F00639

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Survey

DESCRIPTIVE REPORT

Type of Survey:	Navigable Area
Registry Number:	F00639

LOCALITY

State(s):	California
General Locality:	Carquinez Strait
Sub-locality:	Anchorage 22 and 23

2014

CHIEF OF PARTY
Laura Pagano

LIBRARY & ARCHIVES

Date:

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

REGISTRY NUMBER:

HYDROGRAPHIC TITLE SHEET

F00639

INSTRUCTIONS: The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

State(s):	**California**
General Locality:	**Carquinez Strait**
Sub-Locality:	**Anchorage 22 and 23**
Scale:	**5000**
Dates of Survey:	**04/02/2014 to 04/17/2014**
Instructions Dated:	**02/05/2014**
Project Number:	**S-L925-NRT6-14**
Field Unit:	**Navigation Response Team 6**
Chief of Party:	**Laura Pagano**
Soundings by:	**Multibeam Echo Sounder**
Imagery by:	
Verification by:	**Pacific Hydrographic Branch**
Soundings Acquired in:	**meters at Mean Lower Low Water**

Remarks:

The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. All separates are filed with the hydrographic data. Notes in red were generated during office processing. The processing branch concurs with all information and recommendations in the DR unless otherwise noted. 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/.

Table of Contents

List of Tables

List of Figures

Descriptive Report to Accompany Survey F00639

Project: S-L925-NRT6-14

Locality: Carquinez Strait

Sublocality: Anchorage 22 and 23

Scale: 1:5000

April 2014 - April 2014

Navigation Response Team 6

Chief of Party: Laura Pagano

A. Area Surveyed

F00639 encompasses Anchorage 22 and 23 located within the Carquinez Strait near Benicia, California.

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
38° 2' 36.29" N 122° 10' 4.26" W	38° 1' 54.34" N 122° 8' 17.38" W

Table 1: Survey Limits

Survey Limits were acquired in accordance with the requirements in the Project Instructions and the HSSD.

A.2 Survey Purpose

The USCG has requested a hydrographic survey in Anchorage 22 and 23, near Benicia California. In July of 2013, a tug and barge grounded in anchorage 22. NRT6 conducted a reconnaissance operation in Anchorage 22 following the grounding and found that a charted shoal has migrated towards the federal channel. There are concerns that the shoaling may impact more of the anchorages than previously identified during the reconnaissance operation conducted by NRT6. The team is assigned to conduct a full survey of the Anchorages 22 and 23 and to define the extents of the shoal.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

A.4 Survey Coverage

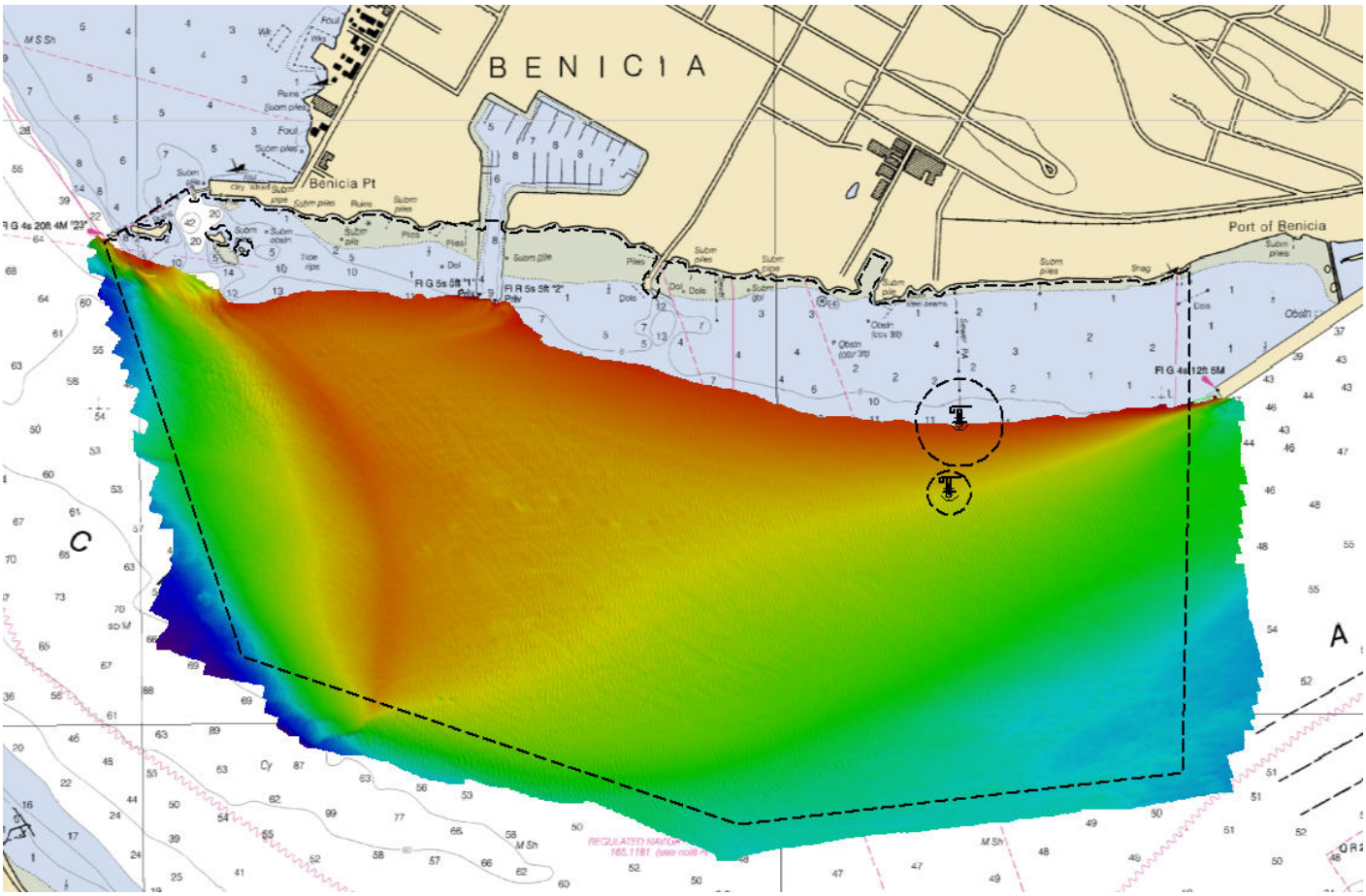


Figure 1: F00639 bathymetry overlaid over assigned survey area and Chart 18657, Carquinez Strait.

FOUR METER CURVE DEVIATION

Navigation Response Team 6 was not able to reach the 4m curve in the NW section of the survey area due to a rocky area deemed unsafe to navigate (38-02-32.98N, 122-09-54.00W). See figure 2.

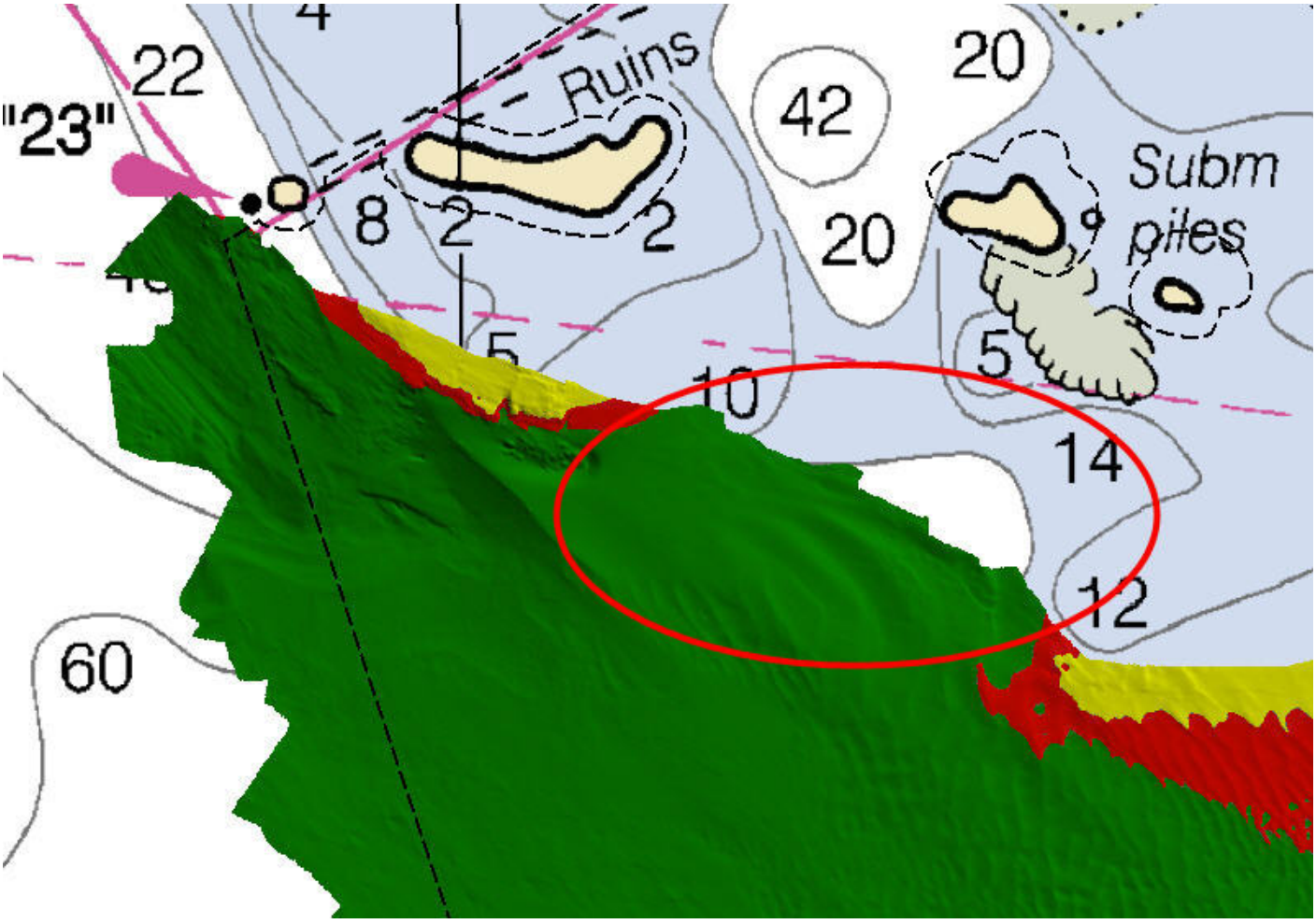


Figure 2: Four meter curve deviation due to a rocky unsafe area (circled red).

After communication with the field unit to clarify conditions in the area reported above as unsafe for navigation, a feature was recommended to be added to the chart showing current eddies at the location.

A.5 Survey Statistics

The following table lists the mainscheme and crossline acquisition mileage for this survey:

	HULL ID	*S3003*	*Total*
LNM	**SBES Mainscheme**	0	0
	MBES Mainscheme	79.34	79.34
	Lidar Mainscheme	0	0
	SSS Mainscheme	0	0
	SBES/MBES Mainscheme	0	0
	SBES/SSS Mainscheme	0	0
	MBES/SSS Mainscheme	0	0
	SBES/MBES Crosslines	6.13	6.13
	Lidar Crosslines	0	0
Number of Bottom Samples			0
Number of AWOIS Items Investigated			0
Number Maritime Boundary Points Investigated			0
Number of DPs			0
Number of Items Investigated by Dive Ops			0
Total SNM			0.731

Table 2: Hydrographic Survey Statistics

The following table lists the specific dates of data acquisition for this survey:

Survey Dates	Day of the Year
04/02/2014	92
04/03/2014	93
04/04/2014	94
04/07/2014	97
04/11/2014	101
04/17/2014	107

Table 3: Dates of Hydrography

B. Data Acquisition and Processing

B.1 Equipment and Vessels

Refer to the Data Acquisition and Processing Report (DAPR) for a complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods. Additional information to supplement sounding and survey data, and any deviations from the DAPR are discussed in the following sections.

B.1.1 Vessels

The following vessels were used for data acquisition during this survey:

Hull ID	***S3003***
LOA	33 feet
Draft	1.6 feet

Table 4: Vessels Used

B.1.2 Equipment

The following major systems were used for data acquisition during this survey:

Manufacturer	Model	Type
Kongsberg	EM3002	MBES

Table 5: Major Systems Used

B.2 Quality Control

B.2.1 Crosslines

Crosslines, acquired for this survey, totalled 7.7% of mainscheme acquisition.

Multibeam Echosounder (MBES) crosslines totaled 6.13 nautical miles, comprising of 7.7% of mainscheme MBES hydrography, satisfying field procedure requirements. The mainscheme bathymetry was manually compared to the crossline nadir beams in CARIS subset mode. In general, the comparison yielded favorable results showing general agreement among soundings. The only areas where some discernible offsets were noted are in Anchorage 22 where sand waves exist (see figure 4). This is not due to equipment effectiveness, instead it is a result of time lapse between survey days in an extremely dynamic area where there are very strong currents and constant sediment shift. In areas where there are no sand waves, this slight offset was not an issue and the crossline comparison is excellent, within IHO Special Order standards.

