H11639

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.

Registry No. H11639

LOCALITY

State California

General Locality San Francisco Bay

Sublocality Rincon Point to Treasure Island

2009

CHIEF OF PARTY
Eric M. Moore

LIBRARY & ARCHIVES

DATE

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

HYDROGRAPHIC TITLE SHEET

REGISTRY No

H11639

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: **N/A**

State California

General Locality Rincon Point to Treasure Island

Sub-Locality Northeast of Cape Thompson.

Scale 1:10,000 **Date of Survey** 10/21/2009 - 02/17/2010

Instructions dated 8/12/2009 **Project No.** OPR-L430-NRT6-09

Vessel NOAA Survey Launch S3003

Chief of party Eric M. Moore

Surveyed by Navigation Response Team Six Personnel

Soundings by Simrad EM3000 Multibeam Echosounder

SAR by Martha Herzog Compilation by Fernando Ortiz

Soundings compiled in Feet

REMARKS: All times are UTC. UTM Projection 10

The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. Revisions and end notes in red were generated during office processing.

Page numbering may be interrupted or non sequential.

All pertinent records for this survey, including the Descriptive Report, are archived at the National Geophysical Data Center (NGDC) and can be retrieved via http://www.ngdc.noaa.gov/.

Descriptive Report to accompany
HYDROGRAPHIC SURVEY H11639
PROJECT: OPR-L430-NRT6-09
Scale of Survey: 1:10,000
Year of Survey: 2009
NOAA Navigation Response Team 6
Eric Moore, Laura Pagano and Ed Wernicke

A. AREA SURVEYED

This survey was conducted in accordance with Hydrographic Survey Letter Instructions for Survey H11639, San Francisco Bay, CA. The original instructions are dated August 12, 2009. Data acquisition was conducted from October 21, 2009 through February 17, 2010.

Project Instructions specify complete coverage, which was achieved in most areas using 200% side scan sonar with concurrent multibeam. Coverage requirements for areas too shallow or close to shore for towing side scan sonar were not specified in the project instructions, so object detection multibeam was acquired in these areas not covered by side scan but seaward of the NALL line. Object detection coverage was acquired over all developments and AWOIS items.[1] Please see figures 4 and 5 for an image depicting object detection multibeam coverage.

Berkeley Marina and surrounding area were surveyed using only multibeam at a line spacing of 20m. This area was too shallow to tow side scan through (the majority of the area was < 4m), and it was deemed inefficient and by the Hydrographer in Charge to survey this non-critical area to complete multibeam coverage.[2] See Figure 6 for a DTM of the survey area.

The shoal at the northern end of Clipper Cove was very shallow, and differed significantly from the charted depths. A higher density of soundings was collected over this area at the request of a local marina, as under-keel clearance is critical to many small vessels transiting from the marina on the south side of the cove. Side scan was run over the area using a float-assisted towfish, and multibeam splits were

run between side scan lines to collect a higher density of soundings. Please see Figure 7 for an image of the bathymetry collected in Clipper Cove.

The area surrounding the Bay Bridge in the survey area was under heavy construction during the time of survey. A new Bay Bridge is being built adjacent to the old bridge, and the area contains many construction barges, cranes, and crew vessels. NRT6 obtained permission to transit the area and collect multibeam through the construction area. Side scan sonar was not towed through the area, as it was too congested for towfish operations. NRT6 recommends re-surveying this area when construction is finished.[3] Multibeam coverage underneath the Bay Bridge and new Bay Bridge construction zone may be seen in Figure 8.

See Table 1 and figures 1-8 below for acquisition totals, images of survey limits and data coverage.

Table 1: NOAA Survey Launch S3003 Acquisition Totals

Multibeam (mainscheme)	127 LNM
Side Scan Sonar 100% (mainscheme)	42 LNM
Side Scan Sonar 200% (mainscheme)	40 LNM
Crosslines	10.5 LNM
Development/Holidays	9 LNM
Square Nautical Miles	2.3 SNM

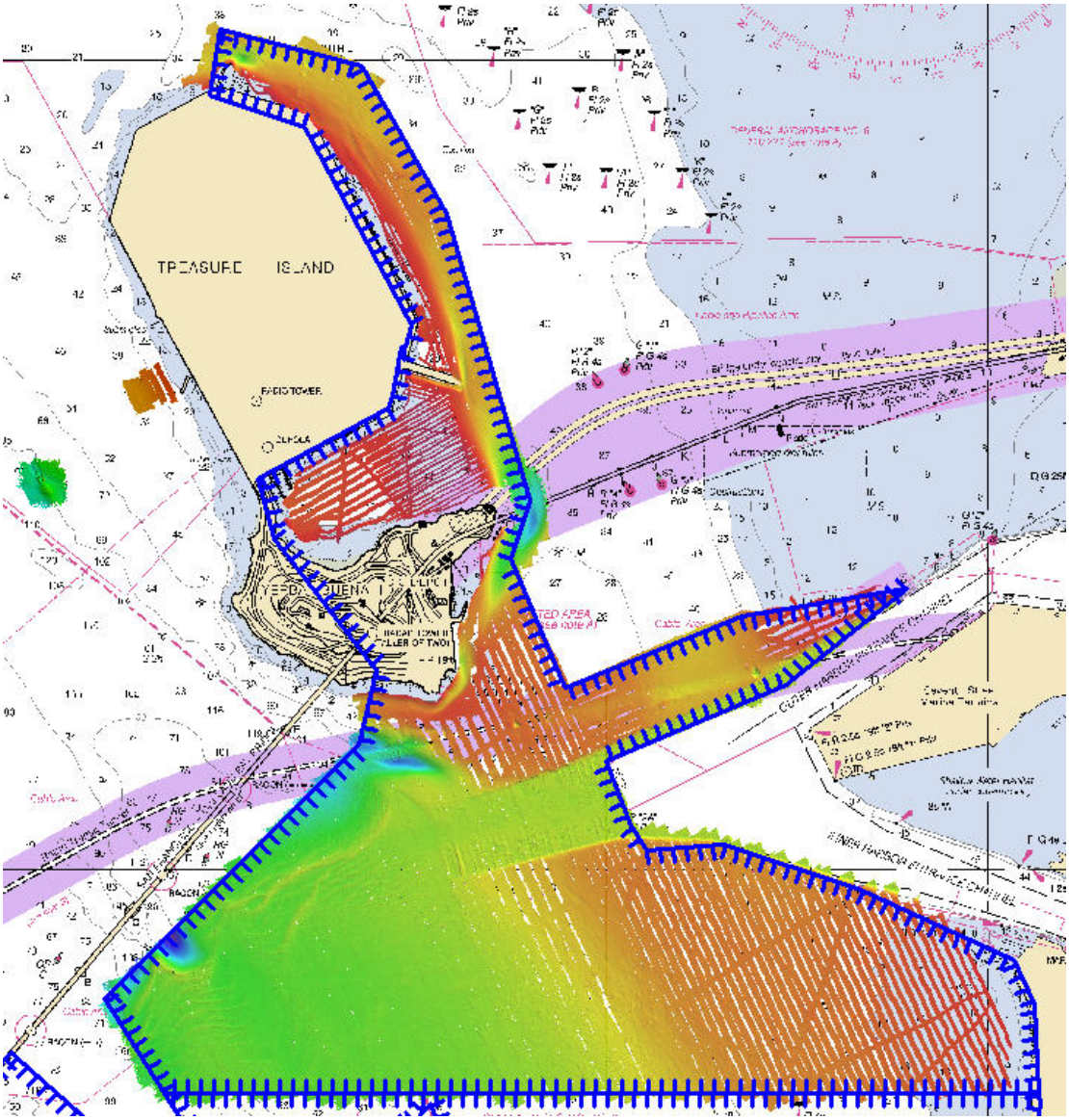

Figure 1: San Francisco Bay, Sheet B, multibeam sonar data coverage.

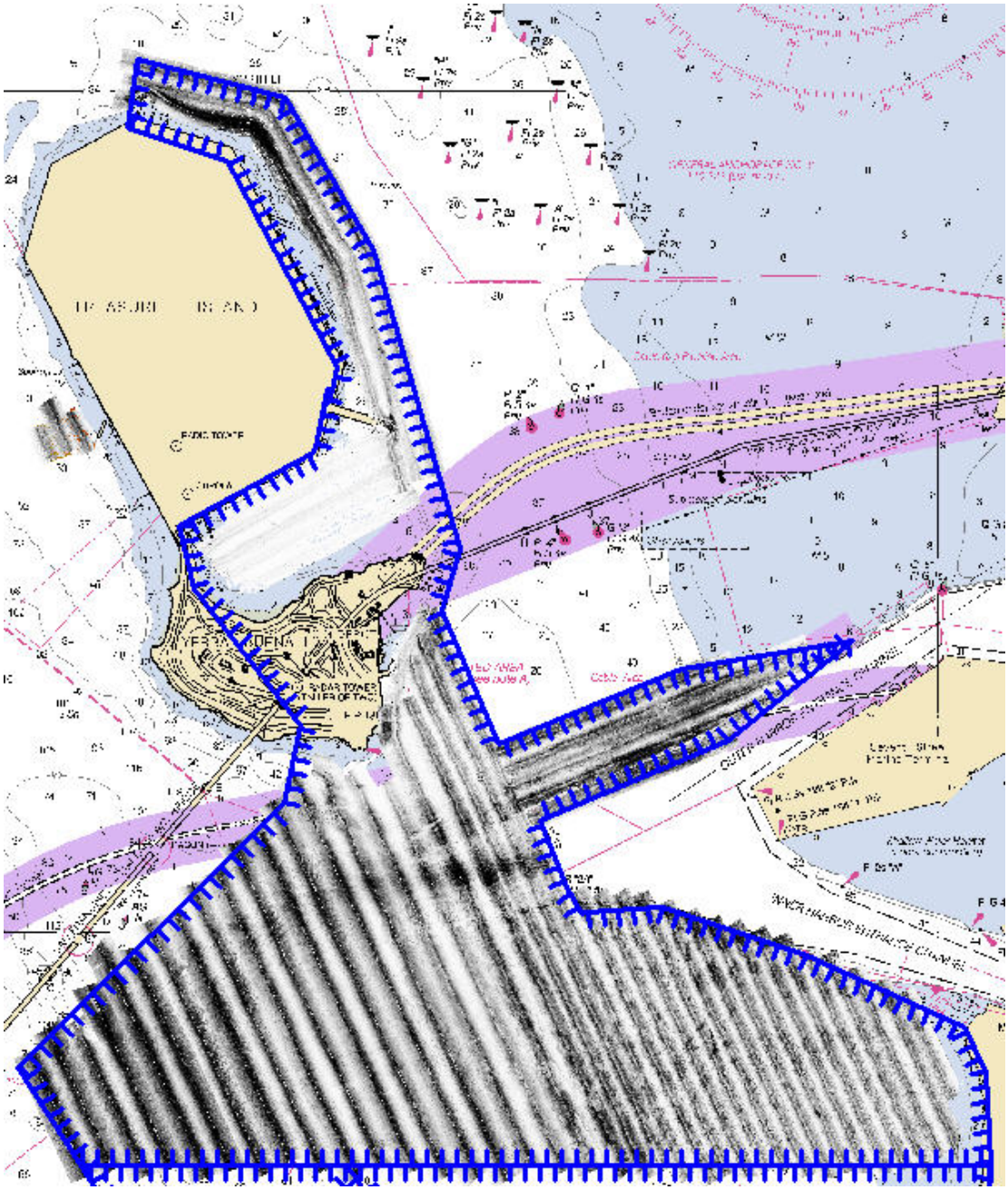

Figure 2: San Francisco Bay, Sheet B, 100% side scan sonar data coverage.

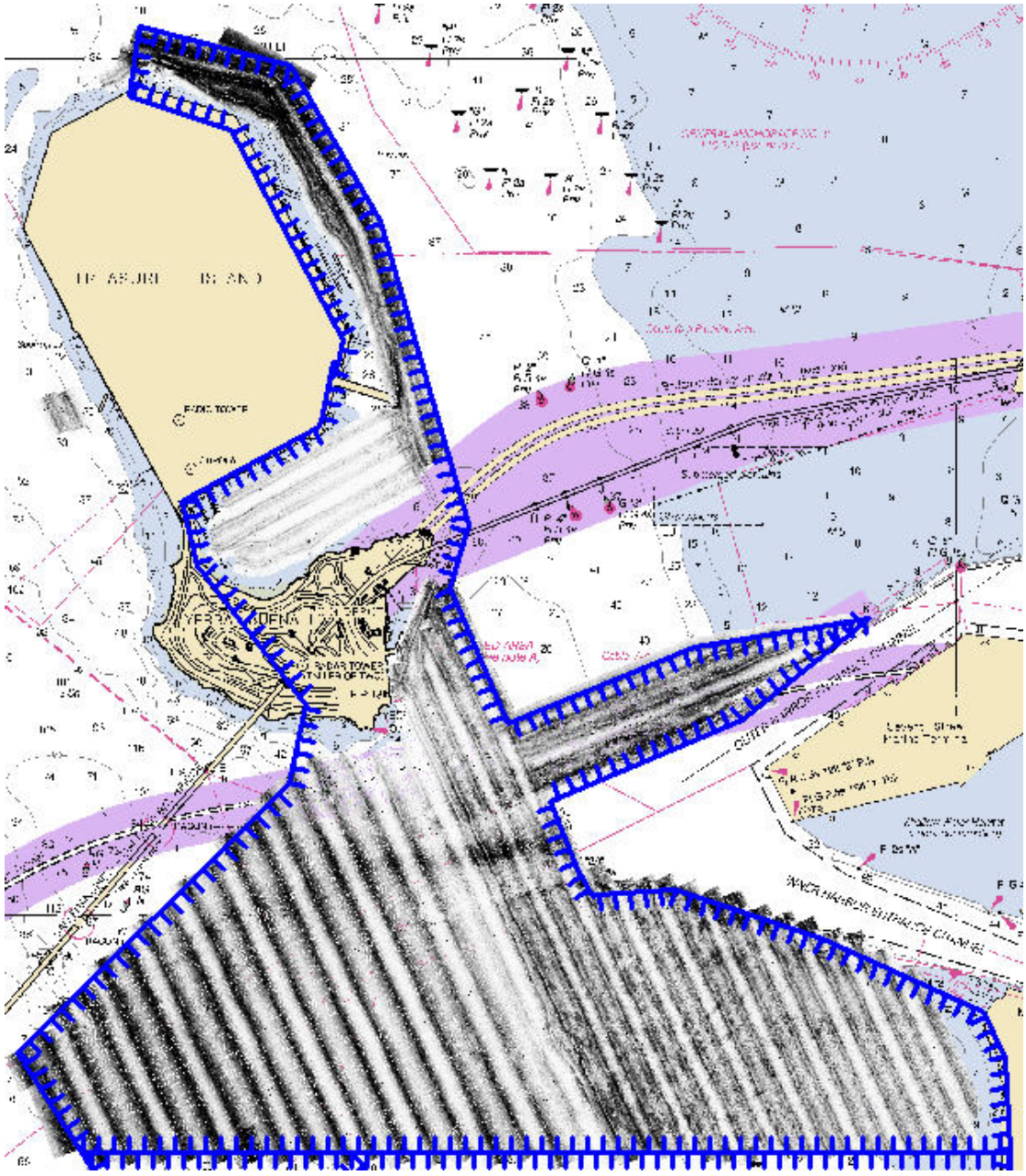

Figure 3: San Francisco Bay, Sheet B, 200% side scan sonar data coverage.

