**

## 1.1) Mooring Buoy 6097

### Survey Summary

**Survey Position:** 47° 59' 05.6" N, 122° 14' 24.8" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2006-114.16:52:54.000 (04/24/2006)  
**DP Dataset:** h11556 / 1212dpnones / 2006-114 / dn123\_dp  
**Profile/Beam:** 1/1  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

Mooring Buoy - QUA: GPSmode=2, SVs=9, HDOP=0.90

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/1212dpnones/2006-114/dn123_dp	1/1	0.00	000.0	Primary
ChartGPs - Digitized	1	22.96	224.2	Secondary (grouped)

### Hydrographer Recommendations

[None]

### S-57 Data

**Geo object 1:** Mooring/warping facility (MORFAC)  
**Attributes:** CATMOR - 7:mooring buoy

### Office Notes

Update position of mooring buoy.

## 1.2) Dolphin 0086

### Survey Summary

**Survey Position:** 48° 00' 53.1" N, 122° 13' 07.9" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2006-271.16:51:31.000 (09/28/2006)  
**DP Dataset:** h11556 / 1212dpnones / 2006-271 / dn271\_dp  
**Profile/Beam:** 3/1  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

dp dol

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/1212dpnones/2006-271/dn271_dp	3/1	0.00	000.0	Primary
ChartGPs - Digitized	2	6.75	145.9	Secondary (grouped)

### Hydrographer Recommendations

[None]

### S-57 Data

**Geo object 1:** Mooring/warping facility (MORFAC)  
**Attributes:** CATMOR - 1:dolphin

### Office Notes

Update charted dol position.



# H11556 - Uncharted Items

**Registry Number:** H11556  
**State:** Washington  
**Locality:** Approaches to Everett  
**Sub-locality:** Everett Harbor  
**Project Number:** OPR-N411-NRT3-06  
**Survey Dates:** 04/25/2006 - 10/17/2006

## Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
18444	16th	09/01/2004	1:10,000 (18444_1)	USCG LNM: 06/03/2008 (06/03/2008) CHS NTM: None (05/30/2008) NGA NTM: None (06/07/2008)
18423	35th	05/01/2005	1:80,000 (18423_15) 1:40,000 (18423_17)	[L]NTM: ?
18443	16th	01/01/2004	1:40,000 (18443_1)	[L]NTM: ?
18441	45th	04/01/2006	1:80,000 (18441_1)	[L]NTM: ?
18440	28th	12/01/2005	1:150,000 (18440_1)	[L]NTM: ?
18003	20th	11/01/2006	1:736,560 (18003_1)	[L]NTM: ?
18007	32nd	07/01/2005	1:1,200,000 (18007_1)	[L]NTM: ?
501	12th	11/01/2002	1:3,500,000 (501_1)	[L]NTM: ?
530	31st	06/01/2005	1:4,860,700 (530_1)	[L]NTM: ?
50	6th	06/01/2003	1:10,000,000 (50_1)	[L]NTM: ?

\* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

## Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Sounding 1643/10	Obstruction	5.92 m	47° 59' 21.2" N	122° 14' 37.8" W	---
1.2	Sounding 404/29	Sounding	11.09 m	47° 59' 18.7" N	122° 13' 39.3" W	---
1.3	Sounding 161/46	Sounding	12.00 m	47° 59' 18.1" N	122° 13' 37.2" W	---
1.4	Rocky Area 1445/124	Bottom Sample	1.72 m	47° 59' 18.5" N	122° 13' 58.4" W	---
1.5	Sounding 360/34	Sounding	26.74 m	47° 58' 41.2" N	122° 13' 44.3" W	---
1.6	Sounding 2265/111	Obstruction	8.30 m	47° 59' 01.2" N	122° 13' 28.0" W	---

1.7	Obstruction 1795/14	Obstruction	7.24 m	47° 59' 06.8" N	122° 13' 22.0" W	---
1.8	Obstruction 2955/122	Obstruction	10.28 m	47° 59' 14.5" N	122° 13' 16.5" W	---
1.9	Obstruction 1749/108	Obstruction	8.17 m	47° 59' 01.9" N	122° 13' 23.2" W	---
1.10	Obstruction 575/111	Obstruction	8.86 m	47° 58' 57.5" N	122° 13' 18.9" W	---
1.11	Sounding 677/74	Sounding	9.43 m	47° 58' 58.3" N	122° 13' 18.9" W	---
1.12	Mooring Buoy 6799	Sounding	[None]	47° 59' 07.4" N	122° 13' 25.4" W	---
1.13	Mooring Buoy 6800	Sounding	[None]	47° 59' 05.2" N	122° 13' 28.1" W	---
1.14	Mooring Buoy 6807	Sounding	[None]	47° 58' 58.3" N	122° 13' 30.9" W	---
1.15	Buoy 0084	Sounding	[None]	48° 01' 10.1" N	122° 12' 56.1" W	---
1.16	Dolphin 0085	Sounding	[None]	48° 00' 58.8" N	122° 13' 01.0" W	---
1.17	Dolphin 0087	Sounding	[None]	48° 00' 49.5" N	122° 13' 13.1" W	---
1.18	Dolphin 0088	Sounding	[None]	48° 00' 44.3" N	122° 13' 19.2" W	---
1.19	Sounding 1963/16	Sounding	9.71 m	47° 59' 08.1" N	122° 13' 13.0" W	---
1.20	Obstruction 2001/10	Obstruction	9.06 m	47° 59' 07.6" N	122° 13' 13.1" W	---

## **1 - DR\_UnCharted**

## 1.1) Sounding 1643/10

### Survey Summary

**Survey Position:** 47° 59' 21.2" N, 122° 14' 37.8" W  
**Least Depth:** 5.92 m (= 19.44 ft = 3.240 fm = 3 fm 1.44 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.499$  m ; **TVU (TPEv)**  $\pm 0.463$  m  
**Timestamp:** 2006-261.21:21:51.541 (09/18/2006)  
**Survey Line:** h11556 / s1212\_simrad / 2006-261 / 040\_2119  
**Profile/Beam:** 1643/10  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