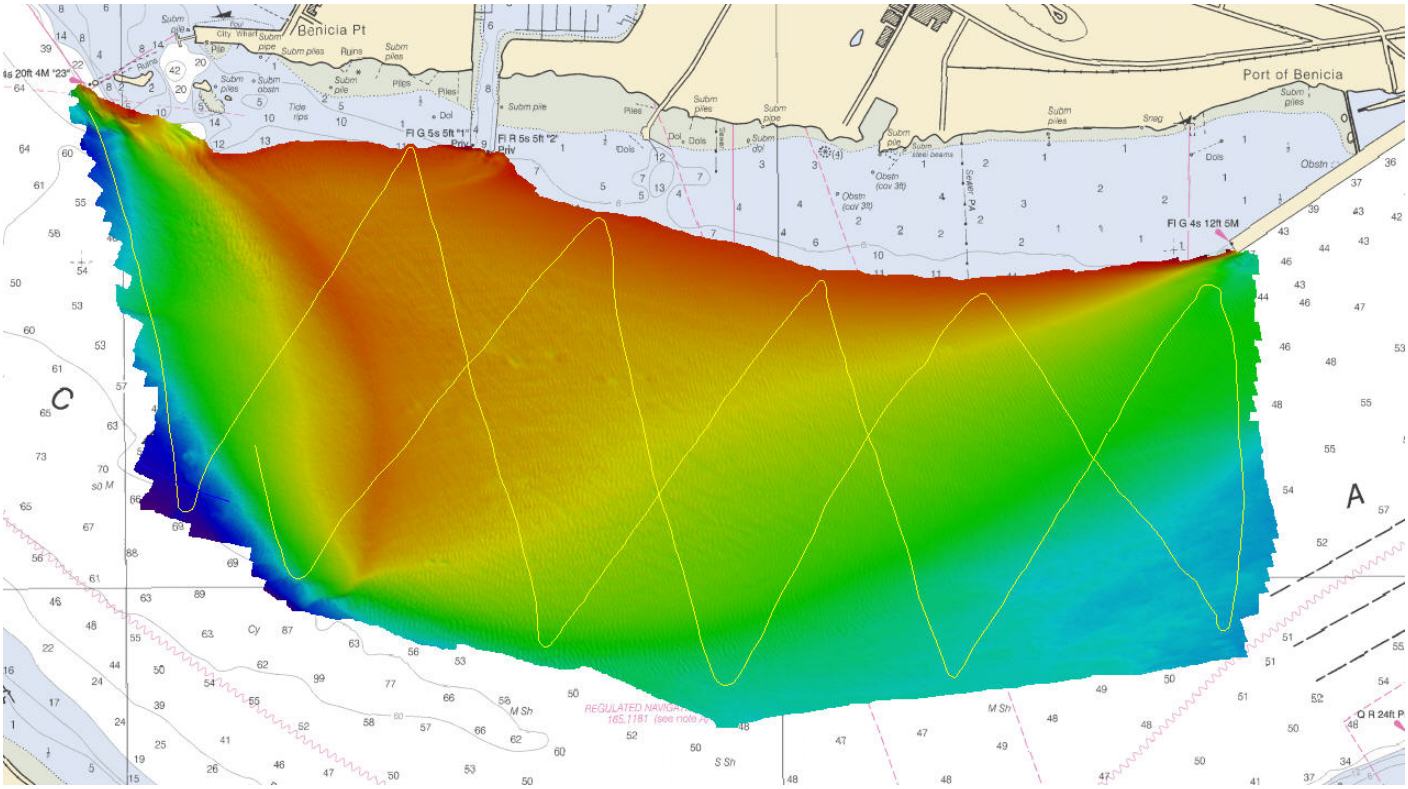


Figure 3: Crosslines overlaid over MBES Surface.

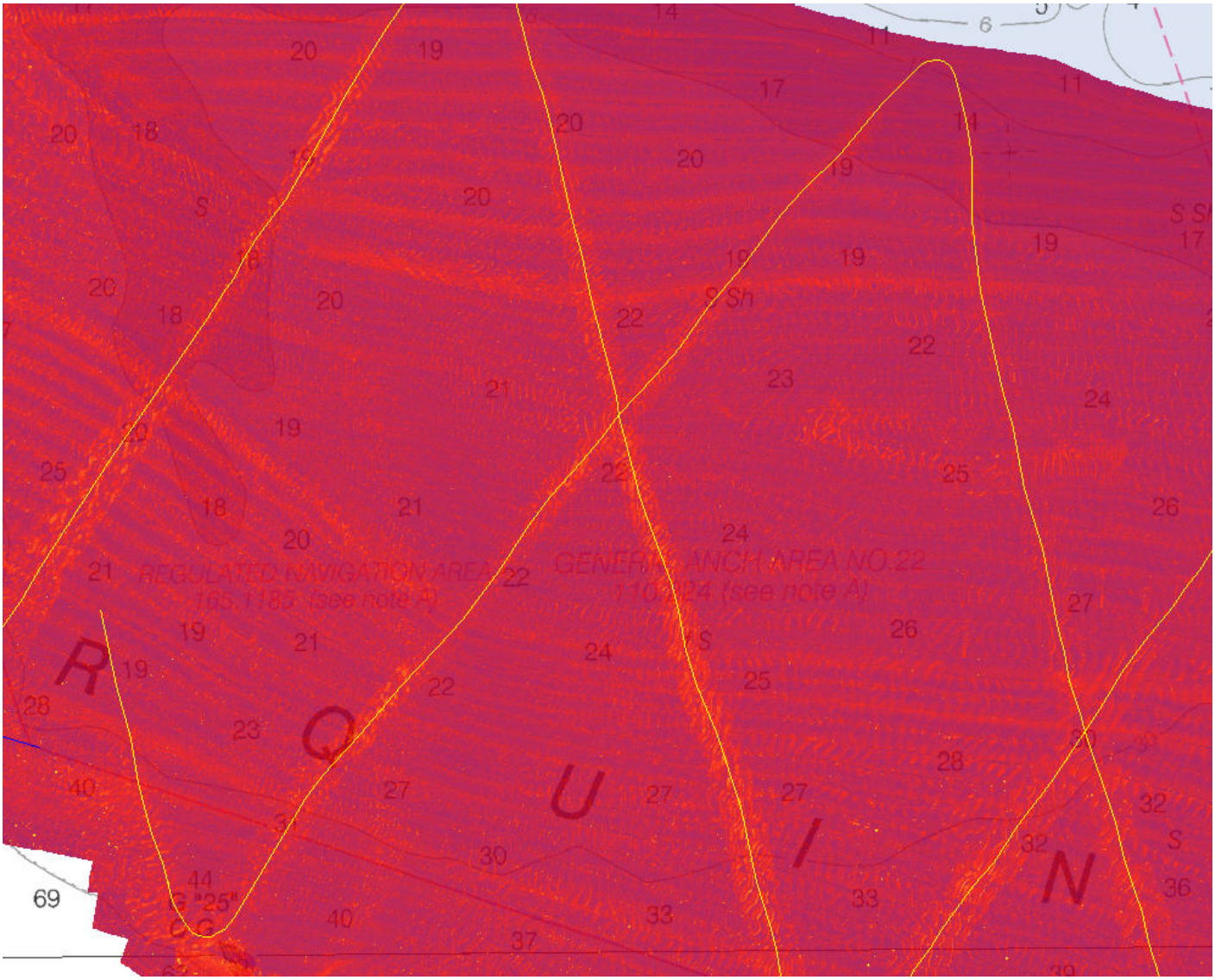


Figure 4: Anchorage 22 notable crossline offset in Standard Deviation mode. Colors toward yellow represent sedimentation shift between crossline and MBES bathymetry.

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Measured	Zoning
0.01 meters	0.06 meters

Table 6: Survey Specific Tide TPU Values

Hull ID	Measured - CTD	Measured - MVP	Surface
S3003	4.0 meters/second		0.5 meters/second

Table 7: Survey Specific Sound Speed TPU Values

Uncertainty values of submitted, finalized grids are calculated in CARIS HIPS & SIPS using the “Greater of the Two” of total propagated uncertainty and standard deviation (scaled to 95%). An “IHO-ness” attribute layer was created for the F00639 finalized surface in CARIS HIPS & SIPS for analysis. Uncertainty values throughout the survey meet Special Order specifications with the exception of those areas show in red (see Figure 5).

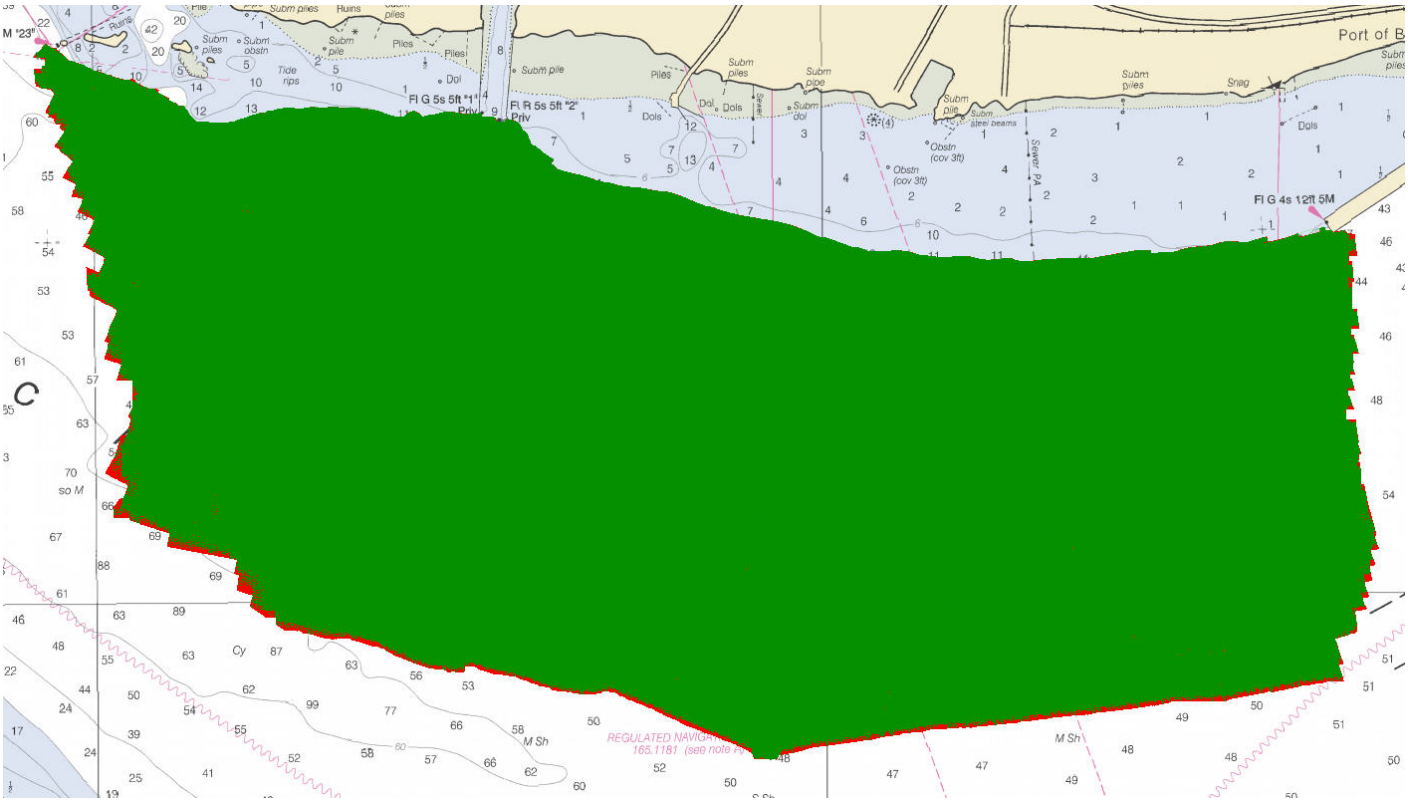


Figure 5: All data colored green meets IHO Special Order specifications. Red data does not.

B.2.3 Junctions

No junction surveys were assigned in the Project Instructions.

There are no contemporary surveys that junction with this survey.

B.2.4 Sonar QC Checks

Sonar system quality control checks were conducted as detailed in the quality control section of the DAPR.

B.2.5 Equipment Effectiveness

POS MV 4 "~3º TILT" ISSUE

A developing issue with S3003's IMU (inertial measurement unit) and secondary differential GPS antenna attributed to sporadic "~3º tilt error" during survey operations for survey F00639.

The issue prognoses was determined by the Pacific Hydrographic Branch (see correspondence folder: B2_Equipment_Effectiveness_POS_Issue).

After analyzing true heave data with POSPac, it was determined that one of the three gyros within the IMU was "sticking" at random times for random duration. Also, an error with the secondary differential GPS was noted, and is most likely an attributing factor.

Error length was as great as 170 meters on line 0122_20140407_181457, but more commonly, the error occurred in much shorter lengths sporadically throughout the survey. See figure 6.

The Hydrographer cleaned the offending data where applicable, with all remaining error within IHO Special Order requirements.

