

H-11099

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. OPR-0331-KR

Registry No. H-11099

LOCALITY

State ALASKA

General Locality Twelve Mile Arm

Sublocality Outer Point to Cat Island

2002

CHIEF OF PARTY

Frederick W. Iversen

LIBRARY & ARCHIVES

DATE

HYDROGRAPHIC TITLE SHEET

H-11099

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.

State AlaskaGeneral Locality Twelve Mile ArmSublocality Outer Point to Cat IslandScale 1:10,000Date of Survey June 15-August 16,2002Instructions Dated 1/29/2002Project No. OPR-O331-KR-02Vessel Luna Sea and Royal FishChief of Party Frederick W. IversenSurveyed by Terra Surveys, LLC personnelSoundings taken by echo sounder, hand lead, pole Reson 8101 & 8124Graphic record scaled by N/AGraphic record checked by N/AEvaluation by B Taylor Automated plot by HP Design Jet 1055cm+Verification by G NelsonSoundings in Fathoms and tenths at MLLWREMARKS: Time in UTC.**Revisions and annotations appearing as endnotes were generated during office****processing. All separates are filed with the project data. As a result, page numbering****may be interrupted or non-sequential.****Terra Surveys****1930 Whiting Circle****Palmer, AK 99645**

Descriptive Report to Accompany Hydrographic Survey H-11099

Sheet E

Scale 1:10,000

June 15-August 16, 2002

Terra Surveys, LLC

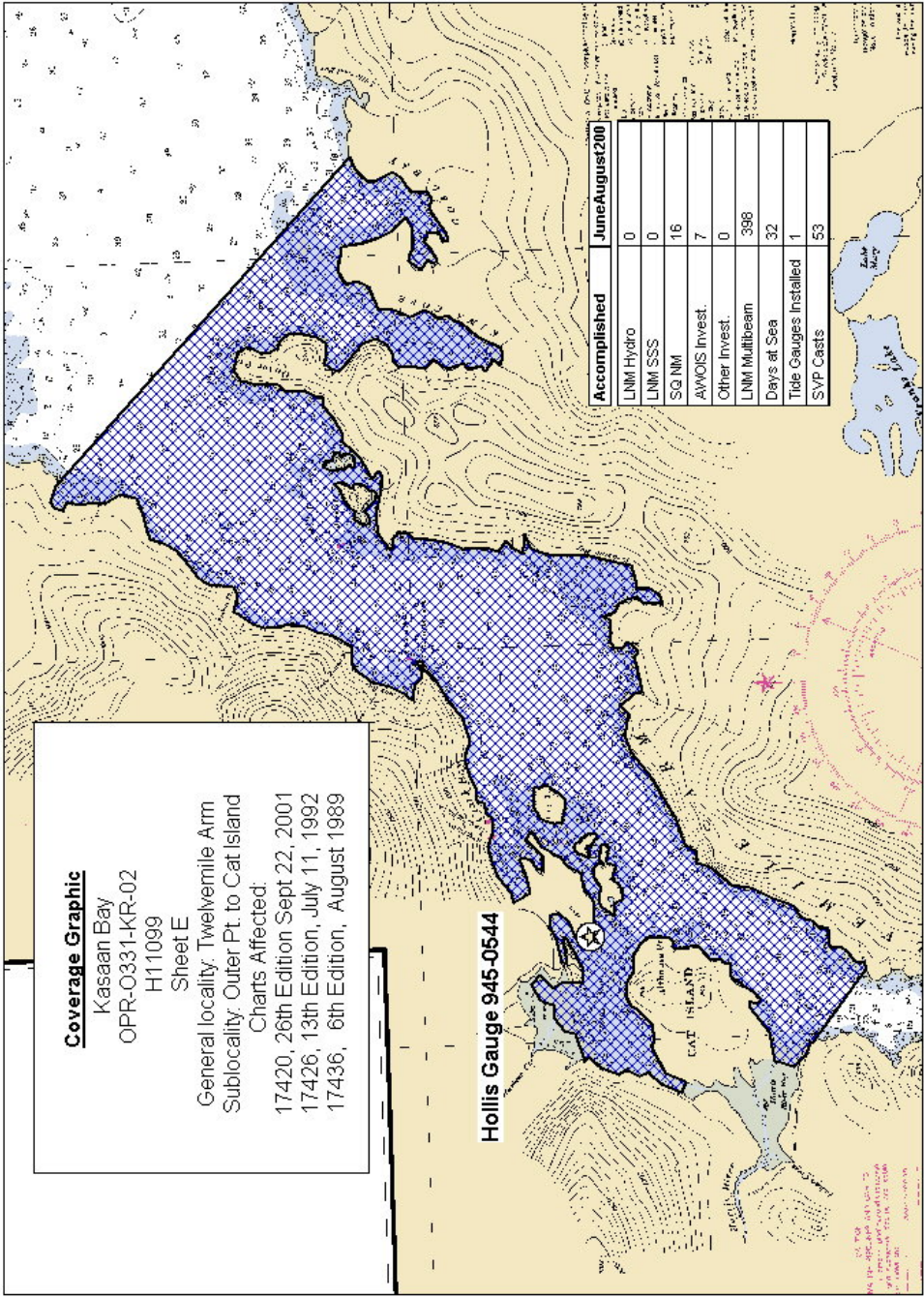
Lead Hydrographer: Frederick W. Iversen

A. AREA SURVEYED

This navigable area survey was conducted in accordance with Hydrographic Project Instructions OPR-O331-KR-02, Kasaan Bay, Alaska dated January 29, 2002.¹

The purpose of this contract was to provide NOAA with modern, accurate hydrographic survey data with which to update the nautical charts of this area. Kasaan Bay consists of abruptly irregular bathymetry ranging in depths 1 fathom above datum to as deep as 278 fathoms² in the eastern entrance to the bay. The bottom type is also variable ranging from hard bedrock to silty mud flats. The Inter-Island Ferry's Prince of Wales, transports passengers twice a day from Ketchikan to Hollis and return. The ferry's transit lies in the northern half of the channel between Patterson Island and Grindall Island at the entrance, and then north of Kasaan Island and into Hollis ferry terminal. Kasaan Bay is also used commercially by fisherman and crabbers. The project area is approximately 7.9 square nautical miles and extends from³ Outer Pt. to Cat Island.

Two shallow water multibeam sonar systems were used to locate and determine the least depth over the obstructions, wrecks and shoals as well as to determine the least depths over the entire project area. This survey has a maximum depth of 90 fathoms and a minimum depth of 0.8 fathom above datum.⁴



Section B Data Acquisition and Processing

B.1 Equipment

Luna Sea

Approximately sixty percent of the soundings for this survey were acquired from the motor vessel *Luna Sea*, with the remaining data collected from the jet boat *Royal Fish*. The *Luna Sea* is a 35-foot aluminum hull boat with a 12.1-foot beam and a 2.25-foot draft. Major systems used on the *Luna Sea* are listed on the following table.

VESSEL <i>Luna Sea</i> LOA: 35 FT, BEAM 12.1 FT, DRAFT: 2.25 FT	
Equipment	Manufacturer & Model
Multibeam sonar	Reson SeaBat 8101
Positioning	Seatex Seapath 200 RTK
Sound velocity	Applied Microsystems 3317 4479
Vessel attitude	Seatex MRU 5

Royal Fish

The *Royal Fish* is a custom built Almar all-welded aluminum boat. Its overall length is 24 feet, with a beam of 8 feet and a draft of 1.5 feet. Major systems used on the *Royal Fish* are listed on the following table.

VESSEL <i>Royal Fish</i> LOA: 24 FT, BEAM 8 FT, DRAFT: 1.5 FT	
Equipment	Manufacturer & Model
Multibeam sonar	Reson SeaBat 8124
Positioning	Seatex Seapath 200
Sound velocity	Applied Microsystems 3279 4425
Vessel attitude	Seatex MRU 5 E

Equipment performance details are provided in the Project-Wide Report,⁵ Sections A, Equipment and B, Quality Control.

B2. Quality Control

Line Spacing and Orientation

In general, the survey limits were constrained by the shoreline. This necessitated running shore “buffer” lines. There were slow, winding lines following the contour of the beach/4meter curve. The Royal Fish typically ran several of these lines to build a buffer zone along the shore. At this point the Luna Sea could run the regular main-scheme lines into and along this zone with an increased margin of safety. Buffer lines were run at higher tides, giving us a significantly better swath width and greater success of reaching the 4-meter curve. A line heading was chosen to coincide with the main channel and/or contours and in most instances held through the remainder of the block or sheet. After the first line was run, the next line was set-up so that sufficient overlap would be achieved using the pre-decided beam angle filtering. Typically only 60° off nadir on the starboard and port channels were displayed to the coverage map in the collection software. Overlap was based on this.

Crosslines

The internal consistency and integrity of the survey data was found to be good. All of the soundings that appear on the smooth sheet meet or exceed the accuracy requirements in the specifications.⁶

Survey H-11099 (Sheet E) had 177.2 Nautical Miles of main scheme lines and 14.6 NM of crosslines. This equates to 8.2% of the mainscheme lines and exceeds the⁷ requirements of 5%.

There were 21 crosslines and 231 mainscheme lines in Sheet E. This resulted in 414 crossings. In addition to the mainscheme lines, a total of 714 shoreline buffer lines (203.4 NM) were collected along with an additional 5 crosslines (1.5 NM) in these areas. This resulted in an additional 79 crossings. A total of 25 crossings were analyzed. These varied spatially, and temporally, which complies with the requirements of the SOW.

Statistical analysis of the crossline comparisons was accomplished using the Caris HIPS Quality control report tool (MakeHist). This tool is used to compare the sounding data from the crossline against a reference DTM surface. The procedure was to compare the near-nadir beams of the mainscheme lines to the nearest unsmoothed soundings obtained from the crosslines. In addition, the nadir or near-nadir depths of the crosslines were compared to the nearest unsmoothed mainscheme soundings. In most cases the mainscheme line was selected to be close in time to the crossline in order to minimize any failed intersections due to bottom change as opposed to sounder error. The output from this tool is a text report containing statistical results of the differences between the crossline data and the mainscheme line data. The statistics are grouped by sonar beam number and can be found in Separate V⁸ of this report. A spreadsheet is included which summarizes the range of beams within each crossline comparison which meet or exceed the 95% compliance standard.

The crossline reports generated with the Caris program use a class file that was developed from the NOAA specifications for this project. The table below shows the parameters for this class file.

Min. Depth	Max. Depth	Allowable Error
0.0m	-10.00m	0.504m
-10.00m	-20.00m	0.537m
-20.00m	-30.00m	0.596m
-30.00m	-40.00m	0.676m
-40.00m	-50.00m	0.77m
-50.00m	-60.00m	0.87m
-60.00m	-80.00m	1.038m
-80.00m	-100.00m	1.272m
-100.00m	-120.00m	1.514m
-120.00m	-140.00m	1.762m
-140.00m	-160.00m	2.013m
-160.00m	-180.00m	2.266m
-180.00m	-200.00m	2.520m
-200.00m	-1000.00m	1.31%

Each error in the file is for a depth mid-way between each group (ex. -10.00 to -20.00 uses -15 depth to compute an allowable error of .537). From -200m and deeper, a slope was computed. The computed allowable errors met NOAA specifications for this project.

Two histograms were made from the final smoothsheet soundings. The graphs show sounding distribution by beam number. Two multi-beam echo sounders were used on H-11099, Sheet E. One was a Reson 8101 with 101 beams and the other a Reson 8124 with 80 beams. The beams for the 8101 sounder are numbered from port to starboard, 1-101 with beam 51 representing the nadir beam. Likewise the 8124 sounder is numbered from port to starboard, 1-80.

8101 Histogram (*Luna Sea*)

There are two anomalies obvious in this chart. There are a large number of soundings used that come from the nadir area of the swath and beam 91.

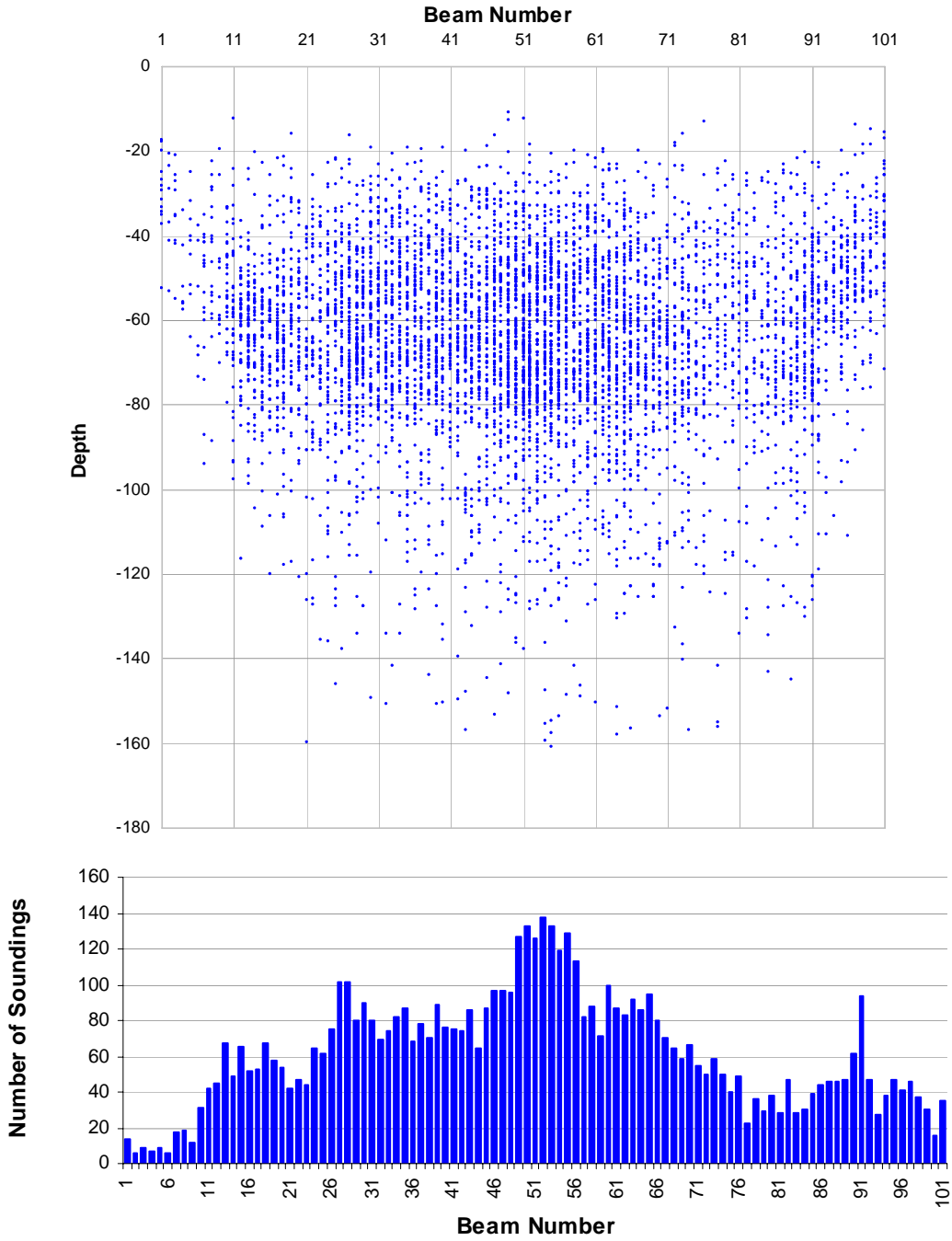
The above average nadir beam selections is something Terra Surveys, LLC has seen before and is systematic to this sounder. It is called the nadir spiking effect and it can be seen as an artifact in the sun-illuminated DTM image. When two lines from this sounder are compared using the crossline analysis tool, the number of acceptable soundings of these beam numbers (48-53) is usually slightly less (less than⁹ 5%) than that of their neighbors, but still within acceptable tolerance. The shoal biasing of all cells brings these slightly shoaler soundings into the final data set.

The beam 91 anomaly is a result of the filtering parameters used during cleaning. Generally most lines had an initial beam angle filter of 60 degrees applied. That left beams 11 and 91 as the outermost beams on the port and starboard side respectively. When the *Luna Sea* ran shore buffer lines, it was typically with the starboard side to the beach, making beam 91 the shoalest beam for most profiles.

8124 Histogram (*Royal Fish*)

This chart shows large spikes in the outer beams on the port and starboard sides. The *Royal Fish* was used almost exclusively to survey along the shore. The outermost beam on the shore side was typically the most shoal for any given ping. A review of the smoothsheet verified that most shoreline soundings were from the 8124's outer beams.

