

H11282

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey: **Hydrographic**

Field No.: **NRT3-10-01-04**

Registry No.: **H11282**

LOCALITY

State: **Washington**

General Locality: **Grays Harbor**

Sub Locality: **Entrance to Grays Harbor**

Kathryn Simmons

TEAM LEADER

LIBRARY & ARCHIVES

DATE:

NOAA FORM 77-28
(11-72)

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

REGISTRY No

HYDROGRAPHIC TITLE SHEET

H11282

INSTRUCTIONS -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.

NRT3-10-01-04

State: Washington

General Locality: Grays Harbor

Sub-Locality: Entrance to Grays Harbor

Scale: 1:10,000

Date of Survey: 03-01-2004 to 07-06-2005

Instructions dated: 02-02-2004

Project No. : S-N914-NRT3-04

Vessel: NOAA Survey Launch 1212

Chief of party: Kathryn Simmons

Surveyed by: Kathryn Simmons, Janice Landsfeld, Vitad Pradith

Soundings by echo sounder, hand lead, pole Echosounder

Graphic record scaled by: NRT-3

Graphic record checked by: NRT-3

Automated Plot: *HP DesignJet 2500 CP Plotter (AHB)*

Verification by: *Atlantic Hydrographic Branch Personnel*

Soundings in fathoms feet ~~meters~~ at MLW MLLW

REMARKS: All times are recorded in UTC.

Notes in red bold italic were made during office processing.

Descriptive Report to Accompany Hydrographic Survey H11282

Scale 1:10,000

2004

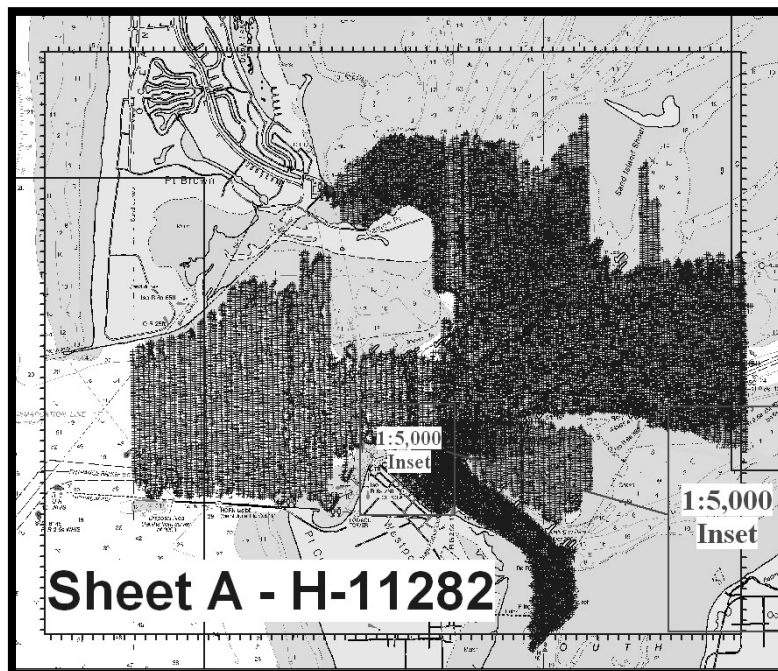
Navigation Response Team 3

Team Leader: Kathryn Simmons

A. AREA SURVEYED

This basic hydrographic survey was conducted in accordance with Port Instructions S-N914-NRT3-04, Grays Harbor, Washington, issued February 2, 2004. The project responds to a request from the USCG Station at Grays Harbor, Washington, to investigate areas of shoaling. In addition, representatives from the Washington State Department of Ecology are concerned about the potential for grounding and a fuel oil spill. In May of 2001 a grounding resulted from a vessel dragging anchor during a storm and, while the incident was not related to charting issues, there is still concern over charted depths since the area is subject to shifting sediment and shoaling. Currently no tank vessels use the Port of Grays Harbor; but vessel size is typically up to 500-600 feet in length, 3200+ DWT, with drafts up to 40 feet.

H11282, Grays Harbor, Entrance to Grays Harbor, is the first of three surveys for Project S-N914-NRB-04 and includes hydrographic data and detached positions. The area surveyed extends from latitude 46°53'15.7"N, northward to latitude 46°58'8.1"N, and from longitude 124°11'5.5" W, eastward to longitude 124°02'35.5" W. Area of hydrography amounts to approximately 26.6 square nautical miles.



Data acquisition was conducted from March 03, 2004 (DN 063) through July 6, 2005 (DN 187).

B. DATA ACQUISITION AND PROCESSING

B1. Equipment and Vessels *See also the Evaluation Report.*

NOAA Launches 1212 and 3001 were the only vessels used for this survey. See Data Acquisition and Processing Report. *

B2. Quality Control

The harbor is subject to significant swells and breakers; however, nine miles of crossline data indicate no systematic error.

B3. Corrections to Echo Soundings

See Data Acquisition and Processing Report. *

C. VERTICAL AND HORIZONTAL CONTROL

C1. Tides and Water Levels *See also the Evaluation Report.*

| See Data Acquisition and Processing Report. *

C2. Horizontal Datum *See also the Evaluation Report.*

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

C3. Position Control

See Data Acquisition and Processing Report. *

* *Appended to this Report.*

C4. Velocity of Sound

Eight sound velocity casts were conducted for the project as shown in the table below:

Day	Latitude/Longitude	Depth(m)	Location
03222004_084	46:58:06.92 N / 123:52:40.30 W	22.7	Grays Harbor
03312004_091	46:58:41.61 N / 123:47:08.65 W	18.4	Grays Harbor
04062004_097	46:57:44.06 N / 123:51:05.65 W	20.4	Grays Harbor
06302004_182	46:57:36.11 N / 123:50:56.09 W	18.3	Grays Harbor
07012004_183	46:57:32.89 N / 123:50:44.16 W	18.0	Grays Harbor
07122004_194	46:58:38.10 N / 123:46:54.74 W	13.9	Grays Harbor
11102004_315	46:57:33.88 N / 123:46:18.85 W	20.6	Grays Harbor
12142004_349	46:58:42.43 N / 123:47:07.51 W	24.4	Grays Harbor

D. RESULTS AND RECOMMENDATIONS *See also the Evaluation Report.*

D1. Chart Comparison

Comparison will be limited to the largest scale chart covering the survey area which is represented on the following chart:

Chart No.	Date	Edition	Scale
18502	June 2004	85th	1:40,000

Comparison of Soundings

The survey area is subject to large ocean swells and wind waves, a 2.8-meter tide range at MHHW as well as a strong ebb current. These factors, combined with the age of the charted depths, have contributed to very significant changes throughout the survey area and, as a result, have rendered charted depths unreliable. The hydrographer recommends superceding all prior surveyed depths with the current survey. Additionally, a line of breakers is frequently encountered along the north and south edges of Whitcomb Flats as depicted on the H11282 Shoreline Updates Table. The zero-curve was obtained where it could be safely acquired.