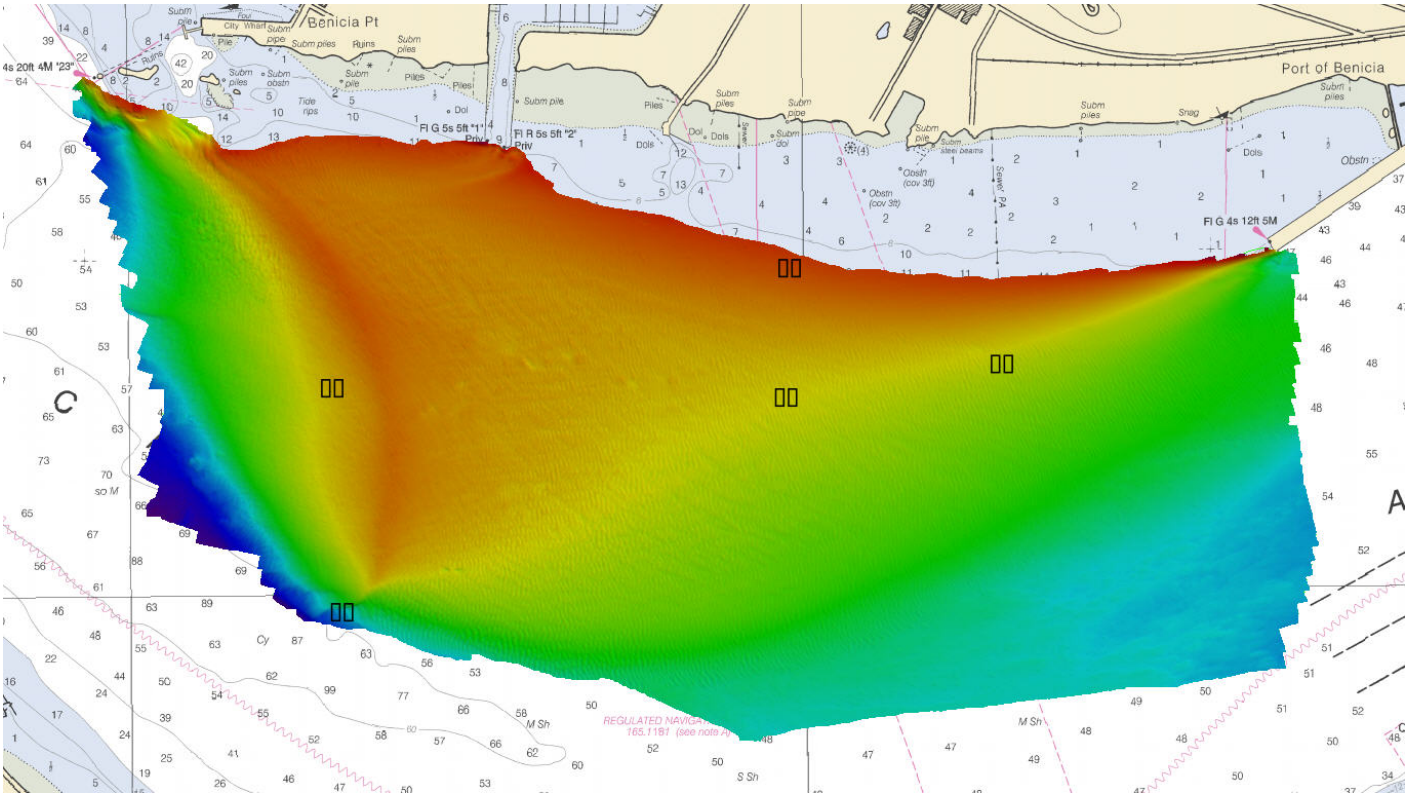


Figure 6: POS MV 4 "~3° TILT" Issue marked locations.

B.2.6 Factors Affecting Soundings

There were no other factors that affected corrections to soundings.

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: Every four hours or more frequently when observed surface sound speed values varied greater than 5 meters per second.

Specifications require a new sound velocity cast when surface sound speed deviates more than 2 m/s from the value of the previous cast. However, no sound speed-induced errors were found during office review and the data are adequate for charting.

B.2.8 Coverage Equipment and Methods

All equipment and survey methods were used as detailed in the DAPR.

B.3 Echo Sounding Corrections

B.3.1 Corrections to Echo Soundings

All data reduction procedures conform to those detailed in the DAPR.

B.3.2 Calibrations

All sounding systems were calibrated as detailed in the DAPR.

B.4 Backscatter

Backscatter was not collected for this survey.

B.5 Data Processing

B.5.1 Software Updates

There were no software configuration changes after the DAPR was submitted.

The following Feature Object Catalog was used: NOAA Extended Attribute Files v5_3

B.5.2 Surfaces

The following surfaces and/or BAGs were submitted to the Processing Branch:

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
F00639_0_5m	CUBE	0.5 meters	0.43 meters - 23.67 meters	NOAA_0.5m	Object Detection
F00639_0_5m_Final	CUBE	0.5 meters	0.43 meters - 29.17 meters	NOAA_0.5m	Object Detection

Table 8: Submitted Surfaces

C. Vertical and Horizontal Control

Additional information discussing the vertical or horizontal control for this survey can be found in the accompanying HVCR.

C.1 Vertical Control

The vertical datum for this project is Mean Lower Low Water.

Standard Vertical Control Methods Used:

Discrete Zoning

The following National Water Level Observation Network (NWLON) stations served as datum control for this survey:

Station Name	Station ID
Martinez-Amorco Pier	9415102

Table 9: NWLON Tide Stations

File Name	Status
9415102.tid	Final Approved

Table 10: Water Level Files (.tid)

File Name	Status
L925NRT62014CORP.zdf	Final

Table 11: Tide Correctors (.zdf or .tc)

A request for final approved tides was sent to N/OPS1 on 05/15/2014. The final tide note was received on 05/21/2014.

Preliminary zoning was accepted as the final zoning for project S-L925-NRT6-2014, F00639, during the time period between April 2nd - April 17th, 2014.

The Tide Note is attached.

C.2 Horizontal Control

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

The projection used for this project is UTM Zone 10N.

The following DGPS Stations were used for horizontal control:

DGPS Stations
Pigeon Point, CA (287kHz)

Table 12: USCG DGPS Stations

D. Results and Recommendations

D.1 Chart Comparison

Due to the navigationally significant nature of the Benicia Anchorages in Carquinez Strait, Anchorage 22 and 23, every sounding and contour line on the largest scale raster chart and ENC was analyzed and compared with the new CUBE surface data using CARIS and Pydro.

D.1.1 Raster Charts

The following are the largest scale raster charts, which cover the survey area:

Chart	Scale	Edition	Edition Date	LNM Date	NM Date
18657	1:10000	19	11/2005	06/10/2014	05/31/2014

Table 13: Largest Scale Raster Charts

18657

CHART COMPARISON, SOUNDINGS AND CONTOUR OVERVIEW

The general trend and most notable attribute for the area is the migrating shoal in Anchorage 22 that is pushing south and east from what is currently charted. Anchorage 23 is in need of a general sounding and contour update but is not experiencing the dramatic sediment shift that is occurring in Anchorage 22. See figures 7 - 11 for a more detailed analysis.

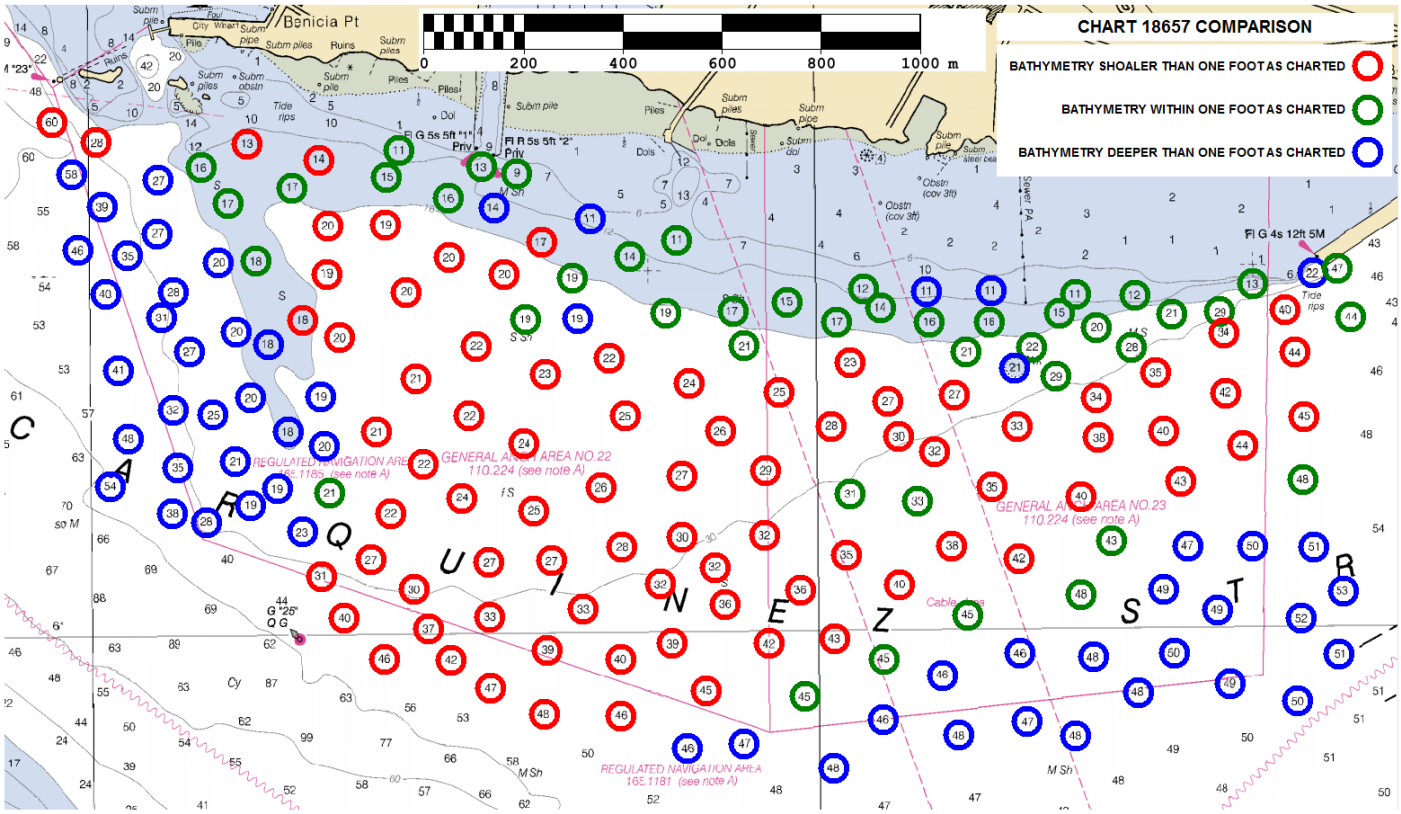


Figure 7: Chart 18657, sounding comparison overview. Bathymetry shoaler or deeper than one foot is noted.

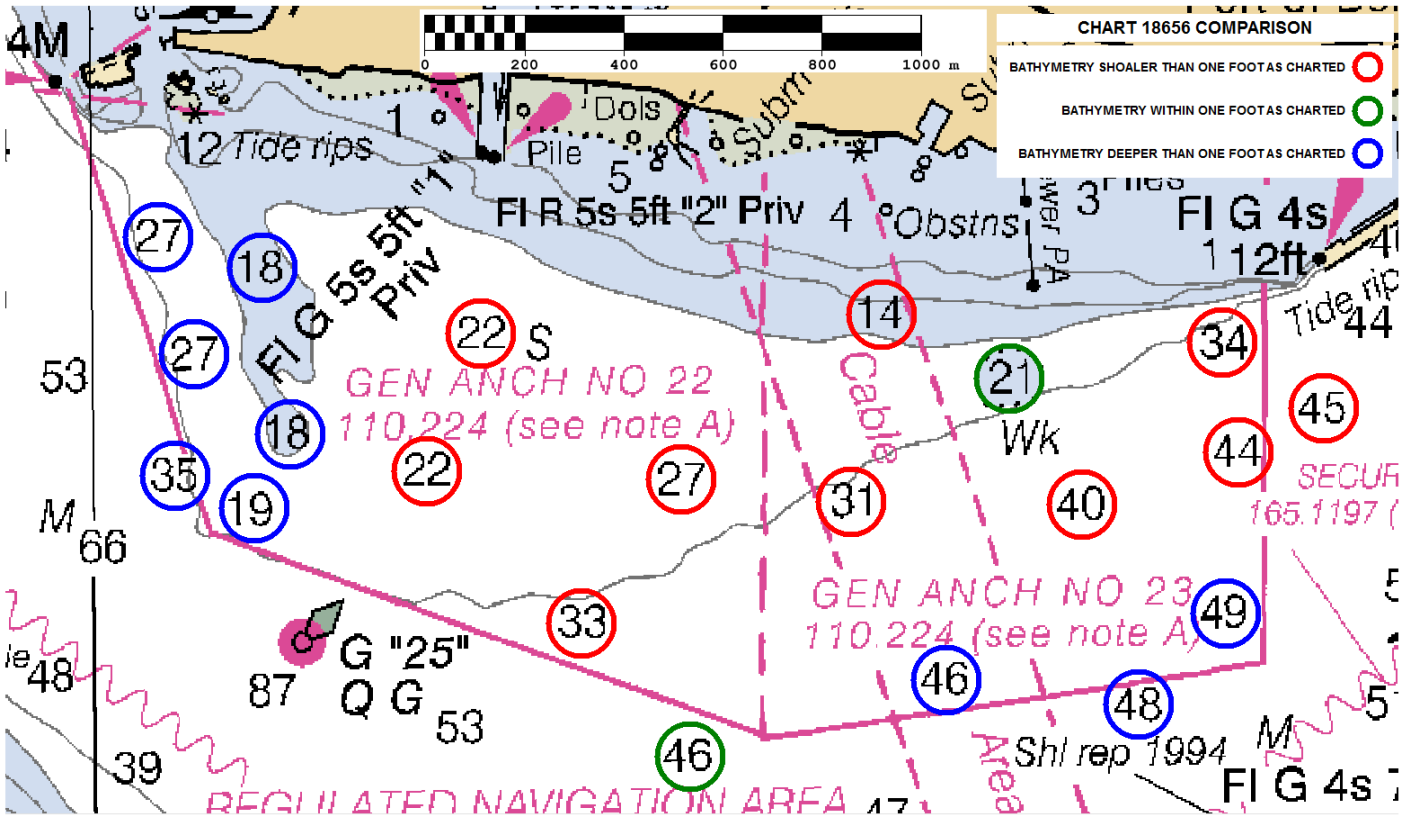


Figure 8: Chart 18656, sounding comparison overview. Bathymetry shoaler or deeper than one foot is noted.