Sheet E Smooth Sheet Sounding Distribution Luna Sea

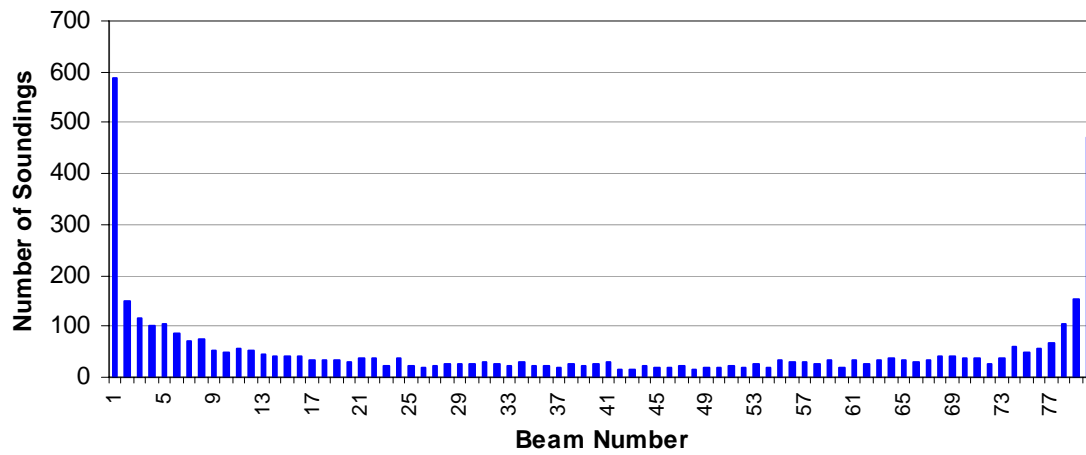
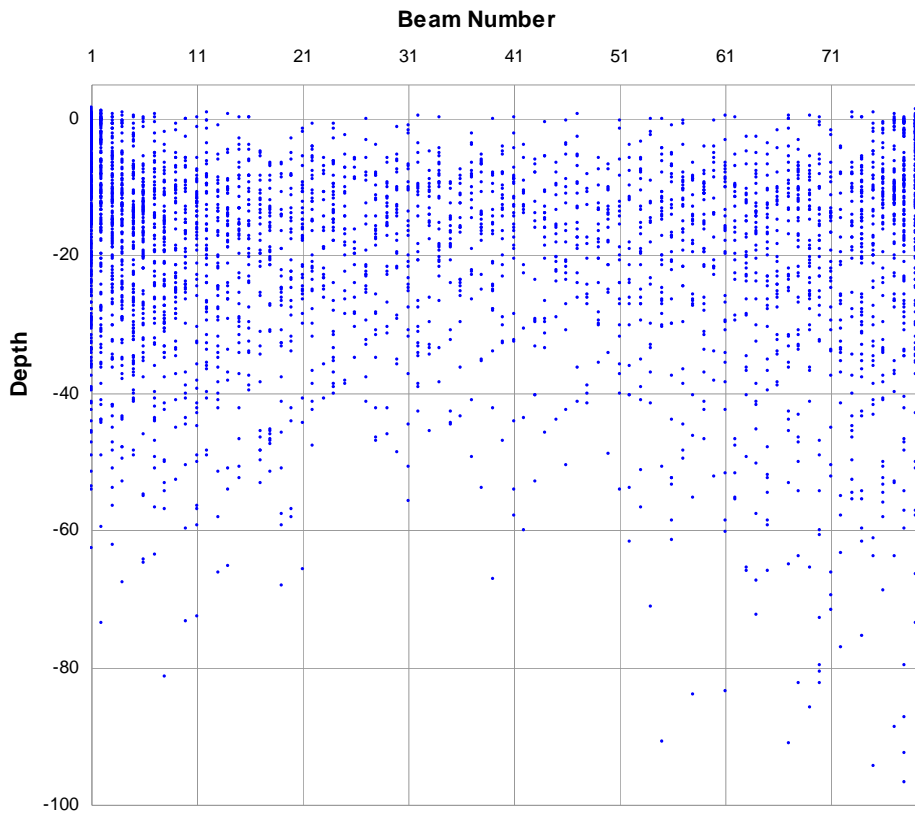


Beam # vs. # of Soundings on Smoothsheet by Vessel

LUNA SEA

<u>Beam</u>	<u>Count</u>	<u>% of Total</u>	<u>Beam</u>	<u>Count</u>	<u>% of Total</u>
1	14	0.22	52	138	2.20
2	6	0.10	53	133	2.12
3	9	0.14	54	119	1.89
4	7	0.11	55	129	2.05
5	9	0.14	56	113	1.80
6	6	0.10	57	82	1.31
7	18	0.29	58	88	1.40
8	19	0.30	59	71	1.13
9	12	0.19	60	100	1.59
10	31	0.49	61	87	1.39
11	42	0.67	62	83	1.32
12	45	0.72	63	92	1.46
13	67	1.07	64	86	1.37
14	49	0.78	65	95	1.51
15	65	1.04	66	80	1.27
16	52	0.83	67	70	1.11
17	53	0.84	68	64	1.02
18	67	1.07	69	59	0.94
19	58	0.92	70	66	1.05
20	54	0.86	71	55	0.88
21	42	0.67	72	50	0.80
22	47	0.75	73	59	0.94
23	44	0.70	74	50	0.80
24	64	1.02	75	40	0.64
25	61	0.97	76	49	0.78
26	75	1.19	77	22	0.35
27	101	1.61	78	36	0.57
28	101	1.61	79	29	0.46
29	80	1.27	80	38	0.61
30	90	1.43	81	28	0.45
31	80	1.27	82	47	0.75
32	69	1.10	83	28	0.45
33	74	1.18	84	30	0.48
34	82	1.31	85	39	0.62
35	87	1.39	86	44	0.70
36	68	1.08	87	46	0.73
37	78	1.24	88	46	0.73
38	70	1.11	89	47	0.75
39	89	1.42	90	61	0.97
40	76	1.21	91	94	1.50
41	75	1.19	92	47	0.75
42	74	1.18	93	27	0.43
43	86	1.37	94	38	0.61
44	64	1.02	95	47	0.75
45	87	1.39	96	41	0.65
46	97	1.54	97	46	0.73
47	97	1.54	98	37	0.59
48	96	1.53	99	30	0.48
49	127	2.02	100	16	0.25
50	133	2.12	<u>101</u>	<u>35</u>	<u>0.56</u>
51	126	2.01	Vessel Total	6280	

Sheet E Smoothsheet Sounding Distribution Royal Fish



Beam # vs. # of Soundings on Smoothsheet by Vessel

ROYAL FISH

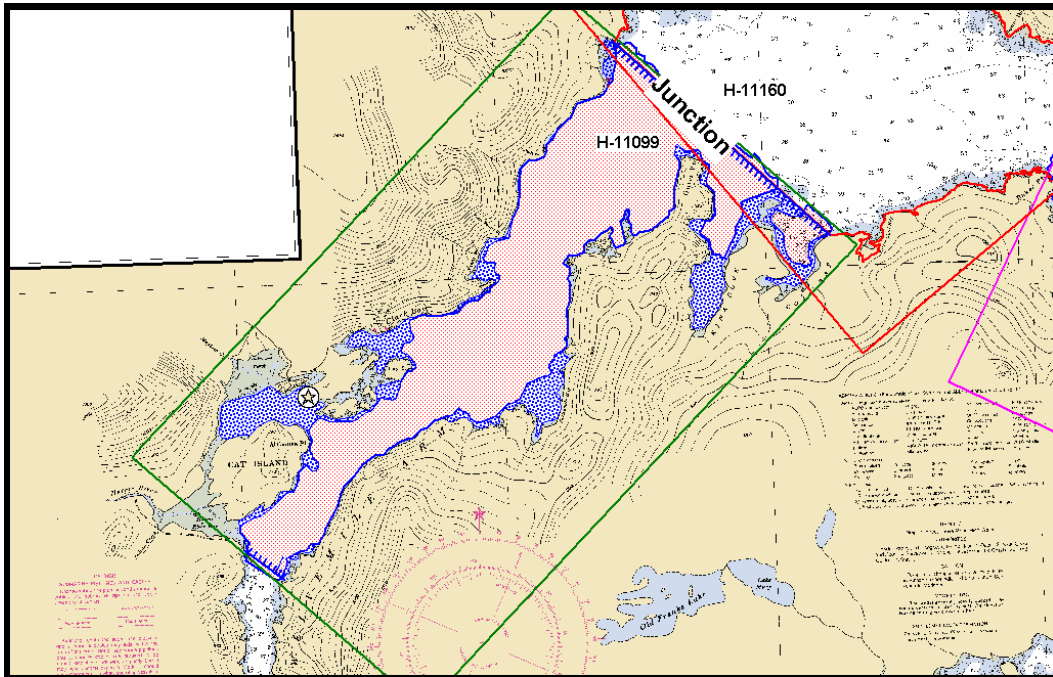
<u>Beam</u>	<u>Count</u>	<u>% of Total</u>	<u>Beam</u>	<u>Count</u>	<u>% of Total</u>
1	589	14.09	50	19	0.45
2	151	3.61	51	22	0.53
3	115	2.75	52	20	0.48
4	100	2.39	53	28	0.67
5	104	2.49	54	18	0.43
6	85	2.03	55	32	0.77
7	70	1.67	56	31	0.74
8	76	1.82	57	31	0.74
9	54	1.29	58	26	0.62
10	50	1.20	59	35	0.84
11	55	1.32	60	20	0.48
12	51	1.22	61	33	0.79
13	44	1.05	62	26	0.62
14	41	0.98	63	32	0.77
15	41	0.98	64	36	0.86
16	40	0.96	65	35	0.84
17	33	0.79	66	29	0.69
18	35	0.84	67	34	0.81
19	32	0.77	68	43	1.03
20	31	0.74	69	40	0.96
21	36	0.86	70	39	0.93
22	36	0.86	71	36	0.86
23	22	0.53	72	28	0.67
24	38	0.91	73	36	0.86
25	23	0.55	74	60	1.44
26	17	0.41	75	50	1.20
27	24	0.57	76	56	1.34
28	26	0.62	77	67	1.60
29	26	0.62	78	104	2.49
30	25	0.60	79	153	3.66
31	29	0.69	80	472	11.29
32	27	0.65			
33	21	0.50			
34	29	0.69			
35	21	0.50			
36	22	0.53			
37	20	0.48			
38	25	0.60			
39	24	0.57			
40	25	0.60			
41	30	0.72			
42	15	0.36			
43	16	0.38			
44	21	0.50			
45	19	0.45			
46	20	0.48			
47	21	0.50			
48	14	0.33			
49	20	0.48			
			Vessel Total	4180	

Vessel Summary

Vessel	Sounding Count	% of Total Soundings
Luna Sea	6280	60%
Royal Fish	4180	40%
Totals	10460	100%

Contemporary Survey Junctions

The northern limits of this survey¹⁰ junctions¹¹ H-11160 (2002, Scale 1:10,000) along it's southwesterly limits. The smoothsheet for H-11160 was plotted at the same scale as this survey and the soundings for both surveys agreed well.¹² There are no recommendations and no adjustments were made.



The junction location of H-11099 and H-11160

Quality Control Checks

All of the quality control methods and procedures are detailed in the Project Wide Data Acquisition and Processing Report.¹³ There were no unique problems that pertain to this survey. A table of Line Statistics is included in Separate V, Crossline Comparisons that details all required aspects of quality control on each line.

B3. Corrections To Echo Soundings

Hydrographic Survey H-11099 was performed with three other surveys in Project OPR-O331-KR-02. Changes to the corrections to echo soundings affect all four surveys in the area and is¹⁴ described in the project wide Data Acquisition and Processing Report.

Tide Issues unique to H-11099

The survey began on DN 166. Tide stations Kasaan (945-0581) and Hollis Anchorage (945-0544) began collecting data on DN 155 and DN 152 respectively, prior to data collection. The data collected was reduced using Kasaan (945-0581) and Hollis Anchorage (945-0544).

Luna Sea Pole Movement and Solution

During the processing phase of subset mode, an anomaly in the *Luna Sea*'s data was detected. A series of patch tests pointed toward pole movement as the most likely cause. As a solution, the lead processor went over each day's data and tested the roll throughout that day. The roll offset was then adjusted accordingly in the same way a roll patch line would be done and changed in the vessel configuration file. Throughout the survey, the roll offset varied by as much as 1 degree. This issue was ultimately resolved by affixing bolts on the upper and lower alignment tubes to keep consistency in pole mount position. Refer to Section C of the DAPR¹⁵ for more information. All the data processed with the roll offset adjustments met or exceeded the prescribed accuracy standard of the 95% confidence level.¹⁶

C. Vertical and Horizontal Control

Soundings for this survey were tide adjusted using data from NOAA tertiary stations Kasaan (945-0581) and Hollis Anchorage (945-0544). They were installed by Terra Surveys, LLC and John Oswald Consulting (JOC) for this project. Ketchikan preliminary water level data was downloaded from the NOAA web site (<http://www.cops.nos.noaa.gov>) daily. Verified tide data and final zoning from these gauges were processed by JOC. The final zoning methodology is described in further detail in the project wide Vertical and Horizontal Control Report.¹⁷

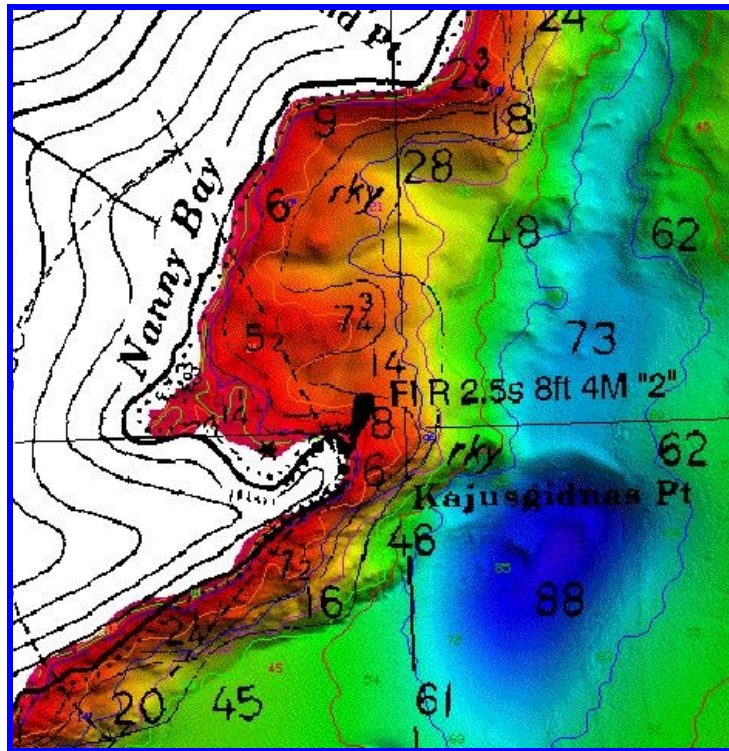
The horizontal control datum for this survey is North American Datum of 1983 (NAD 83). The projection used during collection was UTM, Zone 8. United States Coast Guard Station (USCG) *Annette Island* was used to send correctors to the survey vessels. A 24-hour observation on NGS station *ANN RESET* was used as a fixed point DGPS performance check on *Annette Island*. The observation survey showed the position on *Ann Reset* met the required accuracy standards. The 24-hour observation survey is detailed in the project wide Vertical and Horizontal Control Report. A summary of the daily DGPS confidence checks can be found in Separate I¹⁸ of this report.

D1. Chart Comparison

There was no Local Notice to Mariners that affected the survey area. Notice number 36 (Monthly Edition-September 2002) was the last notice reviewed for this project.