Comparison of Non-Sounding Features

High water shoreline features (piers, fixed aids, etc) defined by point and line data acquired with the Trimble ProXRS receiver have been submitted directly to the Marine Chart Division via the

Navigation Response Branch, NSD. Offshore features were located with detached positions (DP's) which were also used for disprovals of nonexistent charted features. These are detailed in the PSS Feature Report* and on the H11282 Shoreline Updates Table.

* *Appended to this report.*

AWOIS Items

There were no AWOIS items within the survey limits. *Concur.*

Dangers to Navigation *See also the Evaluation Report.*

A Danger to Navigation submitted to MCD in 2004 has been applied to the above chart. No other DTON reports have been submitted.

D2. Additional Results

Shoreline

Prior Surveys

The following prior surveys were compared with the current survey for agreement between soundings, shoreline, and other features:

Registry No.	Year Surveyed	Scale	Datum
H-8293	1956	1:10,000	NAD27

Prior H08293: *Prior survey H08293 was not available for comparison during office processing.*

Aids to Navigation

Fixed aids to navigation positioned with the Trimble ProXRS receiver have been submitted directly to NOAA's Marine Chart Division. A text file of these positions is included in Appendix IV. *Filed with the field digital data. AtoNs were not applied to the PSS data.*

Bridges, Cables, Pipelines

NA

Statistics

Description	Quantities
Total Nautical Miles	440.39
Side Scan Sonar	0
MS Hydrography	440.39

Square Nautical Miles Hydrography	11.01
Square Nautical Miles SSS	0
Velocity Casts	8
Bottom Samples	0
AWOIS Items	0
Tide Stations Installed	1
Position Control Stations Established	0

Miscellaneous *See also the Evaluation Report.*

Observations in the field were logged to a target file and imported into Mapinfo as Field Notes. The daily field notes are included in subfolder “Field Notes” within folder “Field Products.” The daily notes are combined in the table, H11282 Field Notes, which is included with the Mapinfo files for information. *

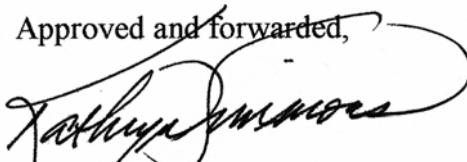
A separate table, H11282 Indexed Notes, was created in Mapinfo to include recommendations to the cartographer. This table is included in the “Field Plots” subfolder “Mapinfo.” A text file of these notes is included in Appendix IV. *

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 Hydrographic Manual, Fourth Edition; the Hydrographic Survey Guidelines; 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 for final review and processing to N/CS33, Atlantic Hydrographic Branch.

Approved and forwarded,

 Kathryn Simmons
 Team Leader

* *Filed with the field digital data.*

Data Acquisition and Processing Report
S-N914-NRT3-03
Entrance to Grays Harbor—Approaches to Aberdeen—Vicinity of Aberdeen
Hydrographic Letter Instructions dated November 7, 2003
Team Leader: Kathryn Simmons

This report includes descriptions of equipment used and methods employed by Navigation Response Team 3 during acquisition and processing of hydrographic survey data. It does not necessarily apply to fast-track data – a separate report will accompany data submitted directly to the Marine Chart Division.

A. EQUIPMENT

Two vessels were used during this survey to acquire single-beam echosounder data, side scan sonar data, sound velocity profiles and detached positions. The vessels and any vessel configuration changes are described below.

NOAA Survey Launch 1212 is a 4.8-ton SeaArk Commander (SAMA115510000) acquired in January 2001. From the beginning of project S-N914-NRT3-03 through May 2004, hull length was 27 feet and the vessel was powered by two 150-horsepower Evinrude-Johnson two-stroke outboards. On May 25, 2004 (DN 146), Launch 1212 was repowered with two 150-horsepower Yamaha four-stroke outboards; and, as a result of the additional weight of the new motors, it was necessary to extend the hull three feet. On August 4, 2004 (DN 217), the vessel was transported back to the manufacturer in Arkansas for the hull modification and was returned to service on September 30 (DN 274). Launch 1212 is equipped with a Dell Pentium II PC which runs the primary software associated with data collection

NOAA Launch S3003, a 30-foot SeaArk, is eight feet wide and displaces 4.8 tons and was used for data collection from July 30 to August 24, 2004 (DN 212-237), while Launch S1212 was undergoing modifications. Launch S3003 is powered by two 130-horsepower Honda four-stroke outboards and is also equipped with a Dell Pentium II PC for running the primary software associated with data collection.

A Trimble backpack DGPS system was used to position fixed aids to navigation, high water features, and natural shoreline.

Sounding Equipment:

1. Single-Beam Echosounder (SBES)

Two Innerspace 455C single-frequency (208 kHz), vertical beam echosounders (VBES) were used for data collection. The dates each was employed on each of the two vessels used for this project are shown in the table below which also summarizes vessel configuration changes.

Dates	Vessel used	Equipment	Echosounder
March 3-May 25, 2004	Launch S1212	Evinrude-Johnson 150-hp, two-stroke outboard motors	Innerspace 455, S/N 192
May 26-July 29, 2004	Launch S1212	Yamaha 150-hp, four-stroke outboard motors	Innerspace 455, S/N 192
July 30-August 3, 2004	Launch S3003	Honda 150-hp, four-stroke outboard motors	Innerspace 455, S/N 194
August 4-August 24, 2004	Launch S3003	Honda 150-hp, four-stroke outboard motors	Innerspace 455, S/N 192
August 25, 2004-Current	Launch S1212	Yamaha outboards with hull Extension	Innerspace 455, S/N 192

Vessel configuration details and offset measurements are included in Appendix III* of this report.

* *Filed with the field digital data.*

The echosounder records both analog and digital data which may be acquired in feet, fathoms or meters. The unit has a beam width of eight degrees and an optional beam width of three degrees. Soundings were acquired in meters with an assumed speed of sound through water of 1500 m/sec. During data collection the analog screens were continuously captured and stored on an external zip drive for reference during digital data processing.

Sounding lines were run at spacing sufficient to define major contours. Line spacing was reduced over shoal areas and for contact development.

Lead line checks were performed periodically throughout the project to verify fathometer accuracy.

Coastal Oceanographic's Hypack Max Gold software was used for vessel navigation and line tracking during hydrographic data acquisition. Hypack was also used to log VBES data in "raw" format and to record detached positions in the form of .tgt files.

2. Side Scan Sonar (SSS)

Each vessel is also equipped with a Klein 3000 sonar system. The system includes:

- Dual frequency (100 kHz, 500 kHz) towfish with 300 PSI pressure sensor
- Transceiver Processing Unit (TPU)
- Workstation Display and Control Unit (WDCU)
- Thirty-five meters of Kevlar reinforced tow cable
- SonarPro software and VX Works TPU operating system

The horizontal beam widths for the low and high frequencies are 1° and 2°, respectively; vertical beam width is 40°. Maximum low-frequency range scale for the Klein 3000 is 500 meters; at high frequency maximum range scale is 150 meters. The high-frequency data were recorded and stored in the data base; the low frequency image is observed during data collection but not converted separately.

A range scale of 100 meters was maintained except in very deep water or during development of submerged obstructions when the scale was reduced to 75 or 50 meters. The towfish height above the bottom was maintained at 8 to 20 percent of the range scale whenever possible. Exceptions occur in very

shallow areas or in areas where rapidly changing terrain raises the risk of hitting the towfish on the bottom.