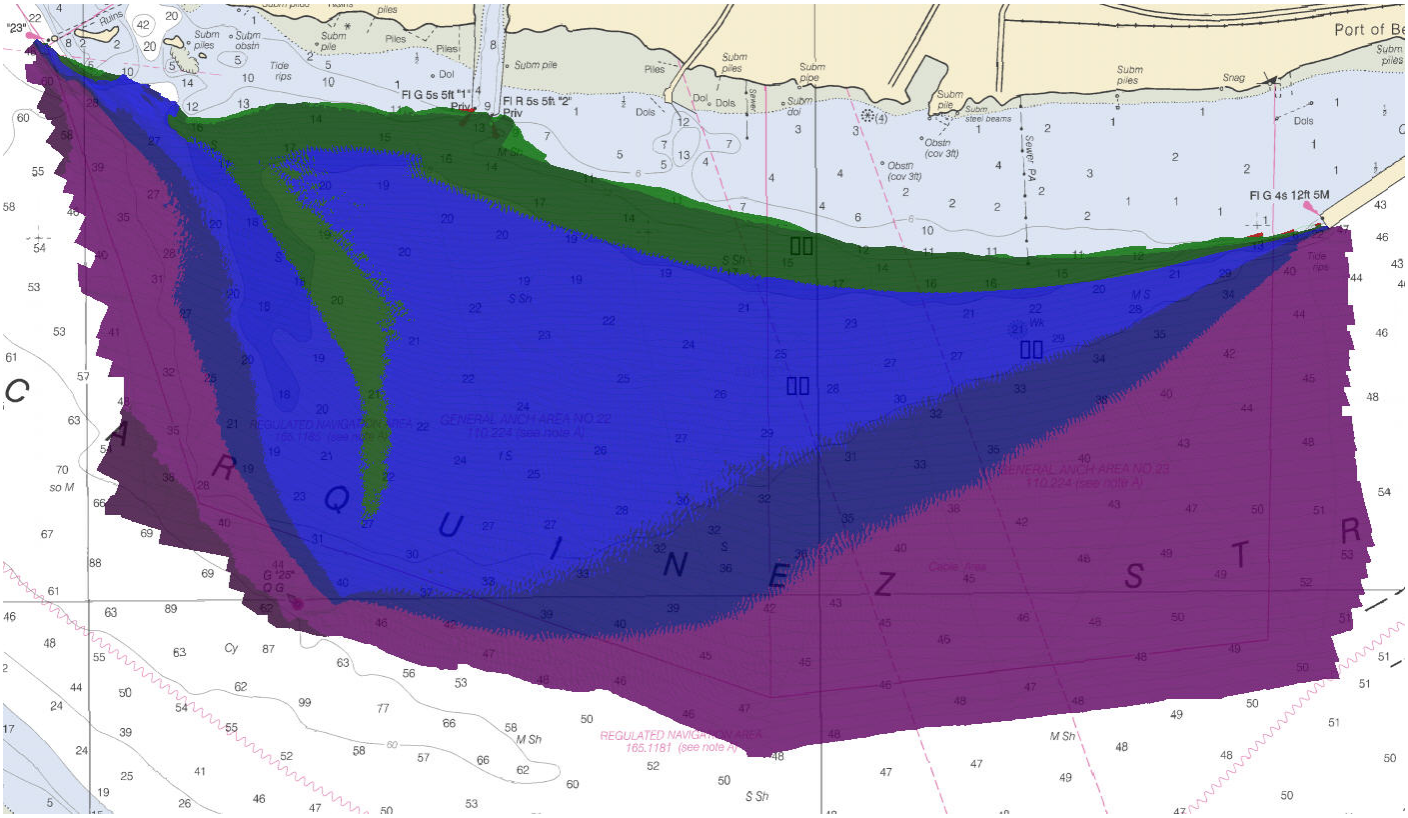


Figure 9: Chart 18657, isoplethic comparison overview. Anchorage 22 is showing major contour line discrepancy whereas Anchorage 23 shows strong agreement and needs only slight modification.

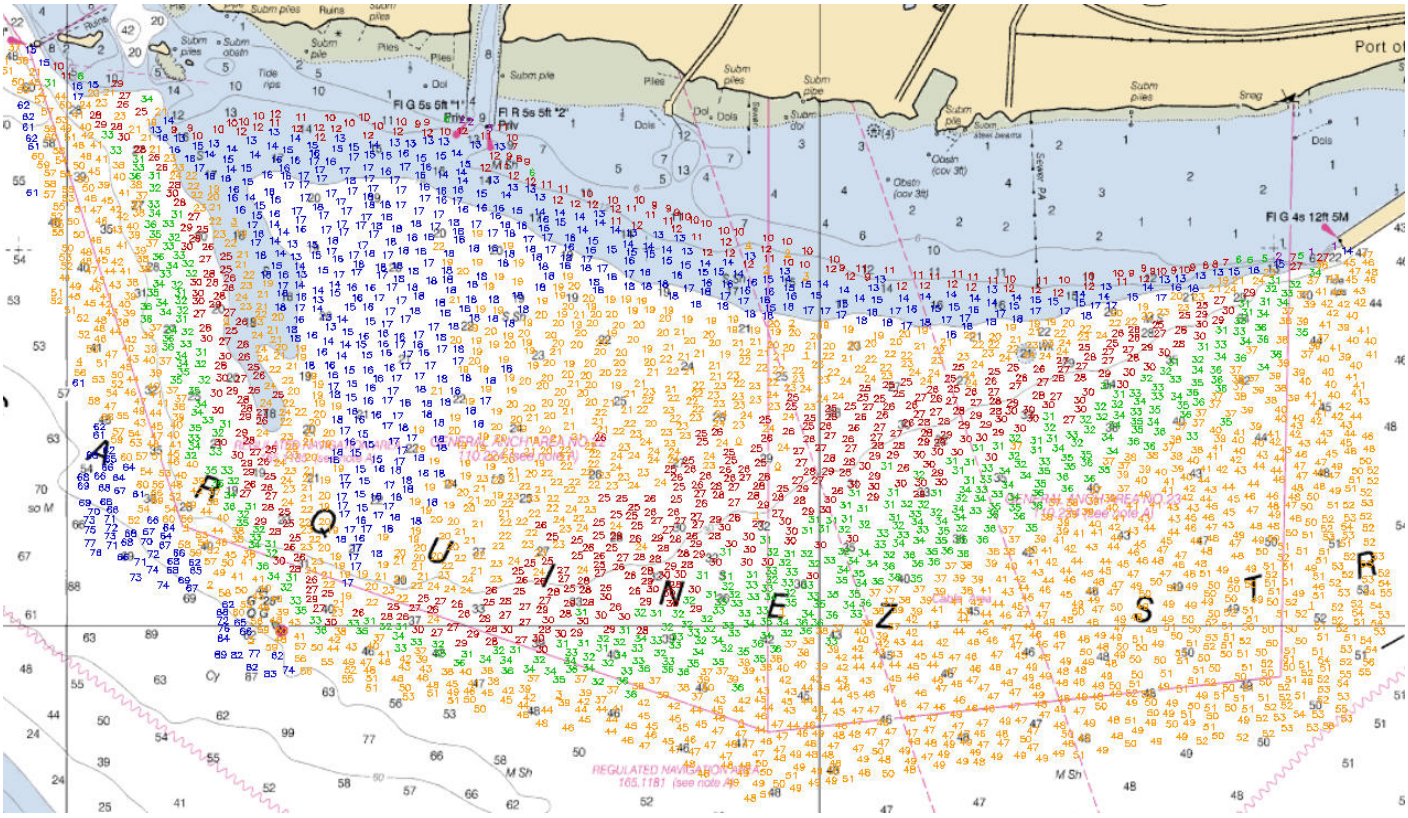


Figure 10: Chart 18657, Pydro sounding and contour overview. Once again, anchorage 22 is showing areas of major discrepancies whereas Anchorage 23 shows strong agreement and needs only slight modification.

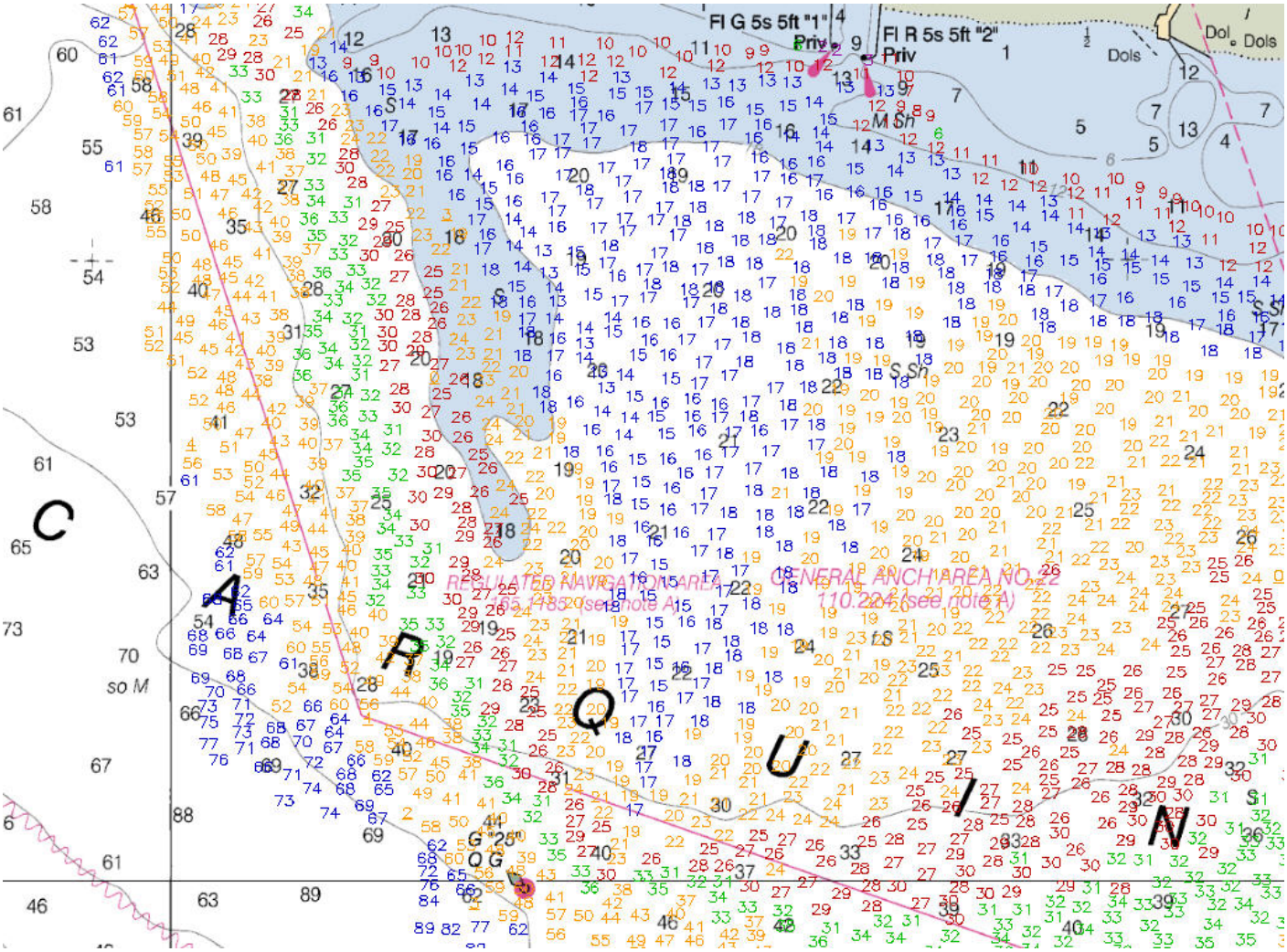


Figure 11: Chart 18657, Pydro sounding and contour overview for western edge of survey and migrating shoal. This is the main area of concern in the survey area. The western edge is now much deeper as charted as sediment is migrating east. This sediment movement has pushed the charted shoal south and east. Updates for this entire area are necessary.

D.1.2 Electronic Navigational Charts

The following are the largest scale ENCs, which cover the survey area:

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US5CA41M	1:10000	25	06/11/2014	06/11/2014	NO

Table 14: Largest Scale ENCs

US5CA41M

ENC US5CA41M shows strong agreement with bathymetric and isoplethic comparison of Chart 18657. See figures 12 and 13 below.