This survey was compared in AutoCAD Map and MicroStation to the following charts¹⁹:

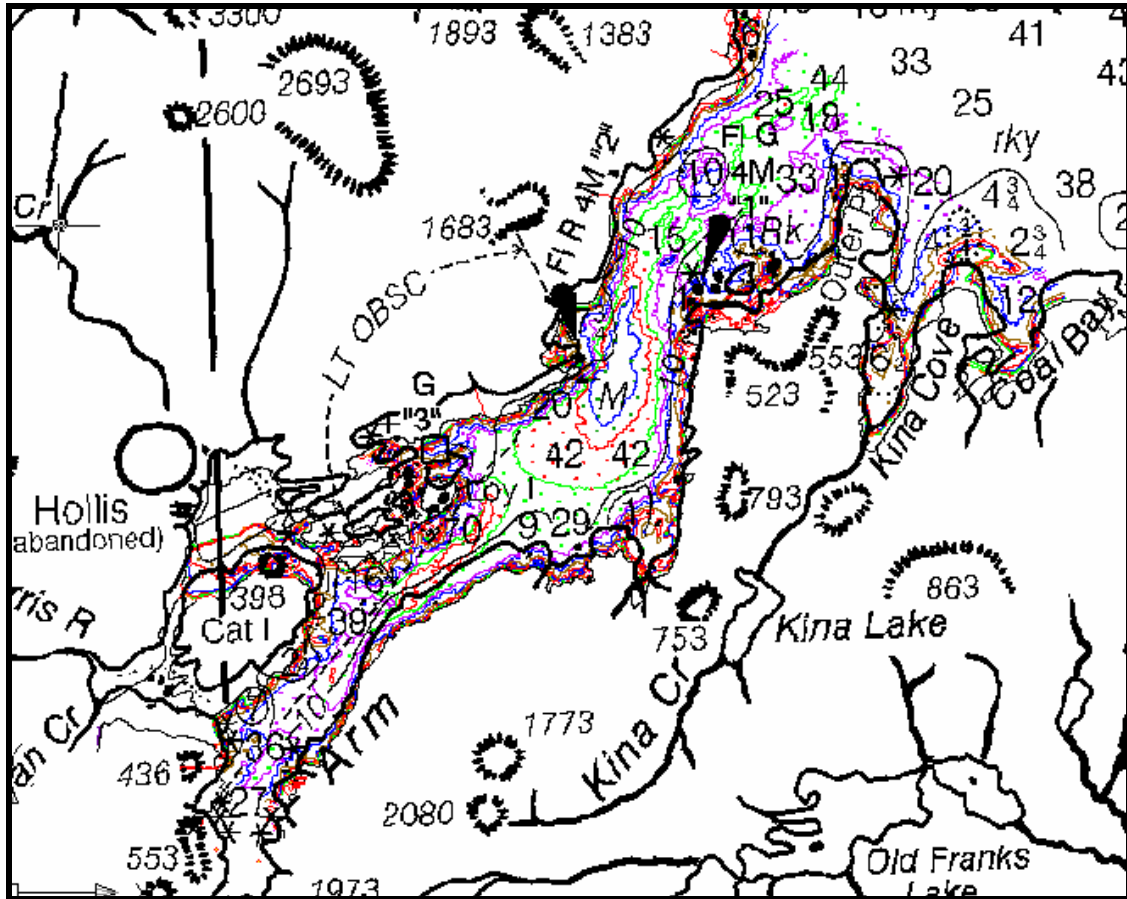
Chart	Scale	Edition	Date
17420	1:229,376	26 th	Sept. 22, 2001
17426	1:40,000 & 1:10,000	13 th	July 11,1992



A typical chart comparison combining 2002 weeded soundings, a digital terrain model and a monochrome chart.

Chart 17420

The comparison with chart 17420(26th edition) shows a significant shift of the shoreline to the south and east (ranging from 200-400 meters). Due to the large amount of shoreline shift present, there was no shift performed to compare depths²⁰ for this chart. However, detailed depth comparisons were made for the largest scale chart, No. 17426.



Portion of Chart 17420(monochrome) overlaid on H-11099 shoreline and contours showing the significant discrepancy between charted and RSD shorelines

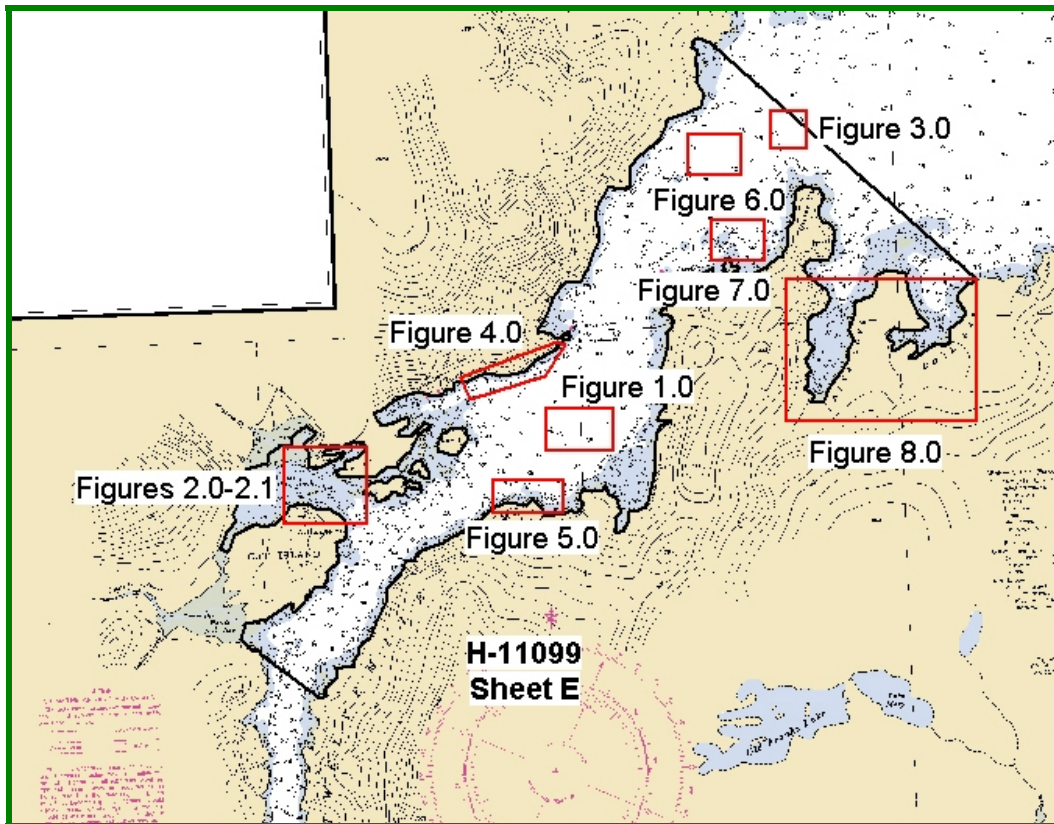
Recommendations

The newest edition of Chart 17420 should be adjusted to the 2002 shoreline findings.²¹

Chart 17426²²

The comparison with chart 17426 (13th edition) agreed reasonably well with this survey. No shift was necessary to compare the 2002 data to the chart. The smoothsheet shoreline was modified to reflect any changes found during the survey (from bathymetry or shoreline investigation). There are nineteen areas labeled *Rky* (rocky) on chart 17426 (largest scale). All but one of these areas agrees with the survey and is described with Figure 1.0. There are also numerous rocky areas throughout this survey not labeled on the chart. These areas were found through analysis of the digital terrain model. Shoreline investigation results also identified numerous new rocks and RSD rocks charted incorrectly.²³

Refer to the chartlet below for vicinity locations of the figures on the following pages.

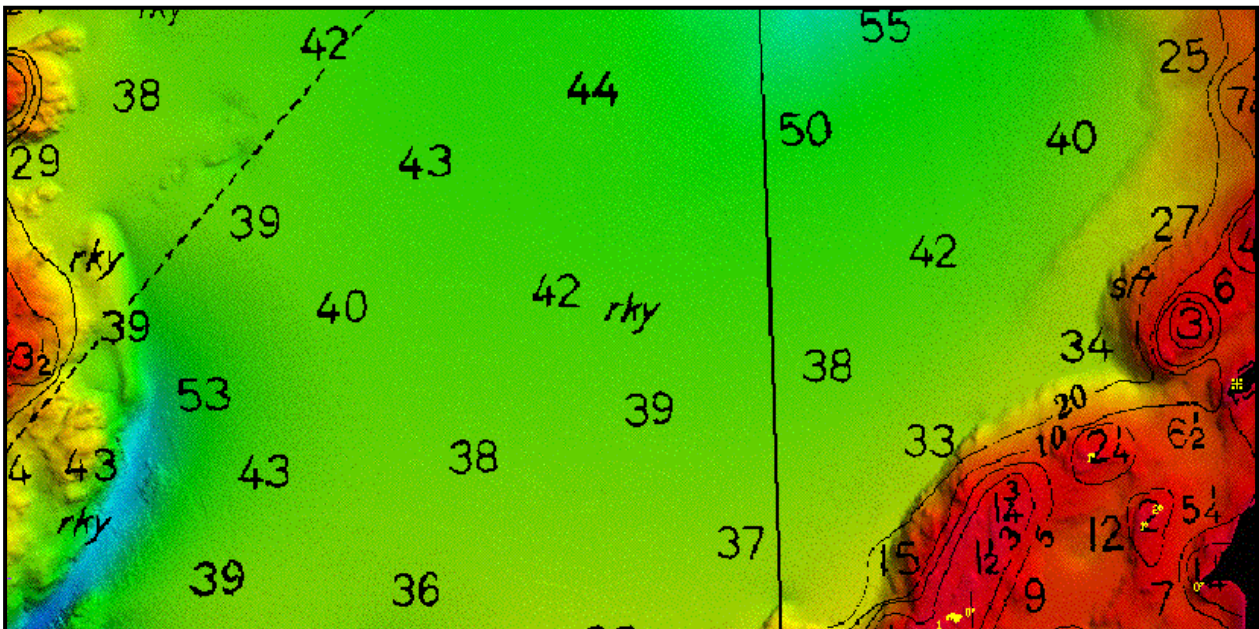


Portion of Chart 17426

Figure 1.0

Vicinity	Comment
55°29'06" N and 132°35'18" W	An area marked as rky. This location has least depths ranging from 39 to 42 fathoms, and is generally featureless.

The following chartlet shows the area marked as 'rky'. Areas determined to contain rocks (small soundings in yellow) have been superimposed on a digital terrain map and monochrome chart for review.

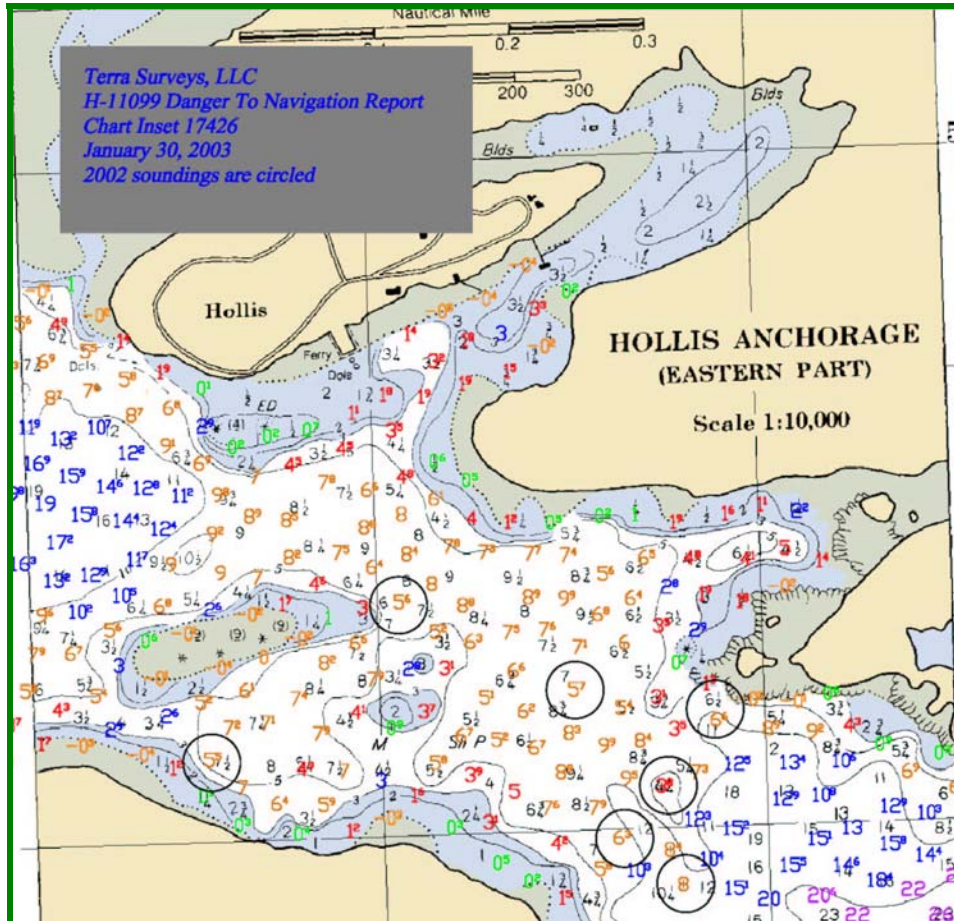


Recommendations

Based on the results of survey H-11099, the Hydrographer recommends removal of the *rky* symbol on the affected charts.²⁴

Figure 2.0

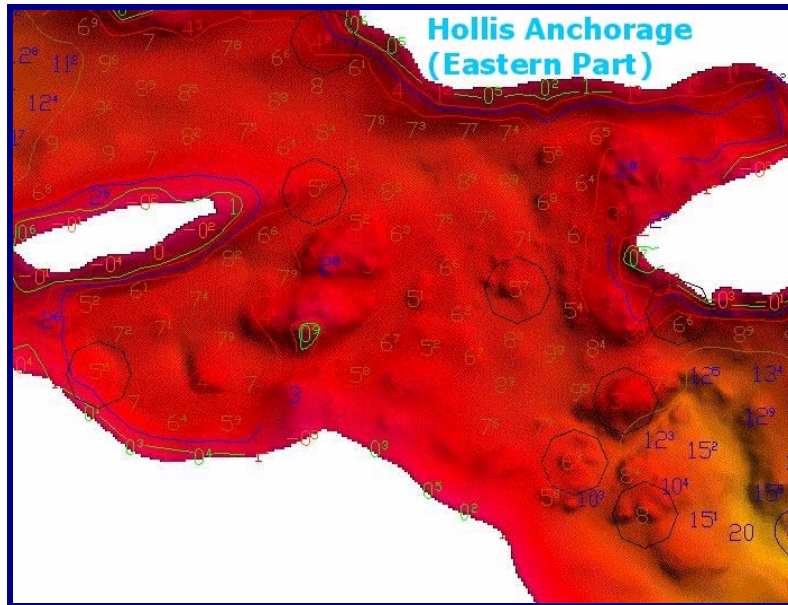
There are seven soundings in the Hollis Anchorage area that were identified as a Danger to Navigation. A Danger to Navigation report was generated post process and can be found in Appendix I of this report.²⁵



Chartlet 17426 showing circled shoal soundings that disagree with Chart inset 17426
(Submitted with Danger To Navigation Report)

Figure 2.1

The following image shows the soundings (circled) submitted as a danger to navigation, with the Digital Terrain Model.



Digital terrain model of the entrance to East Hollis Anchorage

2002 Soundings and Positions

Depth fathoms	Latitude North	Longitude West
5.5	55° 28' 34"	132° 39' 13" ²⁶
5.6	55° 28' 40"	132° 38' 58"
5.7	55° 28' 36"	132° 38' 45"
6.6	55° 28' 35"	132° 38' 34" ²⁷
8	55° 28' 27"	132° 38' 37"
6.3	55° 28' 30"	132° 38' 42"
3.8	55° 28' 32"	132° 38' 38"

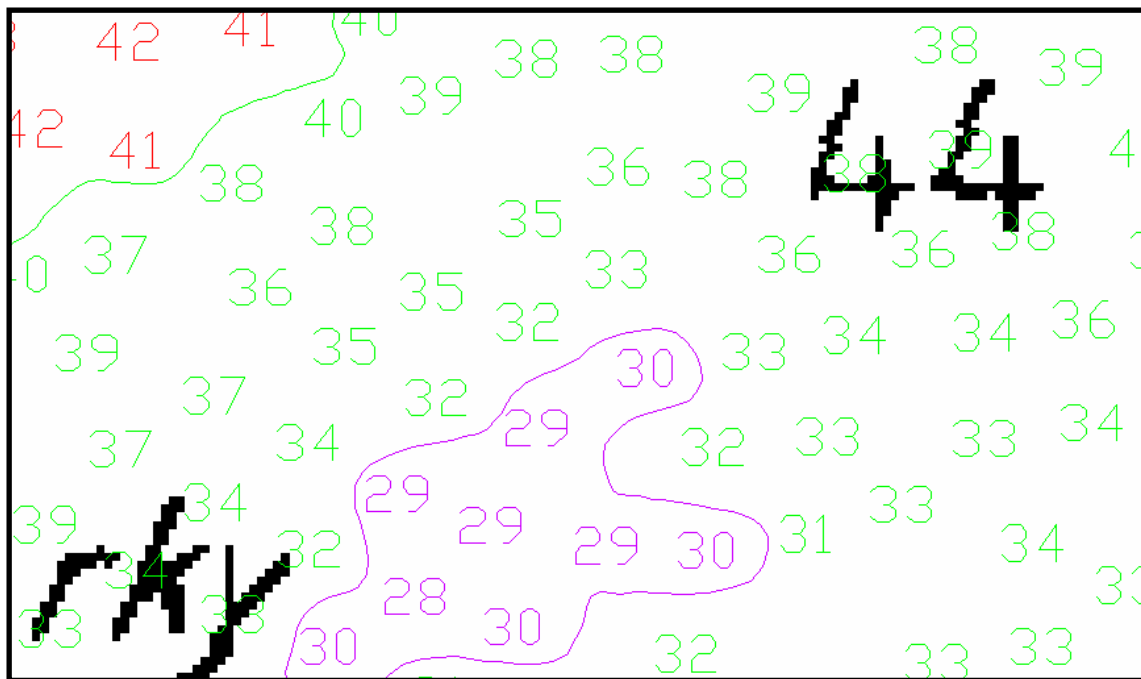
Recommendations

Based on the results of this survey the Hydrographer recommends updating the chart with the 2002 shoal soundings found.²⁸

Figure 3.0

Vicinity	Comment
55°31'50" N and 132°31'21" W	Sea floor is shoaling at this location with least depths ranging from 34 to 40 fathoms. Charted depth for this area is 44 fathoms. ²⁹

The following chartlet shows the area marked as 44 fathoms deep. Smoothsheet soundings have been superimposed over a monochrome chart for review.