Side scan sonar lines were spaced according to the range scale appropriate for water depth to assure overlap of at least 25 meters and to assure 200% coverage.

Vessel speed was maintained at or below five knots to ensure that an object one meter square could be detected across the sonar swath. Confidence checks were performed by observing the outer edges of the sonargram while moving alongside pier faces or known submerged targets.

Sonar images of visible objects or known submerged objects (such as buoy blocks), were captured during data acquisition using the program SnagIt. Identification of these images before and during processing helped to avoid selection of these objects as side scan contacts to be investigated.

All SSS data collection was controlled with SonarPro software operating in a Microsoft Windows 2000 environment on the WDCU. Control signals were sent to the towfish and data were returned from the towfish via the TPU; the sonar data was recorded digitally and stored on the WDCU in the Klein SDF format.

Vessels S1212 and S3003 are equipped with a Dynapar cable counter, which logs to the WDCU via the Hypack delph signal the length of deployed towfish cable. The measurements are made by counting revolutions of the towing block on the J-frame. Before each use, the cable counter was calibrated by adjusting the readout to reflect the measured marking on the towfish cable at the tow point.

3. Diver Least-Depth Gauge

Not applicable

Positioning Equipment:

1. Survey Launches S1212 and S3003

Each launch is equipped with a Trimble DSM212L integrated 12-channel GPS receiver and a dual-channel DGPS beacon receiver. The beacon receiver can simultaneously monitor two independent U.S. Coast Guard (USCG) DGPS beacons. There are three modes: Auto-Range, which locks onto the beacon nearest the vessel; Auto-Power, which locks onto the beacon with the greatest signal strength; and Manual, which allows the user to select the desired beacon. Additionally, the DSM212L can accept differential correctors (RTCM messages) from an external source such as a user-established DGPS reference station.

The following parameters were monitored in real-time through Trimble's TSIP Talker software to ensure position data quality: 1) number of satellites used in the solution, 2) horizontal dilution of precision (HDOP), 3) latency of correctors, and 4) beacon signal strength. The DSM212L was configured to the auto-range mode, to go off-line if the age of DGPS correctors exceeded 20 seconds, and to exclude satellites with an altitude below 8 degrees.

2. Trimble Backpack Unit

A Trimble backpack unit was used to collect DGPS data on fixed aids to navigation, high water features and natural shoreline. The unit consists of the following:

- Pro XRS 12-channel DGPS receiver
- Combined L1 GPS/Beacon/Satellite Differential Antenna
- TSCe data logger with Windows CE operating system

The ProXRS receiver was set to collect data using the following restrictions:

Minimum No. of satellites:	5
Maximum PDOP:	6
Minimum SNR:	4
Minimum Satellite elevation:	15 degrees

Position data were collected at one-second intervals; periods of collection varied as follows:

Major fixed aids to navigation:	3 to 5 minutes
Range lights:	5 minutes
Private fixed aids	5 to 30 seconds
Shoreline construction	1 second point data or line data

Trimble's TerraSync software was used on the Trimble TSCe data logger to collect DGPS data in the field. A data dictionary created by NRT3 was used in the collection process to categorize and add metadata to features. Features were collected under one of three categories: fixed aids, point data, or line data. A copy of the data dictionary is included in Appendix IV. *Filed with the field digital data.*

Trimble's Pathfinder Office software was used to download and convert data from the data logger, and to verify that individual points and lines met accuracy standards. Positions on major features with standard deviations greater than 0.075 meters were rejected.

B. DATA PROCESSING AND QUALITY CONTROL

Single-Beam Echosounder Data

Following acquisition, single-beam echosounder data were converted from HYPACK to the CARIS HDCS format using the CARIS HIPS conversion wizard. SBES navigation data were checked using CARIS HIPS attitude and navigation editors. Navigation fliers were rejected and the depths either interpolated between good navigation points or rejected. Depths were then edited in the single beam editor by comparing the digital record with screen captures from the echosounder. The digital record was edited to ensure that peaks of shoals and abrupt changes in slope were properly digitized by the echosounder.

Side Scan Sonar Data:

Following acquisition, SSS data were also converted to the CARIS HDCS format using the CARIS HIPS conversion wizard, then reviewed with the attitude and navigation editors in the same manner as the SBES data. Using the CARIS SSS Editor, fish height was recomputed (if necessary) and the data were slant-range corrected. Sonargrams were then examined and significant contacts (shadow height of 1.0 meters or greater) selected for further development. The chosen contacts were exported to Mapinfo, where the HYDRO-MI program was used to generate target and line files to be used in Hypack. Five-meter line spacing was employed to develop the SSS contacts using SBES.

Processing Software:

CARIS HIPS SIPS NT software was used to convert and edit VBES/SSS data, apply vertical and horizontal correctors, and analyze VBES/SSS data and detached positions.

NOAA's Pydro software supplied by the Hydrographic Systems and Technology Program (HSTP) was used for analyzing VBES data and SSS contacts, processing and editing detached positions, excessing data, and creating preliminary smooth sheet (PSS) files.

HSTP's HydroMI Mapbasic program was used in combination with Mapinfo software for creating Hypack line and target files, creating CARIS tide files, drawing tracks, and drawing the PSS file created by Pydro.

Mapinfo software was used to plan survey operations, analyze collected hydrographic and Trimble backpack data, and create final survey plots.

Sound velocity profiles were computed from raw pressure, temperature, and conductivity measurements using HSTP's Velocity Program for Windows (VelocWin), 8.50.

A complete list of software and versions is included in Appendix I. *

Data processing flow diagrams are included in Appendix II. *

C. CORRECTIONS TO ECHO SOUNDINGS

Sound Velocity

The speed of sound through the water was determined by periodic sound velocity casts conducted in accordance with the NOS Hydrographic Surveys Specifications and Deliverables Manual

Corrections for speed of sound through the water column were computed from data obtained with a Seacat conductivity, temperature and depth profiler, model SBE-19, except for DNs 171 and 187, when an Odom Digibar Pro was used. NOAA's VELOCWIN software was used to process all casts and generate sound velocity profiles for CARIS. Sound velocity correctors were applied using the 'nearest in time' sound velocity cast.

Calibration reports for the SBE-19 profiler and the Odom Digibar are included in Appendix IV* of this report. Dates and locations of the sound velocity casts are included in Section C of each survey's descriptive report.

Vessel Offsets and Dynamic Draft Correctors

Static Draft

Static draft measurements for Launch S1212 were calculated on three occasions: 1) January 29, 2001 (DN 029) with Evinrude-Johnson motors; 2) June 15, 2004 (DN 177) with Yamaha motors; and 3) October 4, 2004 (DN 278) with the modified hull.

* *Filed with the field digital data.*

In each case, the following procedure was employed: First, the depth of the transducer face from a reference mark on the hull was measured. Next, with the launch in the water, fuel tanks half full and two persons aboard, the depth from this reference mark to the waterline was measured. Combining the two measurements, a static draft of 0.4 meters was calculated.