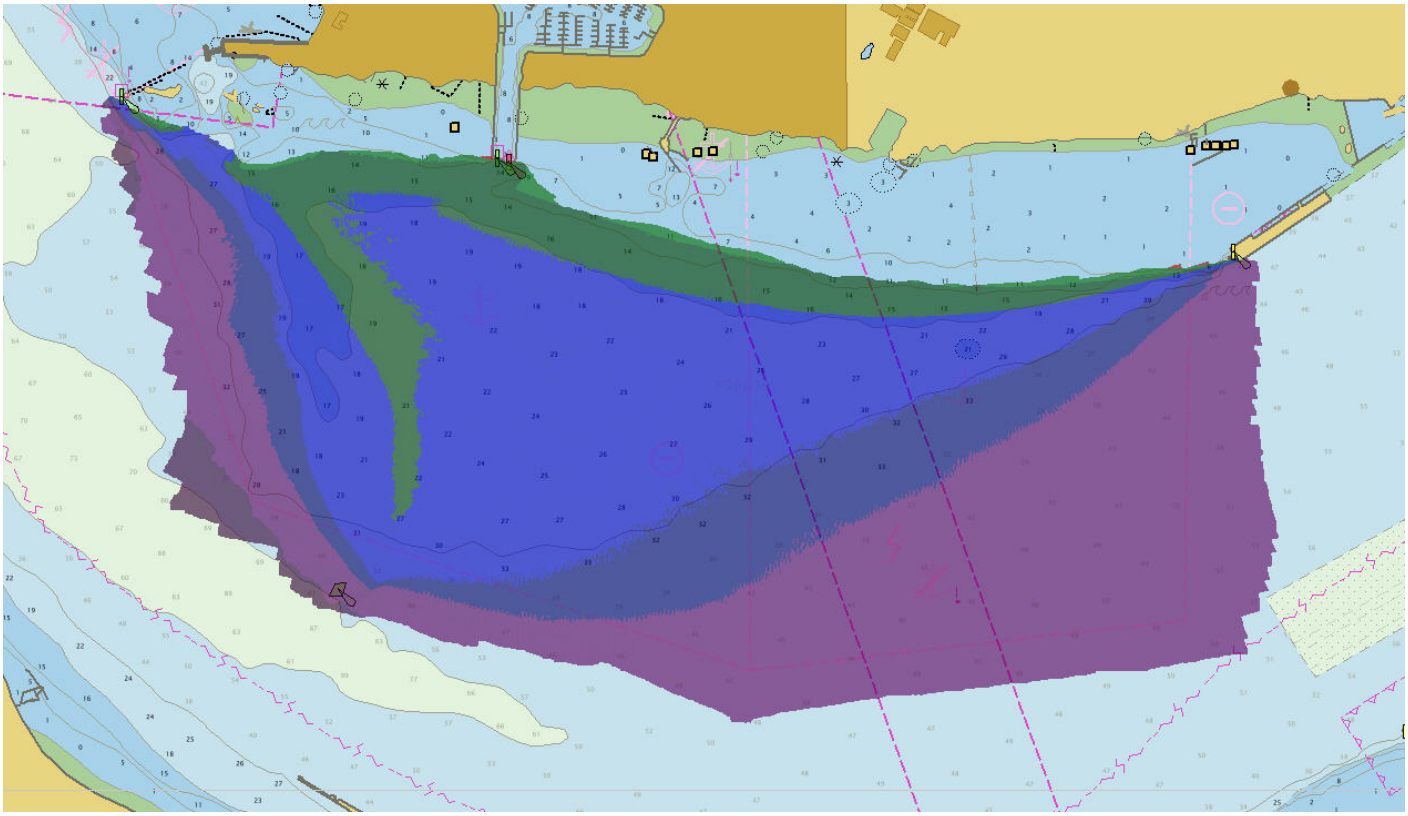


Figure 12: ENC isoplethic comparison overview. Anchorage 22 is showing major contour line discrepancy whereas Anchorage 23 shows strong agreement and needs only slight modification.

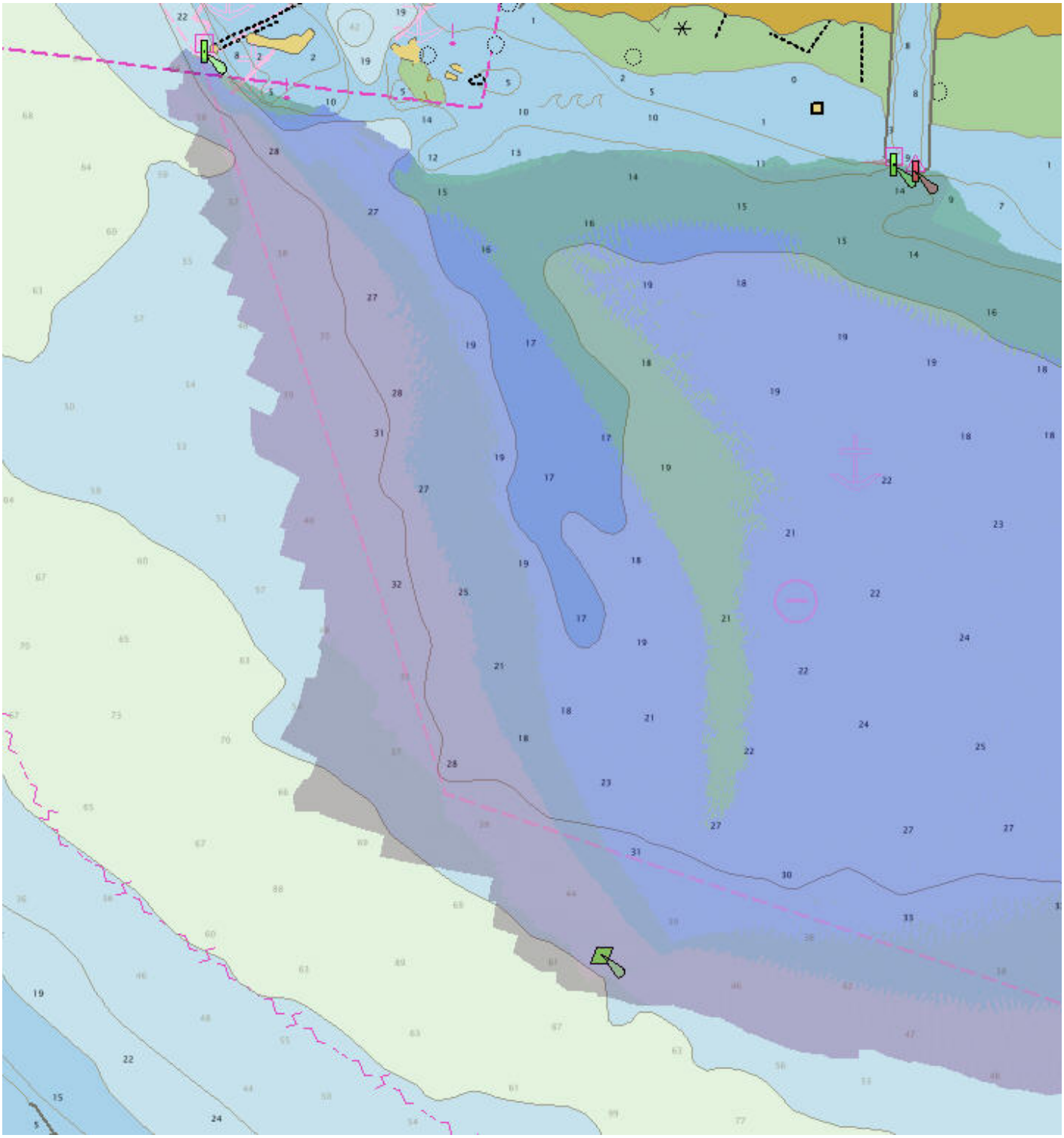


Figure 13: ENC isoplethic comparison overview of western edge of survey and migrating shoal. This is the main area of concern in the survey area. The western edge is now much deeper as charted, by as much as 25ft, and the contours need to be pushed east. This eastern migration of sediment movement has pushed the charted shoal southeast and some areas are showing depths 15ft shoaler than charted. Updates for this entire area are necessary for the ENC.

D.1.3 AWOIS Items

No AWOIS items were assigned for this survey.

D.1.4 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.5 Charted Features

The 21ft charted wreck located at 122-08-43.82W, 38-02-16.89N needs to be updated with a 25 foot sounding. It appears the wreck is mostly buried but remnants still exist. See figure 14.

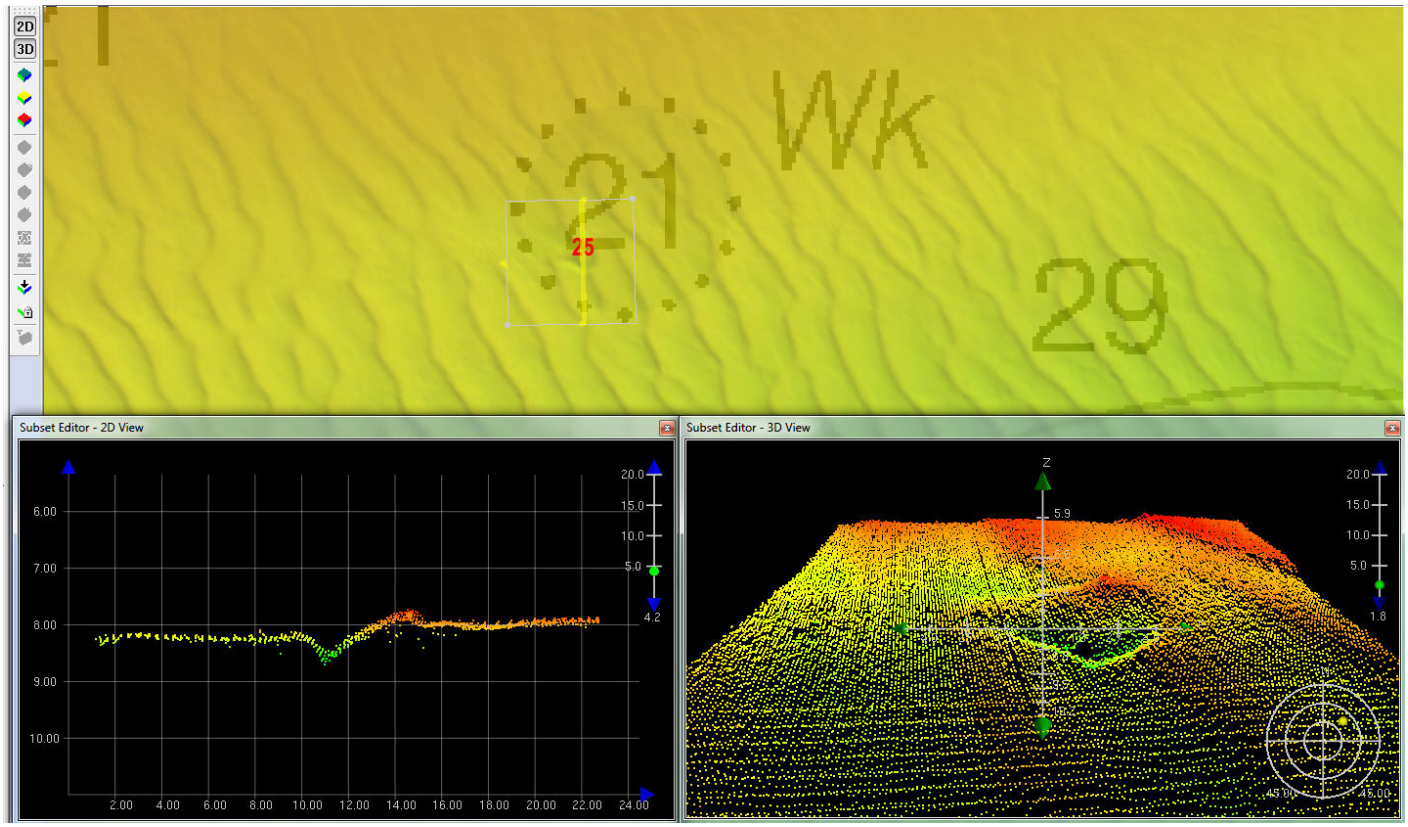


Figure 14: 21ft charted wreck needs to be updated to a 25 foot sounding.

D.1.6 Uncharted Features

No uncharted features exist for this survey.

D.1.7 Dangers to Navigation

No Danger to Navigation Reports were submitted for this survey.

A DTON report was submitted to the branch on September 4, 2014. In addition a Coast Pilot entry was submitted to supplement additional information of the shoal area.

D.1.8 Shoal and Hazardous Features

The charted shoal that is now migrating in Anchorage 22 has become a hazardous feature and it is of paramount importance that this area be updated on the chart as soon as possible. See figures 15 and 16.