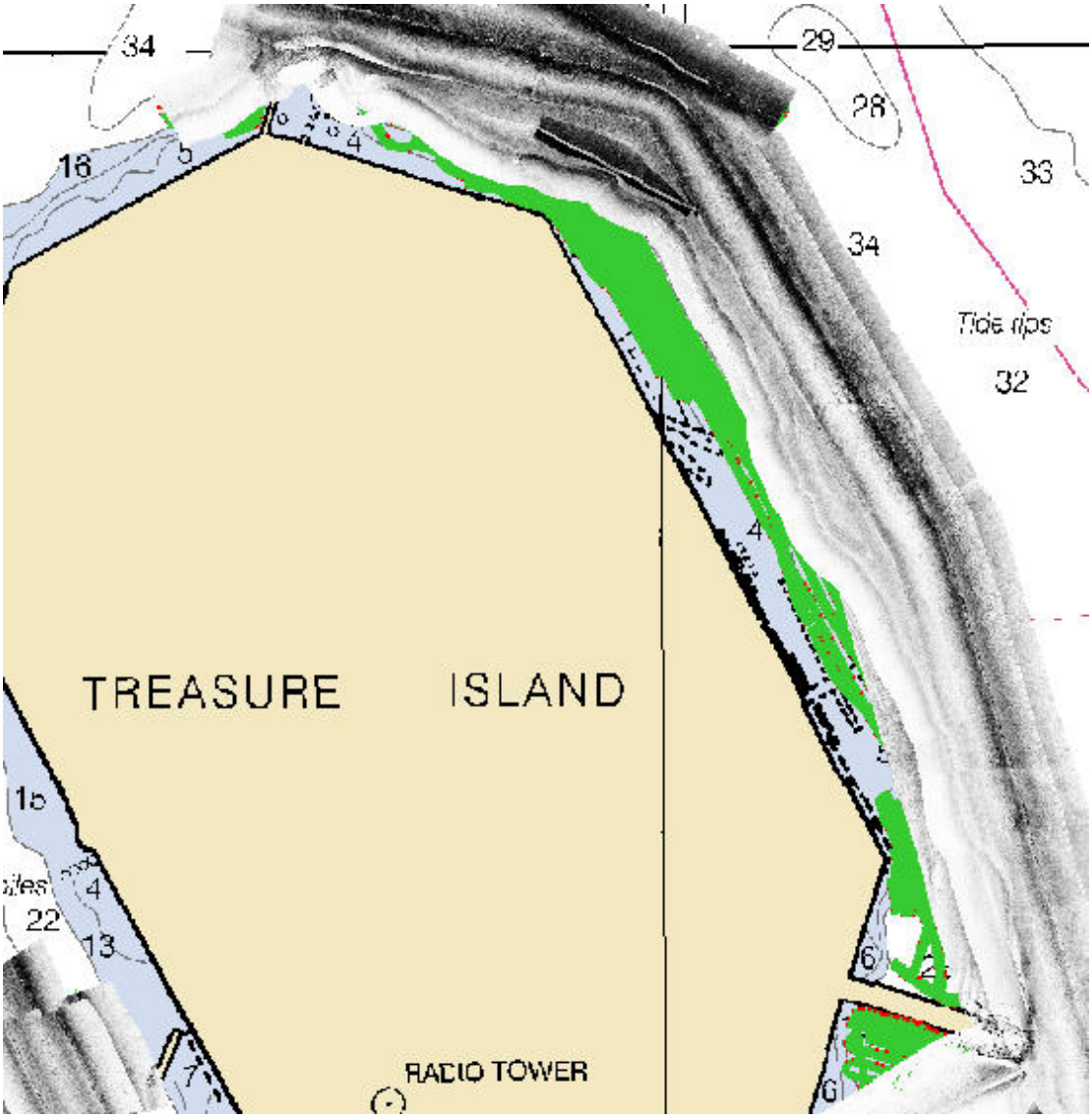

Figure 4: Object detection coverage of 5 soundings per node was acquired where towfish operations were not possible, to the NALL. These areas were bounded by the side scan coverage to the NALL. Areas with a density of five soundings per node or greater are shown in green, less than five are in red.

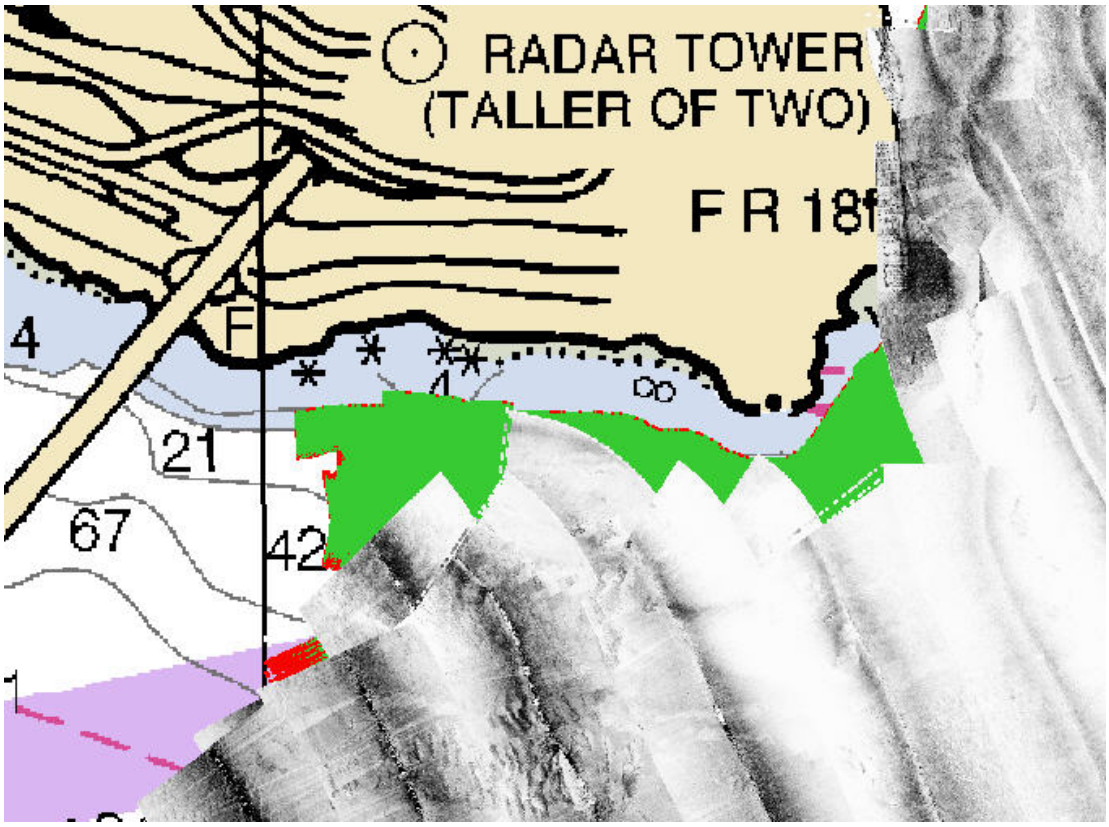

Figure 5: Object detection coverage of 5 soundings per node was acquired where towfish operations were not possible. These areas were bounded by the side scan coverage to the NALL. Areas with a density of five soundings per node or greater are shown in green, less than five are in red.

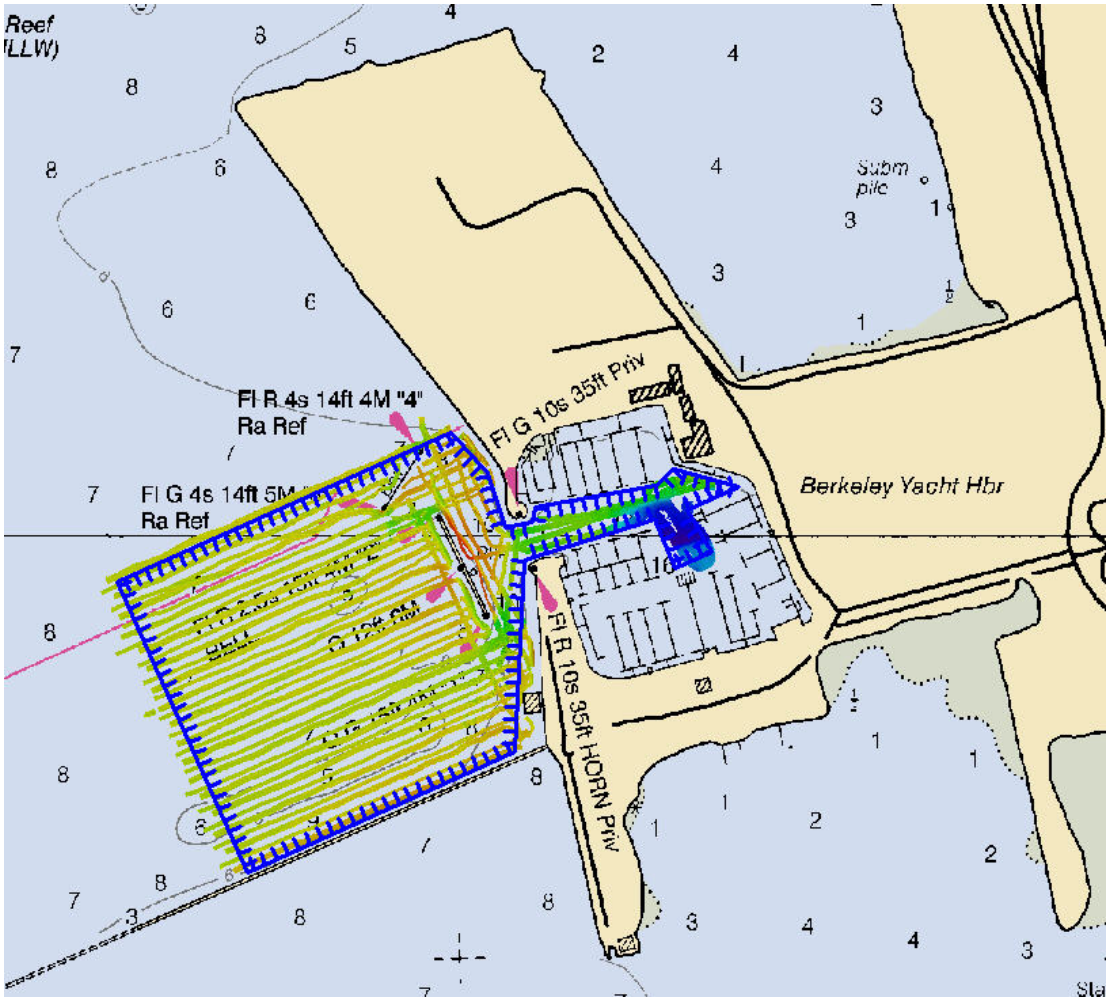

Figure 6: Berkeley Marina, Sheet B, multibeam sonar data coverage.

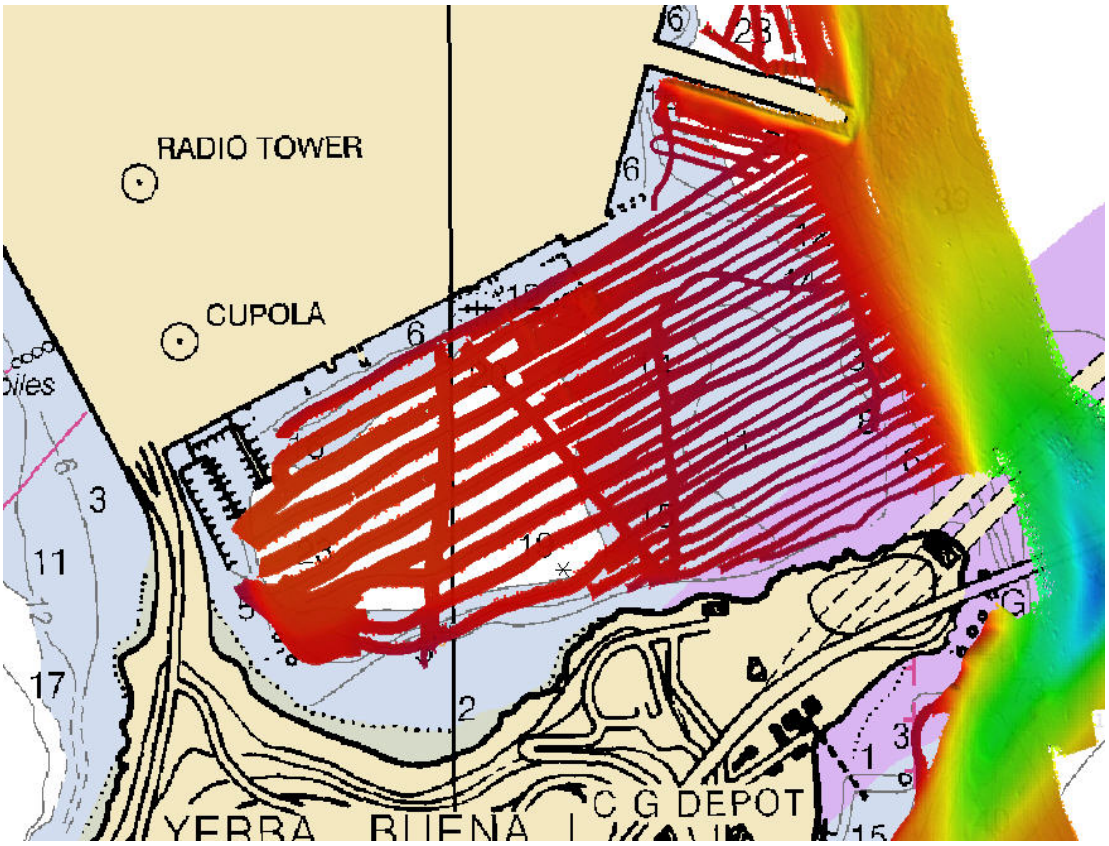

Figure 7: Multibeam splits were run to provide a greater density of sounding over the shoal at the entrance to Clipper Cove.