This appears to be a sunken log, 6m long by 1m wide with a height off the seafloor of 1m.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/s1212_simrad/2006-261/040_2119	1643/10	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

#### Cartographically-Rounded Depth (Affected Charts):

19ft (18444\_1)

3 ¼fm (18441\_1, 18440\_1, 18003\_1, 18007\_1, 530\_1)

3fm 1ft (18423\_17, 18443\_1, 18423\_15)

5.9m (501\_1, 50\_1)

### S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** NATCON - 6:wooden  
 QUASOU - 6:least depth known  
 TECSOU - 3:found by multi-beam  
 VALSOU - 5.925 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

## Office Notes

Chart current survey soundings.

## 1.2) Sounding 404/29

### Survey Summary

**Survey Position:** 47° 59' 18.7" N, 122° 13' 39.3" W  
**Least Depth:** 11.09 m (= 36.39 ft = 6.065 fm = 6 fm 0.39 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.498$  m ; **TVU (TPEv)**  $\pm 0.286$  m  
**Timestamp:** 2006-264.19:01:11.107 (09/21/2006)  
**Survey Line:** h11556 / s1212\_simrad / 2006-264 / 031\_1900  
**Profile/Beam:** 404/29  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

Investigated with SWMB. Feature found, height 0.9 meters, least depth 11.4 meters (37 feet), marked by designated sounding 834/86.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/s1212_simrad/2006-264/031_1900	404/29	0.00	000.0	Primary
h11556/s1212_simrad/2006-264/031_1902	834/86	11.52	303.7	Secondary
h11556/s1212sss_200/2006-271/sonar_data060929194800	0001	14.95	283.6	Secondary
h11556/s1212sss_100/2006-271/sonar_data060929193900	0002	15.31	295.5	Secondary

### Hydrographer Recommendations

Chart depths from current survey.

### S-57 Data

[None]

### Office Notes

Do not concur, contact is in the USACE controlled channel and is deeper than the controlling depths.

### 1.3) Sounding 161/46

#### Survey Summary

**Survey Position:** 47° 59' 18.1" N, 122° 13' 37.2" W  
**Least Depth:** 12.00 m (= 39.38 ft = 6.563 fm = 6 fm 3.38 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.502$  m ; **TVU (TPEv)**  $\pm 0.199$  m  
**Timestamp:** 2006-264.19:05:45.079 (09/21/2006)  
**Survey Line:** h11556 / s1212\_simrad / 2006-264 / 032\_1905  
**Profile/Beam:** 161/46  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

Investigated with SWMB. Small feature found, height 0.4 meters, least depth 12.0 meters (39 feet), marked by designated sounding 161/46.

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/s1212_simrad/2006-264/032_1905	161/46	0.00	000.0	Primary
h11556/s1212sss_200/2006-271/sonar_data060929194800	0002	2.37	300.1	Secondary
h11556/s1212sss_100/2006-271/sonar_data060929193900	0003	5.59	135.0	Secondary

#### Hydrographer Recommendations

Chart depths from current survey.

#### S-57 Data

[None]

#### Office Notes

Concur w/clarification. Feature least depth is insignificant, chart present survey soundings.

## 1.4) Rocky Area 1445/124

### Survey Summary

**Survey Position:** 47° 59' 18.5" N, 122° 13' 58.4" W  
**Least Depth:** 1.72 m (= 5.63 ft = 0.939 fm = 0 fm 5.63 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.411$  m ; **TVU (TPEv)**  $\pm 0.313$  m  
**Timestamp:** 2006-268.18:26:20.110 (09/25/2006)  
**Survey Line:** h11556 / s1212\_simrad / 2006-268 / 007\_1824  
**Profile/Beam:** 1445/124  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

Rocky area noted in multibeam

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/s1212_simrad/2006-268/007_1824	1445/124	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

#### Cartographically-Rounded Depth (Affected Charts):

5ft (18444\_1)

1fm (18441\_1, 18440\_1, 18003\_1, 18007\_1, 530\_1)

0fm 5ft (18423\_17, 18443\_1, 18423\_15)

1.7m (501\_1, 50\_1)

### S-57 Data

**Geo object 1:** Seabed area (SBDARE)

**Attributes:** NATQUA - 10:hard

NATSUR - 9:rock



## Office Notes

Chart Rky seabed area.

## 1.5) Sounding 360/34

### Survey Summary

**Survey Position:** 47° 58' 41.2" N, 122° 13' 44.3" W  
**Least Depth:** 26.74 m (= 87.72 ft = 14.619 fm = 14 fm 3.72 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.951$  m ; **TVU (TPEv)**  $\pm 0.507$  m  
**Timestamp:** 2006-278.18:08:59.314 (10/05/2006)  
**Survey Line:** h11556 / s1212\_simrad / 2006-278 / 002\_1807  
**Profile/Beam:** 360/34  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

Investigated with SWMB. Feature found, height 0.7 to 1.0 meters, least depths 26.7 (87 feet) and 27.2 meters (89 feet), marked by designated soundings 360/34 and 392/31, respectively.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/s1212_simrad/2006-278/002_1807	360/34	0.00	000.0	Primary
h11556/s1212_simrad/2006-269/017_2035	392/31	10.53	109.6	Secondary
h11556/s1212sss_100/2006-271/sonar_data060929200200	0002	10.72	086.4	Secondary

### Hydrographer Recommendations

Chart depths from current survey.

#### S-57 Data

[None]

#### Office Notes

Concur. Chart current survey soundings.