Dynamic Draft

Settlement and squat measurements for VN S1212 were calculated on three occasions: 1) January 30, 2001 (*DN 030*) in San Diego Bay with Evinrude-Johnson motors; 2) June 15, 2004 (*DN 177*) in Grays Harbor's Hoquiam Reach with Yamaha motors; and 3) October 4, 2004 (*DN 278*) in Grays Harbor near Ocean Shores with the modified hull. Field records are included in Appendix V.*

Transducer and antenna offsets, static draft, and dynamic draft correctors were incorporated into the 'vessel config' files, and applied during the merge process in CARIS. Values for offsets and dynamic draft data are included in Appendix III.*

Tide Correctors

The operating National Water Level Observation Network (NWLON) station at Toke Point, WA (944-0910) served as datum control for the survey area. Additionally, in compliance with Section 5 of Project Instructions (revised April 23, 2004), a supplemental tide station was established on February 18, 2004, at the historical site shown below:

Station Number	Station Name	Latitude	Longitude
944-1187	Aberdeen, WA	46° 58.1' N	123° 51.2' W

Verified, six-minute water levels relative to Mean Lower Low Water were downloaded from the NOAA, NOS, Center for Operational Oceanographic Products and Services (CO-OPS) web site: (www.http://co-ops.nos.noaa.gov/data_res.html). These were imported into a text file on a local computer and appended to the CARIS tide file, 9441187.tid.

There are 14 tide zones within the project limits. The tide corrector values, referenced to the tide station at Aberdeen, are provided in the zoning file *N914NRBCORP_rev5.zdf* which is included with the project data.

Using CARIS HIPS, the tide data were loaded, soundings were sorted into the appropriate zone, time and height adjustments were computed and corrected tides were applied to sounding data. These correctors are included in Appendix IV.*

Finally, the CARIS "merge" utility applies tide, draft, dynamic draft, and vessel offset correctors and creates the depth file used by Pydro.

* *Filed with the field digital data.*

Data Decimation and Field Sheet Production

All soundings were combined in the appropriate HDCS project. To produce the Final Field Sheet, all non-rejected soundings that passed all other quality-assurance checks were imported into a Pydro Preliminary Smooth Sheet (PSS) file using shoal-biased “line-by-line” binning and a cell size of 1.5 millimeters at the scale of the survey. For this 1:10,000 scale survey, data were imported using a 15 meter cell size. The resultant thinned data were then excessed in Pydro using a 3-millimeter character size, which ensures that the largest spacing between selected soundings does not exceed 5 millimeters at survey scale. Final selected soundings were exported to Mapinfo. Digital terrain models (DTMs) of sounding data created by Vertical Mapper in Mapinfo help to expose potential hazards as well as depth errors and systematic errors.

D. APPROVAL

As Chief of Party, I have ensured that standard field surveying and processing procedures were used during this project in accordance with the Hydrographic Manual, Fourth Edition; Hydrographic Survey Guidelines; Field Procedures Manual, and the NOS Hydrographic Surveys Specifications and Deliverables Manual, as updated for 2004.

I acknowledge that all of the information contained in this report is complete and accurate to the best of my knowledge.

Approved and Forwarded:

Kathryn Simmons
Navigation Response Team 3

Danger to Navigation Report

Hydrographic Survey Registry Number: H-11282

Survey Title: State: Washington
Locality: Grays Harbor
Sub-locality: Entrance to Grays Harbor

Project Number: OPR-N438-NRB

Survey Dates: March 1, 2004 - November 3, 2004

Depths are reduced to Mean Lower Low Water using verified tides.
Positions are based on the NAD83 horizontal datum.

CHARTS AFFECTED:

<u>Chart</u>	<u>Scale</u>	<u>Edition</u>	<u>Date</u>
18502_1	1:40,000	84th	June 2002

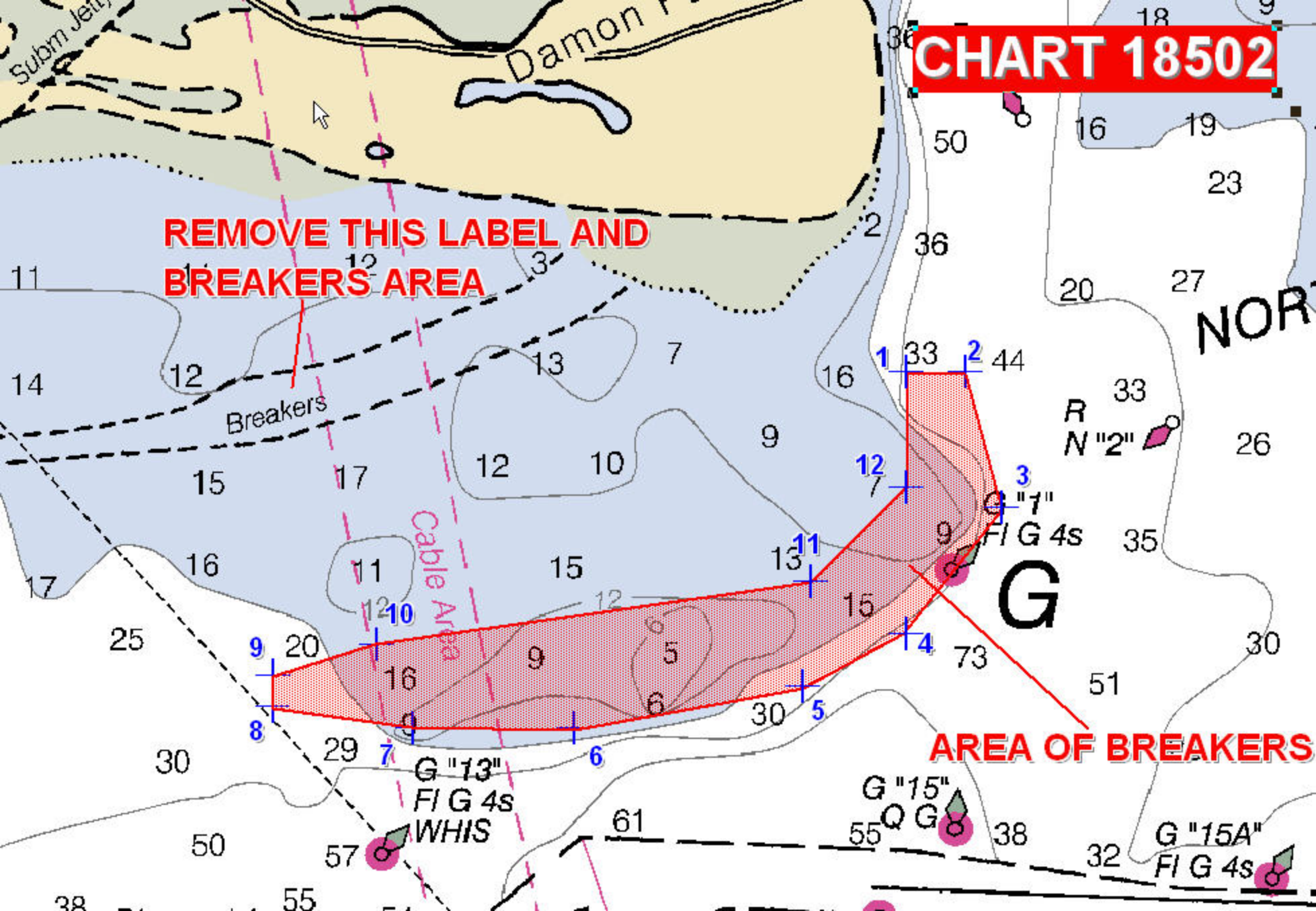
DANGERS: Revise position line of breakers charted from latitude 46:55:57N, longitude 124:08:41W to latitude 46:56:15N, ~~latitude~~ *longitude* 124:06:57. Chart along line defined by following new soundings. *See the Evaluation Report for additional charting recommendations.*