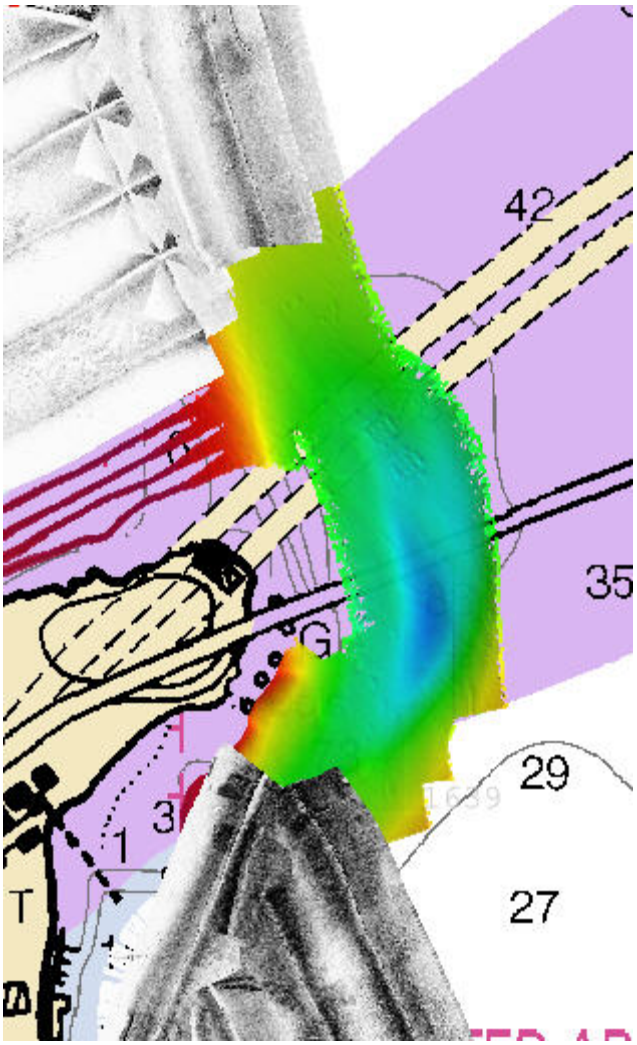

Figure 8: NRT6 was only able to acquire SWMB data underneath the Bay Bridge and new Bay Bridge, due to heavy construction traffic.

B. DATA ACQUISITION AND PROCESSING

B.1 EQUIPMENT

Data were acquired by NOAA Survey boat S3003, which is a 10-meter hydrographic survey vessel with a transducer draft of 0.507 meters (-.024m from reference to waterline, .483m from reference to multibeam transducer).

NOAA Survey boat S3003 acquired soundings, imagery, and sound velocity profiles. Soundings and imagery were acquired by SIMRAD EM3000 multibeam

echosounder. Imagery was acquired with a KLEIN 3000 side scan sonar. Water column sound velocity data was acquired with a Sea-Bird SBE 19+ CTD.

NOAA Survey boat S3003 positioning and attitude data were determined with an Applanix POS/MV 320 Version 4 GPS-aided inertial navigation system.

Refer to the Data Acquisition and Processing Report (DAPR) for detailed equipment and vessel configuration information.

B.2 QUALITY CONTROL

B.2.1 Side Scan Sonar Quality Control

Daily confidence checks were made by observing the outer ranges of the side scan sonar images. A good check consisted of distinguishing contacts corresponding to charted features such navigational Fixed Aids and other cultural features across the entire range of the side scan trace.

B.2.2 Shallow Water Multibeam Quality Control

No unusual problems were encountered during this survey. Construction in the vicinity of the bridge may have affected multibeam data, but these lines were identified and re-acquired.[4]

Refer to this project's DAPR and HSRR for detailed discussion of SWMB system calibrations, data acquisition, and data processing.

B.2.3 BASE Surfaces

Three CARIS HIPS BASE (*B*athymetry *A*ssociated with *S*tatistical *E*rror) surfaces, which incorporate each sounding's total propagated uncertainty (TPU), were created. The finalized BASE surface contains eight layers: depth, uncertainty, density, mean, standard deviation, hypothesis strength, hypothesis count and user nominated. Refer to this project's DAPR for detailed discussion of BASE surface generation and processing. Three Bathymetric Attributed Grid (BAG) were created from the

finalized BASE surface.

The following Field sheet was generated as part of this survey:

Table 2: Fieldsheets, BASE Surfaces and BAG (Bathymetric Attributed Grid) surfaces created.[5]

Fieldsheet	#BASE Surfaces	Resolution	Purpose
H11639	2	1m	Coverage & Finalized
BerkeleyMarina	2	0.5m	Coverage & Finalized
AWOIS	2	1m	Coverage & Finalized
H11639_1m	1	1m	BAG Generation
BerkeleyMarina_0_5m	1	0.5m	BAG Generation
AWOIS_1m	1	1m	BAG Generation

B.2.4 Crosslines

A total of 127 lnm of mainscheme lines were planned and approximately 10.5 lnm of crosslines were conducted, totaling more than 5% of the planned survey lines. BASE surfaces were examined and no systematic errors in the SWMB system were found.[6]

B.3 CORRECTIONS TO ECHO SOUNDING

All methods or instruments used are detailed in the project DAPR. A table of all sound velocity casts is located in Separate II.

B.4 COMPOSITE SOURCE FILE

NRT6 received a Composite Source File with the survey package in 2009. CSF items were verified in the field either visually or using SSS. All CSF items are addressed in the Pydro PSS.[7] A Composite Source File Feature Report, exported from the PSS, is located in Appendix 5 of the DR. Also located in Appendix 5 are the original CSF file, and the acquisition sheets. Please see the DAPR for detailed CSF procedures and notes.

C. VERTICAL AND HORIZONTAL CONTROL

C.1 VERTICAL CONTROL

The tidal datum for this project is Mean Lower Low Water (MLLW). The operating National Water Level Observation Network (NWLON) station at San Francisco, CA (941-4290) was the sole water level station for this project. See Figure 2 for station location and tide zone boundaries. The tide zoning file "L430NRT62009CORP" was applied during processing. The uncertainty value of .13m was used for the TPE computation in CARIS.

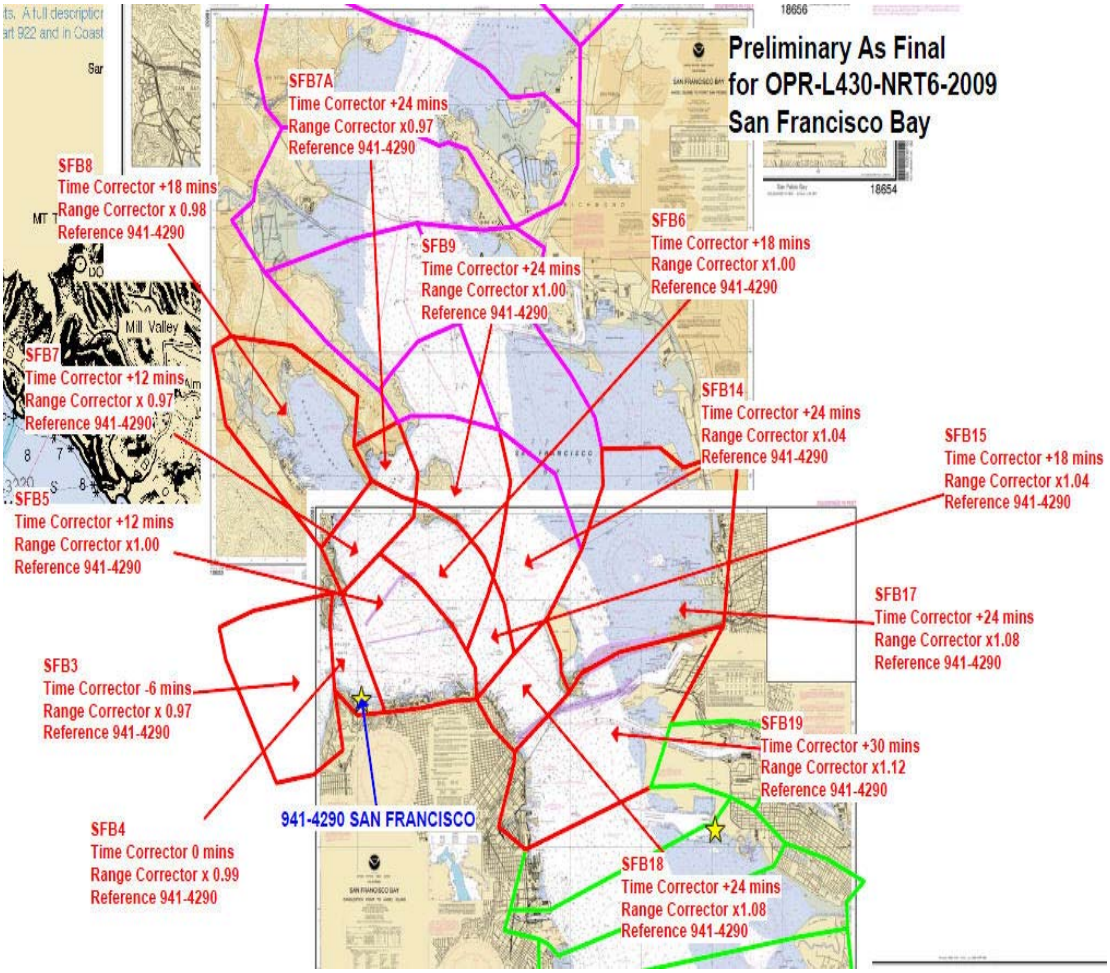

Figure 9: Preliminary Tide Zoning

The preliminary/final zones and correctors used for this survey are as follows:

Table 1: Preliminary Tide Zones & Correctors

Zone Name	Time Correctors (mins)	Range Ratio	Predicted Reference
SFB3	-6	X0.97	941-4290
SFB4	0	X0.99	941-4290
SFB5	+12	X1.00	941-4290
SFB6	+18	X1.00	941-4290
SFB7	+12	X0.97	941-4290
SFB7A	+24	X0.97	941-4290
SFB8	+18	X0.98	941-4290
SFB9	+24	X1.00	941-4290
SFB14	+24	X1.04	941-4290
SFB15	+18	X1.04	941-4290
SFB17	+24	X1.08	941-4290
SFB18	+24	X1.08	941-4290
SFB19	+30	X1.12	941-4290

A Request for Smooth Tides was sent to N/OPS1 on December 14, 2009 and is included in Appendix IV Tides & Water Levels.[8] Observed water levels from the N/OPS1 CO-OPS website were downloaded and applied to all sounding data with preliminary tide zoning. Refer to the 2009 DAPR for a summary of the methods used to determine, evaluate, and apply tide corrections to sounding data.

C.2 HORIZONTAL CONTROL

The horizontal datum used for this survey is the North American Datum of 1983 (NAD 83), projected using UTM zone 10.

Horizontal position was determined using the Global Positioning System (GPS) corrected by U.S. Coast Guard differential GPS (DGPS) beacon station at Pigeon Pt, CA (287 kHz). No horizontal control stations were established for this survey.

Horizontal dilution of precision (HDOP) was monitored daily. The observed HDOP values did not exceed 4.00.

D. RESULTS AND RECOMMENDATIONS

D.1 CHART COMPARISON

Data accuracy standards and bottom coverage requirements have been met and survey data for survey H11639 are adequate to supersede charted data in their common areas.

There are four raster charts affected by this survey:
There are two ENC cells covering the survey area.

Table 3: Affected Charts

Chart Number	Edition	Edition Date
18649	67th	12/01/2009
18650SC	56th	09/01/2009
18652	35th	08/01/2009
18653	11th	10/01/2009

ENC Cell	Last Updated	Issue Date	Edition
US5CA13M	12/14/2009	12/14/2009	38th
US5CA21M	10/26/2009	10/26/2009	20th

D.1.1 General Agreement with Charted Soundings

Depths from survey H11639 generally agree with depths on chart 18650 and 18653, with the exception of a few contour lines that need to be repositioned to reflect new survey data.[9] The recently acquired survey data also shows a few charted shoal patches that are no longer present. The most apparent and dramatic sounding shifts that have taken place are shown in the figures below. Sounding recommendations and images of the shoal areas are included in the Pydro PSS and the survey feature report located in Appendix II. [10]