## 1.6) Sounding 2265/111

### Survey Summary

**Survey Position:** 47° 59' 01.2" N, 122° 13' 28.0" W  
**Least Depth:** 8.30 m (= 27.22 ft = 4.536 fm = 4 fm 3.22 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.461$  m ; **TVU (TPEv)**  $\pm 0.333$  m  
**Timestamp:** 2006-278.17:12:01.708 (10/05/2006)  
**Survey Line:** h11556 / s1212\_simrad / 2006-278 / newlinea  
**Profile/Beam:** 2265/111  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

Investigated with SWMB. Feature found among debris, height 1.4 meters, least depth 8.3 meters (27 feet), marked by designated sounding 2265/111.

Shadow-like image indicating a much taller (3 meter) contact is actually a long, log-like feature oriented similarly on the seafloor, as seen in the BASE surface.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/s1212_simrad/2006-278/newlinea	2265/111	0.00	000.0	Primary
h11556/s1212sss_100/2006-271/sonar_data060929201000	0002	0.97	184.1	Secondary
h11556/s1212sss_100/2006-271/sonar_data060929201000	0003	32.25	012.6	Secondary

### Hydrographer Recommendations

Chart depths from current survey.

#### Cartographically-Rounded Depth (Affected Charts):

27ft (18444\_1)

4 ½fm (18441\_1, 18440\_1, 18003\_1, 18007\_1, 530\_1)

4fm 3ft (18423\_17, 18443\_1, 18423\_15)

8.3m (501\_1, 50\_1)

## S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** QUASOU - 6:least depth known  
TECSOU - 2,3:found by side scan sonar,found by multi-beam  
VALSOU - 8.296 m  
VERDAT - 12:Mean lower low water  
WATLEV - 3:always under water/submerged

## Office Notes

Concur. Chart current survey soundings.

## 1.7) Obstruction 1795/14

### Survey Summary

**Survey Position:** 47° 59' 06.8" N, 122° 13' 22.0" W  
**Least Depth:** 7.24 m (= 23.76 ft = 3.959 fm = 3 fm 5.76 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.446$  m ; **TVU (TPEv)**  $\pm 0.328$  m  
**Timestamp:** 2006-278.17:18:05.288 (10/05/2006)  
**Survey Line:** h11556 / s1212\_simrad / 2006-278 / newlineb  
**Profile/Beam:** 1795/14  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

Investigated with SWMB. Two features found, probably related to barge mooring buoy, heights 2.5 meters and 1.8 meters, least depths 7.2 meters (24 feet) and 7.9 meters (26 feet), marked by designated soundings 1795/14 and 1438/75, respectively.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/s1212_simrad/2006-278/newlineb	1795/14	0.00	000.0	Primary
h11556/s1212sss_100/2006-271/sonar_data060929201000	0001	2.79	050.6	Secondary
h11556/s1212_simrad/2006-278/newlinea	1438/75	16.08	145.2	Secondary
h11556/s1212_simrad/2006-278/newlinea	1491/116	18.43	101.1	Secondary
h11556/s1212_simrad/2006-278/newline	1235/119	24.23	071.0	Secondary

### Hydrographer Recommendations

Chart depths from current survey.

#### Cartographically-Rounded Depth (Affected Charts):

24ft (18444\_1)

4fm (18441\_1, 18440\_1, 18003\_1, 18007\_1, 530\_1)

2fm 0ft (18423\_17, 18443\_1, 18423\_15)

7.2m (501\_1, 50\_1)

## S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** QUASOU - 6:least depth known  
TECSOU - 3:found by multi-beam  
VALSOU - 7.241 m  
VERDAT - 12:Mean lower low water  
WATLEV - 3:always under water/submerged

## Office Notes

Do not concur. Chart 24Ft Obstn.

## 1.8) Obstruction 2955/122

### Survey Summary

**Survey Position:** 47° 59' 14.5" N, 122° 13' 16.5" W  
**Least Depth:** 10.28 m (= 33.71 ft = 5.619 fm = 5 fm 3.71 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.621$  m ; **TVU (TPEv)**  $\pm 0.727$  m  
**Timestamp:** 2006-278.17:20:10.339 (10/05/2006)  
**Survey Line:** h11556 / s1212\_simrad / 2006-278 / newlineb  
**Profile/Beam:** 2955/122  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

Investigated with SWMB. Feature found, height 2.0 meters, least depth 10.3 meters (33 feet), marked by designated sounding 2955/122. Could be anchor for buoy attached to log boom.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/s1212_simrad/2006-278/newlineb	2955/122	0.00	000.0	Primary
h11556/s1212sss_200/2006-271/sonar_data060929201500	0001	2.14	004.1	Secondary

### Hydrographer Recommendations

Chart depths from current survey.

#### Cartographically-Rounded Depth (Affected Charts):

33ft (18444\_1)

5 ½fm (18441\_1, 18440\_1, 18003\_1, 18007\_1, 530\_1)

5fm 3ft (18423\_17, 18443\_1, 18423\_15)

10.3m (501\_1, 50\_1)

### S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** QUASOU - 6:least depth known  
 TECSOU - 2,3:found by side scan sonar,found by multi-beam  
 VALSOU - 10.276 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

## Office Notes

Do not concur. Chart 33FT Obstm.



## 1.9) Obstruction 1749/108

### Survey Summary

**Survey Position:** 47° 59' 01.9" N, 122° 13' 23.2" W  
**Least Depth:** 8.17 m (= 26.80 ft = 4.467 fm = 4 fm 2.80 ft)  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh)  $\pm 1.452$  m ; TVU (TPEv)  $\pm 0.297$  m  
**Timestamp:** 2006-278.17:24:08.332 (10/05/2006)  
**Survey Line:** h11556 / s1212\_simrad / 2006-278 / newlinec  
**Profile/Beam:** 1749/108  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

Feature appears to be a log, height is 1m above surrounding depths.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/s1212_simrad/2006-278/newlinec	1749/108	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

#### Cartographically-Rounded Depth (Affected Charts):

27ft (18444\_1)

4 ½fm (18441\_1, 18440\_1, 18003\_1, 18007\_1, 530\_1)

4fm 3ft (18423\_17, 18443\_1, 18423\_15)

8.2m (501\_1, 50\_1)

### S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** NATCON - 6:wooden  
 QUASOU - 6:least depth known  
 TECSOU - 2,3:found by side scan sonar,found by multi-beam  
 VALSOU - 8.170 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

## Office Notes

Chart 27FT Obstn.