<u>Sounding</u>	<u>Latitude</u>	<u>Longitude</u>
8	46:55:37.675	124:07:37.762
6	46:55:38.417	124:07:18.905
2	46:55:39.164	124:06:50.513
10	46:55:48.779	124:06:13.410
7	46:56:01.153	124:06:04.264
3	46:56:06.982	124:06:17.519

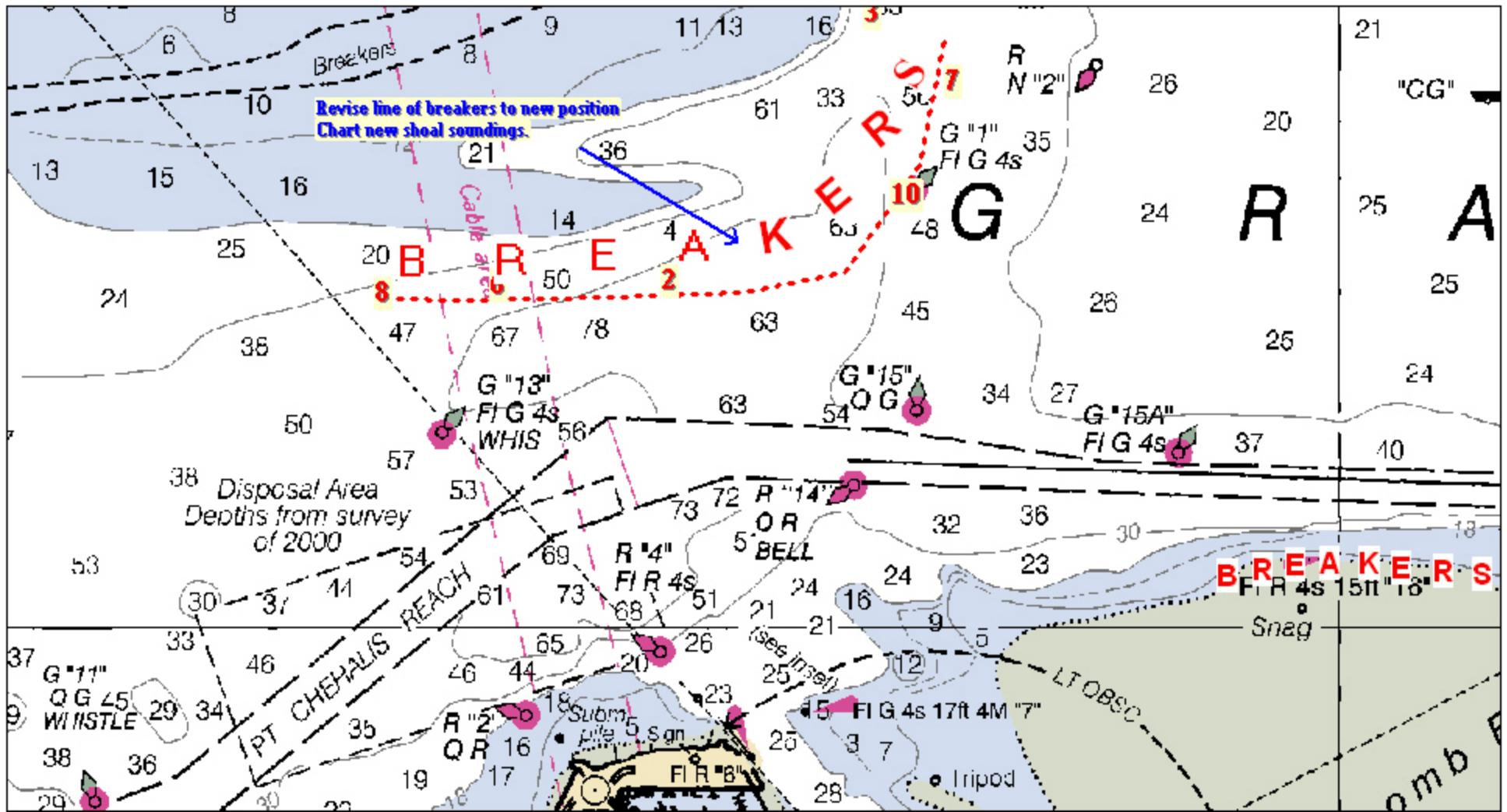
COMMENTS: Breakers also occur along the shoal charted at latitude 46:55:05N, longitude 124:05:03W as depicted on the attached graphic. *See also the Evaluation Report.*

CHART 18502

**REMOVE THIS LABEL AND
BREAKERS AREA**



AREA OF BREAKERS



Chartlet 1 of 1

Danger to Navigation 01

NOT FOR NAVIGATION.



NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

Project: S914-NRB-03
Survey: H-11282
State: Washington
Locality: Grays Harbor
Sub-locality: Entrance to Grays Harbor
Survey Scale: 1:10,000

Sounding Units: Feet
Sounding Datum: MLLW
Horizontal Datum: NAD 83
Projection: UTM 10
Central Meridian: 123° 00 00
Scale Factor: 0.9996

NOAA NRT-3
Kathryn Simmons
Team Leader

March 1 to
November 1, 2004

H11282 Features

Registry Number: H11282
State: Washington
Locality: Grays Harbor
Sub-locality: Entrance to Grays Harbor
Project Number: OPR S-N914-NRT3-04
Survey Dates: 03/01/4 - 10/04/2004

Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Pile	-0.69 m	046° 56' 18.405" N	124° 02' 54.227" W	---
1.2	Sounding	-1.42 m	046° 53' 25.894" N	124° 05' 05.839" W	---
1.3	Dolphin	-6.08 m	046° 57' 00.583" N	124° 06' 39.336" W	---
1.4	Sounding	-2.66 m	046° 56' 59.553" N	124° 06' 57.810" W	<i>Delete</i>
1.5	Dolphin	-5.67 m	046° 56' 55.647" N	124° 06' 56.652" W	---
1.6	Dolphin	-5.69 m	046° 56' 59.571" N	124° 06' 57.503" W	---
1.7	Pile	-4.43 m	046° 56' 58.504" N	124° 07' 37.906" W	---
1.8	Dolphin	-7.45 m	046° 56' 57.626" N	124° 07' 36.525" W	---
1.9	Pile	-5.96 m	046° 56' 57.862" N	124° 07' 19.032" W	---
1.10	Sounding	-2.46 m	046° 56' 59.674" N	124° 07' 17.054" W	---
1.11	Pile	-2.15 m	046° 56' 16.680" N	124° 03' 16.277" W	---
1.12	Pile	-6.04 m	046° 54' 43.922" N	124° 06' 35.450" W	---
1.13	Sounding	-2.21 m	046° 56' 59.944" N	124° 06' 56.813" W	---
1.14	Sounding	-3.39 m	046° 56' 20.168" N	124° 02' 54.960" W	---
1.15	Sounding	1.38 m	046° 55' 06.756" N	124° 03' 27.240" W	---