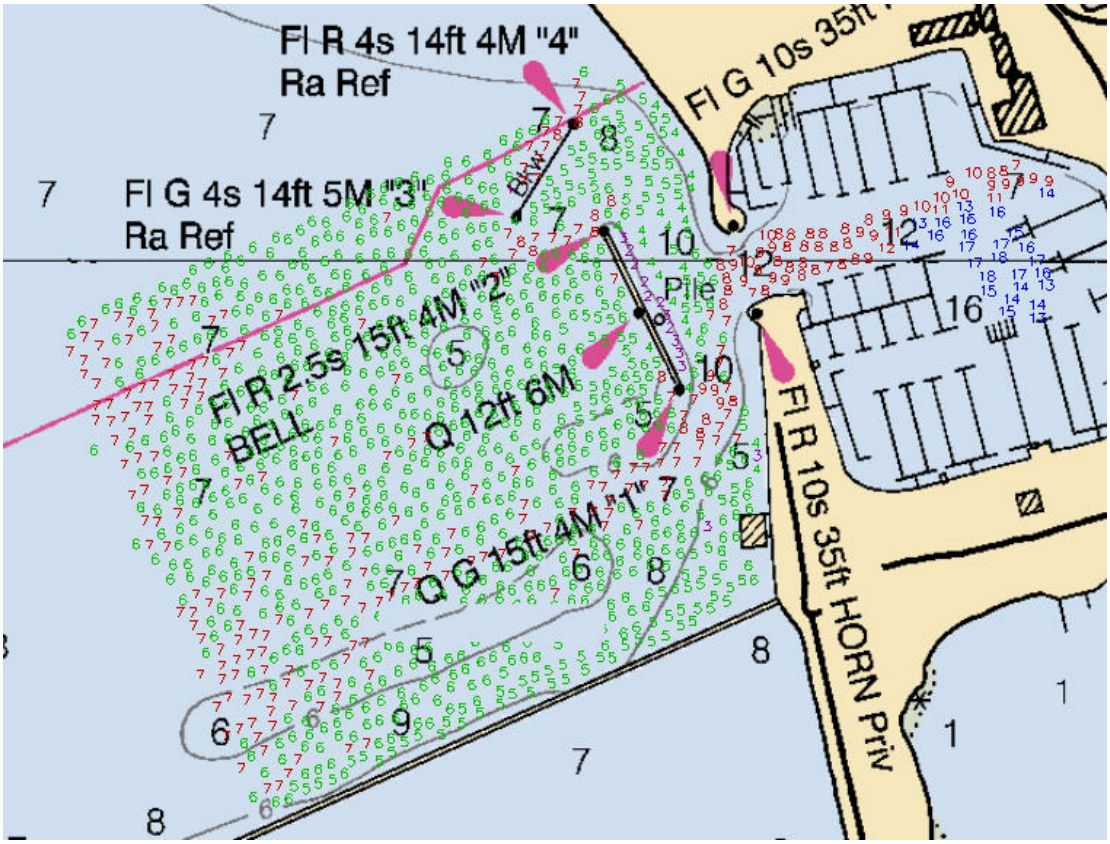

Figure 10: The shoal contours located in the entrance channel of Berkeley Marina are no longer present and need to be updated to reflect new survey data.[11]

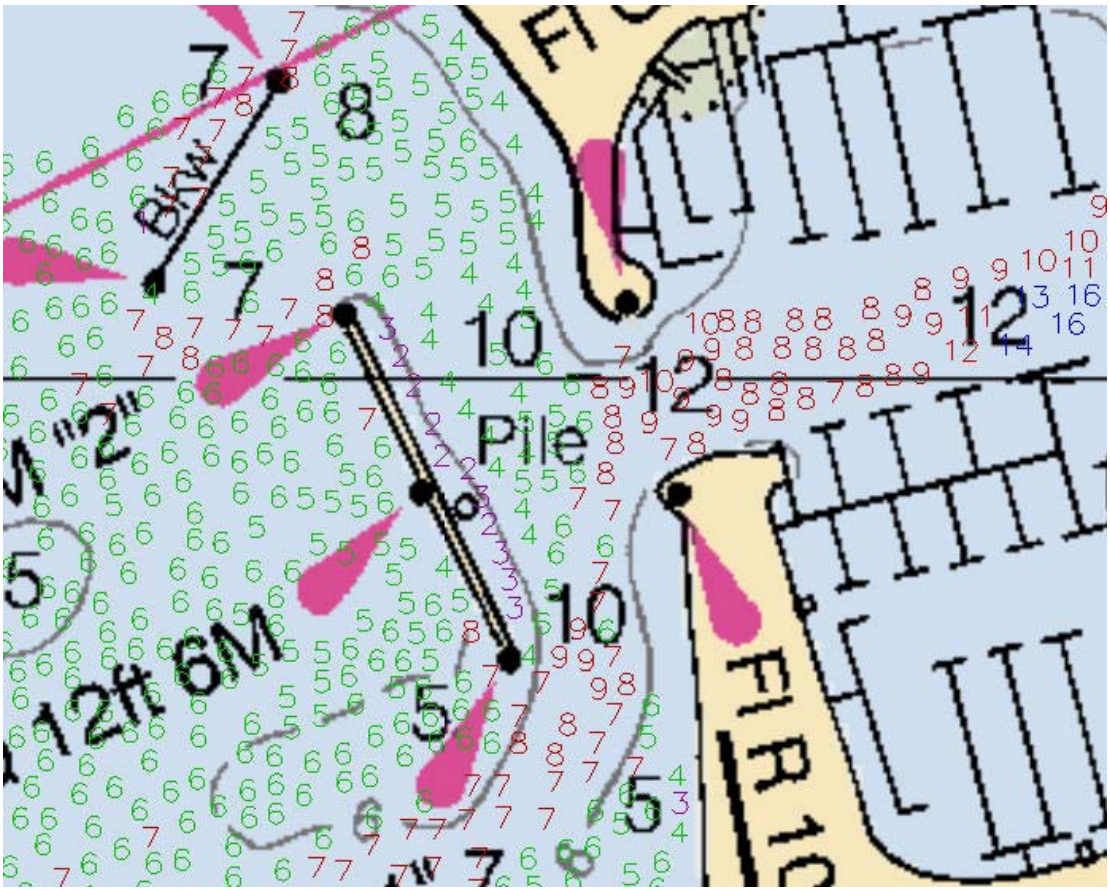

Figure 11: Soundings in the Berkeley Marina need to be updated. Most notably is the new 5ft sounding overlaying the 10ft charted sounding.[12]

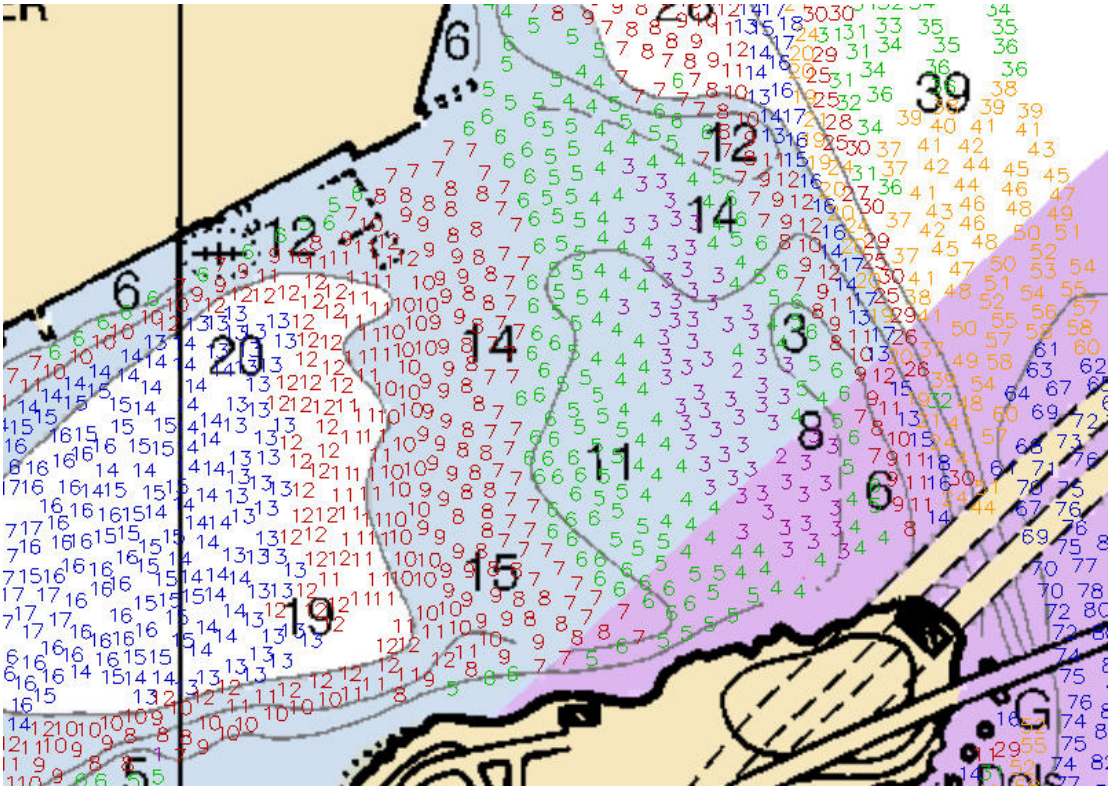

Figure 12: Clipper Cove is another area that needs special attention. The 3 ft shoal has expanded and now reaches further into the cove. Contour lines throughout the cove need to be revised.[13]

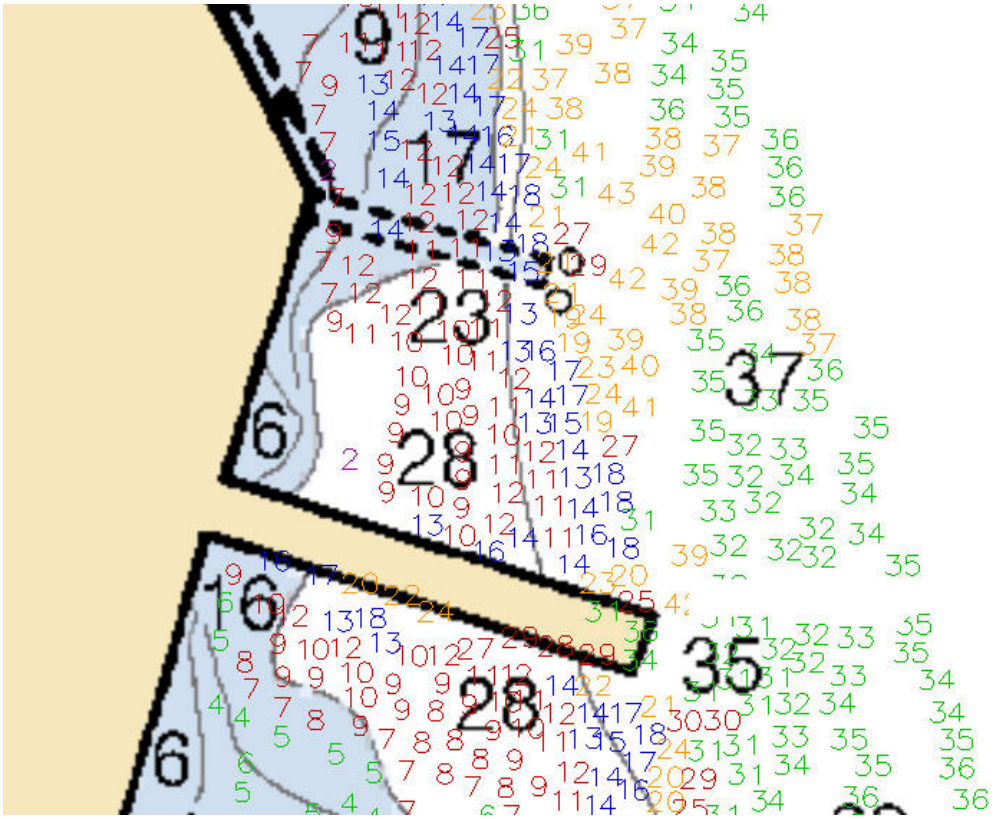

Figure 13: The northern area of Clipper Cove shows an updated 9ft and 10ft sounding overlaying the 28ft charted soundings. The contours and soundings need to be repositioned accordingly in this area. Also, the pier ruins and submerged pilings in the northern part of this image are no longer present, except next to the shoreline.[14] See the screengrab below.

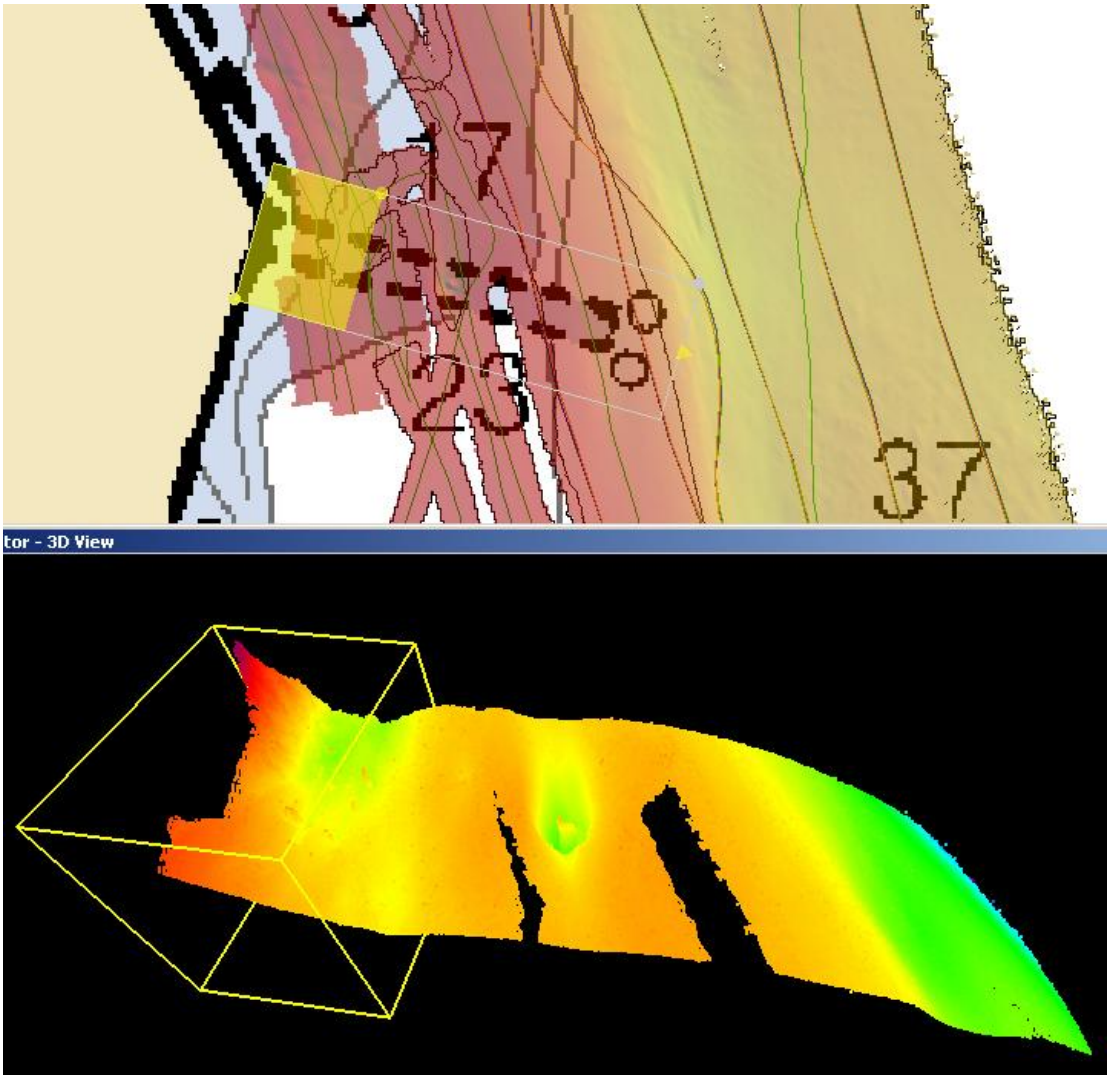

Figure 14: The box in the subset surrounds the existing pilings. The large piling/dolphin in the center of the image is deeper than the surrounding seafloor, and was not deemed significant. The hydrographer recommends re-defining the charted ruin area.[15]