## 1.10) Obstruction 575/111

### Survey Summary

**Survey Position:** 47° 58' 57.5" N, 122° 13' 18.9" W  
**Least Depth:** 8.86 m (= 29.07 ft = 4.846 fm = 4 fm 5.07 ft)  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh)  $\pm 1.499$  m ; TVU (TPEv)  $\pm 0.389$  m  
**Timestamp:** 2006-290.17:55:40.862 (10/17/2006)  
**Survey Line:** h11556 / s1212\_simrad / 2006-290 / 015\_1754  
**Profile/Beam:** 575/111  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

Investigated with SWMB. Feature found, height 1.5 meters, least depth 8.8 meters (29 feet), marked by designated sounding 575/111.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/s1212_simrad/2006-290/015_1754	575/111	0.00	000.0	Primary
h11556/s1212sss_100/2006-271/sonar_data060929202400	0001	2.37	116.1	Secondary

### Hydrographer Recommendations

Chart depths from current survey.

#### Cartographically-Rounded Depth (Affected Charts):

29ft (18444\_1)

4  $\frac{3}{4}$ fm (18441\_1, 18440\_1, 18003\_1, 18007\_1, 530\_1)

4fm 5ft (18423\_17, 18443\_1, 18423\_15)

8.9m (501\_1, 50\_1)

### S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** QUASOU - 6:least depth known  
 TECSOU - 2,3:found by side scan sonar,found by multi-beam  
 VALSOU - 8.862 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

## Office Notes

Do not concur. Chart 29FT Obstn.

## 1.11) Sounding 677/74

### Survey Summary

**Survey Position:** 47° 58' 58.3" N, 122° 13' 18.9" W  
**Least Depth:** 9.43 m (= 30.94 ft = 5.156 fm = 5 fm 0.94 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.466$  m ; **TVU (TPEv)**  $\pm 0.170$  m  
**Timestamp:** 2006-290.17:55:52.644 (10/17/2006)  
**Survey Line:** h11556 / s1212\_simrad / 2006-290 / 015\_1754  
**Profile/Beam:** 677/74  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

Investigated with SWMB. Feature found, height 1.4 meters, least depth 9.4 meters (31 feet), marked by designated sounding 677/74.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/s1212_simrad/2006-290/015_1754	677/74	0.00	000.0	Primary
h11556/s1212sss_100/2006-271/sonar_data060929202400	0003	3.33	179.0	Secondary

### Hydrographer Recommendations

Chart depths from current survey.

### S-57 Data

[None]

### Office Notes

Concur. Chart current survey soundings.

## 1.12) Mooring Buoy 6799

### Survey Summary

**Survey Position:** 47° 59' 07.4" N, 122° 13' 25.4" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2006-115.17:26:38.000 (04/25/2006)  
**DP Dataset:** h11556 / 1212dpnones / 2006-115 / dn115\_dp  
**Profile/Beam:** 1/1  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

Mooring bouy

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/1212dpnones/2006-115/dn115_dp	1/1	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

### S-57 Data

**Geo object 1:** Mooring/warping facility (MORFAC)  
**Attributes:** CATMOR - 7:mooring buoy

### Office Notes

Chart mooring buoy

## 1.13) Mooring Buoy 6800

### Survey Summary

**Survey Position:** 47° 59' 05.2" N, 122° 13' 28.1" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2006-115.17:28:35.000 (04/25/2006)  
**DP Dataset:** h11556 / 1212dpnones / 2006-115 / dn115\_dp  
**Profile/Beam:** 2/1  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

Mooring bouy

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/1212dpnones/2006-115/dn115_dp	2/1	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

### S-57 Data

**Geo object 1:** Mooring/warping facility (MORFAC)  
**Attributes:** CATMOR - 7:mooring buoy

### Office Notes

Chart mooring buoy

## 1.14) Mooring Buoy 6807

### Survey Summary

**Survey Position:** 47° 58' 58.3" N, 122° 13' 30.9" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2006-115.17:31:25.000 (04/25/2006)  
**DP Dataset:** h11556 / 1212dpnones / 2006-115 / dn115\_dp  
**Profile/Beam:** 3/1  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

Mooring bouy

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/1212dpnones/2006-115/dn115_dp	3/1	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

### S-57 Data

**Geo object 1:** Mooring/warping facility (MORFAC)  
**Attributes:** CATMOR - 7:mooring buoy

### Office Notes

Chart mooring buoy



## 1.15) Buoy 0084

### Survey Summary

**Survey Position:** 48° 01' 10.1" N, 122° 12' 56.1" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2006-271.16:43:21.000 (09/28/2006)  
**DP Dataset:** h11556 / 1212dpnones / 2006-271 / dn271\_dp  
**Profile/Beam:** 1/1  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

**Remarks:**

DP Green buoy 7 marking shoal - QUA: GPSmode=2, SVs=12, HDOP=0.82

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/1212dpnones/2006-271/dn271_dp	1/1	0.00	000.0	Primary

### Hydrographer Recommendations

Revise Position charted Buoy

### S-57 Data

**Geo object 1:** Buoy, lateral (BOYLAT)  
**Attributes:** BOYSHP - 2:can (cylindrical)  
 CATLAM - 1:port-hand lateral mark  
 COLOUR - 4:green  
 OBJNAM - LLN 18586 Snohomish River Buoy 7  
 STATUS - 1:permanent

### Office Notes

Defer to MCD for charting recommendation.