1 - Tree

1.1) Profile/Beam - 1/1 from h11282 / 1212dpones / 04-061 / dp01mar

Survey Summary

Survey Position: 046° 56' 18.405" N, 124° 02' 54.227" W
Least Depth: -0.69 m
Timestamp: 04-061.23:37:28.000 (03/01/0004)
DP Dataset: h11282 / 1212dpones / 04-061 / dp01mar
Profile/Beam: 1/1
Charts Affected: [no CHAPP data available]

Remarks:

Pile ruins - possibly remnants of charted dredge range

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11282/1212dpones/04-061/dp01mar	1/1	0.00	000.0	Primary

Hydrographer Recommendations

Delete charted dredge range; chart pile ruins

S-57 Data

Geo object 1: Pile (PILPNT)
Attributes: CATPLE - 3:post
 CONDTN - 2:ruined
 CONVIS - 2:not visual conspicuous
 HEIGHT - 0.69 m
 INFORM - pile

Office Notes

Concur. Delete charted dredge pile symbol in 46°56'17.56"N, 124°02'53.60"W". Add visible piles in 46°56'18.41"N, 124°02'54.23"W

1.2) Profile/Beam - 1/1 from h11282 / 1212dpnones / 2004-070 / 031004dp

Survey Summary

Survey Position: 046° 53' 25.894" N, 124° 05' 05.839" W
Least Depth: -1.42 m
Timestamp: 2004-070.20:18:26.000 (03/10/2004)
DP Dataset: h11282 / 1212dpnones / 2004-070 / 031004dp
Profile/Beam: 1/1
Charts Affected: [no CHAPP data available]

Remarks:

Charted pile - in ruins.

Hydrographer Recommendations

Retain charted pile.

S-57 Data

[None]

Office Notes

Concur. The hydrographer located one of three piles in 46°53'25.894"N, -124°05'05.839"W. Retain the three charted piling.

1.3) Profile/Beam - 1/1 from h11282 / 1212dpones / 04-274 / 09302004dps

Survey Summary

Survey Position: 046° 57' 00.583" N, 124° 06' 39.336" W
Least Depth: -6.08 m
Timestamp: 04-274.19:09:51.000 (09/30/0004)
DP Dataset: h11282 / 1212dpones / 04-274 / 09302004dps
Profile/Beam: 1/1
Charts Affected: [no CHAPP data available]

Remarks:

Uncharted two-pile dol

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11282/1212dpones/04-274/09302004dps	1/1	0.00	000.0	Primary

Hydrographer Recommendations

Chart new dol.

S-57 Data

Geo object 1: Pile (PILPNT)
Attributes: CATPLE - 4:tripodal
 CONVIS - 1:visual conspicuous
 HEIGHT - 6.08 m
 INFORM - dol

Office Notes

Concur. Chart as a visible Marker in 46°57'00.583"N, -124°06'39.336"W.

1.5) Profile/Beam - 3/1 from h11282 / 1212dpones / 04-274 / 09302004dps

Survey Summary

Survey Position: 046° 56' 55.647" N, 124° 06' 56.652" W
Least Depth: -5.67 m
Timestamp: 2004-274.20:21:38.000 (09/30/2004)
DP Dataset: h11282 / 1212dpones / 04-274 / 09302004dps
Profile/Beam: 3/1
Charts Affected: [no CHAPP data available]

Remarks:

Dol at location of charted marker

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11282/1212dpones/04-274/09302004dps	3/1	0.00	000.0	Primary

Hydrographer Recommendations

Delete marker notation. Revise position charted pile symbol.

S-57 Data

Geo object 1: Pile (PILPNT)
Attributes: CATPLE - 4:tripodal
 CONVIS - 1:visual conspicuous
 HEIGHT - 5.67 m
 INFORM - dol

Office Notes

Do not concur. Retain the visible marker as charted.

1.6) Profile/Beam - 4/1 from h11282 / 1212dpnones / 04-274 / 09302004dps

Survey Summary

Survey Position: 046° 56' 59.571" N, 124° 06' 57.503" W
Least Depth: -5.69 m
Timestamp: 2004-274.20:24:23.000 (09/30/2004)
DP Dataset: h11282 / 1212dpnones / 04-274 / 09302004dps
Profile/Beam: 4/1
Charts Affected: [no CHAPP data available]

Remarks:

Dol at location of charted marker.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11282/1212dpnones/04-274/09302004dps	4/1	0.00	000.0	Primary

Hydrographer Recommendations

Delete Marker notation. Chart dol at surveyed position.

S-57 Data

Geo object 1: Pile (PILPNT)
Attributes: CATPLE - 4:tripodal
 CONVIS - 1:visual conspicuous
 HEIGHT - 5.69 m
 INFORM - dol

Office Notes

Do not concur. Retain the visible marker and notation Markers as charted.

1.7) Profile/Beam - 1/1 from h11282 / 1212dpones / 2004-278 / 10042004dps

Survey Summary

Survey Position: 046° 56' 58.504" N, 124° 07' 37.906" W
Least Depth: -4.43 m
Timestamp: 2004-278.22:59:39.000 (10/04/2004)
DP Dataset: h11282 / 1212dpones / 2004-278 / 10042004dps
Profile/Beam: 1/1
Charts Affected: [no CHAPP data available]

Remarks:

Pile near entrance channel

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11282/1212dpones/2004-278/10042004dps	1/1	0.00	000.0	Primary

Hydrographer Recommendations

Delete charted marker and "Markers (lighted)" notation. Chart pile.

S-57 Data

Geo object 1: Pile (PILPNT)
Attributes: CATPLE - 3:post
CONVIS - 1:visual conspicuous
HEIGHT - 4.43 m
INFORM - pile

Office Notes

Concur in part. Chart a pile in 46°56'58.504"N, -124°07'37.906"W.

1.8) Profile/Beam - 2/1 from h11282 / 1212dpones / 2004-278 / 10042004dps

Survey Summary

Survey Position: 046° 56' 57.626" N, 124° 07' 36.525" W
Least Depth: -7.45 m
Timestamp: 2004-278.23:21:35.000 (10/04/2004)
DP Dataset: h11282 / 1212dpones / 2004-278 / 10042004dps
Profile/Beam: 2/1
Charts Affected: [no CHAPP data available]

Remarks:

Dol w/platform for day marker - not in use

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11282/1212dpones/2004-278/10042004dps	2/1	0.00	000.0	Primary

Hydrographer Recommendations

Delete charted marker and "Markers (lighted)" notation. Chart dol.

S-57 Data

Geo object 1: Pile (PILPNT)
Attributes: CATPLE - 4:tripodal
 CONVIS - 1:visual conspicuous
 HEIGHT - 7.45 m
 INFORM - Dolphin

Office Notes

Concur in part. Retain marker as charted. Revise notation Markers (lighted) to Marker.