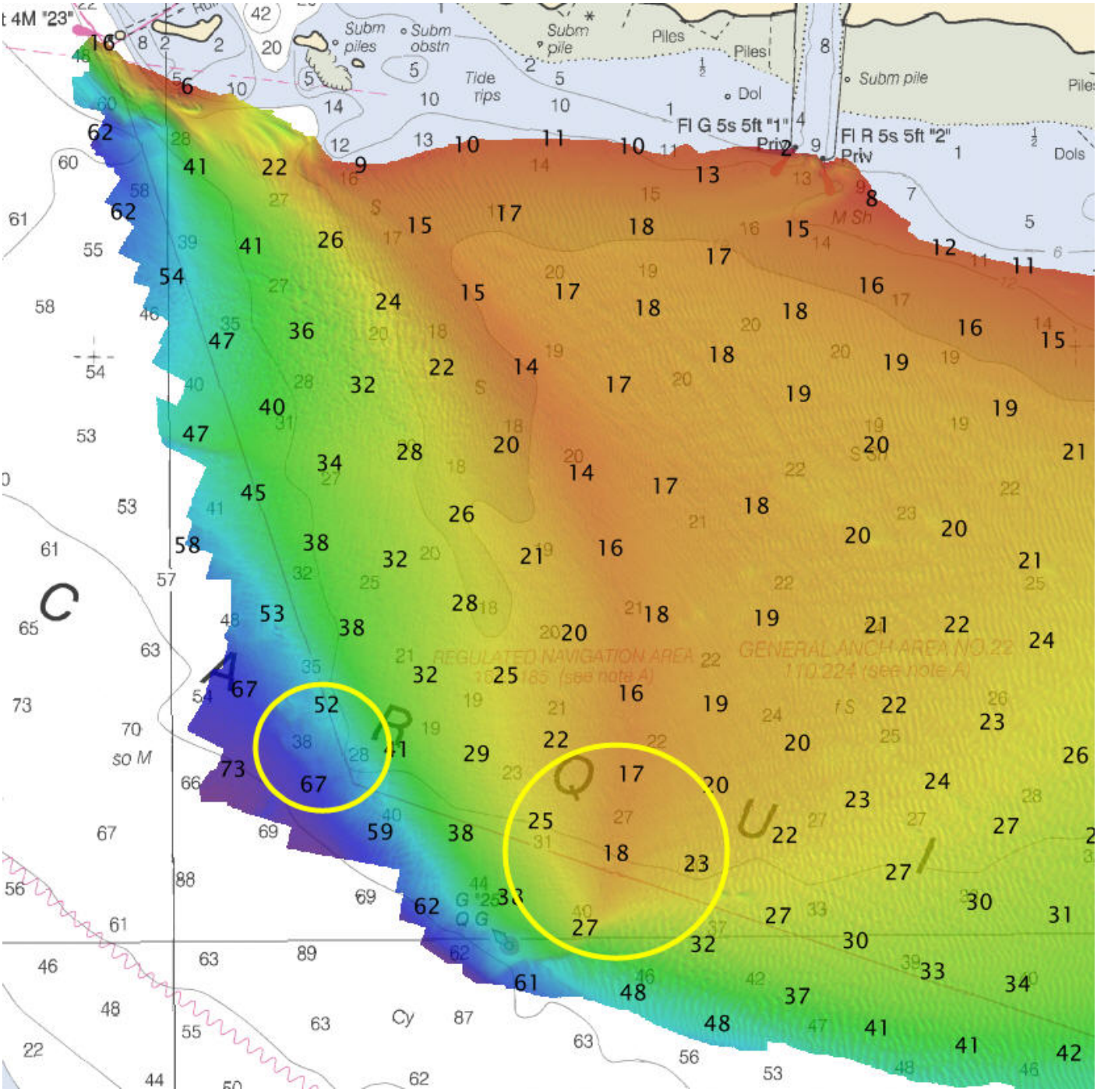


Figure 15: Chart 18657, areas of highest discrepancy within and around migrating shoal. Soundings ranging from 10 - 30 feet off of what is charted.

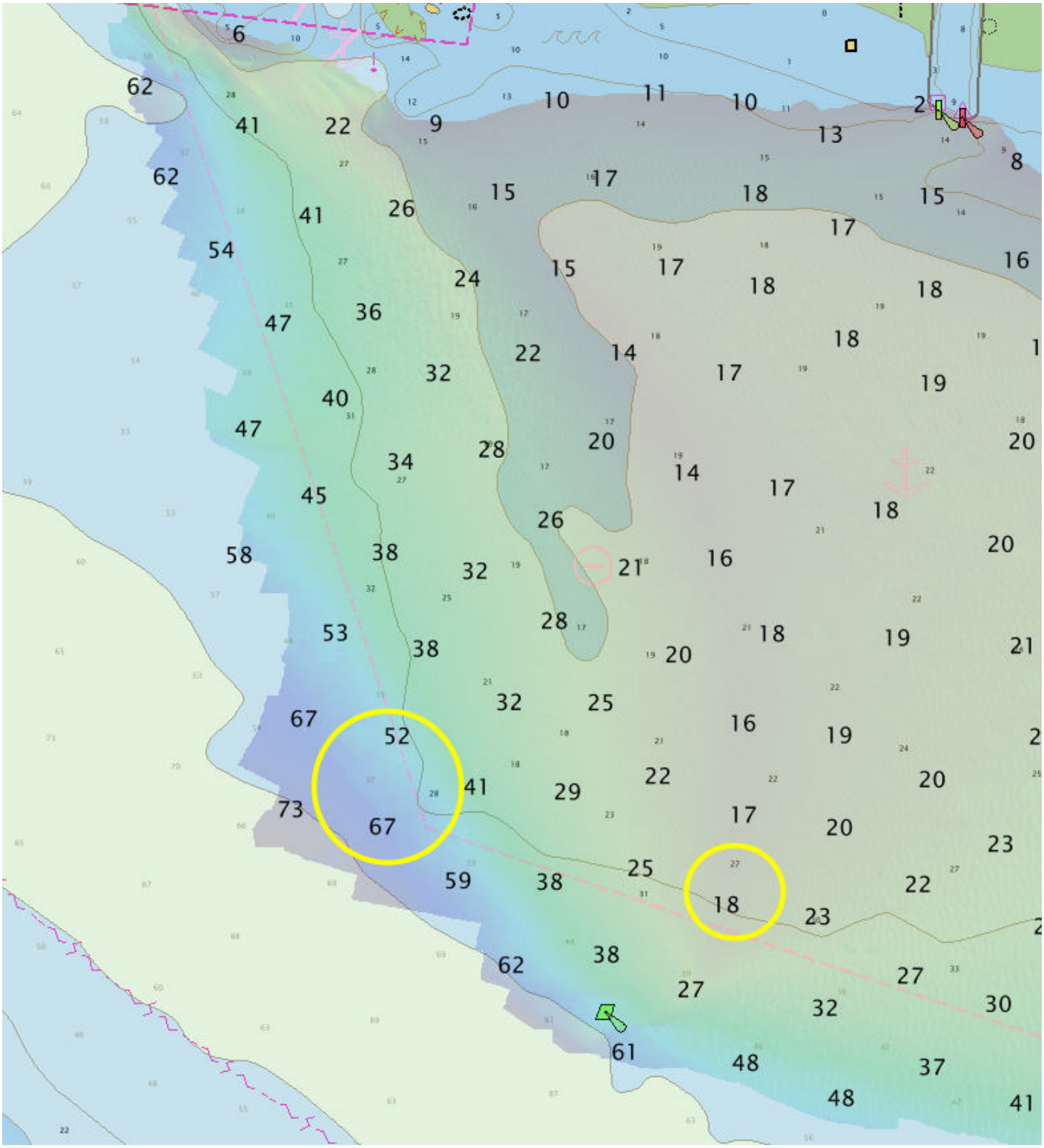


Figure 16: ENC US5CA41M areas of highest discrepancy within and around migrating shoal. Soundings ranging from 10 - 30 feet off of what is charted.

D.1.9 Channels

No channels exist for this survey. There are no precautionary areas, safety fairways, traffic separation schemes, pilot boarding areas, or channel and range lines within the survey limits.

D.1.10 Bottom Samples

No bottom samples were required for this survey.

D.2 Additional Results

D.2.1 Shoreline

NRT6 conducted a limited shoreline verification using the composite source file (CSF). All features with the attribute populated with 'Assigned' were addressed even if they were inshore of NALL. The assigned features are included and attributed in the submitted Final Feature File.

All other visible cultural features inside the limit of survey that were not a part of the assigned CSF were verified as charted and can be seen in the figure 17.

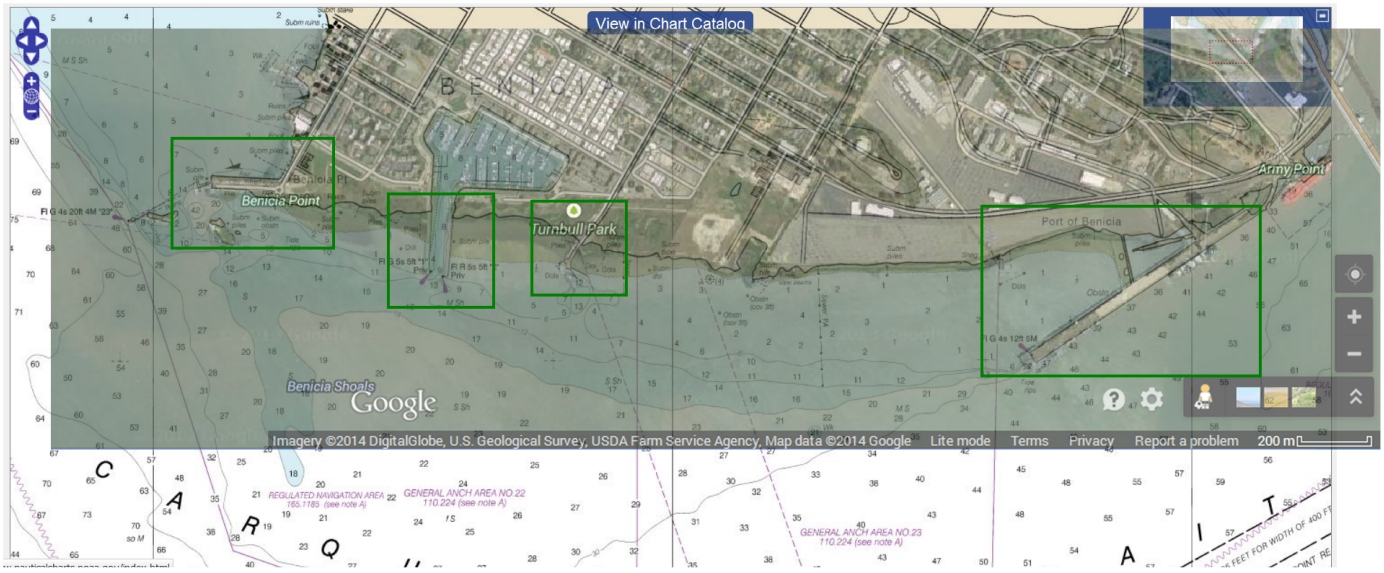


Figure 17: All visible cultural features, not part of the assigned feature file, were verified in the field by NRT6 and can be retained as charted.

D.2.2 Prior Surveys

No prior survey comparisons exist for this survey.

D.2.3 Aids to Navigation

No Aids to navigation (ATONs) exist for this survey.

D.2.4 Overhead Features

No overhead features exist for this survey.

D.2.5 Submarine Features

One cable area exists within F00639 survey limits but no evidence of cable area was verified in the bathymetry. The cable area is 300m wide and 2300m across the eastern portion of the survey area and located in Anchorage 23. See figure 18.

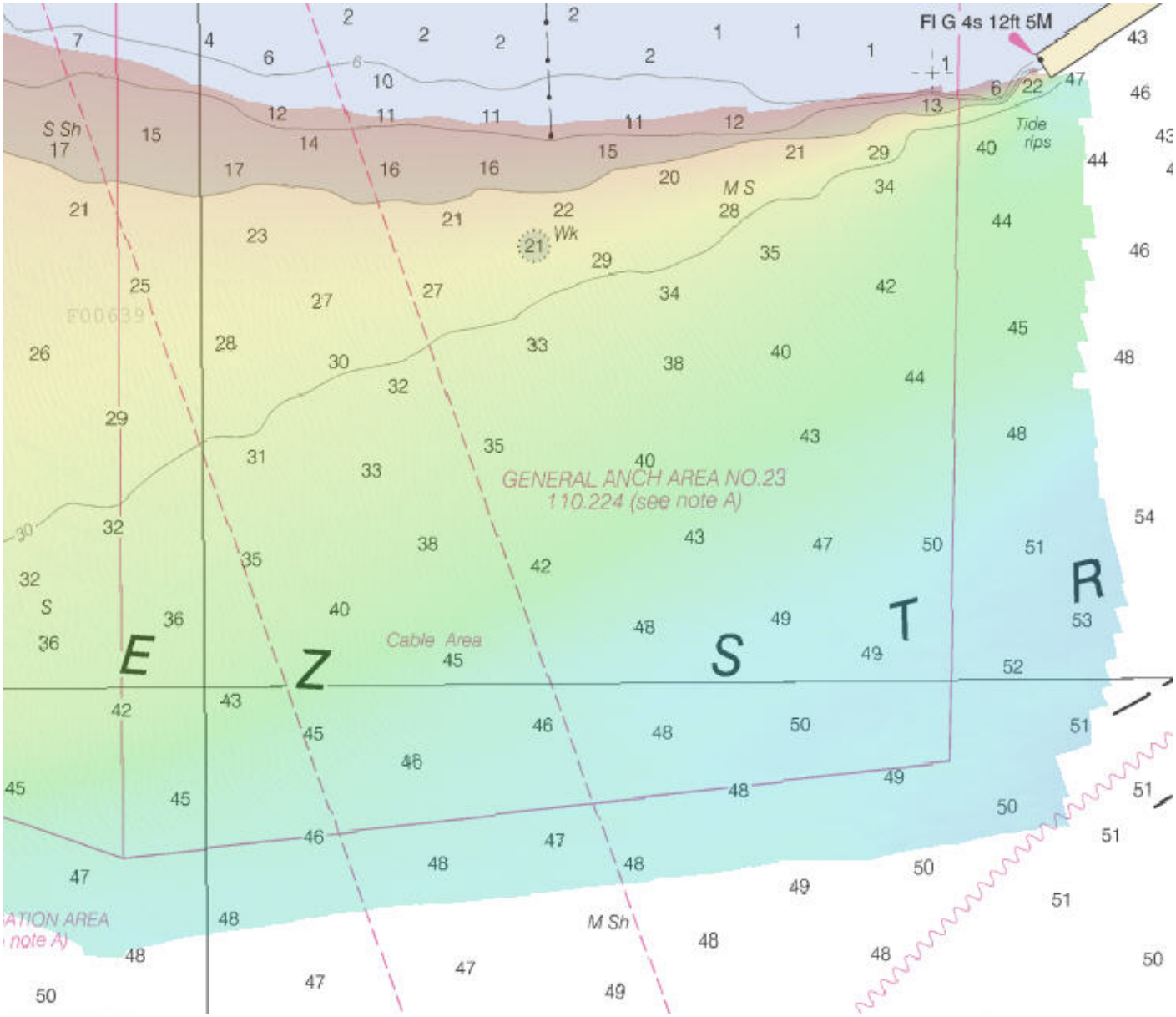


Figure 18: Cable area located in Anchorage 23.