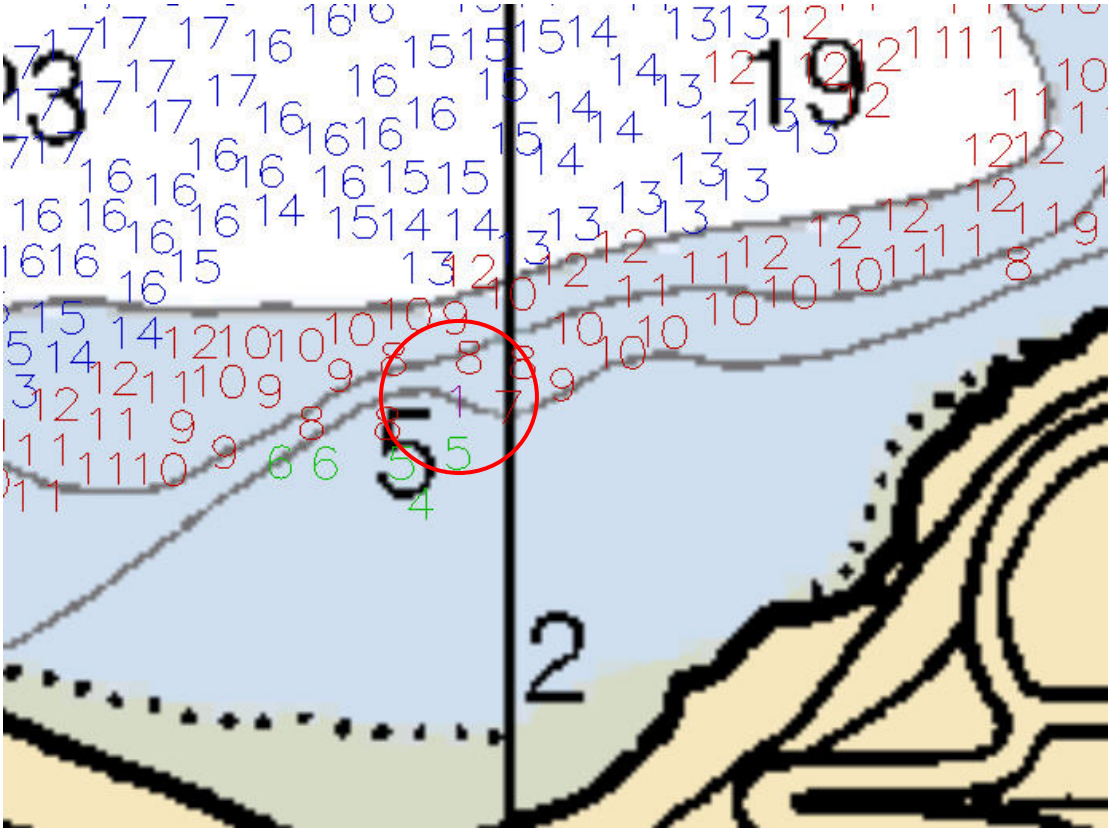

Figure 15: A wreck with a 1 ft sounding is next to the 5 ft charted sounding in Clipper Cove. [16] **More detailed information on the wreck is located in this surveys PSS and the survey feature report located in Appendix II.**

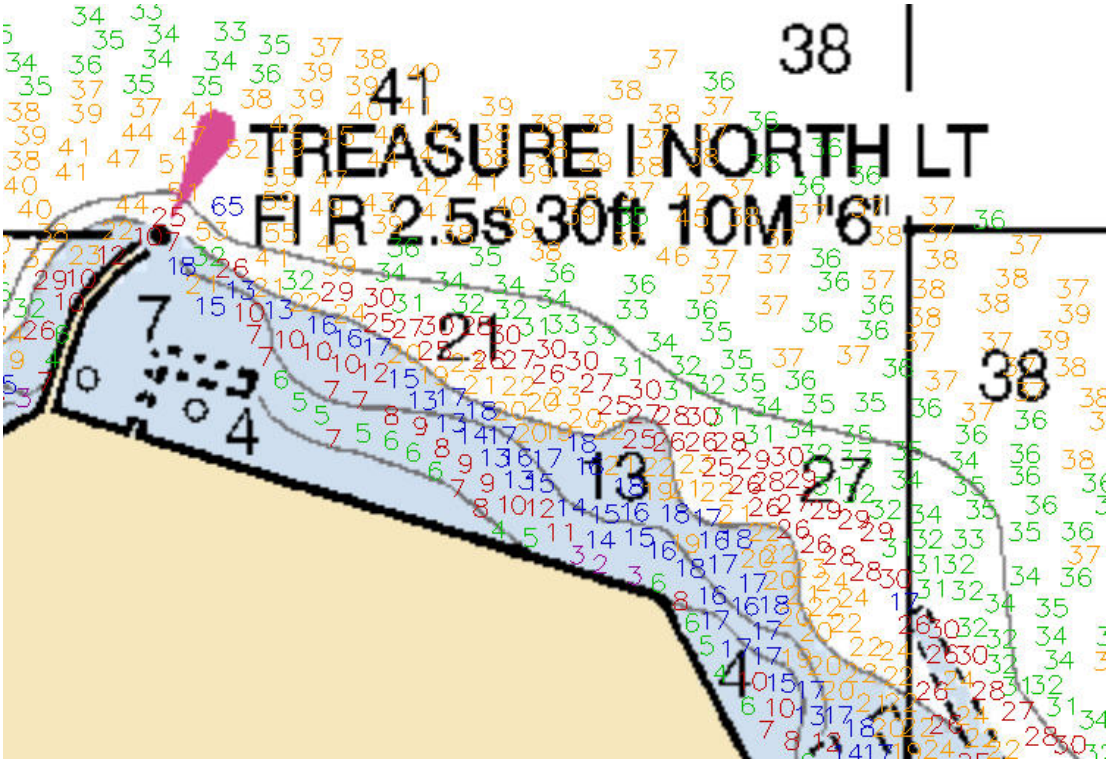

Figure 16: The northern area of Treasure Island is showing a significant shift from the charted depths. The contours need to be updated to reflect the new survey data.[17]

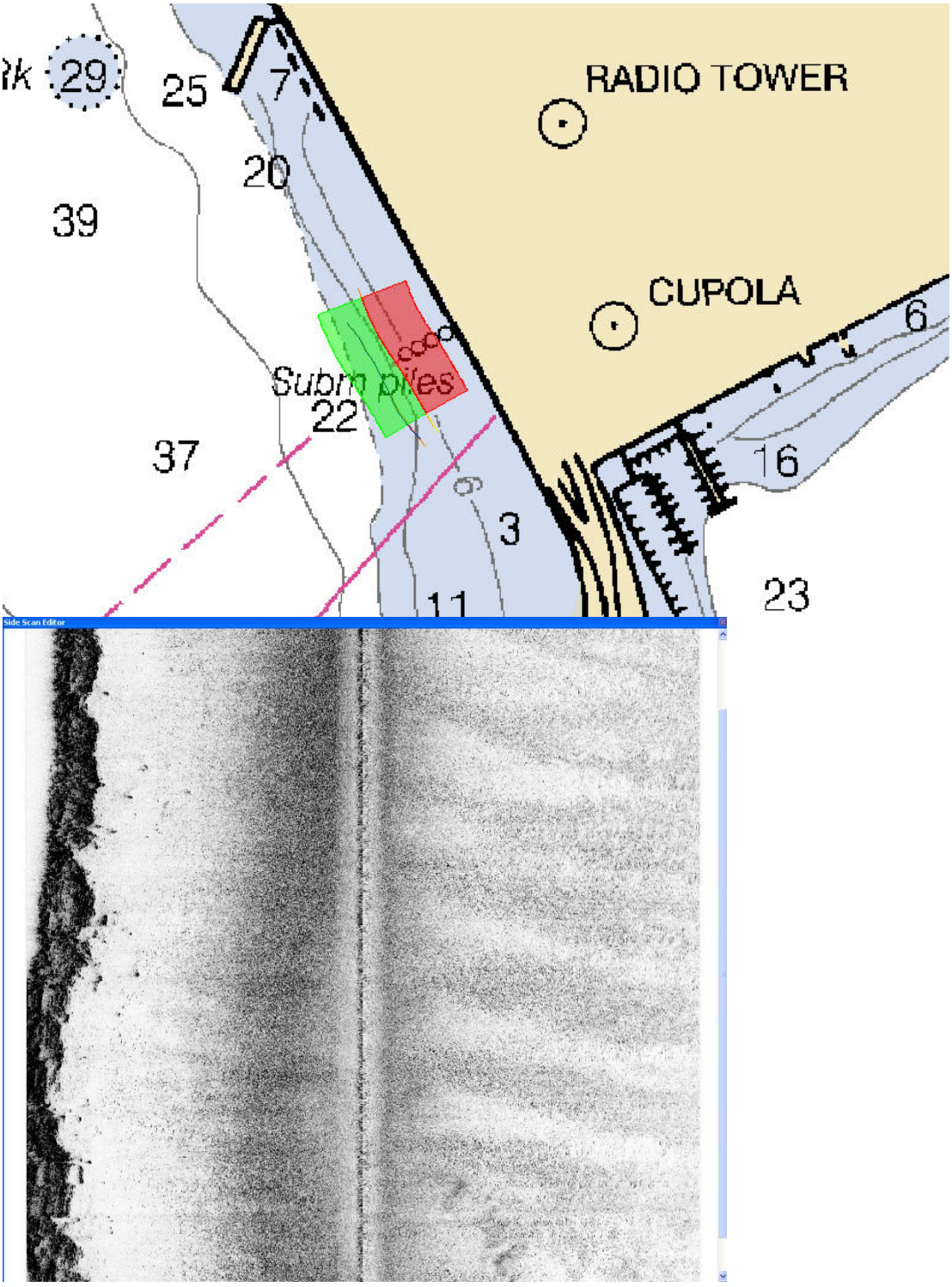

Figure 17: The submerged piles on the southwest side of Treasure Island (CSF Danger 9 -12) were disproved by 200% SSS. SSS data from day 2010_041 lines 100210212000 and 100210211800 reveals that the piles are no longer present. [18] More information is included in the project PSS and in the CSF boat logs under Appendix V.

D.1.2 Dangers to Navigation (DtoNs)

One DTON was identified by the field party within the limits of H11639 and was submitted to MCD on November 24, 2009. Investigation methods, results and charting recommendations have been entered into the Pydro PSS "H11639.pss". Information pertaining to the DTON is contained in Appendix I of this report.[19]

D.1.3 AWOIS Items

Three AWOIS items were assigned and investigated during this survey. Investigation methods, results and charting recommendations have been entered into the Pydro PSS "H11639.pss". Information pertaining to the AWOIS items is contained in Appendix II of this report.[20]

D.2 ADDITIONAL RESULTS

D.2.1 Prior Surveys

No prior surveys were listed for comparison in the project instructions.

D.2.2 Aids to Navigation and Other Detached Positions

One light was positioned on Treasure Island with the Trimble GeoXH handheld GPS unit. The position data were post-processed in Trimble Pathfinder software, and it was exported and sent to aton.reports@noaa.gov. Please see the AtoNs folder located in Appendix 5 of the Descriptive Report for the Trimble files and the submitted report. [21]

Platform 6 was positioned by nosing up to each piling and offsetting a target to the bow of the vessel in Hypack. The feature was submitted to MCD as a DTON and has been added to chart 18650. Investigation methods, photographs, results and charting recommendations have been entered into the Pydro PSS "H11639.pss".

D.2.3 Bridges and Overhead Cables

The San Francisco – Oakland Bay Bridge is located within the survey limits of Sheet

H11639 and is addressed with a “bridge note” on the chart. New bridge construction is underway in the survey area and the current construction is denoted on the chart as well.

D.2.4 Ferry Routes

High speed ferry routes run through the survey area and are addressed with Note “D” on the chart. There no ferry terminals within the survey area of Sheet H11639.[22]

D.2.5 Submarine Cables and Pipelines

A large cable area that is already denoted on the chart under note “B” is located within the survey limits of Sheet H11639.[23]

One possible pipeline or sewer line was located in the survey area and is shown in the figure below.

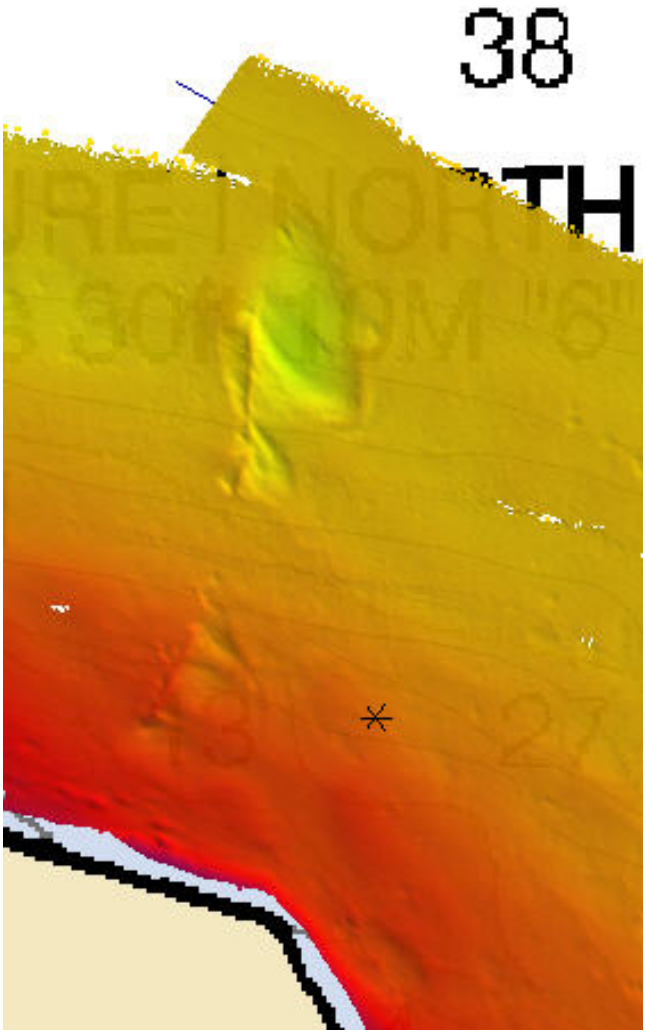

Figure 18: Possible pipeline or sewer line (linear feature running north/south in base surface) located on the northern end of Treasure Island.[24]

D.2.6 Bottom Samples

Bottom samples were acquired in the survey area.[25] A detailed table can be found in Appendix 5 of the descriptive report. In addition they have been included in the Pydro PSS "H11639.pss" submitted for this survey.