1.9) Profile/Beam - 3/1 from h11282 / 1212dpones / 2004-278 / 10042004dps

Survey Summary

Survey Position: 046° 56' 57.862" N, 124° 07' 19.032" W
Least Depth: -5.96 m
Timestamp: 2004-278.23:24:30.000 (10/04/2004)
DP Dataset: h11282 / 1212dpones / 2004-278 / 10042004dps
Profile/Beam: 3/1
Charts Affected: [no CHAPP data available]

Remarks:

Revised position. Pile marking entrance channel to marina - not lighted

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11282/1212dpones/2004-278/10042004dps	3/1	0.00	000.0	Primary

Hydrographer Recommendations

Revise position charted pile; delete marker notation

S-57 Data

Geo object 1: Pile (PILPNT)
Attributes: CATPLE - 3:post
 CONVIS - 1:visual conspicuous
 HEIGHT - 5.96 m
 INFORM - Pile

Office Notes

Concur in part. Add marker symbol in 46°56'57.862"N, -124°07'19.032"W and notation Marker.

1.10) Profile/Beam - 4/1 from h11282 / 1212dpones / 2004-278 / 10042004dps

Survey Summary

Survey Position: 046° 56' 59.674" N, 124° 07' 17.054" W
Least Depth: -2.46 m
Timestamp: 2004-278.23:27:09.000 (10/04/2004)
DP Dataset: h11282 / 1212dpones / 2004-278 / 10042004dps
Profile/Beam: 4/1
Charts Affected: [no CHAPP data available]

Remarks:

Disproval charted position lighted marker

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11282/1212dpones/2004-278/10042004dps	4/1	0.00	000.0	Primary

Hydrographer Recommendations

Delete charted marker. Chart at revised location. See DP153.

S-57 Data

[None]

Office Notes

Concur. Delete charted Marker in 46°56'59.674"N, -124°07'17.054"W.

1.11) Profile/Beam - 1/1 from h11282 / 3003dpones / 2004-231 / 08182004dps

Survey Summary

Survey Position: 046° 56' 16.680" N, 124° 03' 16.277" W
Least Depth: -2.15 m
Timestamp: 2004-231.19:50:24.000 (08/18/2004)
DP Dataset: h11282 / 3003dpones / 2004-231 / 08182004dps
Profile/Beam: 1/1
Charts Affected: [no CHAPP data available]

Remarks:

Dol Ruins. Remnants of charted dredge range.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11282/3003dpones/2004-231/08182004dps	1/1	0.00	000.0	Primary

Hydrographer Recommendations

Delete charted dredge range and Pile notation. Chart dol ruins.

S-57 Data

Geo object 1: Pile (PILPNT)
Attributes: CATPLE - 4:tripodal
 CONDTN - 2:ruined
 CONVIS - 1:visual conspicuous
 HEIGHT - 2.15 m
 INFORM - pile ruins
 OBJNAM - pile

Office Notes

Concur in part. Delete the charted dredge pile in 46°56'18.805"N, -124°03'11.680"W. Add a pile symbol and the notation piles in 46°56'16.680"N, -124°03'16.277"W.

1.12) Profile/Beam - 1/1 from h11282 / 3003dpones / 2004-216 / 08032004dp

Survey Summary

Survey Position: 046° 54' 43.922" N, 124° 06' 35.450" W
Least Depth: -6.04 m
Timestamp: 2004-216.20:12:26.000 (08/03/2004)
DP Dataset: h11282 / 3003dpones / 2004-216 / 08032004dp
Profile/Beam: 1/1
Charts Affected: [no CHAPP data available]

Remarks:

Center 2 uncharted piles; 6ft apart

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11282/3003dpones/2004-216/08032004dp	1/1	0.00	000.0	Primary

Hydrographer Recommendations

Chart new piles.

S-57 Data

Geo object 1: Pile (PILPNT)
Attributes: CATPLE - 3:post
 CONVIS - 1:visual conspicuous
 HEIGHT - 6.04 m
 INFORM - Two piles
 OBJNAM - piles

Office Notes

Concur. Chart two piles centered in 46°54'43.922"N, -124°06'35.450"W.

1.13) Profile/Beam - 1/1 from h11282 / 1212dpnones / 4-274 / 09302004dps

Survey Summary

Survey Position: 046° 56' 59.944" N, 124° 06' 56.813" W
Least Depth: -2.21 m
Timestamp: 4-274.20:13:00.000 (09/30/0004)
DP Dataset: h11282 / 1212dpnones / 4-274 / 09302004dps
Profile/Beam: 1/1
Charts Affected: [no CHAPP data available]

Remarks:

Disproval Charted marker

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11282/1212dpnones/4-274/09302004dps	1/1	0.00	000.0	Primary

Hydrographer Recommendations

Delete charted marker and "Markers" notation.

S-57 Data

[None]

Office Notes

Do not concur. Marker previously located. See feature 1.6), page 8.

1.14) Profile/Beam - 1/1 from h11282 / 3003dpones / 2004-231 / 08182004dps

Survey Summary

Survey Position: 046° 56' 20.168" N, 124° 02' 54.960" W
Least Depth: -3.39 m
Timestamp: 2004-231.19:02:37.000 (08/18/2004)
DP Dataset: h11282 / 3003dpones / 2004-231 / 08182004dps
Profile/Beam: 1/1
Charts Affected: [no CHAPP data available]

Remarks:

Disproval charted dredge range.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11282/3003dpones/2004-231/08182004dps	1/1	0.00	000.0	Primary

Hydrographer Recommendations

Delete charted dredge range

S-57 Data

Geo object 1: Pile (PILPNT)
Attributes: CATPLE - 3:post
 OBJNAM - pile dredge

Office Notes

Concur. Delete charted dredge range symbol in Lat 46°56'20.65"N, Long 124°02'55.30"W.

1.15) Profile/Beam - 1912/1 from h11282 / 3003sb / 2004-231 / 015_2023

Survey Summary

Survey Position: 046° 55' 06.756" N, 124° 03' 27.240" W
Least Depth: 1.38 m
Timestamp: 2004-231.21:28:01.534 (08/18/2004)
Survey Line: h11282 / 3003sb / 2004-231 / 015_2023
Profile/Beam: 1912/1
Charts Affected: [no CHAPP data available]

Remarks:

Obstruction found during office processing.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11282/3003sb/2004-231/015_2023	1912/1	0.00	000.0	Primary

Hydrographer Recommendations

Chart a dangerous 4-ft obstruction.

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: OBJNAM - Obstruction
 QUASOU - 2:depth unknown
 TECSOU - 1:found by echo-sounder
 VALSOU - 1.376 m
 VERDAT - 2:Mean lower low water springs

Office Notes

Concur. Chart a dangerous obstruction with a depth of 4 feet (4 Obstn).