## 1.16) Dolphin 0085

### Survey Summary

**Survey Position:** 48° 00' 58.8" N, 122° 13' 01.0" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2006-271.16:49:40.000 (09/28/2006)  
**DP Dataset:** h11556 / 1212dpnones / 2006-271 / dn271\_dp  
**Profile/Beam:** 2/1  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

DP dol

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/1212dpnones/2006-271/dn271_dp	2/1	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

### S-57 Data

**Geo object 1:** Mooring/warping facility (MORFAC)  
**Attributes:** CATMOR - 1:dolphin

### Office Notes

Chart dol

## 1.17) Dolphin 0087

### Survey Summary

**Survey Position:** 48° 00' 49.5" N, 122° 13' 13.1" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2006-271.16:53:03.000 (09/28/2006)  
**DP Dataset:** h11556 / 1212dpnones / 2006-271 / dn271\_dp  
**Profile/Beam:** 4/1  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

dp dol

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/1212dpnones/2006-271/dn271_dp	4/1	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

### S-57 Data

**Geo object 1:** Mooring/warping facility (MORFAC)  
**Attributes:** CATMOR - 1:dolphin

### Office Notes

Chart dol

## 1.18) Dolphin 0088

### Survey Summary

**Survey Position:** 48° 00' 44.3" N, 122° 13' 19.2" W  
**Least Depth:** [None]  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh) [None] ; TVU (TPEv) [None]  
**Timestamp:** 2006-271.16:54:45.000 (09/28/2006)  
**DP Dataset:** h11556 / 1212dpnones / 2006-271 / dn271\_dp  
**Profile/Beam:** 5/1  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

dp dol

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/1212dpnones/2006-271/dn271_dp	5/1	0.00	000.0	Primary

### Hydrographer Recommendations

[None]

### S-57 Data

**Geo object 1:** Mooring/warping facility (MORFAC)  
**Attributes:** CATMOR - 1:dolphin

### Office Notes

Chart dol.

## 1.19) Sounding 1963/16

### Survey Summary

**Survey Position:** 47° 59' 08.1" N, 122° 13' 13.0" W  
**Least Depth:** 9.71 m (= 31.87 ft = 5.312 fm = 5 fm 1.87 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.494$  m ; **TVU (TPEv)**  $\pm 0.390$  m  
**Timestamp:** 2006-278.17:37:47.883 (10/05/2006)  
**Survey Line:** h11556 / s1212\_simrad / 2006-278 / newlinee  
**Profile/Beam:** 1963/16  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

Investigated with SWMB. Feature found, height 1.7 meters, least depth 9.0 meters (30 feet), marked by designated sounding 2001/10.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/s1212_simrad/2006-278/newlinee	1963/16	0.00	000.0	Primary

### Hydrographer Recommendations

Chart as separate obstruction? Chart depths from current survey.

### S-57 Data

[None]

### Office Notes

Chart current survey soundings.

## 1.20) Obstruction 2001/10

### Survey Summary

**Survey Position:** 47° 59' 07.6" N, 122° 13' 13.1" W  
**Least Depth:** 9.06 m (= 29.73 ft = 4.956 fm = 4 fm 5.73 ft)  
**TPU ( $\pm 1.96\sigma$ ):** **THU (TPEh)**  $\pm 1.513$  m ; **TVU (TPEv)**  $\pm 0.486$  m  
**Timestamp:** 2006-278.17:37:51.992 (10/05/2006)  
**Survey Line:** h11556 / s1212\_simrad / 2006-278 / newlinee  
**Profile/Beam:** 2001/10  
**Charts Affected:** 18444\_1, 18423\_17, 18443\_1, 18423\_15, 18441\_1, 18440\_1, 18003\_1, 18007\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

Investigated with SWMB. Feature found, height 1.0 meter, least depth 9.7 meters (32 feet), marked by designated sounding 1963/16.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
h11556/s1212_simrad/2006-278/newlinee	2001/10	0.00	000.0	Primary
h11556/s1212sss_100/2006-271/sonar_data060929203500	0002	2.27	128.4	Secondary
h11556/s1212sss_100/2006-271/sonar_data060929203500	0001	17.39	184.0	Secondary

### Hydrographer Recommendations

Chart depths from current survey.

#### Cartographically-Rounded Depth (Affected Charts):

29ft (18444\_1)

5fm (18441\_1, 18440\_1, 18003\_1, 18007\_1, 530\_1)

4fm 5ft (18423\_17, 18443\_1, 18423\_15)

9.1m (501\_1, 50\_1)

### S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** QUASOU - 6:least depth known  
 TECSOU - 3:found by multi-beam