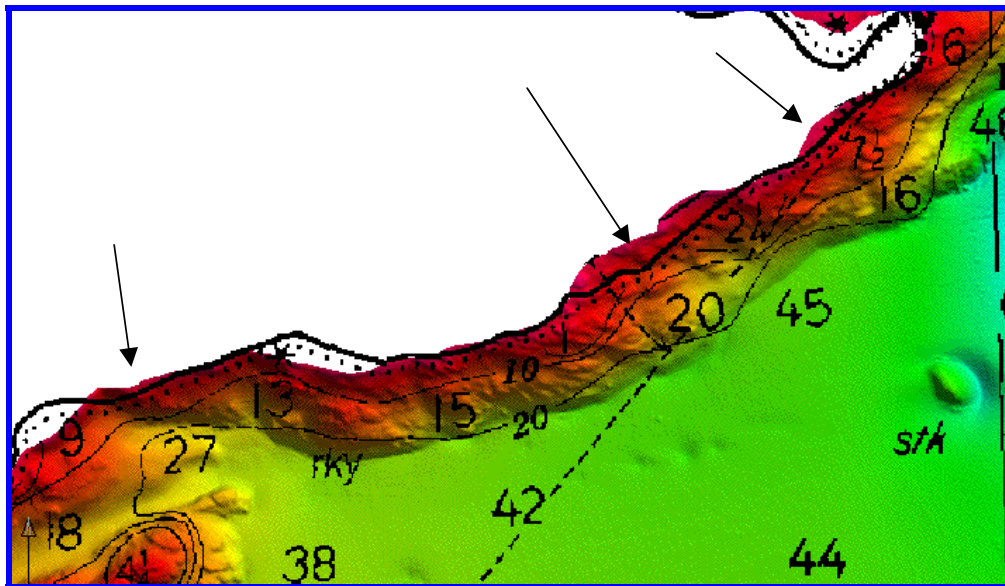
Recommendations

Based on the results of this survey the Hydrographer recommends updating the charted 44 fathom sounding with the 2002 surveyed 36 fathom sounding.³⁰

Figure 4.0

Vicinity	Comment
55°29'34" N and 132°35'06" W ³¹	Shoreline changed by Bathymetry ³²

The following chartlet shows the shoreline indicated on chart 17426 has changed. A digital terrain map has been superimposed on a monochrome chart for review.



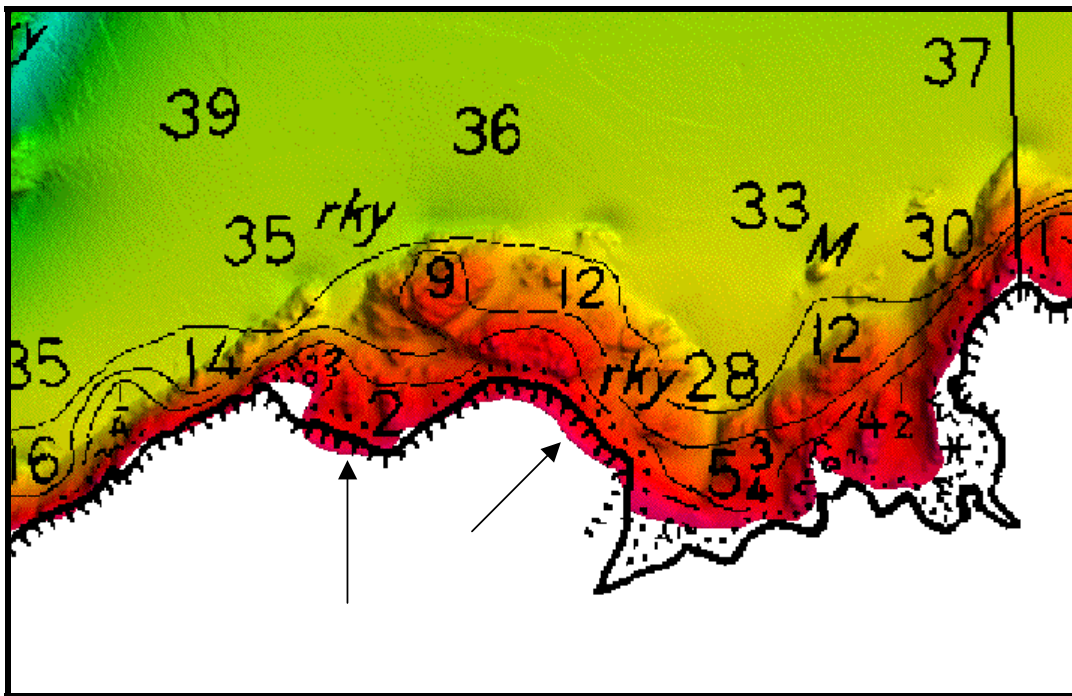
Recommendations

Based on the results of this survey the Hydrographer recommends updating the chart with the shoreline changes from the 2002 bathymetry. The new shoreline has migrated to the north by as much as 35 meters in this area.³³

Figure 5.0

Vicinity	Comment
55°28'26" N and 132°35'55" W ³⁴	Shoreline changed by Bathymetry ³⁵

The following chartlet shows the shoreline indicated on chart 17426 has changed. A digital terrain map has been superimposed on a monochrome chart for review.



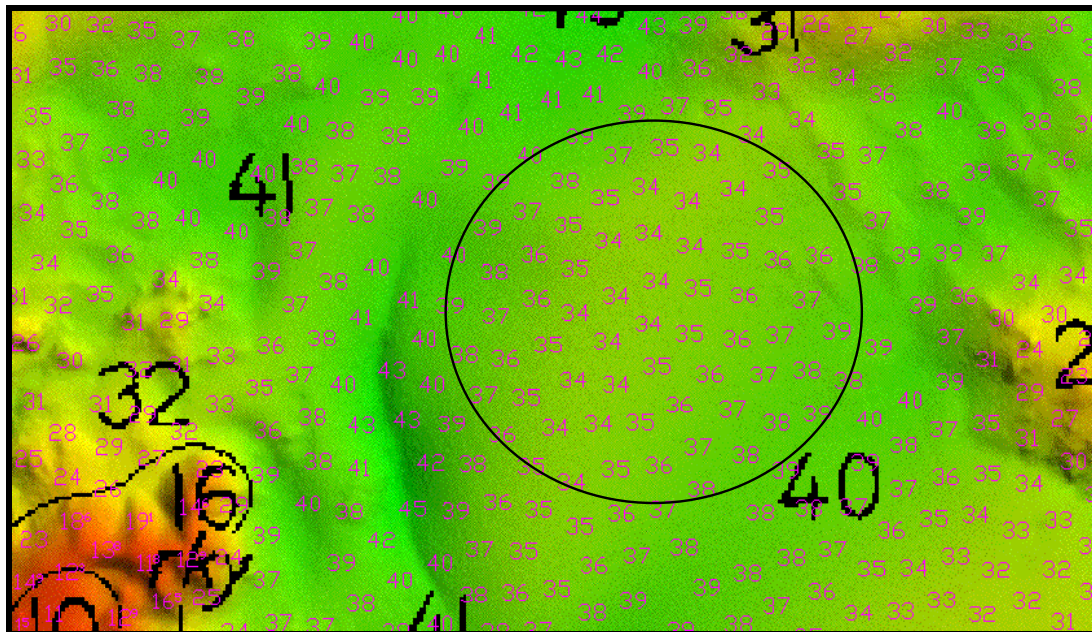
Recommendations

Based on the results of this survey the Hydrographer recommends updating the chart with the shoreline changes from the 2002 bathymetry. The new shoreline in this area has advanced to the south by as much as 30 meters.³⁶

Figure 6.0

Vicinity	Comment
55°31'31" N and 132°32'40" W	Area of shoaling

The following chartlet shows an area of shoaling. Smoothsheet soundings have been superimposed on a digital terrain map and a monochrome chart for review.



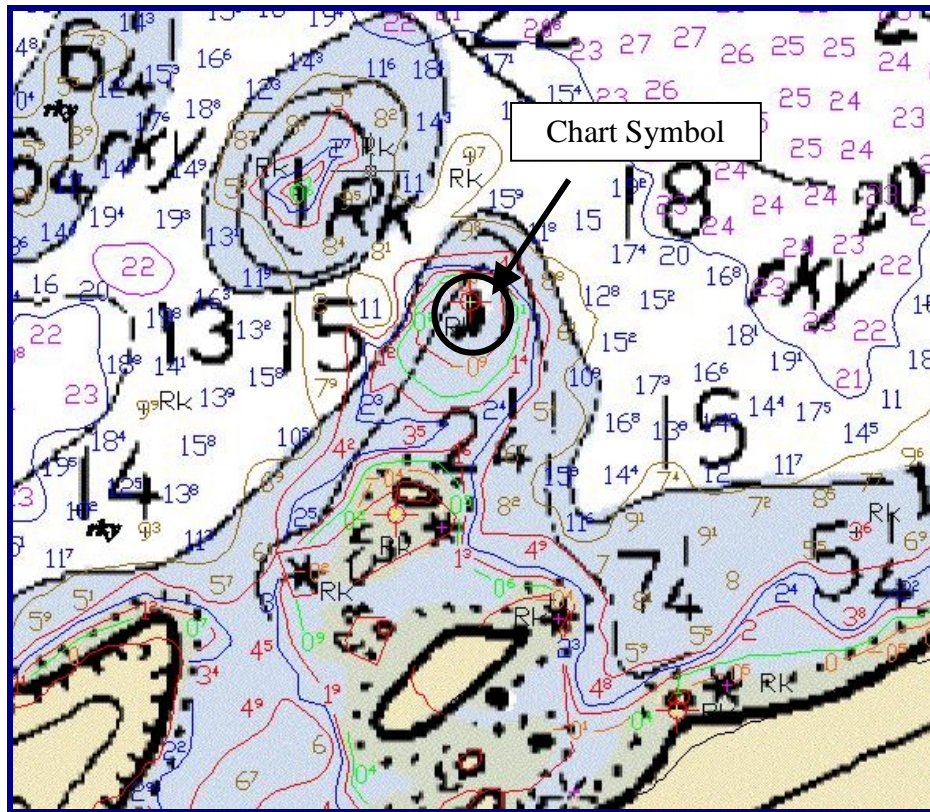
Recommendations

Based on the results of this survey the Hydrographer recommends adding a 34-fathom sounding at the position of 55°31'31" N and 132°32'40" W.

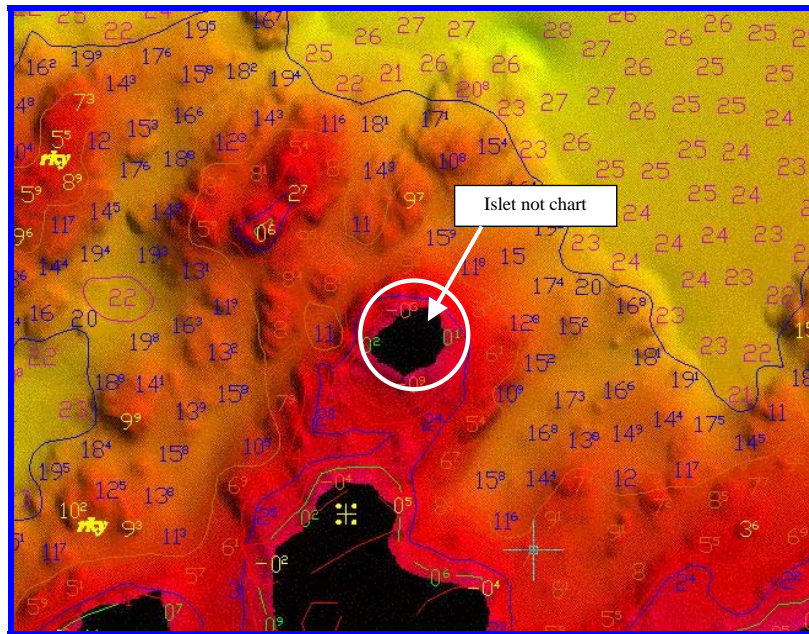
Figure 7.0

Vicinity	Comment
55°30'39" N and 132°32'36" W ³⁷	Islet not charted

Bathymetry and traditional shoreline verification revealed an Islet not charted.³⁸ The image below shows the 2002 soundings and contours as they compare to Chart 17426. The chart does show a symbol that could represent a land mass although the charted contours indicate more of an extension of the Islet to the south. The remote sensing data lists a rock at this position. However, ground truthing reported trees growing on this mass which measures approximately 90 meters across, and is 16-feet above MLLW.



Symbol on Chart 17426 where Islet was found



2002 soundings overlaid on the digital terrain model



2002 shoreline verification photo of Islet not charted

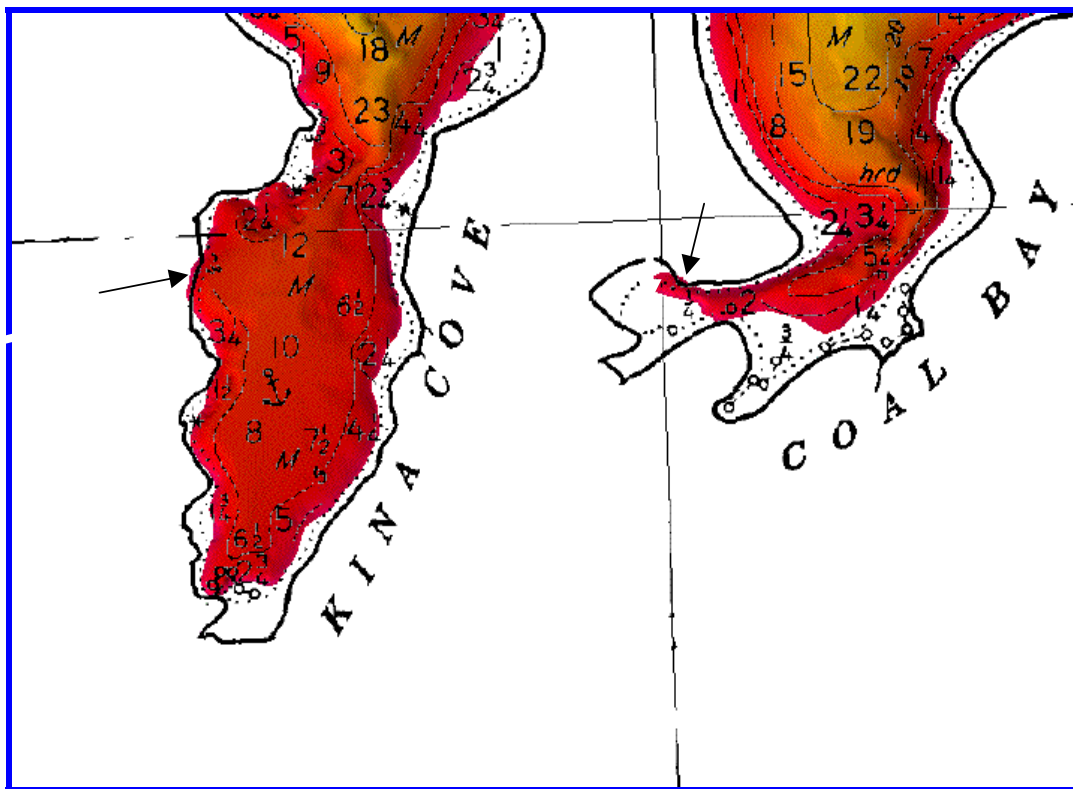
Recommendations

Based on the results of this survey the Hydrographer recommends changing the charted symbol at the position of 55°30'39" N and 132°32'36" W³⁹ to an Islet

Figure 8.0

Vicinity	Comment
Kina Cove, Coal Bay	Shoreline changed by Bathymetry ⁴⁰

The following chartlet shows the shoreline indicated on chart 17426 has changed.⁴¹ A digital terrain map has been superimposed on a monochrome chart for review.