E. APPROVAL SHEET

OPR-L430-NRT6-09
San Francisco Bay, California
Survey Registry No. H11639

Field operations for this basic hydrographic survey were conducted under my daily supervision with frequent checks of progress and adequacy. All bathymetry models, this Descriptive Report, and all accompanying records and data are approved.

This survey is adequate to supersede all prior surveys in common areas and for application to the relevant NOS nautical charts.

Also submitted in association with this descriptive report has been a series of reports and data:

- SEPARATES TO ACCOMPANY PROJECT OPR-L430-NRT6-09
- OPR-L430-NRT6-09 HORIZONTAL AND VERTICAL CONTROL REPORT
- SEPTEMBER 2009 DATA ACQUISITION AND PROCESSING REPORT

Respectfully Submitted:

Approved and Forwarded:

eric m moore

Digitally signed by eric m moore
DN: cn=eric m moore, email=eric.m.moore@noaa.gov, o=NOAA S/V BAY HYDROGRAPHER, ou=NOAA/NOS/OCS/HSD/OPS, c=US
Date: 2010.03.09 14:54:59 -08'00'

Eric Moore, NOAA
Physical Science Technician

Revisions and corrections compiled during office processing and certification.

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[1] Concur.
[2] Concur.
[3] Concur with clarification. Resurvey as time and resources allow.
[4] Data is adequate to supersede charted data in the common area.
[5] Concur with clarification. During Office processing the H11639_Final_Combined_1m in Fieldsheet H11639_Combined was created for cartographic compilation.
[6] Concur.
[7] Concur with clarification. During Office processing Features from H11639.pss were exported into H11639_pydro.hob.
[8] Tide note is attached to this document.
[9] Concur.
[10] The feature report is included in this report. The submitted feature file was used in the compilation of HCell H11639. During compilation, some modifications were made to accommodate chart scale. Chart features as depicted in the HCell.
[11] Concur with the hydrographers recommendations.
[12] Concur with clarification. A 4ft sounding was added to the HCell to be charted.
[13] Concur.
[14] Concur.
[15] Concur. A blue note was added to the HCell to remove the charted ruined pier.
[16] Concur. A wreck feature was added to the HCell to be charted.
[17] Concur.
[18] Concur. A blue note was added to the HCell to remove charted piles.
[19] One DTON has been applied to the charts. The DTON report is attached to this report.
[20] AWOIS report is attached to this report.
[21] Chart ATONs per latest ATONIS information.
[22] Concur. A blue note was added to the HCell to retain charted ferry routes.
[23] Concur. A blue note was added to the HCell to retain charted cable area.
[24] A feature was added to the HCell to represent this shoal area.
[25] Seven bottom samples were submitted by the field. 3 Bottom samples to be retained and 4 bottom samples to be charted.

Survey Feature Report

Registry Number: H11639

State: California

Locality: San Francisco Bay

Sub-locality: Rincon Point to Treasure Island

Project Number: OPR-L430-NRT6-09

Survey Dates: 11/12/2009 - 12/03/2009

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
18650	55th	12/01/2007	1:20,000 (18650_1)	USCG LNM: 07/28/2009 (09/01/2009) NGA NTM: 04/23/2005 (09/19/2009)
18652	34th	09/01/2007	1:80,000 (18652_1) 1:40,000 (18652_5)	[L]NTM: ?
18649	66th	02/01/2009	1:40,000 (18649_1)	[L]NTM: ?
18640	25th	08/01/2005	1:207,840 (18640_1)	[L]NTM: ?
18680	31st	06/01/2005	1:210,668 (18680_1)	[L]NTM: ?
18010	21st	03/01/2007	1:811,980 (18010_1)	[L]NTM: ?
18022	35th	08/01/2005	1:868,003 (18022_1)	[L]NTM: ?
18007	33rd	02/01/2009	1:1,200,000 (18007_1)	[L]NTM: ?
18020	38th	10/01/2007	1:1,444,000 (18020_1)	[L]NTM: ?
501	12th	11/01/2002	1:3,500,000 (501_1)	[L]NTM: ?
530	32nd	06/01/2007	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	Clipper Cove Wreck	Wreck	0.50 m	37° 48' 49.9" N	122° 22' 00.9" W	---
1.2	15ft sounding	Shoal	4.68 m	37° 48' 21.7" N	122° 21' 29.8" W	---
1.3	17ft Sounding_Submerged pile/dolphin	Obstruction	5.23 m	37° 49' 52.0" N	122° 22' 00.2" W	---
2.1	AWOIS 52174 wreck	Wreck	7.12 m	37° 50' 41.0" N	122° 22' 10.7" W	52174

Generated by Pydro v9.10 (r2824) on Fri Mar 05 23:12:23 2010 [UTC]

2.2	Awois 53170 rock	Rock	9.67 m	37° 49' 11.2" N	122° 22' 37.2" W	53170
2.3	Awois 51986 wrecks	Wreck	20.22 m	37° 48' 58.0" N	122° 22' 56.8" W	51986
3.1	Platform Piling 1	Stationary structure, floating or fixed	[None]	37° 48' 40.9" N	122° 20' 18.3" W	---
3.2	Platform Piling 2	Stationary structure, floating or fixed	[None]	37° 48' 41.0" N	122° 20' 18.0" W	---
3.3	Platform Piling 3	Stationary structure, floating or fixed	[None]	37° 48' 41.4" N	122° 20' 18.1" W	---
3.4	Platform Piling 4	Stationary structure, floating or fixed	[None]	37° 48' 41.3" N	122° 20' 18.4" W	---

1 - New Features

1.1) Clipper Cove Wreck

Survey Summary

Survey Position: 37° 48' 49.9" N, 122° 22' 00.9" W

Least Depth: 0.50 m (= 1.65 ft = 0.275 fm = 0 fm 1.65 ft)

TPU (±1.96σ): **THU (TPEh)** ±1.961 m ; **TVU (TPEv)** ±0.280 m

Timestamp: 2009-321.21:41:51.883 (11/17/2009)

Survey Line: hdcs_data / nrt6_s3003_em3000 / 2009-321 / 019_2131

Profile/Beam: 3150/7

Charts Affected: 18650_1, 18649_1, 18652_5, 18652_1, 18640_1, 18680_1, 18010_1, 18022_1, 18007_1, 18020_1, 501_1, 530_1, 50_1

Remarks:

Small wreck.

Feature Correlation

Address	Feature	Range	Azimuth	Status
hdcs_data/nrt6_s3003_em3000/2009-321/019_2131	3150/7	0.00	000.0	Primary
hdcs_data/nrt6_s3003_klein3000_sss200/2009-308/sonar_data091104205000	0001	18.17	252.1	Secondary
hdcs_data/nrt6_s3003_klein3000_sss100/2009-308/sonar_data091104205900	0001	19.61	067.3	Secondary

Hydrographer Recommendations

Hydrographer recommends charting small wreck with the least depth of 1ft.

Cartographically-Rounded Depth (Affected Charts):

1ft (18650_1, 18649_1, 18652_5, 18652_1)

0 ¼fm (18640_1, 18680_1, 18010_1, 18022_1, 18007_1, 18020_1, 530_1)

.5m (501_1, 50_1)

S-57 Data

Geo object 1: Wreck (WRECKS)

Attributes: CATWRK - 1:non-dangerous wreck

CONVIS - 2:not visual conspicuous

QUASOU - 6:least depth known

SORDAT - 20100217

SORIND - US,US,survy,H11639

TECSOU - 2,3:found by side scan sonar,found by multi-beam

VALSOU - 0.503 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

1.2) 15ft sounding

Survey Summary

Survey Position: 37° 48' 21.7" N, 122° 21' 29.8" W

Least Depth: 4.68 m (= 15.36 ft = 2.560 fm = 2 fm 3.36 ft)

TPU (±1.96σ): **THU (TPEh)** ±1.961 m ; **TVU (TPEv)** ±0.285 m

Timestamp: 2009-337.20:51:27.983 (12/03/2009)

Survey Line: hdcs_data / nrt6_s3003_em3000 / 2009-337 / 401_2043

Profile/Beam: 211/51

Charts Affected: 18650_1, 18649_1, 18652_5, 18652_1, 18640_1, 18680_1, 18010_1, 18022_1, 18007_1, 18020_1, 501_1, 530_1, 50_1

Remarks:

Dredge spoil next to hole.

Feature Correlation

Address	Feature	Range	Azimuth	Status
hdcs_data/nrt6_s3003_em3000/2009-337/401_2043	211/51	0.00	000.0	Primary

Hydrographer Recommendations

Hydrographer recommends charting shoal sounding of 15ft with appropriate contour circle around it.

Cartographically-Rounded Depth (Affected Charts):

15ft (18650_1, 18649_1, 18652_5, 18652_1)

2 ½fm (18640_1, 18680_1, 18010_1, 18022_1, 18007_1, 18020_1, 530_1)

4.7m (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

QUASOU - 6:least depth known

SORDAT - 20100217

SORIND - US,US,Survy,H11639

TECSOU - 3:found by multi-beam

VERDAT - 12:Mean lower low water

1.3) 17ft Sounding_Submerged pile/dolphin

Survey Summary

Survey Position: 37° 49' 52.0" N, 122° 22' 00.2" W

Least Depth: 5.23 m (= 17.16 ft = 2.859 fm = 2 fm 5.16 ft)

TPU (±1.96σ): **THU (TPEh)** ±1.961 m ; **TVU (TPEv)** ±0.284 m

Timestamp: 2009-337.21:26:25.029 (12/03/2009)

Survey Line: hdcs_data / nrt6_s3003_em3000 / 2009-337 / 405_2118

Profile/Beam: 341/34

Charts Affected: 18650_1, 18649_1, 18652_5, 18652_1, 18640_1, 18680_1, 18010_1, 18022_1, 18007_1, 18020_1, 501_1, 530_1, 50_1

Remarks:

chtd submerged pile/dolphin at the end of the chtd submerged pier.

Feature Correlation

Address	Feature	Range	Azimuth	Status
hdcs_data/nrt6_s3003_em3000/2009-337/405_2118	341/34	0.00	000.0	Primary
hdcs_data/nrt6_s3003_klein3000_sss100/2009-309/sonar_data091105200100	0007	6.07	133.6	Secondary

Hydrographer Recommendations

Hydrographer recommends extending the northern end of the chtd submerged pier to encompass the submerged pile/dolphin at the end (17ft sounding).

Cartographically-Rounded Depth (Affected Charts):

17ft (18650_1, 18649_1, 18652_5, 18652_1)

2 ¾fm (18640_1, 18680_1, 18010_1, 18022_1, 18007_1, 18020_1, 530_1)

5.2m (501_1, 50_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)

Attributes: CATOBS - 1:snag / stump

CONDTN - 2:ruined

INFORM - PILE

QUASOU - 6:least depth known

SORDAT - 20100217

SORIND - US,US,Survy,H11639

TECSOU - 2,3:found by side scan sonar,found by multi-beam

VALSOU - 5.229 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

2 - AWOIS Features

2.1) AWOIS 52174 wreck

Primary Feature for AWOIS Item #52174

Search Position: 37° 50' 41.0" N, 122° 22' 10.9" W

Historical Depth: 6.20 m

Search Radius: 50

Search Technique: S2,MB,ES

Technique Notes: [None]

History Notes:

HISTORY■ LNM47/92(11/17/92)--11TH CGD; BERKELEY PIER LIGHTED WRECK BUOY ì■"WR" ESTABLISHED.■ H10456/93--DANG WRECK (SUBM 6.2M(20FT) AT MLLW), 30FT WOODEN WRECK IN A NW-SE■DIRECTION, DIVERS INDICATE THAT THE STARBOARD RAIL IS THE SHOALEST PORTION OF ■THE WRECK. POSITION GIVEN IN LAT 37-50-41N, LONG 122-22-10.85W. (ENTERED 1/95 ■RWD)

Survey Summary

Survey Position: 37° 50' 41.0" N, 122° 22' 10.7" W

Least Depth: 7.12 m (= 23.36 ft = 3.893 fm = 3 fm 5.36 ft)

TPU (±1.96σ): **THU (TPEh)** ±1.962 m ; **TVU (TPEv)** ±0.286 m

Timestamp: 2009-316.21:40:55.995 (11/12/2009)

Survey Line: hdcs_data / nrt6_s3003_em3000 / 2009-316 / 400_2133

Profile/Beam: 442/110

Charts Affected: 18650_1, 18649_1, 18652_5, 18652_1, 18640_1, 18680_1, 18010_1, 18022_1, 18007_1, 18020_1, 501_1, 530_1, 50_1

Remarks:

AWOIS 52174 wreck was investigated with MB/SSS object detection requirements. The wreck has been verified and chart should be updated to reflect new survey data.

Feature Correlation

Address	Feature	Range	Azimuth	Status
hdcs_data/nrt6_s3003_em3000/2009-316/400_2133	442/110	0.00	000.0	Primary
OPR-L430-NRT6-09awois	AWOIS # 52174	2.61	083.6	Secondary (grouped)
hdcs_data/nrt6_s3003_klein3000_sss100/2009-316/sonar_data091112214000	0001	4.68	158.5	Secondary
ChartGPs - ENC 0_1CSF01	Danger 63	16.52	184.1	Secondary (grouped)

Hydrographer Recommendations

Hydrographer recommends charting Awois 52174 with a shoal depth of 23ft instead of 20ft to reflect new survey data.