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : August 24, 2006

HYDROGRAPHIC BRANCH: Pacific Hydrographic Branch
HYDROGRAPHIC PROJECT: S-N914-NRT3-2004
HYDROGRAPHIC SHEET: H11282_Rev

LOCALITY: Entrance to Grays Harbor, WA
TIME PERIOD: March 3-November 3, 2004; July 6, 2005

TIDE STATION USED: 944-0910 Toke Point, WA
Lat. 46 42.5' N Long. 123 58.0' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.493 meters

TIDE STATION USED: 944-1187 Aberdeen, WA
Lat. 46 58.1' N Long. 123 51.3' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.869 meters

REMARKS: RECOMMENDED ZONING

Use zone(s) identified as: GH1, GH2, GH3, GH4, GH5, GH6, & PAC212A

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time on the 1983-2001 National Tidal Datum Epoch (NTDE).

For 

CHIEF, PRODUCT AND SERVICES DIVISION



**ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H11282 (2004-05)**

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 EQUIPMENT

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

Hydrographic Processing System
MicroStation J, version 07.01.04.16
I/RAS B, version 07.01.000.18
MapInfo, version 8.0
CARIS HIPS/SIPS 6.0
PYDRO, version 6.8.0

The smooth sheet was plotted using a Hewlett Packard DesignJet 2500CP plotter.

C. VERTICAL AND HORIZONTAL CONTROL

C1. Tides and Water Levels

A request for Approved Tides was sent to N/OPS1 on August 24, 2005.

Approved tides were applied during office processing.

C2. Horizontal Control

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD83), UTM Zone 10N. Office processing of this survey is based on these values.

D. RESULTS AND RECOMMENDATIONS

D1. Chart Comparison 18502 (85th Ed. Jun 04)

The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes a chart comparison in section D1 of the Descriptive Report. The following should be noted:

1. In order to maintain harmony with the descendants of Captain Robert Gray, the American explorer for whom the harbor was named, it is recommended that the charted geographic name **GR S HARBOR** be revised to **GRAYS HARBOR**. 🤦 Oops!

2. Major changes have occurred in and around the area of Whitcomb Flats. Junction areas of the present survey do not adequately define the sounding datum line specifically in the vicinities of Latitude 46°55'00.00"N, Longitude 124°02'25.00"W and Latitude 46°54'090.00"N, Longitude 124°04'30.00"W. It is recommended that charting disposition for these areas be deferred to Marine Charting Division (MCD).

3. The charted Disposal Area in the vicinity of Latitude 46°54'28.61"N, Longitude 124°09'10.00"W was developed by the hydrographer. It is recommended that the charted note, *Disposal Area Depths from survey of 2003*, be revised to *Disposal Area Depths from survey of 2004-05*.

4. The charted Disposal Area in the vicinity of Latitude 46°55'00.00"N, Longitude 124°07'25.00"W was developed by the hydrographer. It is recommended that the charted note, *Disposal Area Depths from survey of 2002*, be revised to *Disposal Area Depths from survey of 2004-05*.

5. The charted name ENTRANCE RANGE in Latitude 46°54'37.00"N, Longitude 124°10'30.00"W should be revised to ENTRANCE CHANNEL in accordance with the name in the charted tabulation unless other information indicates otherwise.

6. A conflict exists with the charted controlling depth along the right outside quarter of PT CHEHALIS REACH in the vicinity of Latitude 46°54'33.00"N, Longitude 124°08'17.00"W. The present survey shows shoaling of 27 to 33 feet in charted controlling depths of 34 feet.

7. The charted Marker in Latitude 46°57'04.52"N, Longitude 124°06'35.84"W is not considered verified or disproved by the present survey. It is recommended that the marker be retained unless other information indicates otherwise.

8. It is recommended that the charted notation 12 ft rep 1966 in Latitude 46°57'00.00"N, Longitude 124°07'40.40"W be deleted from the chart unless other information indicates

otherwise.

9. The following charted features were neither verified nor disproved by the present survey.

Feature	Latitude (N)	Longitude (W)
Marker	46°56'52.75"	124°06'24.50"
Pile	46°56'31.50"	124°04'50.95"
Pile	46°55'09.41"	124°02'51.35"
Pile	46°55'07.14"	124°03'42.29"
Snag	46°55'02.59"	124°05'05.93"
Tripod	46°54'43.10"	124°06'06.34"

It is recommended that these features be retained as charted.

10. It is recommended that the approximate shoreline at Westhaven Cove in the vicinity of Latitude 46°54'37.00"N, Longitude 124°06'30.00"W be revised as shown on the H-Drawing unless other information indicates otherwise.

Dangers to Navigation

One Danger to Navigation Report was submitted by the hydrographer to the Marine Chart Division (MCD), Silver Spring, Maryland for inclusion in the Local Notice to Mariners. A copy of the report is appended the Descriptive Report. The following should be noted:

1. It is recommended that the charted note "Breakers" in Latitude 46°56'04.00"N, Longitude 124°07'42.00"W be deleted. It is also recommended that charted limit line for breakers from Latitude 46°55'59.00"N, Longitude 124°08'41.00"W to Latitude 46°56'18.00"N, Longitude 124°07'00.00"W be deleted.

2. It is recommended that the note "Breakers" located by the hydrographer be charted, centered at Latitude 46°55'43.40"N, Longitude 124°06'34.50"W. It is also recommended that the breaker limit lines be charted at the following positions:

	Latitude (N)	Longitude (W)
Add dashed lines joining 1.	46°56'08.00"	124°06'16.00"
to 2.	46°56'08.00"	124°06'08.00"
to 3.	46°56'02.00"	124°06'03.00"
to 4.	46°55'55.00"	124°06'03.00"
to 5.	46°55'43.00"	124°06'16.00"

H11282

to 6.	46°55'38.00"	124°06'30.00"
to 7.	46°55'34.00"	124°07'01.00"
to 8.	46°55'34.00"	124°07'23.00"
to 9.	46°55'36.00"	124°07'42.00"
to 10.	46°55'39.00"	124°07'42.00"
to 11.	46°55'42.00"	124°07'28.00"
to 12.	46°55'48.00"	124°06'29.00"
to 13.	46°55'57.00"	124°06'16.00"

Junctions

H11299 (2004-05) to the east

A standard junction has been effected between the present survey and survey H11299 (2004-05).

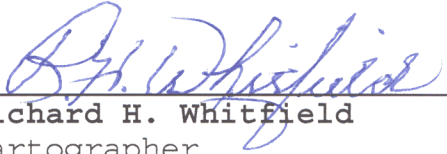
Adequacy of survey

This is an adequate hydrographic survey. Additional work is recommended to adequately delineate the low water datum within the areas of Whitcomb Flats and South Channel joining with the present survey.

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. The following NOS raster chart was used for compilation of the present survey:

18502 (85th Edition, Jun. /04)
Corrected through NM Jun. 5/04
Corrected through LNM May 18/04

A handwritten signature in blue ink, appearing to read "R.H. Whitfield", is written over a horizontal line.

Richard H. Whitfield
Cartographer
Verification of Field Data
Evaluation and Analysis

APPROVAL SHEET
H11282 (2004-05)

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disapproval of charted data. All revisions and additions made to the smooth sheet during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.



Date: 10/16/06

Norris A. Wike
Cartographer,
Atlantic Hydrographic Branch

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.



Approved: _____

Date: 10/17/06

P. Tod Schattgen
Lieutenant Commander, NOAA
Chief, Atlantic Hydrographic Branch