Recommendations

Based on the results of this survey the Hydrographer recommends updating the chart with the shoreline changes from the 2002 bathymetry.

Additional Findings

In addition, the following shows a table of soundings and positions that disagree with the chart:⁴²

Chart Depth Fathoms	H-11099 Fathoms	Latitude	Longitude	Comment
28	32	55° 28' 05.99" N	132° 37' 56.78" W	Near charted depth of 28
14	15.7	55° 27' 24.73" N	132° 39' 55.39" W	Btwn 7 and 14 on chart
12	15.3	55° 29' 31.53" N	132° 33' 58.63" W	Near charted depth of 12
62	54	55° 30' 16.52" N	132° 34' 25.63" W	Near charted depth of 62
28	n/a	55° 30' 24.50" N	132° 34' 06.48" W	On the deep side of 30 cntr

Danger to Navigation Reports

A total of two Dangers to Navigation reports were submitted for this survey. Their reports can be found in Appendix I of this report.⁴³

AWOIS Investigations

LAT83	<input type="text" value="55/29/50.24"/>	LONG83	<input type="text" value="132/29/47.65"/>	NATIVEDATUM	<input type="text" value="31"/>
LATDEC:	<input type="text" value="55.497288888889"/>	LONDEC:	<input type="text" value="132.49656944444"/>	GPQUALITY	<input type="text" value="High"/>
				GPSOURCE	<input type="text" value="Scaled"/>
PROJECT	<input type="text" value="OPR-0331"/>	ITEMSTATUS	<input type="text" value="Assigned"/>	SEARCHTYPE	<input type="text" value="Full"/>
RADIUS	<input type="text" value="125"/>	INIT	<input type="text" value="MBH"/>	ASSIGNED	<input type="text" value="6/5/2001"/>
TECNIQ	<input type="text" value="VS,BD,DI,SD"/>				
Techniqnote	<input type="text" value="SEARCH THE AREA AS SHOWN ON THE AWOIS GRAPHIC."/>				
History	<input type="text" value="H08532 (1960)--TWO PILINGS (APPROX. 15-20 METERS APART) CHARTED AS ONE PILING WERE FOUND BY THIS HYDROGRAPHIC SURVEY. (ENTERED 6/01 BY MBH)"/>				
Fieldnote	<input type="text" value="INVESTIGATION"/> <input type="text" value="DATE(S): // (DN:)"/> <input type="text" value="HYDROGRAPHIC SURVEY NUMBER:"/> <input type="text" value="VN: TIME:"/> <input type="text" value="INVESTIGATION METHODS USED: (IE DI, 200% SIDE SCAN SONAR, ECHO SOUNDER)"/> <input type="text" value="SURVEYED POSITION: LAT. LON."/> <input type="text" value="POSITION DETERMINED BY: DIFFERENTIAL GPS"/> <input type="text" value="INVESTIGATION SUMMARY:"/> <input type="text" value="CHARTING RECOMMENDATION (HYDROGRAPHER):"/> <input type="text" value="EVALUATOR COMMENTS:"/>				
Proprietary					
YEARSUNK	<input type="text"/>	NIMANUM	<input type="text"/>		

AWOIS Items Summary

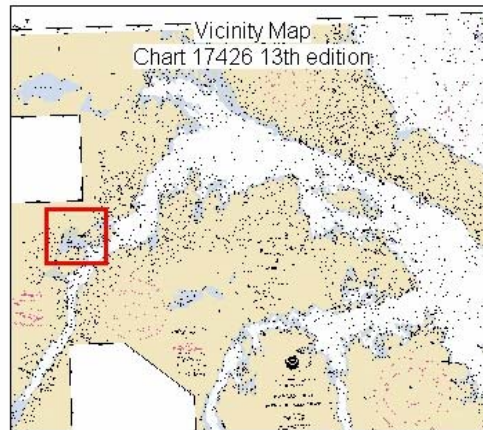
This contract required full investigation of ten AWOIS items. The table below is a summary of the items and their results. The next three pages show location maps, followed by individual reports.

Record	Description	Comment
52766	Dolphin	Full investigation with shoreline verification, not found
52767	Dolphin	Full investigation with SWMB and shoreline verification, not found
52776	Dolphin	Full investigation with SWMB and shoreline verification, not found
52777	Piles	Full investigation with SWMB and shoreline verification, not found
52778	Dolphin	Full investigation with SWMB and shoreline verification, not found
52769	Rock awash	Full Investigation with SWMB and shoreline verification, rock awash found
52770	Submerged pile	Full investigation, piles found
52771	Anchored Log	Full investigation, anchored log found
52772	Structure(dolphin and pile)	Full investigation, not found .
52773	Dolphins	Full Investigation; not found

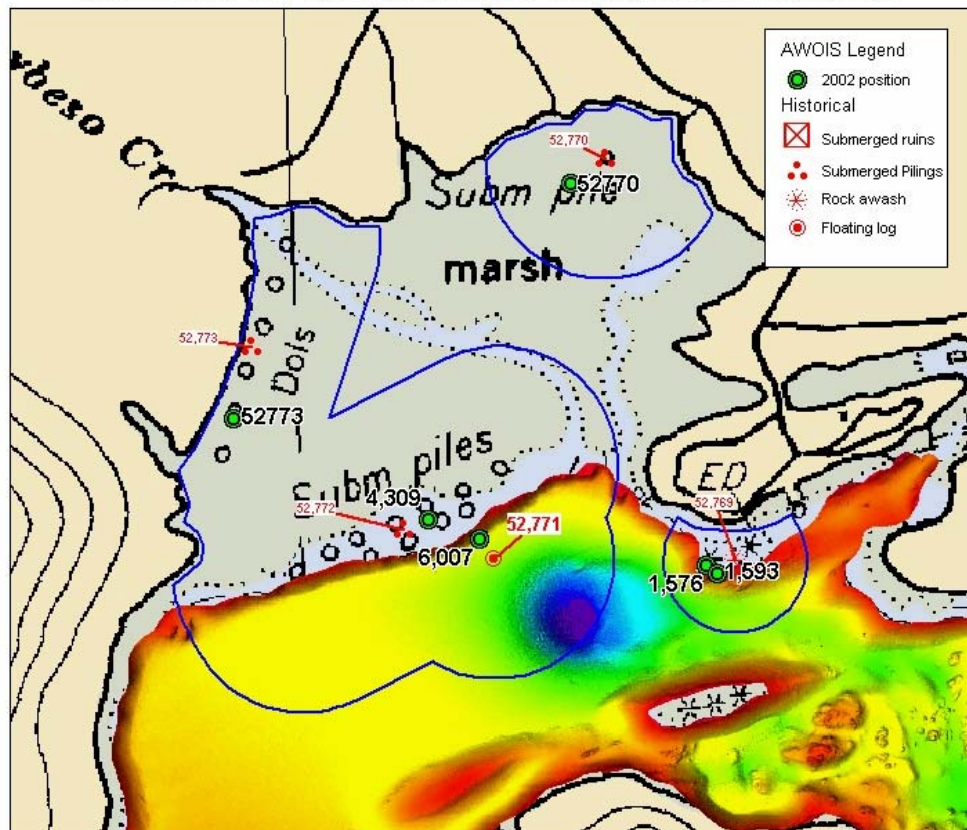
Historical and 2002
AWOIS Positions

H-11099 Sheet E

- 52769
- 52770
- 52771
- 52772
- 52773



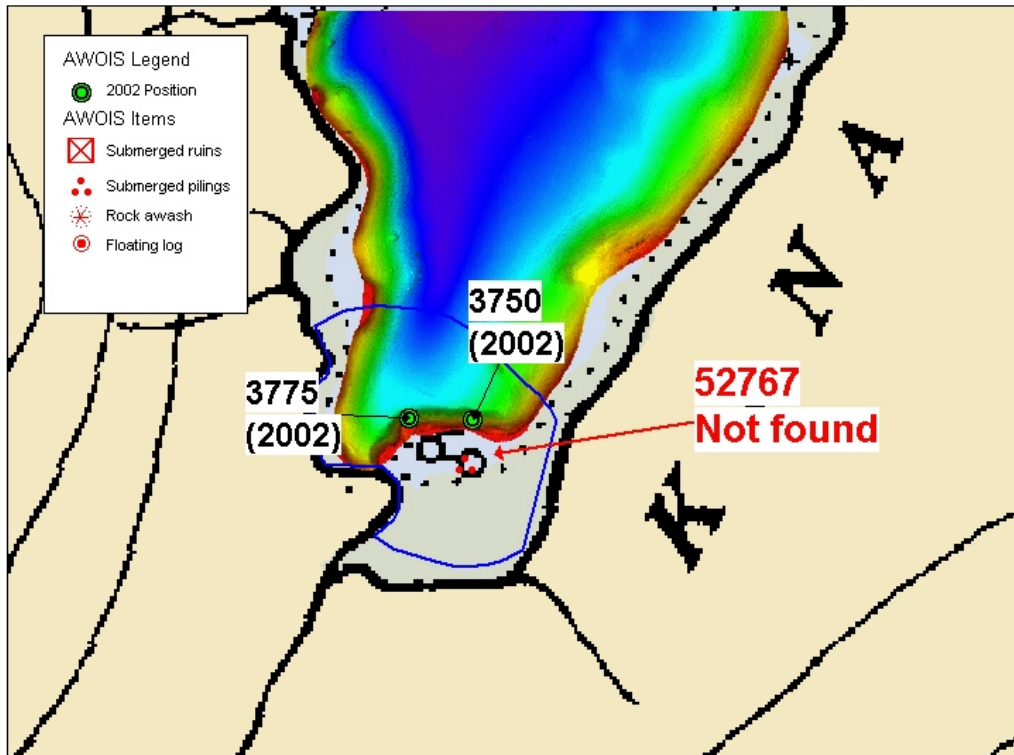
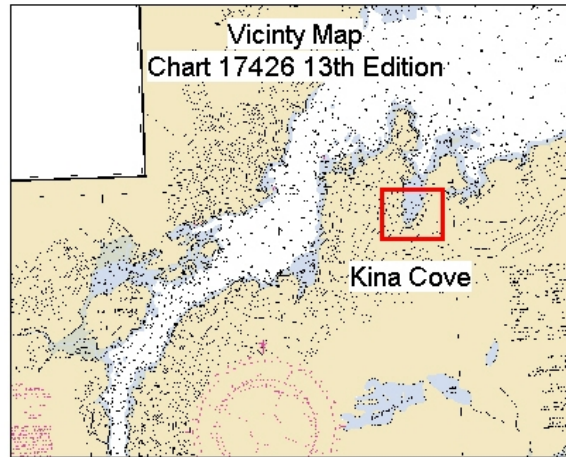
Location map with digital terrain model showing limits of hydrography



Historical and 2002
AWOIS Positions

H-11099 Sheet E

52767



Historical and 2002
AWOIS Positions

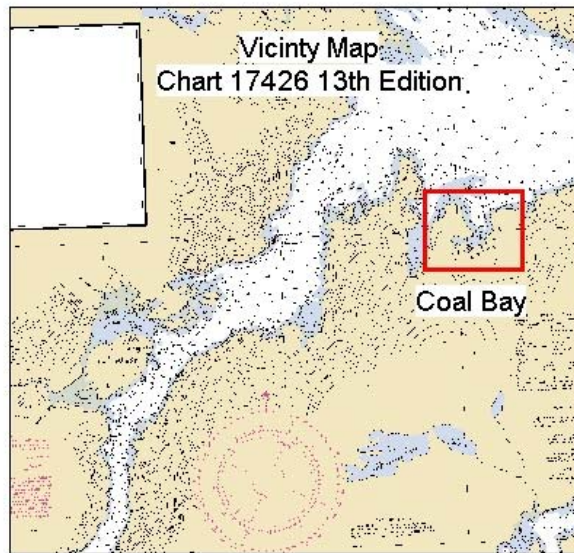
H-11099

52766

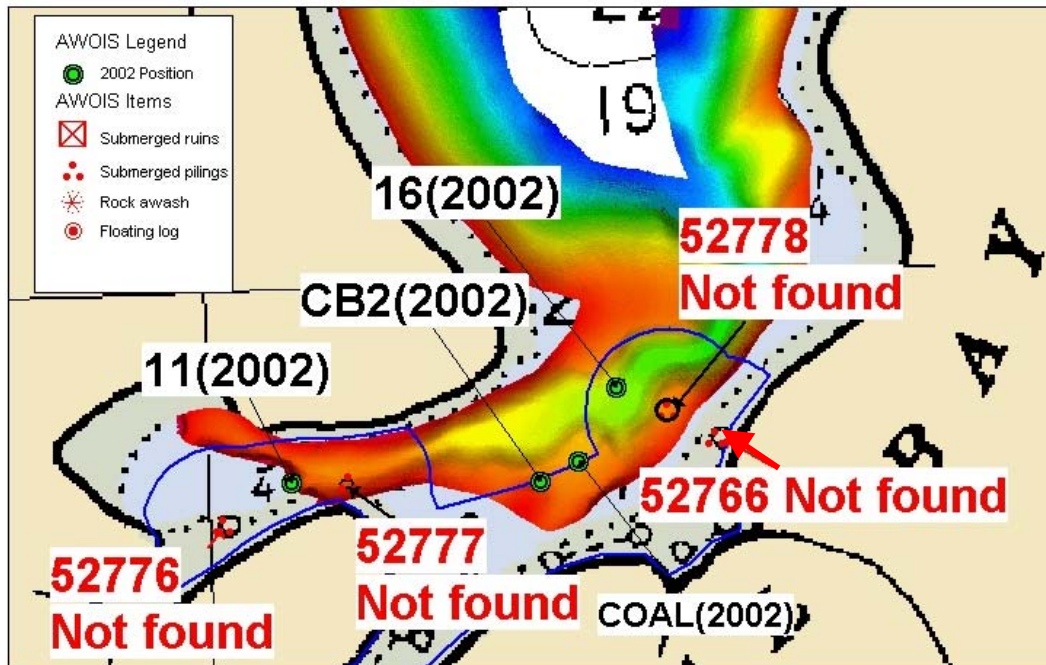
52776

52777

52778



Location map with digital terrain model showing limits of hydrography



Item Investigation Report

Item Description (as charted): Dolphin

Source: AWOIS record number 52766

Charted Position: Lat 55°29'51.86" N Long 132°29'15.61" W

Charts Affected: 17420 26th edition September 22, 2001
17426 13th edition July 11, 1992

Investigation

Date(s)/Day Number(s): 9/6/02 DN 249

Survey Vessel Name: Workskiff

Position Numbers/Time: 16/15:51:10 UTC
COAL/16:01:02 UTC
CB2/16:05:30 UTC

Investigation Method: Shoreline verification

Surveyed Position (NAD83): Search areas Lat 55° 29' 54.60" N Long 132° 29' 24.01" W
Lat 55° 29' 50.98" N Long 132° 29' 28.00" W
Lat 55° 29' 50.05" N Long 132° 29' 30.91" W

Position Determined By: Garmin Etrex GPS

Investigation Summary: This item fell outside the limits of hydrography. A 700-meter, visual shoreline investigation was done for one hour at low tide. The AWOIS radius was totally exposed during this search. Any remnants, if they existed, would have been visible. No dolphins were found. The AWOIS history lists this area as the most seaward location of a group of dolphins. Refer to the following photos, images and plotted field positions for more details on this item.

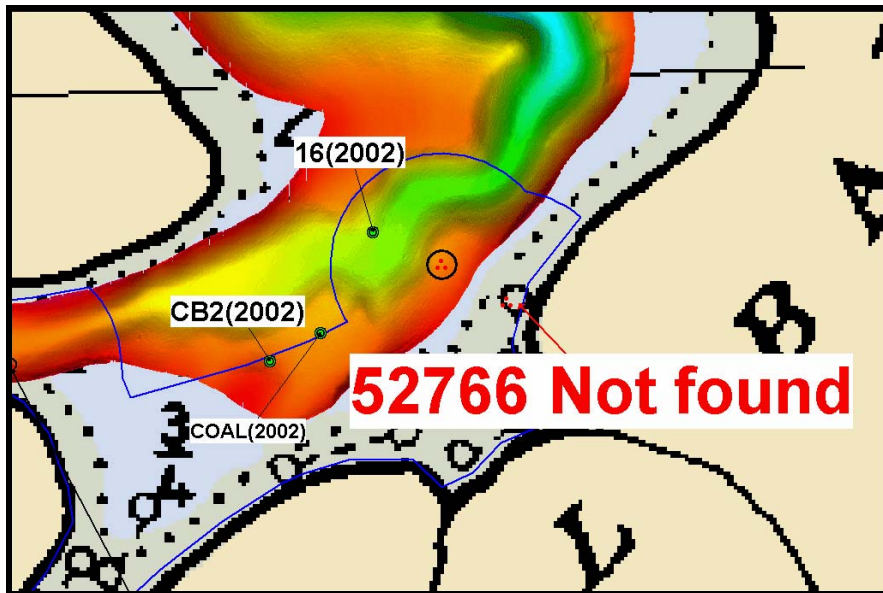
Charting Recommendation

Based on the results of survey H-11099, the Hydrographer recommends removal of the Submerged piles symbols from the chart and removal of the AWOIS item.⁴⁴

Recommended Least Depth: Not applicable.