VALSOU - 9.063 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

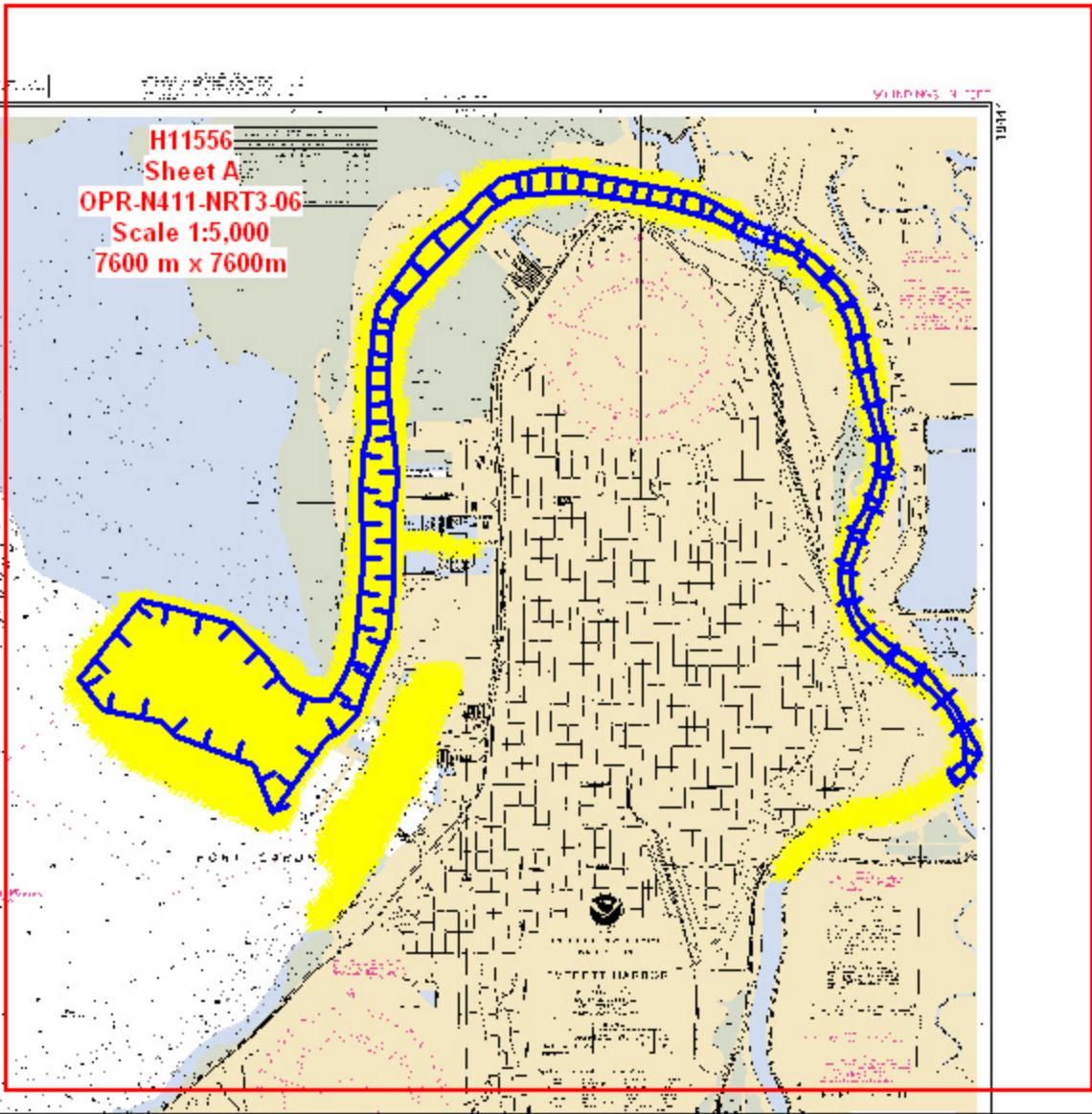
## Office Notes

Do not concur. Chart 29FT Obstn.

APPENDIX III  
FINAL PROGRESS SKETCH AND SURVEY



H11556  
Sheet A  
OPR-N411-NRT3-06  
Scale 1:5,000  
7600 m x 7600m



APPENDIX IV  
TIDES AND WATER LEVELS

November 13, 2006

MEMORANDUM FOR: Chief, Requirements and Development Division, N/OPS1

FROM: Kathryn Simmons, Navigation Response Team 3

SUBJECT: Request for Approved Tides/Water Levels

Please provide the following data:

1. Tide Note
2. Final zoning in MapInfo and .MIX format
3. Six Minute Water Level data (Co-ops web site)

Transmit data to the following:

NOAA/NOS/Atlantic Hydrographic Branch  
N/CS33, Building #2  
439 West York Street  
Norfolk, VA 23510  
ATTN: Chief AHB

These data are required for the processing of the following hydrographic survey:

Project No.: OPR-N411-NRT3-06  
Registry No.: H11556  
State: Washington  
Locality: Approaches to Everett  
Sublocality: Everett Harbor

Attachments containing:

- 1) an Abstract of Times of Hydrography,
- 2) digital MID MIF files of the track lines from Pydro

cc: N/CS33

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Year_DOY	Min Time	Max Time
2006_089	17:15:34	20:38:16
2006_103	15:37:14	18:40:25
2006_108	15:47:34	19:21:48
2006_114	16:52:54	22:01:31
2006_115	17:26:38	20:47:36
2006_123	17:36:28	20:46:58
2006_261	18:26:40	21:45:06
2006_264	18:00:55	23:00:51
2006_268	17:18:23	19:24:25
2006_269	18:43:20	20:36:29
2006_271	16:26:44	19:46:36
2006_278	17:00:49	19:39:42
2006_290	17:54:25	19:00:49

APPENDIX V  
SUPPLEMENTAL SURVEY AND  
CORRESPONDENCE



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
National Ocean Service  
Silver Spring, Maryland 20910