Cartographically-Rounded Depth (Affected Charts):

23ft (18650_1, 18649_1, 18652_5, 18652_1)

3 ¾fm (18640_1, 18680_1, 18010_1, 18022_1, 18007_1, 18020_1, 530_1)

7.1m (501_1, 50_1)

S-57 Data

Geo object 1:	Wreck (WRECKS)
Attributes:	CATWRK - 1:non-dangerous wreck
	CONVIS - 2:not visual conspicuous
	INFORM - Wreck
	QUASOU - 6:least depth known
	SORDAT - 20100217
	SORIND - US,US,survy,H11639
	TECSOU - 3:found by multi-beam
	VALSOU - 7.119 m
	VERDAT - 12:Mean lower low water
	WATLEV - 3:always under water/submerged

2.2) Awois 53170 rock

Primary Feature for AWOIS Item #53170

Search Position: 37° 49' 11.3" N, 122° 22' 37.3" W

Historical Depth: 8.84 m

Search Radius: 50

Search Technique: S2,MB,ES

Technique Notes: [None]

History Notes:

L-1335/00--4/13/00; POSITION COMES FROM PROJECT NUMBER OPR-L304-KR-99 (H-10961): PACIFIC HYDROGRAPHIC BRANCH REPORT OF DANGERS TO NAVIGATION. FEATURE FOUND WAS A SUBMERGED ROCK WITH A DEPTH OF 29.2 AT 37°49'11.3"N 122°22'37.3"W. DEPTH WAS DISCOVERED USING SHALLOW WATER MULTIBEAM TECHNOLOGY. ROCK DETERMINATION WAS MADE FROM AN INTERPRETATION OF SOUNDINGS. FEATURE IS 5.9 FEET ABOVE SEA FLOOR IN AN AREA CHARTED AS APPROXIMATELY 35 FEET DEEP. IT IS APPROXIMATELY 6 FEET LONG AND 4 FEET WIDE. IT IS RECOMMENDED IN THE DESCRIPTIVE REPORT THAT DIVE INVESTIGATIONS BE PERFORMED TO VERIFY LEAST DEPTHS B/C IT IS POSSIBLE THAT MASTS OR OTHER OBSTRUCTIONS COULD BE RISING ABOVE THIS FEATURE■ LNM-38/00--9/19/00; ADD 29 FT DEPTH WITH DOTTED DANGER CURVE, BLUE TINT AND LABEL: RK AT 37°49'11.2"N 122°22'37.2"W.

Survey Summary

Survey Position: 37° 49' 11.2" N, 122° 22' 37.2" W

Least Depth: 9.67 m (= 31.73 ft = 5.288 fm = 5 fm 1.73 ft)

TPU (±1.96σ): **THU (TPEh)** ±1.962 m ; **TVU (TPEv)** ±0.288 m

Timestamp: 2009-316.21:09:30.589 (11/12/2009)

Survey Line: hdcs_data / nrt6_s3003_em3000 / 2009-316 / 403_2101

Profile/Beam: 325/29

Charts Affected: 18650_1, 18649_1, 18652_5, 18652_1, 18640_1, 18680_1, 18010_1, 18022_1, 18007_1, 18020_1, 501_1, 530_1, 50_1

Remarks:

Awois 53170 was investigated with MB/SSS object detection requirements. The rock has been verified and chart should be updated to reflect new survey data.

Feature Correlation

Address	Feature	Range	Azimuth	Status
hdcs_data/nrt6_s3003_em3000/2009-316/403_2101	325/29	0.00	000.0	Primary

ChartGPs - ENC 0_1CSF01	Danger 47	0.98	148.1	Secondary (grouped)
hdcs_data/nrt6_s3003_klein3000_sss200/2009-316/sonar_data091112212100	0001	2.75	166.4	Secondary
hdcs_data/nrt6_s3003_klein3000_sss200/2009-316/sonar_data091112211800	0001	4.00	014.7	Secondary
OPR-L430-NRT6-09awois	AWOIS # 53170	4.96	143.2	Secondary

Hydrographer Recommendations

Hydrographer recommends charting Awois 53170 with a shoal depth of 31ft instead of 29ft to reflect new survey data.

Cartographically-Rounded Depth (Affected Charts):

31ft (18650_1, 18649_1, 18652_5, 18652_1)

5 ¼fm (18640_1, 18680_1, 18010_1, 18022_1, 18007_1, 18020_1, 530_1)

9.7m (501_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)

Attributes:

INFORM - Rock

QUASOU - 6:least depth known

SORDAT - 20100217

SORIND - US,US,Survy,H11639

TECSOU - 3:found by multi-beam

VALSOU - 9.671 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

2.3) Awois 51986 wrecks

Primary Feature for AWOIS Item #51986

Search Position:	37° 48' 57.7" N, 122° 22' 56.7" W
Historical Depth:	21.15 m
Search Radius:	50
Search Technique:	S2,MB,ES
Technique Notes:	[None]

History Notes:

CL579/61--OBSTR REPORTED 260DEG. 1100YDS FROM CUPOLA, TREASURE ì■ISLAND, NM20/61 ISSUED.■ CL716/76--CAS; WK LOCATED BY ECHOSOUNDER AND WIRE SWEEP ì■INVESTIGATION. ECHOSOUNDER LEAST DEPTH OF 68.5FT AND A ì■LEADLINE/DIVER LEAST DEPTH OF 69.2FT BOTH REDUCED TO PREDICTED ì■TIDES WERE OBTAINED. THE WK, BELIEVED TO BE A METAL BARGE WITH NO ì■PROTRUDING MAST WAS POSITIONED IN LAT 37-48-59N, LONG ì■122-22-53W(NAD27).■ H9794/78--70FT WK LOCATED IN LAT 37-48-58N, LONG ì■122-22-53W(NAD27). EVALUATOR RECOMMENDS CHART PRESENT SURVEY DATA.■ CL82/92--USCG; "REMOVE THE WRECK CHARTED IN ANCHORAGE 7 IN POSITION ì■LAT 37-49.1N, LONG 122-22.9W(NAD83). ON DECEMBER 8, 1991, DIVERS ì■FROM US NAVY MOBILE DIVING SALVAGE UNIT ONE VERIFIED THE WRECK NO ì■LONGER EXISTS WITHIN A 100 METER RADIUS OF THE CHARTED POSITION." ì■CHARTING ACTION; REVISED TO ED. (ENTERED 11/92 RWD)■ H10456/93--WK (SUBM 23.0M(75FT) AT MLLW), 12M ES INVESTIGATION ON AN ì■APPROX 30X75FT BARGE LIKE FEATURE, POSITION GIVEN IN LAT ì■37-48-58.13N, LONG 122/22/56.97W. ANOTHER WK LIKE FEATURE WITH A ì■LEAST DEPTH OF 23.7M WAS LOCATED ABOUT 30M NORTH. (UPDATED 1/95 ì■RWD)■ H10960/00--OPR-L304-KR-00: WRECK WAS FOUND AT POSITION 37 48 57.663 N, 122 22 56.707 W WITH A LEAST DEPTH OF 69.4 FEET. THIS POSITION IS 15 METERS SOUTHEAST OF THE REPORTED LOCATION IN THE AWOIS DATABASE. THE DEPTH IN THE DATABASE WAS REPORTED AS 69.2 FEET IN 1976 AND 75 FEET IN 1993. IT IS RECOMMENDED THAT THE DEPTH OF THE WRECK BE REVISED TO 69 FEET. A SECOND WRECK, WHICH WAS ORIGINALLY DISCOVERED IN 1993, WAS LOCATED APPROXIMATELY 10 METERS WEST OF THE AWOIS ITEM. THE WRECK WAS FOUND AT POSITION 37 48 57.543 N, 122 22 57.743 W WITH A LEAST DEPTH OF 81.5 FEET. IT IS RECOMMENDED THAT THE SECOND WRECK BE ADDED TO THE AWOIS DATABASE. FOLLOWING IS A HILL SHADED MODEL OF MULTIBEAM DATA FROM THIS SURVEY, ILLUSTRATING THE ORIENTATION. ENTERED 11/04 MCR

Survey Summary

Survey Position:	37° 48' 58.0" N, 122° 22' 56.8" W
Least Depth:	20.22 m (= 66.33 ft = 11.055 fm = 11 fm 0.33 ft)
TPU (±1.96σ):	**THU (TPEh)** ±2.006 m ; **TVU (TPEv)** ±0.418 m
Timestamp:	2009-316.18:49:40.523 (11/12/2009)
Survey Line:	hdcs_data / nrt6_s3003_em3000 / 2009-316 / 410_1841
Profile/Beam:	253/122

Charts Affected: 18650_1, 18649_1, 18652_5, 18652_1, 18640_1, 18680_1, 18010_1, 18022_1, 18007_1, 18020_1, 501_1, 530_1, 50_1

Remarks:

Awois 51986 wrecks were investigated with MB object detection requirements. The wrecks have been verified and chart should be updated to reflect new survey data.

Feature Correlation

Address	Feature	Range	Azimuth	Status
hdcs_data/nrt6_s3003_em3000/2009-316/410_1841	253/122	0.00	000.0	Primary
ChartGPs - ENC 0_1CSF01	Danger 64	5.09	133.5	Secondary (grouped)
ChartGPs - ENC 0_1CSF01	Danger 61	10.52	307.4	Secondary (grouped)
OPR-L430-NRT6-09awois	AWOIS # 51986	11.34	345.2	Secondary
ChartGPs - ENC 0_1CSF01	Danger 67	40.80	090.2	Secondary (grouped)

Hydrographer Recommendations

Hydrographer recommends charting Awois 51986 with a shoal depth of 66ft instead of 69ft to reflect new survey data.

Cartographically-Rounded Depth (Affected Charts):

66ft (18650_1, 18649_1, 18652_5, 18652_1)

11fm (18640_1, 18680_1, 18010_1, 18022_1, 18007_1, 18020_1, 530_1)

20.2m (501_1, 50_1)

S-57 Data

Geo object 1: Wreck (WRECKS)

Attributes:

CATWRK - 1:non-dangerous wreck

CONVIS - 2:not visual conspicuous

INFORM - Wreck

QUASOU - 6:least depth known

SORDAT - 20100217

SORIND - US,US,survy,H11639

TECSOU - 3:found by multi-beam

VALSOU - 20.217 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

3 - Dangers to Navigation

3.1) Platform Piling 1

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 48' 40.9" N, 122° 20' 18.3" W

Least Depth: [None]

TPU (±1.96σ): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]

Timestamp: 2009-328.19:47:29.000 (11/24/2009)

DP Dataset: hdcs_data / unassigned / 2009-328 / platform_position

Profile/Beam: 1/1

Charts Affected: 18650_1, 18649_1, 18652_5, 18652_1, 18640_1, 18680_1, 18010_1, 18022_1, 18007_1, 18020_1, 501_1, 530_1, 50_1

Remarks:

Platform-like structure, consisting of four pilings, each connected by a beam with a sign reading "Caution Exposed Cables." Height of platform is approx. 4m. Lights on pilings designated Platorm Pilings 2 and 4.

Feature Correlation

Address	Feature	Range	Azimuth	Status
hdcs_data/unassigned/2009-328/platform_position	1/1	0.00	000.0	Primary

Hydrographer Recommendations

Chart platform using the four piling positions. This platform is uncharted, and is located in an area of high small-vessel traffic related to the construction of the new Bay Bridge.

S-57 Data

Geo object 1: Pile (PILPNT)

Attributes: CATPLE - 3:post

CONVIS - 1:visual conspicuous

HEIGHT - 4 m

INFORM - Piling connected to other pilings

SORDAT - 20100217

SORIND - US, US, Survy, H11639

3.2) Platform Piling 2

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 48' 41.0" N, 122° 20' 18.0" W

Least Depth: [None]

TPU (±1.96σ): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]

Timestamp: 2009-328.19:50:02.000 (11/24/2009)

DP Dataset: hdcs_data / unassigned / 2009-328 / platform_position

Profile/Beam: 2/1

Charts Affected: 18650_1, 18649_1, 18652_5, 18652_1, 18640_1, 18680_1, 18010_1, 18022_1, 18007_1, 18020_1, 501_1, 530_1, 50_1

Remarks:

Platform-like structure, consisting of four pilings, each connected by a beam with a sign reading "Caution Exposed Cables." Height of platform is approx. 4m. Lights on pilings designated Platorm Pilings 2 and 4.

Feature Correlation

Address	Feature	Range	Azimuth	Status
hdcs_data/unassigned/2009-328/platform_position	2/1	0.00	000.0	Primary

Hydrographer Recommendations

Chart platform using the four piling positions. This platform is uncharted, and is located in an area of high small-vessel traffic related to the construction of the new Bay Bridge.

S-57 Data

Geo object 1: Pile (PILPNT)

Attributes: CATPLE - 3:post

CONVIS - 2:not visual conspicuous

HEIGHT - 4 m

INFORM - Pile connected to other piles

SORDAT - 20100217

SORIND - US,US,survy,H11639

3.3) Platform Piling 3

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 48' 41.4" N, 122° 20' 18.1" W

Least Depth: [None]

TPU (±1.96σ): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]

Timestamp: 2009-328.19:52:47.000 (11/24/2009)

DP Dataset: hdcs_data / unassigned / 2009-328 / platform_position

Profile/Beam: 3/1

Charts Affected: 18650_1, 18649_1, 18652_5, 18652_1, 18640_1, 18680_1, 18010_1, 18022_1, 18007_1, 18020_1, 501_1, 530_1, 50_1

Remarks:

Platform-like structure, consisting of four pilings, each connected by a beam with a sign reading "Caution Exposed Cables." Height of platform is approx. 4m. Lights on pilings designated Platorm Pilings 2 and 4.

Feature Correlation

Address	Feature	Range	Azimuth	Status
hdcs_data/unassigned/2009-328/platform_position	3/1	0.00	000.0	Primary

Hydrographer Recommendations

Chart platform using the four piling positions. This platform is uncharted, and is located in an area of high small-vessel traffic related to the construction of the new Bay Bridge.

S-57 Data

Geo object 1: Pile (PILPNT)

Attributes: CATPLE - 3:post

CONVIS - 1:visual conspicuous

HEIGHT - 4 m

INFORM - Pile connected to other piles

SORDAT - 20100217

SORIND - US,US,survy,H11639

3.4) Platform Piling 4

DANGER TO NAVIGATION

Survey Summary

Survey Position: 37° 48' 41.3" N, 122° 20' 18.4" W

Least Depth: [None]

TPU (±1.96σ): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]

Timestamp: 2009-328.19:54:39.000 (11/24/2009)

DP Dataset: hdcs_data / unassigned / 2009-328 / platform_position

Profile/Beam: 4/1

Charts Affected: 18650_1, 18649_1, 18652_5, 18652_1, 18640_1, 18680_1, 18010_1, 18022_1, 18007_1, 18020_1, 501_1, 530_1, 50_1

Remarks:

Platform-like structure, consisting of four pilings, each connected by a beam with a sign reading "Caution Exposed Cables." Height of platform is approx. 4m. Lights on pilings designated Platorm Pilings 2 and 4.