Seaward extents of AWOIS item 52766 search area



AWOIS item 52766 and the 2002 search positions, Chart 17426

Item Investigation Report

Item Description (as charted): Dolphin

Source: AWOIS record number 52767

Charted Position: Lat 55°29'22.45" N Long 132°31'17.05" W

Charts Affected: 17420 26th edition September 22, 2001
17426 13th edition July 11, 1992

Investigation

Date(s)/Day Number(s): 8/8/02 DN 220 Survey Vessel Name: Royal Fish/Workskiff

Position Numbers/Time: 3775/15:28:01 3770/15:23:50

Investigation Method: Shallow Water Multibeam Sonar/Shoreline Verification

Surveyed Position (NAD83):

Search area Lat 55° 29' 50.42778" N Long 132° 29' 52.54476" W

Position Determined By: Differential GPS

Investigation Summary: A 200-meter radius area was searched for two hours in addition to investigation in the office. The position for this item falls outside the limits of hydrography. The northern half of the search area has full coverage. The southern half was searched visually during shoreline verification at low tide. The AWOIS history lists log storage dolphins at this location. No Dolphins were found. Refer to the following photos, images and plotted field positions for more details on this item.

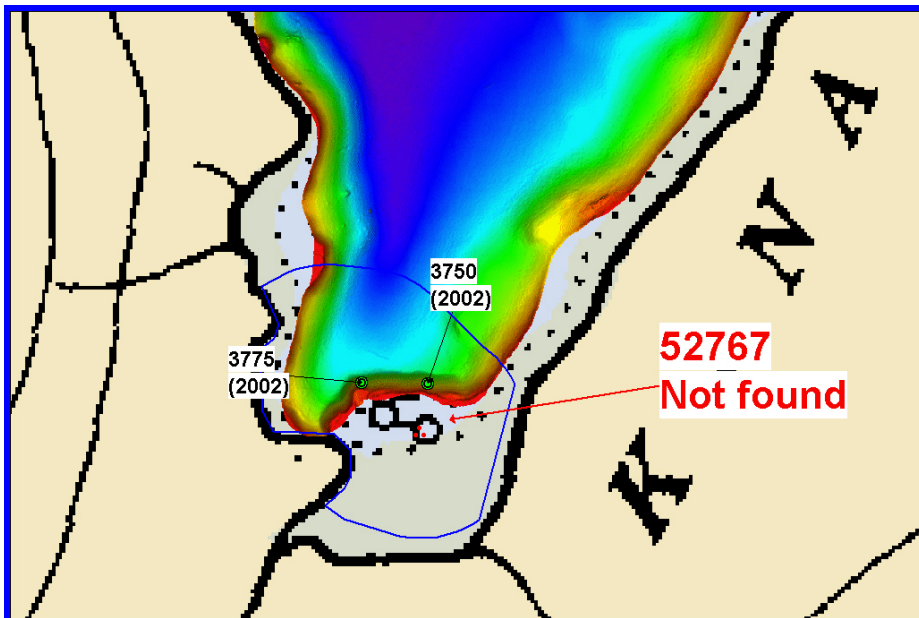
Charting Recommendation

Based on the results of survey H-11099, the Hydrographer recommends removal of the dolphin symbol on the affected charts. ⁴⁵

Recommended Least Depth: Not applicable



AWOIS item 52767 search area looking North



AWOIS item 52767 search area, Chart 17426

Item Investigation Report

Item Description (as charted): Rock Awash

Source: AWOIS record number 52769

Charted Position: Lat 55°28'48.48" N Long 132°39'08.27" W

Charts Affected: 17420 26th edition September 22, 2001
17426 13th edition July 11, 1992

Investigation

Date(s)/Day Number(s): 06/28/2002 DN 179

Survey Vessel Name: Royal Fish

Position Numbers/Time: 1576/ 19:37:21 UTC
1593/ 19:39:56 UTC

Investigation Method: Shallow Water Multibeam Sonar, shoreline verification

Surveyed Position (NAD83): Lat 55° 28' 48.28" N Long 132° 39' 11.63" W
Lat 55° 28' 47.68" N Long 132° 39' 10.31" W

Position Determined By: Differential GPS

Investigation Summary: A 150-meter radius was searched. A rock awash was found and positioned 50 meters from the historical position. The charted rock symbol agrees with the 2002 surveyed position. The area has full SWMB coverage on the seaward side, defining the shape of this item. Refer to the following photos, images and plotted field positions for more details on this item.

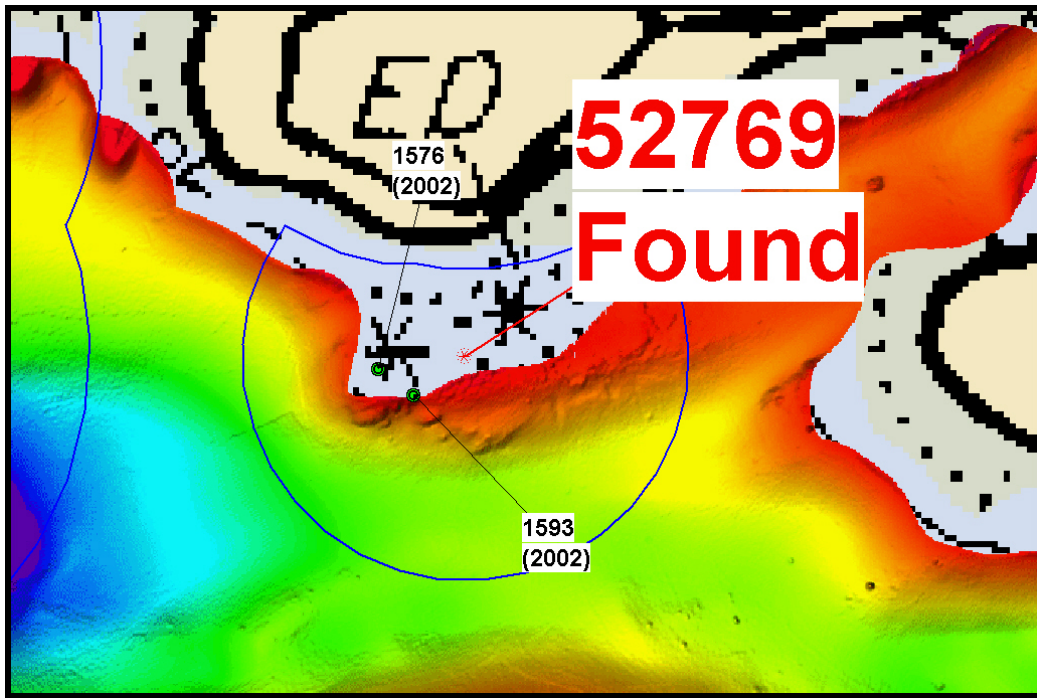
Charting Recommendation

Based on the results of survey H-11099, the Hydrographer recommends retention of the charted rock symbol for the item. The AWOIS position of this item should be updated to the 2002 surveyed position, Lat 55° 28' 48" N and Long 132° 39' 11"W(average of extent surveyed position above).⁴⁶

Recommended Least Depth/Height: 0.91 meters above MLLW



AWOIS item 52769, looking North



AWOIS item 52769, 2002 bathymetry, and 2002 positions; Chart 17426

Item Investigation Report

Item Description (as charted): Submerged Pile

Source: AWOIS record number 52770

Charted Position: Lat 55°29'15.84" N Long 132°39'22.05" W

Charts Affected: 17420 26th edition September 22, 2001
17426 13th edition July 11, 1992

Investigation

Date(s)/Day Number(s): 8/17/02 DN 229 Survey Vessel Name: Not applicable

Position Numbers/Time: 52770(2002)/22:30:17 UTC

Investigation Method: Shoreline verification

Surveyed Position (NAD83): Lat 55° 29' 14.28" N Long 132° 39' 26.26" W

Position Determined By: Garmin Etrex GPS

Investigation Summary: This item was outside the limits of hydrography. A 250-meter radius was searched on foot. A position was established at two pilings with a 225-square meter dilapidated barge and machinery, 100-meters from the historical position. Refer to the following photos, images and plotted field positions for more details on this item.

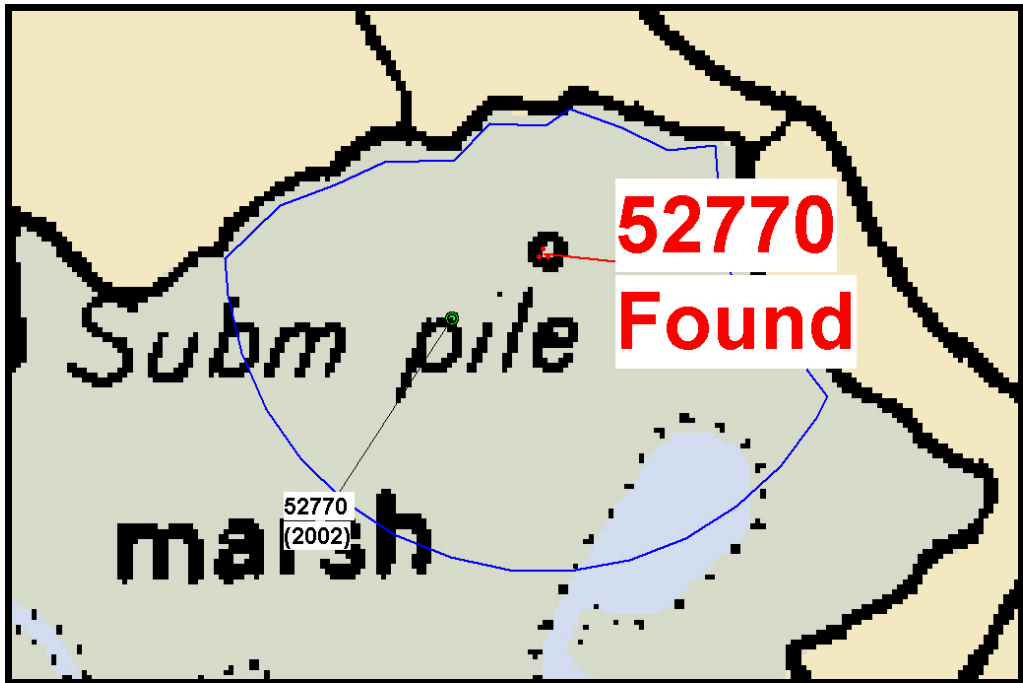
Charting Recommendation

Recommendations: Based on the results of survey H-11099, the Hydrographer recommends updating the charted submerged pile symbol to a visible ruins symbol and adding a wreck symbol. The position should also be updated to the 2002 position, Lat 55° 29' 14.28" N Long 132° 39' 26.26" W⁴⁷

Recommended Least Depth/Height: This item is greater than 0.7 meters above MHW classifying it as a visible obstruction.



AWOIS item 52770 looking North



AWOIS item 52770 and 2002 position, Chart 17426

Item Investigation Report

Item Description (as charted): Anchored log

Source: AWOIS record number 52771

Charted Position: Lat 55°28'49.10" N Long 132°39'36.94" W

Charts Affected: 17420 26th edition September 22, 2001
17426 13th edition July 11, 1992

Investigation

Date(s)/Day Number(s): 9/6/02 DN 249 Survey Vessel Name: Royal Fish/Work Skiff

Position Numbers/Time: 6007, 15:01:37 UTC

Investigation Method: Shallow Water Multibeam Sonar, shoreline verification

Surveyed Position (NAD83): Lat 55°28'50.51" N Long 132°39'38.44" W

Position Determined By: Differential GPS, Garmin Etrex GPS

Investigation Summary: A 300-meter radius was searched. A pink buoy attached to a floating log was located and positioned 50-meters from the historical position. The area has full SWMB coverage. Refer to the following photos, images and plotted field positions for more details.

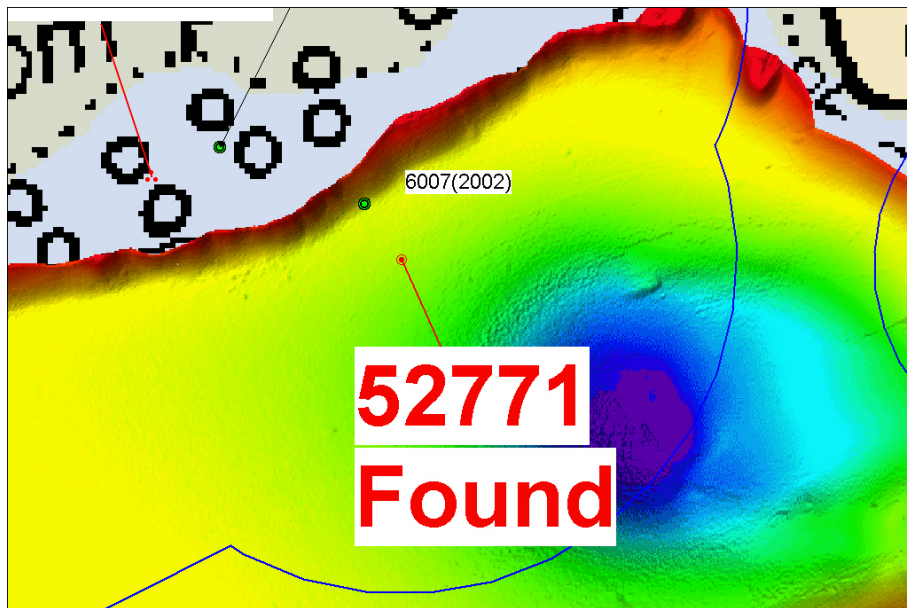
Charting Recommendation

Recommendations: Based on the results of survey H-11099, the Hydrographer recommends retention of the log symbol. This log is floating at Lat 55°28'50.51" N Long 132°39'38.44" W.⁴⁸

Recommended Least Depth: This item is floating; no least depth recommended.



AWOIS item 52771, looking Northwest



AWOIS item 52771, 2002 bathymetry and 2002 position; Chart 17426

Item Investigation Report

Item Description (as charted): Dolphin

Source: AWOIS record number 52772

Charted Position: Lat 55°28'51.31" N Long 132°39'47.48" W

Charts Affected: 17420 26th edition September 22, 2001
17426 13th edition July 11, 1992

Investigation

Date(s)/Day Number(s):08/09/2002 DN 221 Survey Vessel Name:Workskiff

Position Numbers/Time: 4309/ 02:57:07

Investigation Method: Shoreline investigation

Surveyed Position (NAD83): Search area Lat 55° 28' 51.99" N Long 132° 39' 44.53" W

Position Determined By: Differential GPS

Investigation Summary: A two-hour 510-meter by 80-meter corridor was searched, in addition to office investigation. This item falls outside the limits of hydrography, a search position was obtain during shoreline verification. Water clarity was good; the bottom was visible during the search. There are submerged piles symbols on the chart in this search corridor. No dolphins or piles were found anywhere within the search corridor.

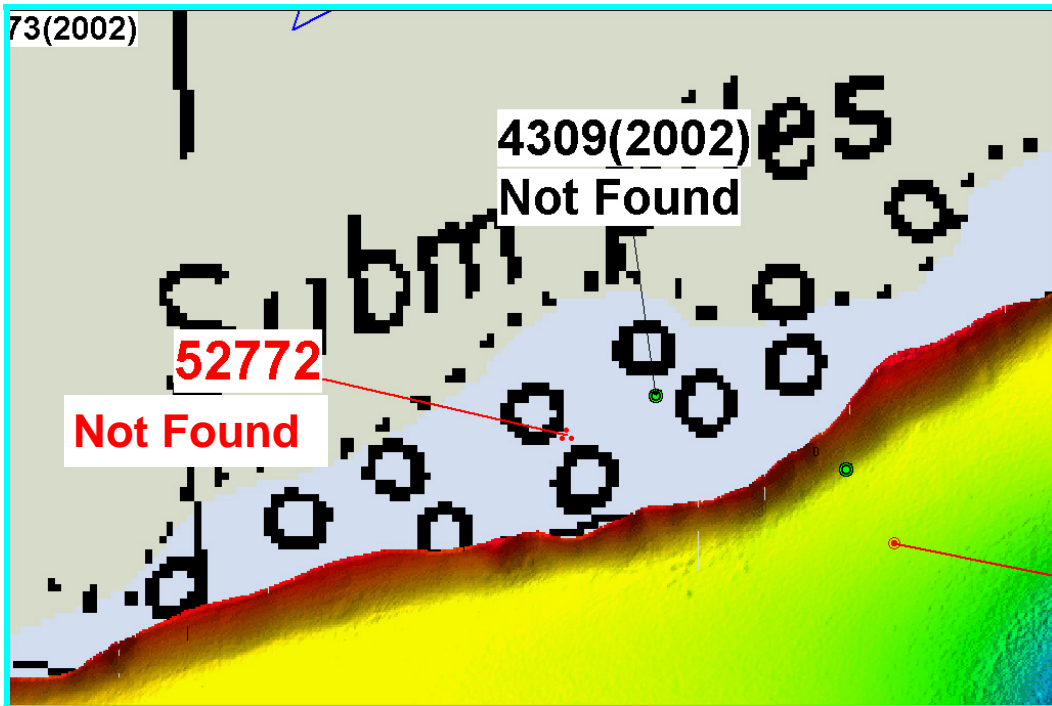
Charting Recommendation

Based on the results of survey H-11099, the Hydrographer recommends removal of the Submerged piles symbols from the chart and removal of the AWOIS item.⁴⁹

Recommended Least Depth: Not applicable.