**Final tide zone node point locations for OPR-N411-NRT3-2006, H11556**

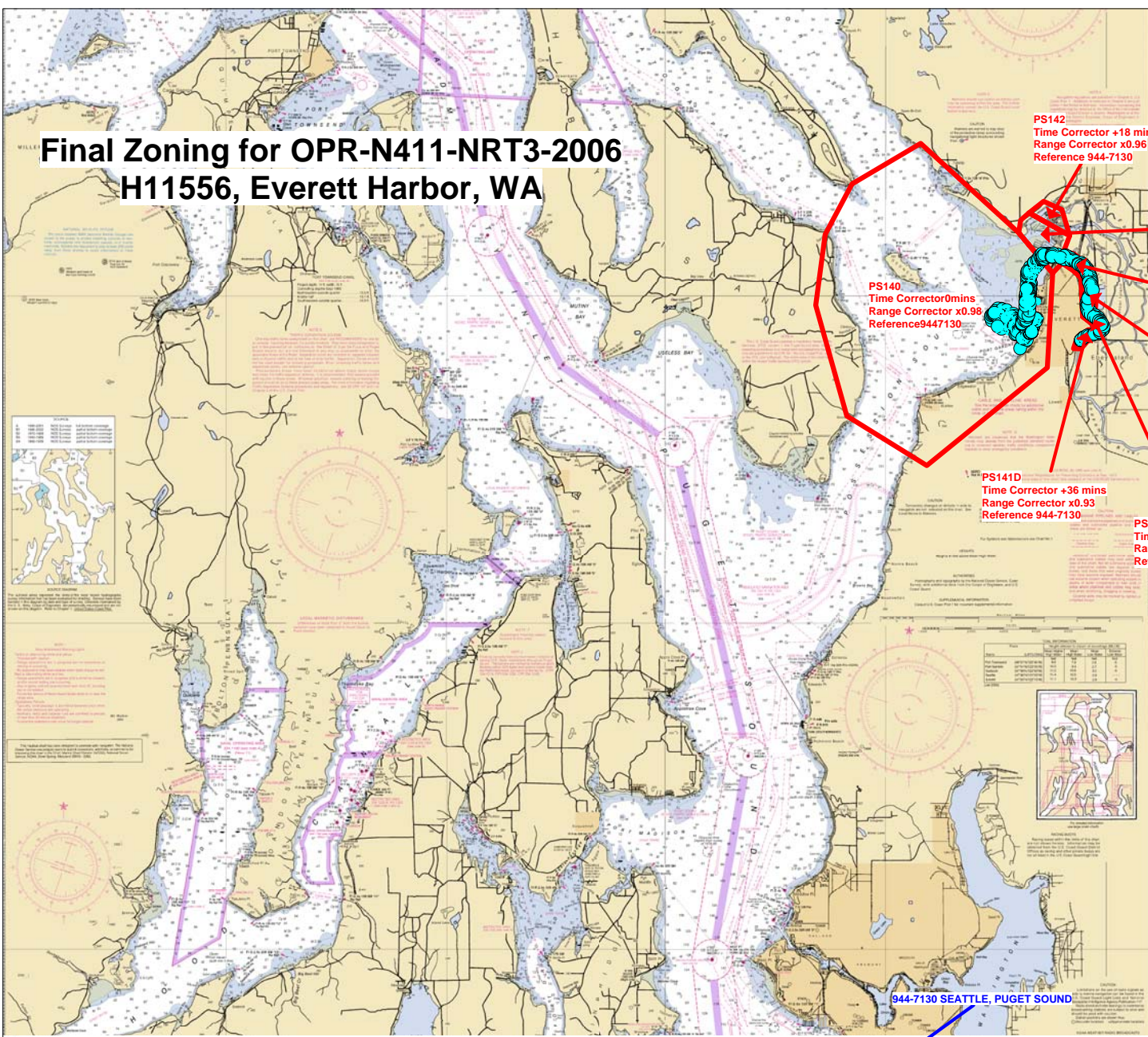
Format: Tide Station (in recommended order of use)  
 Average Time Correction (in minutes)  
 Range Correction  
 Longitude in decimal degrees (negative value denotes Longitude West),  
 Latitude in decimal degrees

	Tide Station Order	AVG Time Correction	Range Correction
Zone PS140	944-7130	0	0.98
-122.362642 47.938777			
-122.386199 47.995136			
-122.378981 48.031107			
-122.358689 48.05675			
-122.306635 48.077356			
-122.232403 48.031938			
-122.206642 48.011411			
-122.210683 47.963373			
-122.302 47.913522			
-122.362642 47.938777			
Zone PS141	944-7130	+12	0.96
-122.206642 48.011411			
-122.199519 48.016533			
-122.198109 48.022772			
-122.19371 48.030554			
-122.224517 48.042091			
-122.230919 48.038334			
-122.232403 48.031938			
-122.206642 48.011411			
Zone PS141A	944-7130	+18	0.96
-122.199519 48.016533			
-122.191358 48.012763			
-122.185259 48.009057			
-122.17589 48.011443			
-122.180891 48.016342			
-122.190425 48.021106			
-122.198109 48.022772			
-122.199519 48.016533			
Zone PS141B	944-7130	+24	0.95
-122.185259 48.009057			
-122.183985 47.989282			
-122.174477 47.991845			
-122.173458 47.999974			
-122.174013 48.005705			

-122.17589 48.011443			
-122.185259 48.009057			
Zone PS141C	944-7130	+30	0.94
-122.183985 47.989282			
-122.171706 47.982848			
-122.169011 47.98119			
-122.166016 47.982346			
-122.167813 47.98697			
-122.174477 47.991845			
-122.183985 47.989282			
Zone PS141D	944-7130	+36	0.93
-122.179729 47.98267			
-122.188332 47.978316			
-122.190812 47.973047			
-122.185225 47.972937			
-122.180259 47.97685			
-122.171127 47.980049			
-122.169011 47.98119			
-122.171706 47.982848			
-122.179729 47.98267			
Zone PS142	944-7130	+18	0.96
-122.19371 48.030554			
-122.199687 48.043729			
-122.213452 48.047925			
-122.224517 48.042091			
-122.19371 48.030554			