D.2.6 Ferry Routes and Terminals

No ferry routes or terminals exist for this survey.

D.2.7 Platforms

No platforms exist for this survey.

D.2.8 Significant Features

No significant features exist for this survey.

D.2.9 Construction and Dredging

No present or planned construction or dredging exist within the survey limits.

D.2.10 New Survey Recommendation

No new surveys or further investigations are recommended for this area.

D.2.11 BENICIA MARINA BREAKWATERS EFFECT

The extents of two breakwaters near the entrance to Benicia Harbor (38-02-31.24N, 122-09-27.23W) are producing notable hydrodynamic effects on the sea floor, yielding a shifting sedimentary difference of nearly one meter between survey days DN097 and DN101. See Figure 19.

The Hydrographer recommends shoalest MBES data supersede as charted.

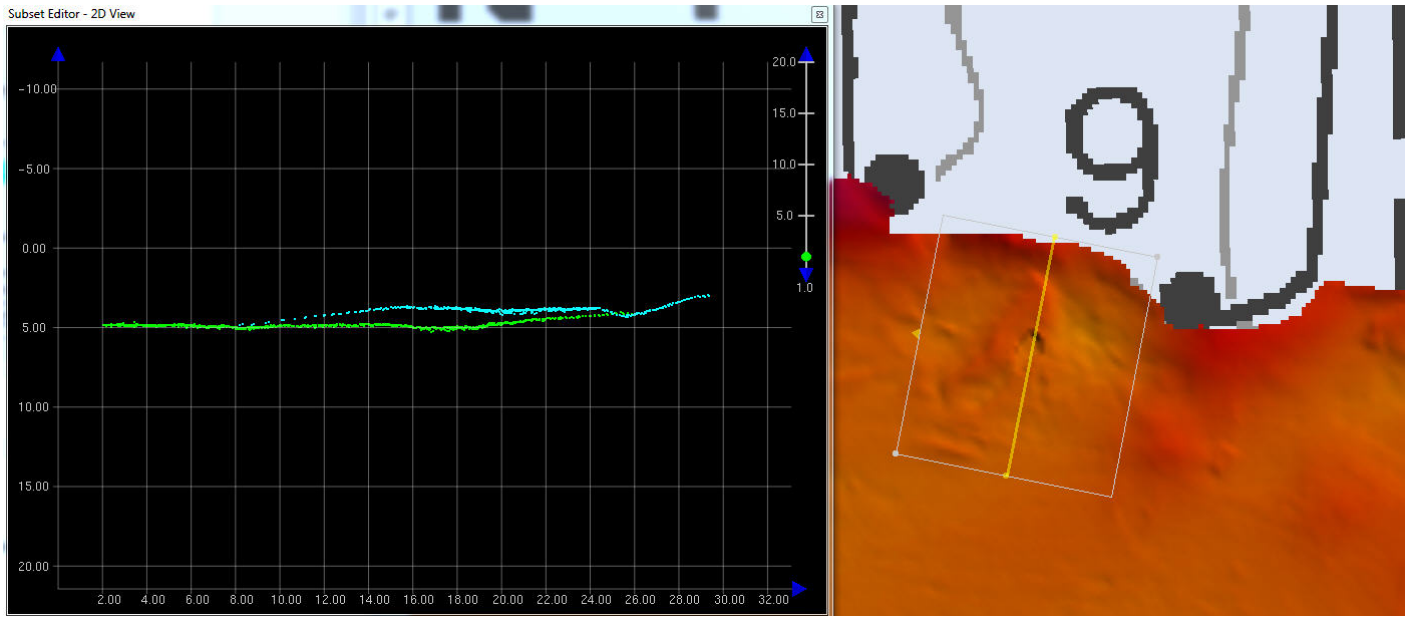


Figure 19: Sediment shift located directly outside Benicia Marina breakwaters.

D.2.12 Inset Recommendation

No new insets are recommended for this area.

E. Approval Sheet

As Chief of Party, Field operations for this hydrographic survey were conducted under my direct supervision, with frequent personal checks of progress and adequacy. I have reviewed the attached survey data and reports.

All field sheets, this Descriptive Report, and all accompanying records and data are approved. All records are forwarded for final review and processing to the Processing Branch.

The survey data meets or exceeds requirements as set forth in the NOS Hydrographic Surveys and Specifications Deliverables Manual, Field Procedures Manual, Letter Instructions, and all HSD Technical Directives. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required with the exception of deficiencies noted in the Descriptive Report.

Approver Name	Approver Title	Approval Date	Signature
Laura Pagano	Chief of Party	07/22/2014	PAGANO.LAURA.A.1365885520 Digitally signed by PAGANO.LAURA.A.1365885520 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=OTHER, cn=PAGANO.LAURA.A.1365885520 Date: 2014.07.22 14:50:34 -07'00'

F. Table of Acronyms

Acronym	Definition
AHB	Atlantic Hydrographic Branch
AST	Assistant Survey Technician
ATON	Aid to Navigation
AWOIS	Automated Wreck and Obstruction Information System
BAG	Bathymetric Attributed Grid
BASE	Bathymetry Associated with Statistical Error
CO	Commanding Officer
CO-OPS	Center for Operational Products and Services
CORS	Continually Operating Reference Staiton
CTD	Conductivity Temperature Depth
CEF	Chart Evaluation File
CSF	Composite Source File
CST	Chief Survey Technician
CUBE	Combined Uncertainty and Bathymetry Estimator
DAPR	Data Acquisition and Processing Report
DGPS	Differential Global Positioning System
DP	Detached Position
DR	Descriptive Report
DTON	Danger to Navigation
ENC	Electronic Navigational Chart
ERS	Ellipsoidal Referenced Survey
ERZT	Ellipsoidally Referenced Zoned Tides
FFF	Final Feature File
FOO	Field Operations Officer
FPM	Field Procedures Manual
GAMS	GPS Azimuth Measurement Subsystem
GC	Geographic Cell
GPS	Global Positioning System
HIPS	Hydrographic Information Processing System
HSD	Hydrographic Surveys Division
HSSD	Hydrographic Survey Specifications and Deliverables

Acronym	Definition
HSTP	Hydrographic Systems Technology Programs
HSX	Hypack Hysweep File Format
HTD	Hydrographic Surveys Technical Directive
HVCR	Horizontal and Vertical Control Report
HVF	HIPS Vessel File
IHO	International Hydrographic Organization
IMU	Inertial Motion Unit
ITRF	International Terrestrial Reference Frame
LNM	Local Notice to Mariners
LNM	Linear Nautical Miles
MCD	Marine Chart Division
MHW	Mean High Water
MLLW	Mean Lower Low Water
NAD 83	North American Datum of 1983
NAIP	National Agriculture and Imagery Program
NALL	Navigable Area Limit Line
NM	Notice to Mariners
NMEA	National Marine Electronics Association
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NRT	Navigation Response Team
NSD	Navigation Services Division
OCS	Office of Coast Survey
OMAO	Office of Marine and Aviation Operations (NOAA)
OPS	Operations Branch
MBES	Multibeam Echosounder
NWLON	National Water Level Observation Network
PDBS	Phase Differencing Bathymetric Sonar
PHB	Pacific Hydrographic Branch
POS/MV	Position and Orientation System for Marine Vessels
PPK	Post Processed Kinematic
PPP	Precise Point Positioning
PPS	Pulse per second

Acronym	Definition
PRF	Project Reference File
PS	Physical Scientist
PST	Physical Science Technician
RNC	Raster Navigational Chart
RTK	Real Time Kinematic
SBES	Singlebeam Echosounder
SBET	Smooth Best Estimate and Trajectory
SNM	Square Nautical Miles
SSS	Side Scan Sonar
ST	Survey Technician
SVP	Sound Velocity Profiler
TCARI	Tidal Constituent And Residual Interpolation
TPE	Total Porpagated Error
TPU	Topside Processing Unit
USACE	United States Army Corps of Engineers
USCG	United Stated Coast Guard
UTM	Universal Transverse Mercator
XO	Executive Officer
ZDA	Global Positiong System timing message
ZDF	Zone Definition File

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : May 20, 2014

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: S-L925-NRT6-2014
HYDROGRAPHIC SHEET: F00639

LOCALITY: Anchorage 22 and 23, Carquinez Strait
TIME PERIOD: April 2nd - April 17th, 2014

TIDE STATION USED: 941-5102 Martinez-Amorco Pier
Lat. 38° 02.1'N Long. 122° 07.5' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.462 meters

REMARKS: RECOMMENDED ZONING

Preliminary zoning is accepted as the final zoning for project S-L925-NRT6-2014, F00639, during the time period between April 2nd - April 17th, 2014.

Please use the zoning file L925NRT62014CORP submitted with the project instructions for S-L925-NRT6-2014. Zones SFB76 and SFB77 are the applicable zones for F00639.

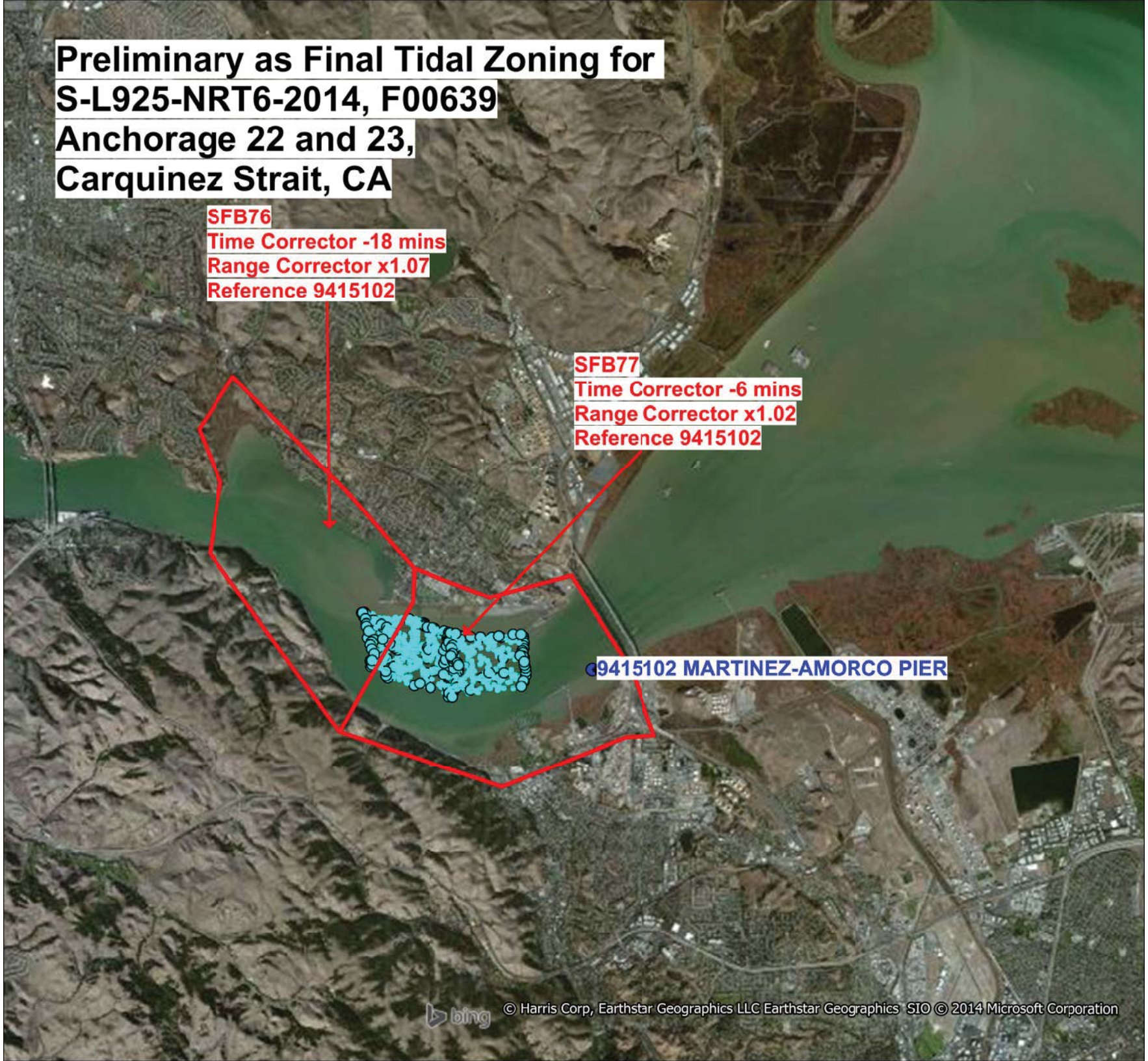
Refer to attachments for zoning information.