AWOIS 52772 search area, looking Northwest



AWOIS 52772 search position, Chart 17426

Item Investigation Report

Item Description (as charted): Dolphin

Source: AWOIS record number 52773

Charted Position: Lat 55°29'03.91" N Long 132°40'04.87" W

Charts Affected: 17420 26th edition September 22, 2001
17426 13th edition July 11, 1992

Investigation

Date(s)/Day Number(s): 8/13/02 DN 225

Survey Vessel Name: Workskiff

Position Numbers/Time: 52773/ 21:55:45 UTC

Investigation Method: Shoreline verification

Surveyed Position (NAD83): Lat 132° 40' 7.27" N Long 55° 28' 59.21" W

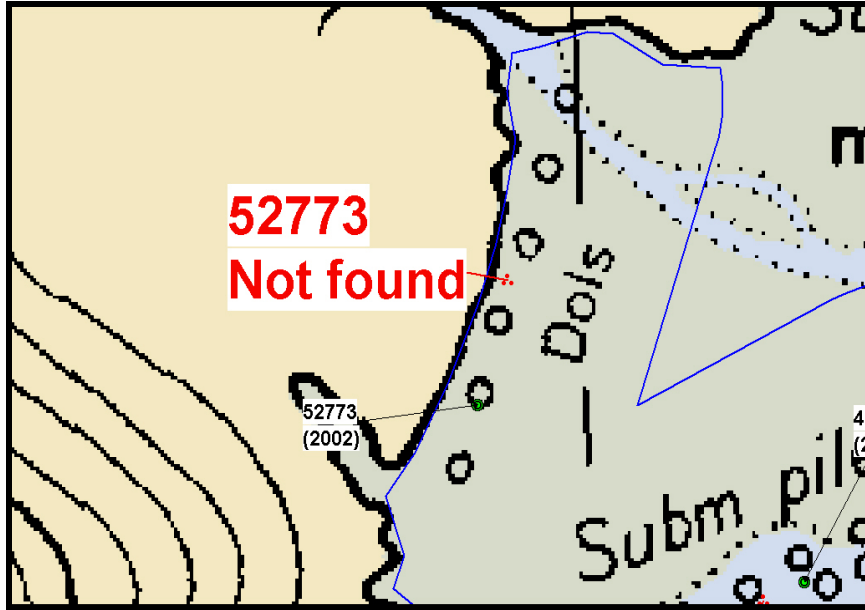
Position Determined By: Garmin Etrex GPS

Investigation Summary: This item fell outside the limits of hydrography. A two hour search on foot was conducted along a corridor 500-meters long and 50-meters wide along the shoreline where the charted dolphins are supposed to be located. The entire search corridor was exposed and visible. No dolphins were found in the search area. There was approximately 20 logs lying down above the high tide line in this area. These may be left over from the log storage area the dolphins once supported.

Charting Recommendation

Based on the results of survey H-11099, the Hydrographer recommends removal of the dolphin symbols .⁵⁰

Recommended Least Depth: Not applicable



AWOIS 52773 search position, Chart 17426



Logs in AWOIS 52773 search area, looking South



Logs in AWOIS 52773 search area, looking North

Item Investigation Report

Item Description (as charted): Dolphin

Source: AWOIS record number 52776

Charted Position: Lat 55°29'48.30" N Long 132°29'58.60" W

Charts Affected: 17420 26th edition September 22, 2001
17426 13th edition July 11, 1992

Investigation

Date(s)/Day Number(s): 9/6/02 DN 249 Survey Vessel Name: Workskiff

Position Numbers/Time: 11/15:51:23 UTC

Investigation Method: Shoreline verification

Surveyed Position (NAD83): Search area Lat 55° 29' 50.43" N Long 132° 29' 52.54" W

Position Determined By: Garmin Etrex GPS

Investigation Summary: A 100-meter swath was searched for two hours in addition to investigation in the office. The position for this item falls outside the limits of hydrography. The Eastern portion of the search area has full coverage. The Western portion was searched visually during shoreline verification at low tide. The AWOIS history lists a dolphin used as a hydrographic control station at this location. No dolphins were found.

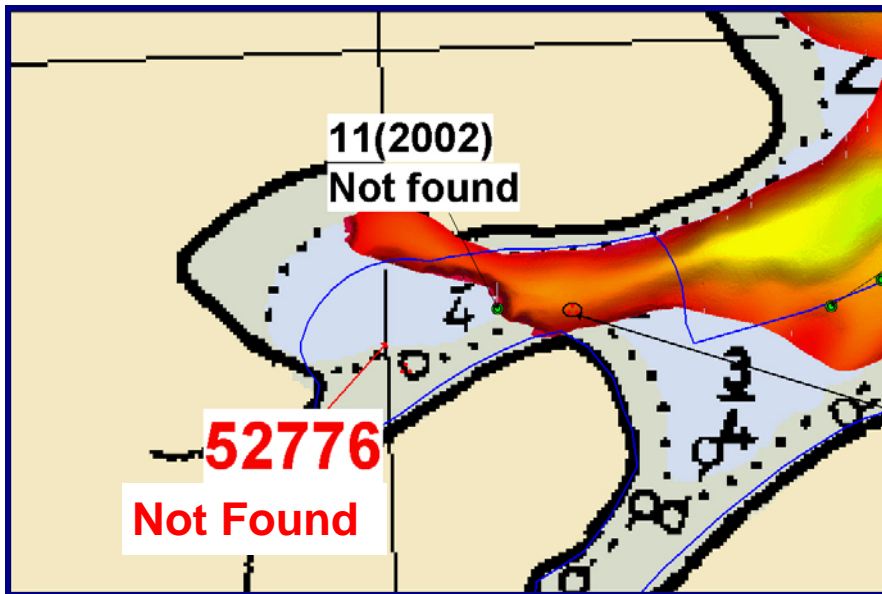
Charting Recommendation

Based on the results of survey H-11099, the Hydrographer recommends removal of the dolphin symbols.⁵¹

Recommended Least Depth: Not applicable



AWOIS item 52776 search area



AWOIS item 52776, 2002 bathymetry and 2002 position; Chart 17426

Item Investigation Report

Item Description (as charted): Pilings

Source: AWOIS record number 52777

Charted Position: Lat 55°29'50.24" N Long 132°29'47.65" W

Charts Affected: 17420 26th edition September 22, 2001
17426 13th edition July 11, 1992

Investigation

Date(s)/Day Number(s): 7/19/02 DN 200 Survey Vessel Name: Royal Fish/Workskiff

Position Numbers/Time: 11/17:25:54 UTC

Investigation Method: Shallow Water Multibeam Sonar, shoreline verification

Surveyed Position (NAD83): Search area Lat 55° 29' 50.43" N Long 132° 29' 52.54" W

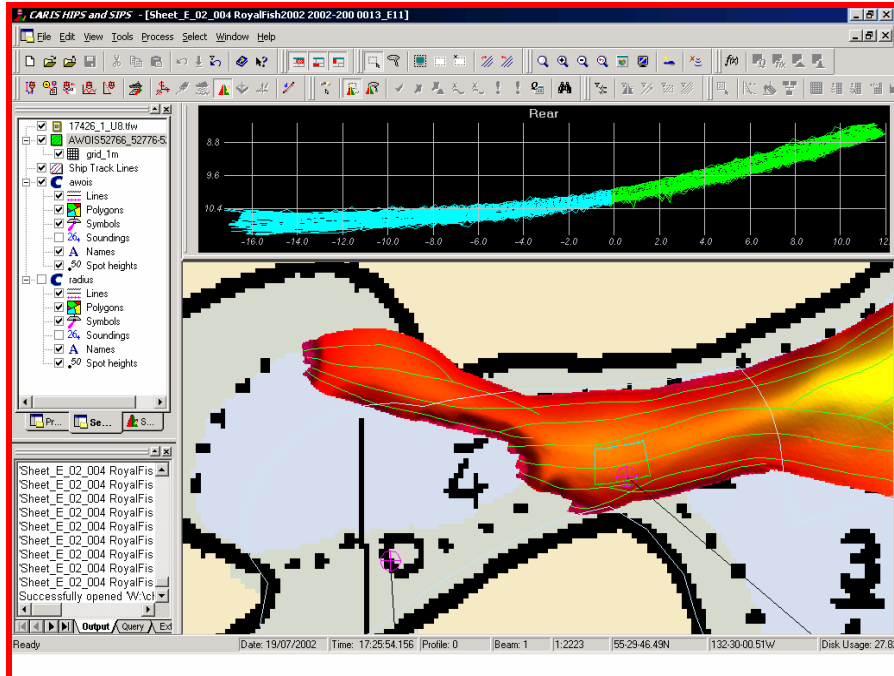
Position Determined By: Differential GPS

Investigation Summary: A 100-meter swath was searched for two hours with bathymetry, shoreline verification, and office investigation. This area has 200% SWMB coverage. It has been the hydrographer's experience, this coverage would show a pile if it was there. The AWOIS history lists two pilings charted as one at this location. No pilings were found.

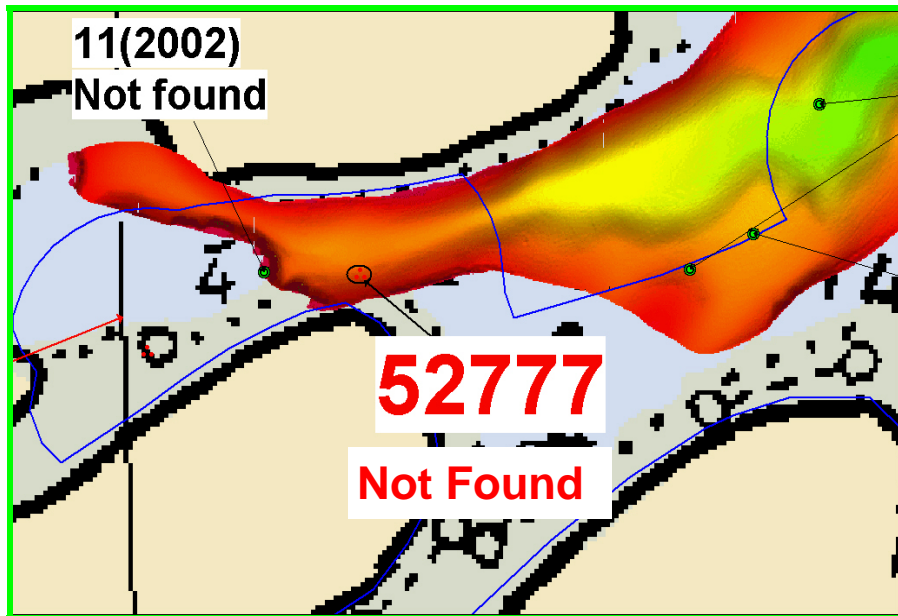
Charting Recommendation

Based on the results of survey H-11099, the Hydrographer recommends removal of the pile symbol.⁵²

Recommended Least Depth: MLLW (0 fathoms)



SWMB coverage over AWOIS item 52777 as viewed in CARIS HIPS



AWOIS item 52777, 2002 bathymetry and 2002 position; Chart 17426

Item Investigation Report

Item Description (as charted): Dolphin

Source: AWOIS record number 52778

Charted Position: Lat 55°29'53.30" N Long 132°29'19.68" W

Charts Affected: 17420 26th edition September 22, 2001
17426 13th edition July 11, 1992

Investigation

Date(s)/Day Number(s): 7/19/02 DN 200 Survey Vessel Name: Royal Fish/Workskiff

Position Numbers/Time: Profile 1400/17:30:02 UTC

Investigation Method: Shallow Water Multibeam Sonar, shoreline verification

Surveyed Position (NAD83): Lat 55°29'53.30" N Long 132°29'19.68" W

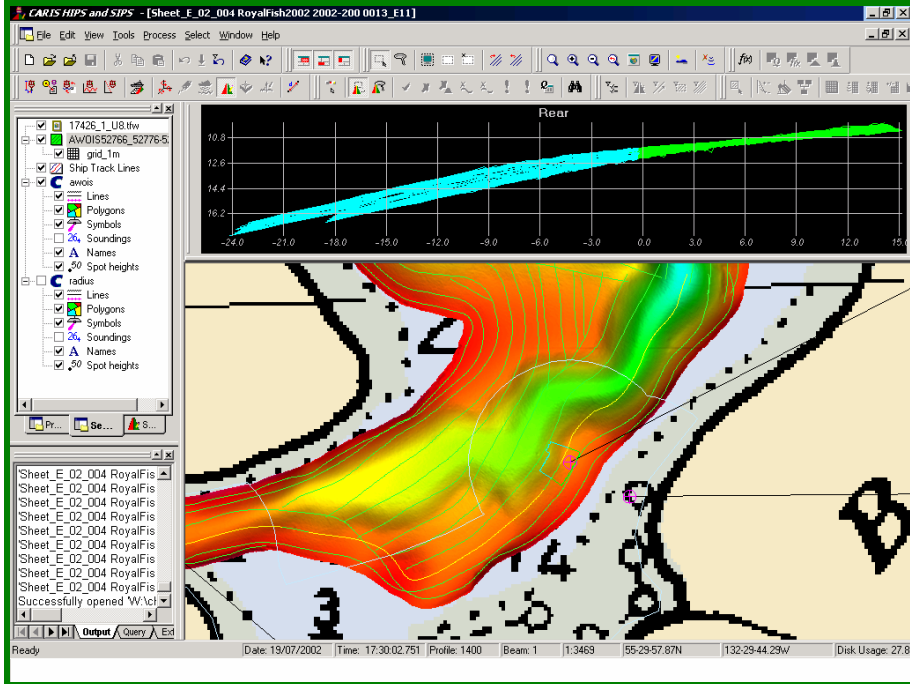
Position Determined By: Differential GPS

Investigation Summary: A 150-meter swath was searched for two hours in addition to office investigation. This area has 200% SWMB coverage. It has been the hydrographer's experience, this coverage would show a pile if it was there. The AWOIS history lists two pilings charted as one at this location. No pilings were found.