Feature Correlation

Address	Feature	Range	Azimuth	Status
hdcs_data/unassigned/2009-328/platform_position	4/1	0.00	000.0	Primary
hdcs_data/nrt6_s3003_klein3000_sss200/2009-337/sonar_data091203203000	0001	1.02	319.4	Secondary

Hydrographer Recommendations

Chart platform using the four piling positions. This platform is uncharted, and is located in an area of high small-vessel traffic related to the construction of the new Bay Bridge.

S-57 Data

Geo object 1: Pile (PILPNT)

Attributes: CATPLE - 3:post

CONVIS - 1:visual conspicuous

HEIGHT - 4 m

INFORM - Pile attached to other piles

SORDAT - 20100217

SORIND - US,US,survy,H11639

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : January 5, 2009

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-L430-NRT6-2009
HYDROGRAPHIC SHEET: H11639 Rev

LOCALITY: Rincon Point to Reasure Island, San Francisco Bay, CA
TIME PERIOD: October 21 - December 3, 2009

TIDE STATION USED: 941-4290 San Francisco, CA
Lat. 37° 48.4'N Long. 122° 28.0' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.594 meters

REMARKS: RECOMMENDED ZONING

Preliminary zoning is accepted as the final zoning for project OPR-L430-NRT6-2009, H11639_Rev, during the time period between October 21 and December 3, 2009.

Please use the revised zoning file "L430NRT62009CORP" and "L430NRT62009CORP.zdf" file sent on December 2, 2009. Zones SFB14, SFB15, SFB17, SFB18 and SFB19 are the applicable zones for H11639.

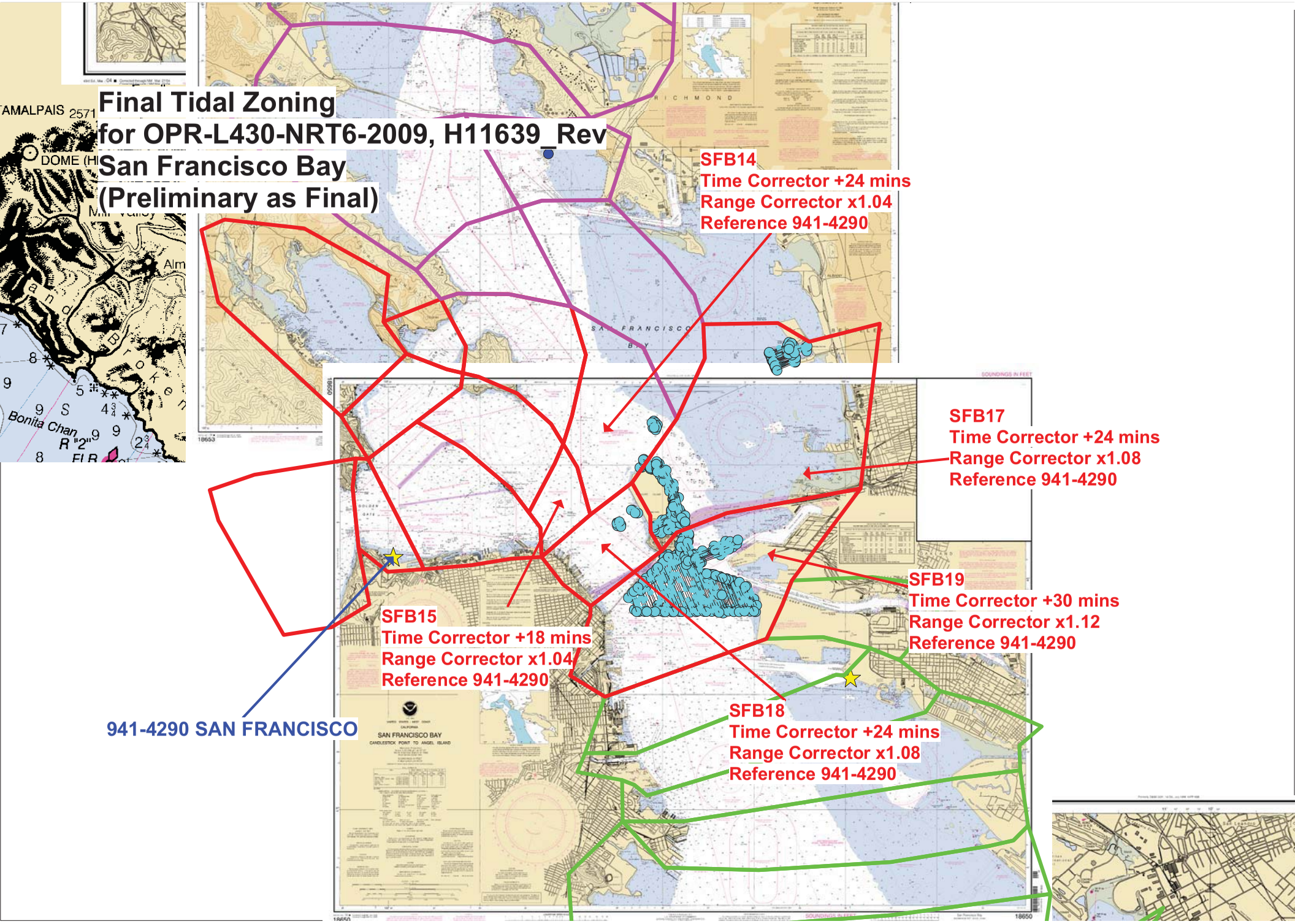
Refer to attachments for zoning information.

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).

Peter J. Stone

Digitally signed by Peter J. Stone
DN: cn=Peter J. Stone, o=CO-OPS, ou=NOAA/NOS, email=peter.stone@noaa.gov, c=US
Date: 2010.01.06 14:37:15 -05'00'

CHIEF, OCEANOGRAPHIC DIVISION


Final Tidal Zoning
for OPR-L430-NRT6-2009, H11639_Rev
San Francisco Bay
(Preliminary as Final)
SFB14
Time Corrector +24 mins
Range Corrector x1.04
Reference 941-4290
SFB17
Time Corrector +24 mins
Range Corrector x1.08
Reference 941-4290
SFB19
Time Corrector +30 mins
Range Corrector x1.12
Reference 941-4290
SFB15
Time Corrector +18 mins
Range Corrector x1.04
Reference 941-4290
SFB18
Time Corrector +24 mins
Range Corrector x1.08
Reference 941-4290
941-4290 SAN FRANCISCO
SAN FRANCISCO BAY
CANDLESTICK POINT TO ANGEL ISLAND
RICHMOND
SAN FRANCISCO BAY
TAMALPAIS 2571
DOME (HI
Bonita Chan
R "2"

H11639 HCell Report

Fernando Ortiz, Physical Scientist
Pacific Hydrographic Branch

1. Specifications, Standards and Guidance Used in HCell Compilation

HCell compilation of survey H11639 used:

Office of Coast Survey HCell Specifications: Draft, Version: 4.0, 17 March 2010.
HCell Reference Guide: Version 2.0, July 29, 2010.

2. Compilation Scale

Depths and features for HCell H11639 were compiled to the largest scale raster charts shown below:

Chart	Scale	Edition	Edition Date	NTM Date
18650	1:20,000	56th	09/2009	3/1/2011
18653	1:20,000	11th	10/2009	3/1/2011

The following ENCs were also used during compilation:

Chart	Scale
US5CA13M	
US5CA21M	

3. Soundings

A survey-scale sounding (SOUNDG) feature object layer was built from the 1-meter Combined Surface in CARIS BASE Editor. A shoal-biased selection was made at 1:10,000 for the18650 and 18653 charts at survey scale using a Radius Table file with values shown in the table, below.

Shoal Limit (m)	Deep Limit (m)	Radius (mm)
-1	10	3
10	20	4
20	30	4.5
30	100	5

In CARIS BASE Editor soundings were manually selected from the high density sounding layers (SS) and imported into a new layer (CS) created to accommodate chart density depths. Manual selection was used to accomplish a density and distribution that closely represents the seafloor morphology.

4. Depth Contours

Depth contours at the intervals on the largest scale chart are included in the *_SS HCell for MCD raster charting division to use for guidance in creating chart contours. The metric and fathom equivalent contour values are shown in the table below.

Chart Contour Intervals in feet from Chart 18650 and 18653	Metric Equivalent to Chart feet, Arithmetically Rounded	Metric Equivalent of Chart feet, with NOAA Rounding Applied	Feet with NOAA Rounding Applied	Feet with NOAA Rounding Removed for Display on H11639_SS.000
6	1.8288	2.0574	6.75	6
12	3.6576	3.8862	12.75	12
18	5.4864	5.715	18.75	18
30	9.144	9.3726	30.75	30
36	10.9728	11.2014	36.75	36
60	18.288	18.5166	60.75	60
90	27.432	27.6606	90.75	90

5. Meta Areas

The following Meta object area is included in HCell H11639:

M_QUAL

The Meta area object was constructed on the basis of the limits of the hydrography.

6. Features

Features addressed by the field units are delivered to PHB where they are deconflicted against the hydrography and the largest scale chart. These features, as well as features to be retained from the chart and features digitized from the Base Surface, are included in the HCell. The geometry of these features may be modified to emulate chart scale per the HCell Reference Guide on compiling features to the chart scale HCell.

7. S-57 Objects and Attributes

The *_CS HCell contains the following Objects:

$CSYMB	Blue Notes-Notes to the MCD chart Compiler
FSHFAC	Fishing structure
M_QUAL	Data quality Meta object
OBSTRN	Obstruction
SBDARE	Bottom samples
SOUNDG	Soundings at the chart scale density
UWTROC	Rocks
WRECKS	Wrecks

The *_SS HCell contains the following Objects:

DEPCNT	Contours at chart scale intervals
SOUNDG	Soundings at the survey scale density

8. Spatial Framework

8.1 Coordinate System

All spatial map and base cell file deliverables are in an LLDG geographic coordinate system, with WGS84 horizontal, MHW vertical, and MLLW (1983-2001 NTDE) sounding datums.

8.2 Horizontal and Vertical Units

DUNI, HUNI and PUNI are used to define units for depth, height and horizontal position in the chart units HCell, as shown below.

Chart Unit Base Cell Units:

Depth Units (DUNI):	Feet
Height Units (HUNI):	Meters
Positional Units (PUNI):	Meters

During creation of the HCell in CARIS BASE Editor and CARIS S-57 Composer, all soundings and features are maintained in metric units with as high precision as possible. Depth units for soundings measured with sonar maintain millimeter precision. Depths on rocks above MLLW and heights on islets above MHW are typically measured with range finder, so precision is less. Units and precision are shown below.

BASE Editor and S-57 Composer Units:

Sounding Units:	Meters rounded to the nearest millimeter
Spot Height Units:	Meters rounded to the nearest decimeter

See the HCell Reference Guide for details of conversion from metric to charting units, and application of NOAA rounding.

9. Data Processing Notes

There were no significant deviations from the standards and protocols given in the HCell Specification and HCell Reference Guide.

10. QA/QC and ENC Validation Checks

H11639 was subjected to QA checks in S-57 Composer prior to exporting to the metric HCell base cell (000) file. The millimeter precision metric S-57 HCell was converted to chart units and NOAA rounding applied. dKart Inspector was then used to further check the data set for conformity with the S-58 ver. 2 standard (formerly Appendix B.1 Annex C of the S-57 standard).

All tests were run and warnings and errors investigated and corrected unless they are MCD approved as inherent to and acceptable for HCells.

11. Products

11.1 HSD, MCD and CGTP Deliverables

H11639_CS.000	Base Cell File, Chart Units, Soundings and features compiled to 1:20,000
H11639 _SS.000	Base Cell File, Chart Units, Soundings and Contours compiled to 1:10,000
H11639 _DR.pdf	Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items
H11639 _outline.gml H11639 _outline.xsd	Survey outline

11.2 Software

CARIS HIPS Ver. 6.1	Inspection of Combined BASE Surfaces
CARIS BASE Editor Ver. 3.0	Creation of soundings and bathy-derived features, creation of the depth area, meta area objects, and Blue Notes; Survey evaluation and verification; Initial HCell assembly.
CARIS S-57 Composer Ver. 2.1	Final compilation of the HCell, correct geometry and build topology, apply final attributes, export the HCell, and QA.
CARIS GIS 4.4a	Setting the sounding rounding variable for conversion of the metric HCell to NOAA charting units with NOAA rounding.
CARIS HOM Ver. 3.3	Perform conversion of the metric HCell to NOAA charting units with NOAA rounding.
HydroService AS, dKart Inspector Ver. 5.1, SP 1	Validation of the base cell file.
Northport Systems, Inc., Fugawi View ENC Ver.1.0.0.3	Independent inspection of final HCells using a COTS viewer.

12. Contacts

Inquiries regarding this HCell content or construction should be directed to:

Fernando Ortiz
Physical Scientist
Pacific Hydrographic Branch
Seattle, WA
206.526.6859
Fernando.ortiz@noaa.gov.

APPROVAL SHEET
H11639

The survey evaluation and verification has been conducted according to branch processing procedures and the HCell compiled per the latest OCS HCell Specifications.

Fernando Ortiz
2011.03.21
10:29:31 -07'00'

The survey and associated records have been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, S-57 classification and attribution of soundings and features, cartographic characterization, and verification or disproval of charted data within the survey limits. The survey records and digital data comply with OCS requirements except where noted in the Descriptive Report and are adequate to supersede prior surveys and nautical charts in the common area.

Digitally signed by Kurt Brown
Date: 2011.03.21 10:55:31 -07'00'

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

Gary C. Nelson
Digitally signed by Gary C. Nelson
DN: cn=Gary C. Nelson, o=NOAA, ou=Pacific Hydrographic Branch, email=gary.nelson@noaa.gov, c=US
Date: 2011.03.21 11:29:14 -07'00'

Christopher Hare
HQ Survey Review
2011.04.22 11:21:36 -04'00'