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).

HOVIS.GERALD.THOMAS.1365860250

Digitally signed by HOVIS.GERALD.THOMAS.1365860250
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=OTHER, cn=HOVIS.GERALD.THOMAS.1365860250
Date: 2014.05.21 09:38:26 -04'00'

CHIEF, PRODUCTS AND SERVICES BRANCH


Preliminary as Final Tidal Zoning for
S-L925-NRT6-2014, F00639
Anchorage 22 and 23,
Carquinez Strait, CA
SFB76
Time Corrector -18 mins
Range Corrector x1.07
Reference 9415102
SFB77
Time Corrector -6 mins
Range Corrector x1.02
Reference 9415102
9415102 MARTINEZ-AMORCO PIER
bing
© Harris Corp, Earthstar Geographics LLC Earthstar Geographics SIO © 2014 Microsoft Corporation

F00639_Feature_Report

Registry Number: F00639
State: California
Locality: Carquinez Strait
Sub-locality: Anchorage 22 and 23
Project Number: S-L925-NRT6-14
Survey Date: 04/17/2014

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
18657	19th	11/01/2005	1:10,000 (18657_1)	USCG LNM: 7/1/2014 (8/19/2014) NGA NTM: 3/25/2000 (8/30/2014)
18656	55th	09/01/2006	1:40,000 (18656_1)	[L]NTM: ?
18652	34th	09/01/2007	1:40,000 (18652_7)	[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.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Wreck	7.70 m	38° 02' 17.0" N	122° 08' 43.5" W	---
2.1	GP	[None]	38° 02' 32.6" N	122° 09' 51.8" W	---

1 - Charted Features

1.1) US 0000645569 00001 / Feature_Report_Office.000

Survey Summary

Survey Position:	38° 02' 17.0" N, 122° 08' 43.5" W
Least Depth:	7.70 m (= 25.26 ft = 4.210 fm = 4 fm 1.26 ft)
TPU (±1.96σ):	**THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp:	2014-107.00:00:00.000 (04/17/2014)
Dataset:	Feature_Report_Office.000
FOID:	US 0000645569 00001(02260009D9C10001)
Charts Affected:	18657_1, 18652_7, 18656_1, 18010_1, 18022_1, 18007_1, 18020_1, 501_1, 530_1, 50_1

Remarks:

WRECKS/remrks: Wreck is partially buried and is now deeper than charted. (AWOIS ITEM # 51227)

Hydrographer Recommendations

Chart new wreck with new least depth, retain position

Cartographically-Rounded Depth (Affected Charts):

25ft (18657_1, 18652_7, 18656_1)

4 ¼fm (18010_1, 18022_1, 18007_1, 18020_1, 530_1)

7.7m (501_1, 50_1)

S-57 Data

Geo object 1:	Wreck (WRECKS)
Attributes:	CATWRK - 2:dangerous wreck
	EXPSOU - 1:within the range of depth of the surrounding depth area
	NINFOM - Update charted wreck (AWOIS item # 51227)
	QUASOU - 6:least depth known
	SORDAT - 20140417
	SORIND - US,US,graph,F00639
	TECSOU - 3:found by multi-beam
	VALSOU - 7.700 m
	WATLEV - 3:always under water/submerged

Feature Images

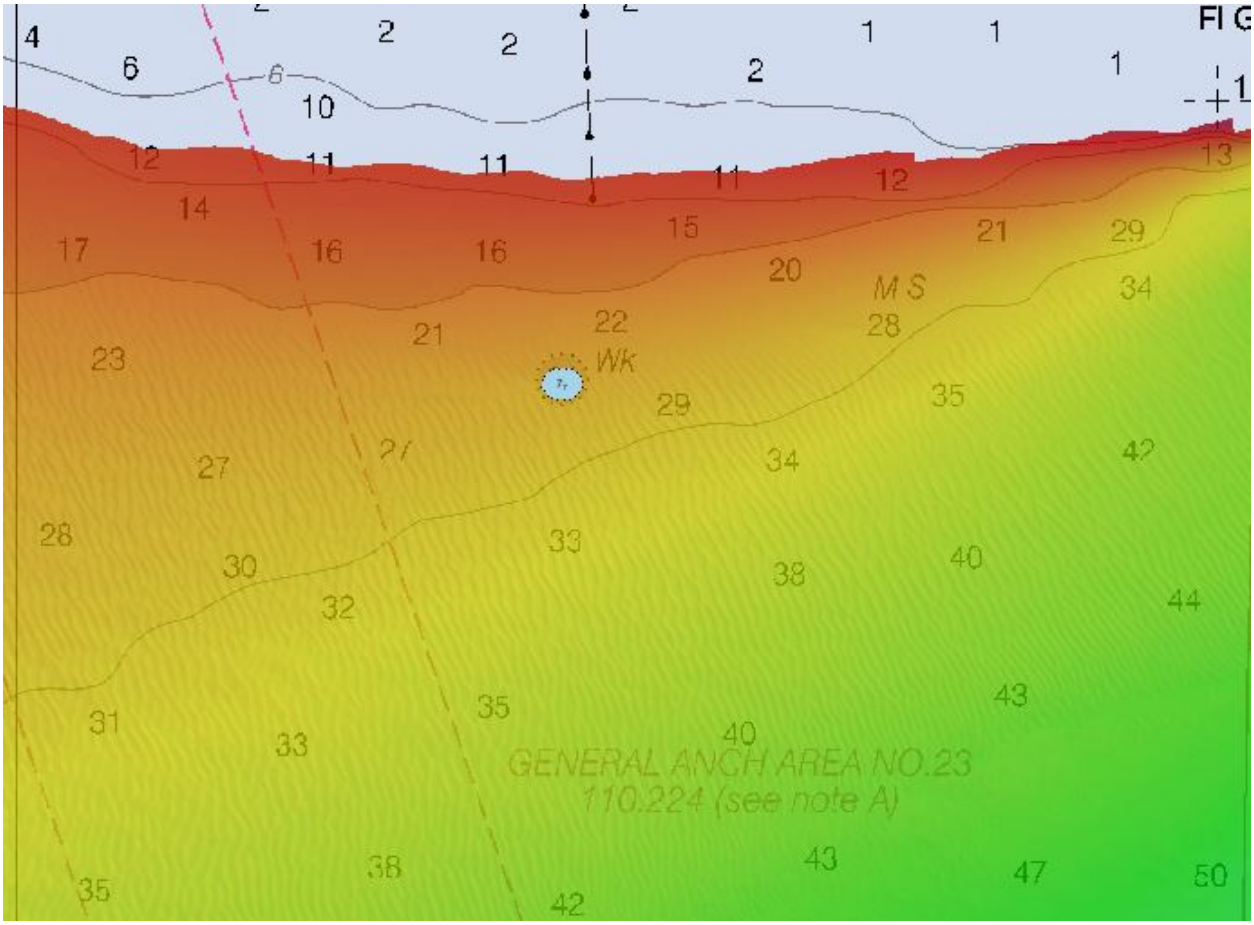


Figure 1.1.1

2 - Dangers To Navigation

2.1) US 0000651169 00001 / Feature_Report_Office.000

DANGER TO NAVIGATION

Survey Summary

Survey Position:	38° 02' 32.6" N, 122° 09' 51.8" W
Least Depth:	[None]
TPU (±1.96σ):	**THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp:	2014-107.00:00:00.000 (04/17/2014)
Dataset:	Feature_Report_Office.000
FOID:	US 0000651169 00001(02260009EFA10001)
Charts Affected:	18657_1, 18652_7, 18656_1, 18010_1, 18022_1, 18007_1, 18020_1, 501_1, 530_1, 50_1

Remarks:

CTNARE/remrks: sandy area, continual change

Hydrographer Recommendations

chart new caution area

S-57 Data

Geo object 1:	Caution area (CTNARE)
Attributes:	INFORM - Area is subject to continual change. Sediments and shoals are migrating south and east in Benecia Anchorage 22. The changeable nature and shoaling trend may extend beyond the indicated area. NINFOM - DTON. Chart new caution area. SORDAT - 20140417 SORIND - US,US,graph,F00639

Feature Images

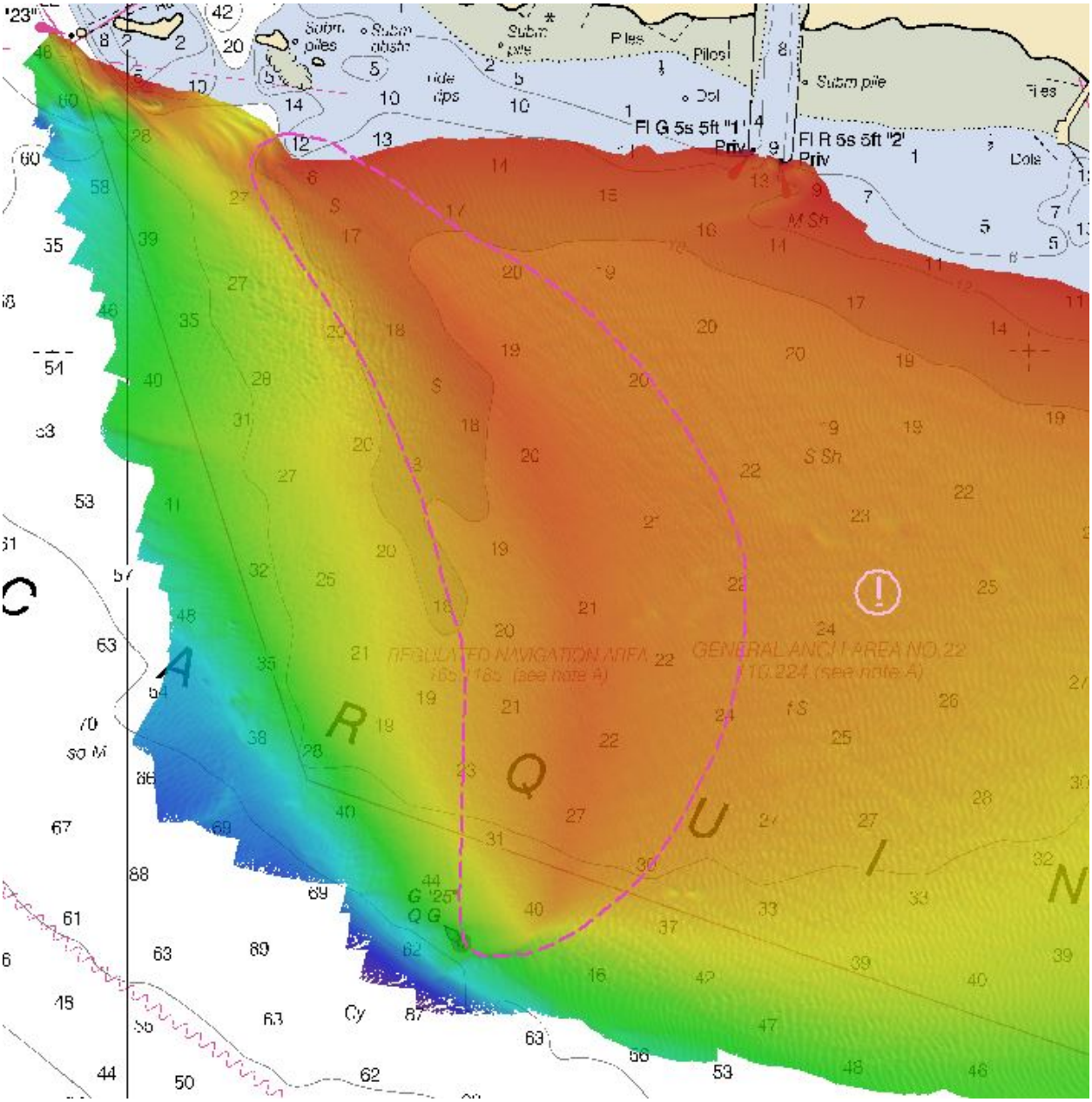


Figure 2.1.1

Office Notes: The caution area was expanded during MCD compilation from that shown in Figure 2.1.1 to encompass a larger area east and west of that shown in figure 2.1.1.

APPROVAL

PAGE F00639

Data meet or exceed current specifications as certified by the OCS survey acceptance review process. Descriptive Report and survey data except where noted are adequate to supersede prior surveys and nautical charts in the common area.

The following products will be sent to NGDC for archive

- F00639_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- F00639_GeoImage.pdf

The survey evaluation and verification has been conducted according current OCS Specifications.

Digitally signed by HOLMBERG.PETER.SCOTT.1365886101
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=OTHER, cn=HOLMBERG.PETER.SCOTT.1365886101
Date: 2014.12.17 14:21:32 -08'00'

Approved:_____

Pete Holmberg
Cartographic Team Lead, Pacific Hydrographic Branch

The survey has been approved for dissemination and usage of updating NOAA's suite of nautical charts.

Digitally signed by Peter Holmberg
DN: cn=Peter Holmberg, o, ou=signing for Benjamin K. Evans, email=benjamin.k.evans@noaa.gov, c=US
Date: 2014.12.17 14:08:28 -08'00'

Approved:_____

CDR Benjamin K. Evans, NOAA
Chief, Pacific Hydrographic Branch