# Final Zoning for OPR-N411-NRT3-2006 H11556, Everett Harbor, WA



PS142  
Time Corrector +18 mins  
Range Corrector x0.96  
Reference 944-7130

PS141  
Time Corrector +12 mins  
Range Corrector x0.96  
Reference 944-7130

PS141A  
Time Corrector +18 mins  
Range Corrector x0.96  
Reference 944-7130

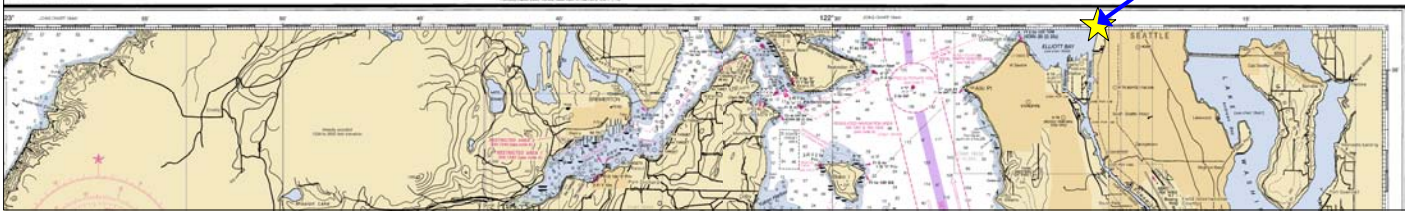
PS141B  
Time Corrector +24 mins  
Range Corrector x0.95  
Reference 944-7130

PS141D  
Time Corrector +36 mins  
Range Corrector x0.93  
Reference 944-7130

PS141C  
Time Corrector +30 mins  
Range Corrector x0.94  
Reference 944-7130

PS140  
Time Corrector 0mins  
Range Corrector x0.98  
Reference 944-7130

944-7130 SEATTLE, PUGET SOUND



**ATLANTIC HYDROGRAPHIC BRANCH  
EVALUATION REPORT to ACCOMPANY  
SURVEY H11556 (2006)**

This Evaluation Report has been written to supplement and/or clarify the original Descriptive Report. Sections in this report refer to the corresponding sections of the Descriptive Report.

**B. DATA ACQUISITION AND PROCESSING**

**B.1 DATA PROCESSING**

The following software was used to process data at the Atlantic Hydrographic Branch:

HSTP PYDRO version 8.7 r2368-1  
CARIS HIPS/SIPS version 6.1 SP2 HF 1  
CARIS Bathym Manager version 2.1 HF 1-8  
DKART INSPECTOR, version 5.0 Build 732 SP1  
CARIS HOM version 3.3  
CARIS S57 Composer version 2.0

**B.2. QUALITY CONTROL**

**B.2.1. H-Cell**

The AHB source depth grid for the survey's nautical chart update product entailed the field's original 50cm and 1m grids, combined at 1 meter resolution. The selected sounding set is approximately 10 to 20 times the number of charted depths. The chart scale selected soundings are a subset of the survey scale selected soundings. The surface model was referenced when selecting the chart scale soundings, to ensure that the selected soundings portrayed the bathymetry within the common area.

The pre-compilation products or components (Stand Alone HOB files (SAHOB)) included sounding selections (SOUNDG), features (SBDARE), Meta objects (M\_COVR, M\_QUAL, M\_NSYS), and cartographic Blue Notes. The individual SAHOB files were inserted into one BASE Manager feature layer and exported to S57 format in order to create the H-Cell deliverable.

The completed H-Cell was exported as a Base Cell File (ENC.000) in S-57 format with all values in metric units. The metric equivalent ENC.000 file was then converted to NOAA chart units (ENC\_CU.000) with all values measured in feet following NOAA sounding rounding rules.

Chart compilation was performed by Atlantic Hydrographic Branch personnel in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland.

The H11556 CARIS H-Cell final deliverables include the following products:

US511556_CS.000	1:10,000 Scale	H11556 H-Cell with Chart Scale Selected Soundings
US511556_SS.000	1:5,000 Scale	H11556 Selected Soundings (Survey Scale)
US511556_BlueNtoes.000	1:10,000 Scale	H11556 Cartographic Notes

## **C. VERTICAL AND HORIZONTAL CONTROL**

Final vertical correction processing was completed by the field unit/office personnel with no additional correction required by Atlantic Hydrographic Branch. The field unit/office personnel applied verified water levels in conjunction with the final tidal zoning approved by N/OPSI CO-OPS. Sounding datum is Mean Lower Low Water (MLLW). Vertical datum is Mean High Water (MHW)

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD83), UTM projection zone 10. Office ENC processing of this survey required translating the datum to meet S-57 ENC requirements.

## **D. RESULTS AND RECOMMENDATIONS**

### **D.1 CHART COMPARISON**

#### **18444 (16th Edition, Sep./04)**

Corrected through NM 09/18/2004  
Corrected through LNM 09/07/2004  
Scale 1:10,000

### **ENC Comparison**

#### **US5WA51M**

Everett Harbor  
Edition 5  
Application Date 2007-10-15  
Issue Date 2008-06-10  
Chart 18444

### **D.1.1 Hydrography**

The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in section "D" and Appendix 1&2 of the Descriptive Report.

### **D.3. MISCELLANEOUS**

Chart compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland. See Section D.1. of this report for a list of the Raster Charts and Electronic Navigation Charts (ENC) used for compiling the present survey:

### **D.4. ADEQUACY OF SURVEY**

The present survey is adequate to supersede the charted bathymetry within the common area. Any features not specifically addressed either in the H-Cell BASE Cell File or the Blue Notes should be retained as charted. Refer to the Descriptive Report for further recommendations by the hydrographer.

**APPROVAL SHEET**

**H11556**

**Initial Approvals:**

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, representation of critical depths, cartographic symbolization, and verification or disproval of charted data. All revisions and additions made to the H-Cell files during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with National Ocean Service and Office of Coast Survey requirements except where noted in the Descriptive Report and the Evaluation Report.

All final products have undergone a comprehensive reviews per the Hydrographic surveys Division Office Processing Manual and are verified to be accurate and complete except where noted.

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**Sarah M. Eggleston**  
Physical Scientist  
Atlantic Hydrographic Branch

I have reviewed the H-Cell files, accompanying data, and reports. This survey and accompanying Marine Chart Division deliverables meet National Ocean Service requirements and standards for products in support of nautical charting except where noted.

Approved: \_\_\_\_\_  
**Shepard Smith**  
Lieutenant Commander, NOAA  
Chief, Atlantic Hydrographic Branch