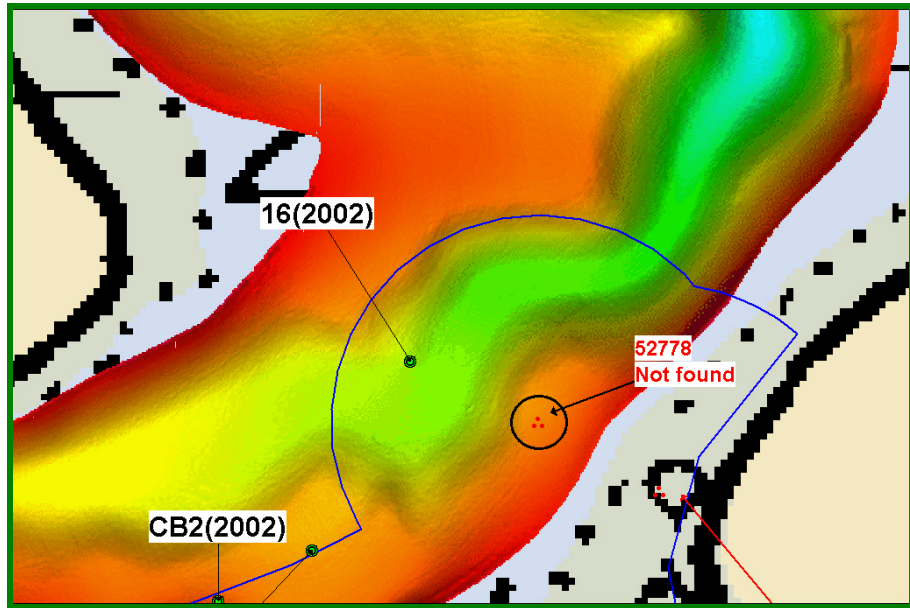
Charting Recommendation

Based on the results of survey H-11099, the Hydrographer recommends removal of the pile symbol.⁵³

Recommended Least Depth: 4.0 fathoms



SWMB coverage over AWOIS item 52778 as viewed in CARIS HIPS



AWOIS item 52778, 2002 bathymetry and 2002 search position; Chart 17426

D2. Additional Results

Shoreline Investigation

Shoreline and nearshore investigation was required for this contract. A total of 26 PITBIs (Potential Item to Be Investigated) were identified and submitted for review in this survey. These items range from new items not charted, both cultural and natural, to items not charted correctly. Items (most notably rocks) not charted correctly were out of position from 40 to 70 meters. These 26 items were not approved for further investigation. The submitted reports can be found at the end of this section. New or not charted correctly items that are not navigationally significant are not shown on the smoothsheet, with the exception of rocks identified from the bathymetry and the new Hollis ferry terminal (shown in red). Traditional shoreline verification was required for any feature seaward of the 4-meter curve. A table of these items and their detached positions is included at the end of this section.⁵⁴

The provided shoreline remote sensing data (RSD) was of known poor quality. Once the fieldwork began it became apparent that it was of very poor quality. More often than⁵⁵ not, the shoreline disagreed with the RSD, and agreed with the chart. In any one area, there was a mixture of the shoreline matching the chart, the RSD or neither. The field crews worked with shoreline maps showing both sets of data (RSD and charted) and sketched the ground truth changes onto these maps. Navigation was achieved through HYPACK software showing the position of the boat in its relationship to both sets of data simultaneously. Changes to the RSD shoreline data are shown in red dashed lines on the smoothsheet.⁵⁶

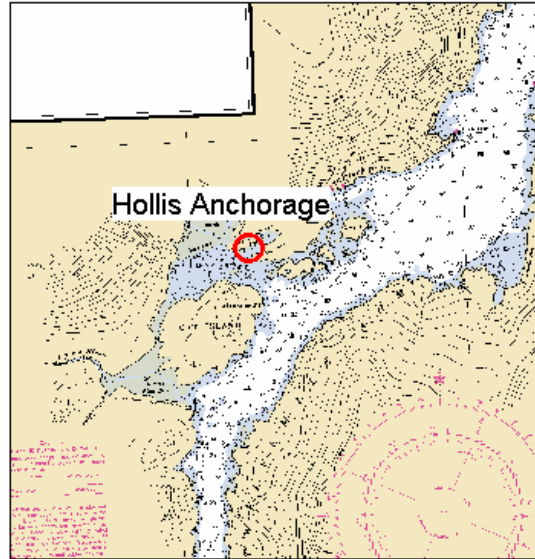
Disprovals

There are two item disprovals in this survey, in addition to the seven AWOIS items not found. Details for these items are on the following pages. Diligent shoreline investigations were used in addition to bathymetry when AWOIS items were not found.

H-11099 Disproval Items			
Item Number	Item Description	Latitude (N)	Longitude (W)
Disproval #1	Pile not found	Lat 55° 28' 51.44"	Long 132° 39' 00.45"
Disproval #2	Rock not found	Lat 55° 28' 07.80"	Long 132° 37' 36.46"

Vicinity Chart 17426

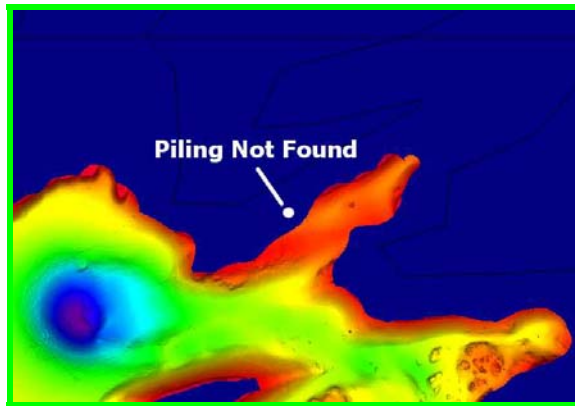
Disproval Item #1
Pile not found
Search area:
Lat 55° 28' 51.44" N
Long 132° 39' 0.45" W



Disproval #1: Hollis Anchorage pile not found

Shoreline verification crews were unable to locate a pile and historical ferry dock in Hollis Anchorage on DN 179. The crew diligently searched the area. The area was not covered with multibeam data. Local knowledge confirmed that the dock and piling have been removed.⁵⁷ The following page shows photos and multibeam images of the area.

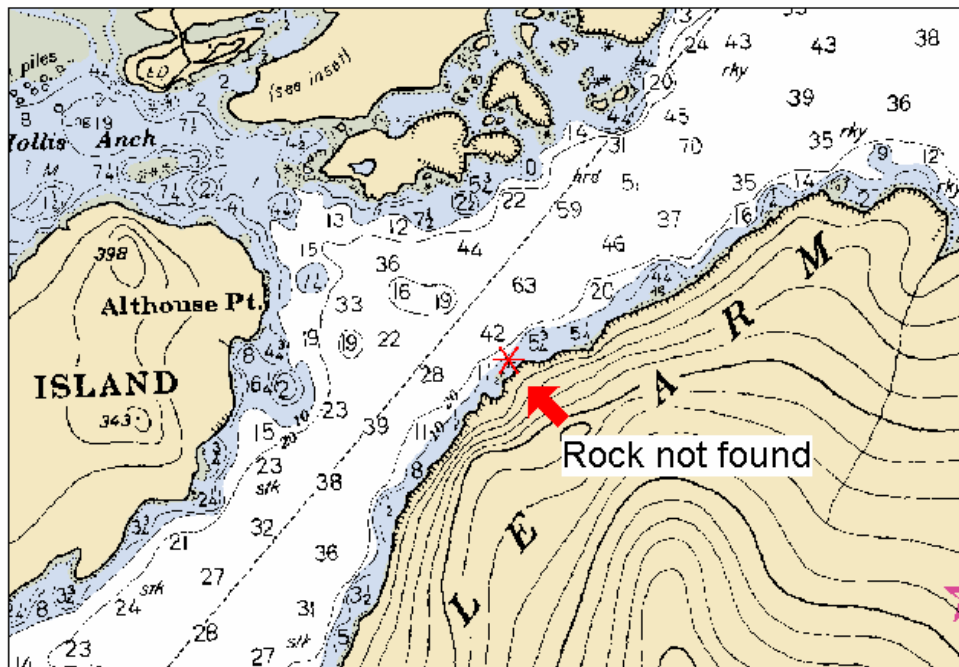
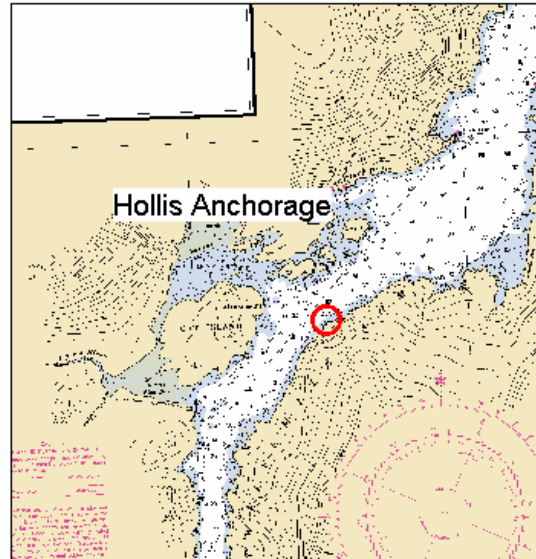
Disproval item #1



Limits of bathymetry and photos of piling not found

Vicinity Chart 17426

Disproval Item #2
Rock not found
Search area:
Lat 55° 28' 7.80" N
Long 132° 37' 36.46" W

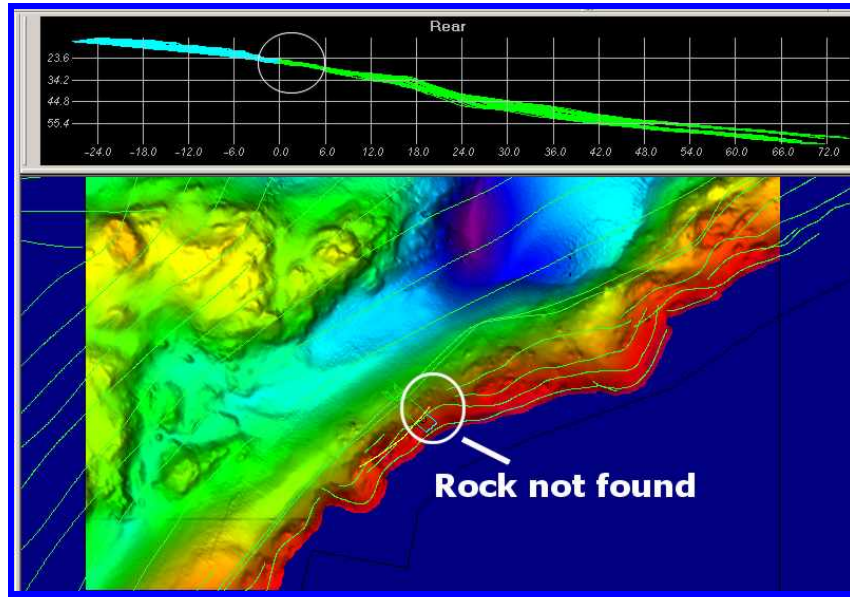


Disproval # 2: Rock not found

The shoreline verification crews were unable to locate a rock near the 4-meter curve after a diligent 20-minute search on DN 222. The area has 200% multibeam coverage, and no rock was found in the data.⁵⁸ The digital terrain image does show covered rocks in the vicinity.

The following page shows a photo and multibeam image of the area.

Disproval #2



Bathymetry over rock search area



Disproval #2 Rock search area

Shoreline Recommendations

Based on the results of shoreline investigation survey H-11099, the Hydrographer recommends further investigation of the PITBIs(Potential Items to be Invesitgated).⁵⁹

Aids to Navigation

There are five aids to navigation in survey H-11099. All navigation aids appear to serve their intended purpose, and were located within an acceptable range of their charted positions, but differ from the 2002 Light List vol. VI recorded positions.⁶⁰

Jarvis Island Light 1 (22401)

Jarvis Island Light 1 was found in good condition and appears to serve its intended purpose.

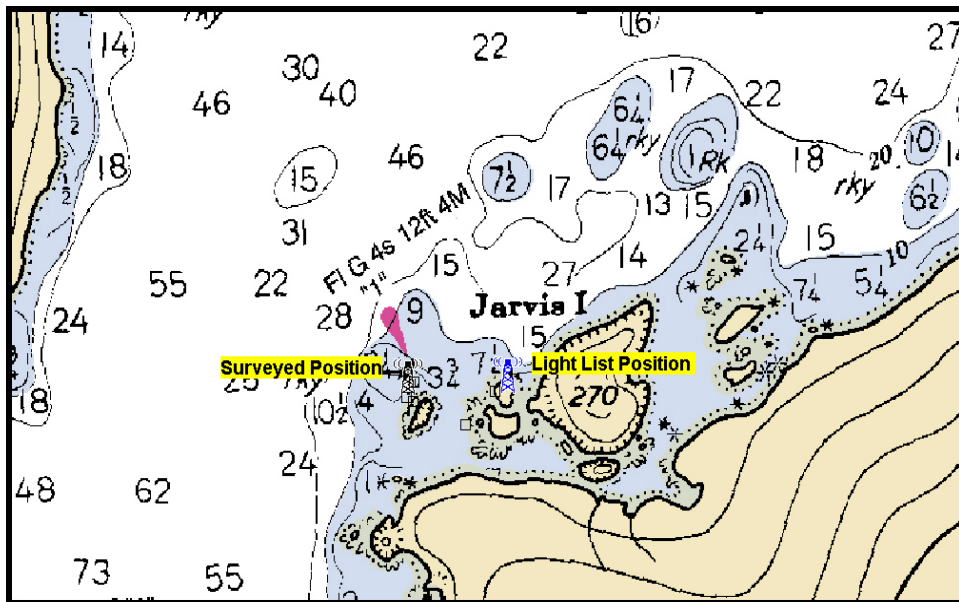
<u>USCG Light list name</u>	Jarvis Island Light 1
<u>Name on chart</u>	“1”
<u>USCG Light list number</u>	22401
<u>Characteristic</u>	FL G 4s
<u>Height</u>	12 feet
<u>Range</u>	4 nautical miles
<u>Structure</u>	SG on spindle

Light List position Published 2002, vol. VI:
55° 30' 24" N, 132° 33' 18" W

Surveyed position, 9:35:51 ADT, August 09, 2002:
55° 30' 24.2" N, 132° 33' 36.2" W



Jarvis Island Light 1 (22401)



Position comparison with nautical chart 17426

Clark Bay Light 2 (22403)

Clark Bay Light 2 was found in good condition and appears to serve its intended purpose.

USCG Light list name Clark Bay Light 2

Name on chart "2"

USCG Light list number 22403

Characteristic FL R 2.5s

Height 8 feet

Range 4 nautical miles

Structure TR on spindle

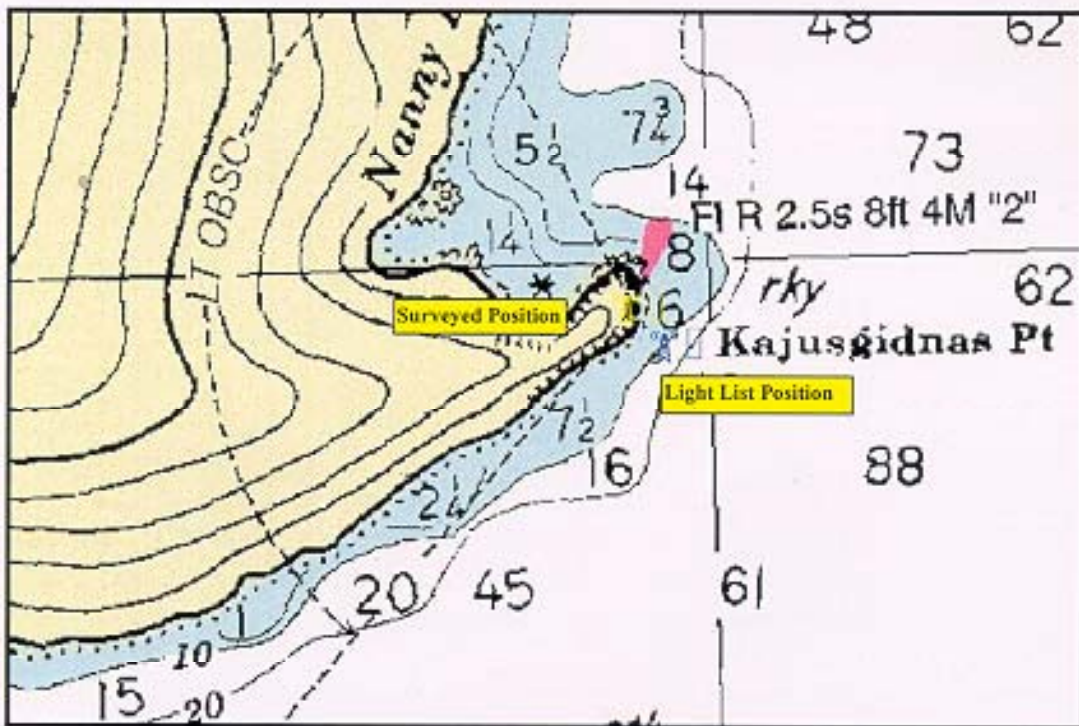
Remarks Obscured from 042° to 155°

Light List position Published 2002, vol. VI:
55° 29' 54" N, 132° 35' 06" W

Surveyed position, 15:05:43 ADT, July 18, 2002:
55° 29' 56.4" N, 132° 35' 8.6" W



Clark Bay Light 2 (22403)



Hollis Ferry Terminal East Dolphin Light (22405)

Hollis Ferry Terminal East Dolphin Light was found in good condition was found in good condition⁶¹ and appears to serve it's intended purpose.

<u>USCG Light list name</u>	Hollis Ferry Terminal East Dolphin Light
<u>Name on chart</u>	No Name
<u>USCG Light list number</u>	22405
<u>Characteristic</u>	FL R 6s
<u>Height</u>	32 feet
<u>Range</u>	none listed
<u>Structure</u>	On dolphin
<u>Remarks</u>	Private aid

Light List position Published 2002, vol. VI:
55° 29' 24" N, 132° 37' 06" W

Surveyed position, 12:10:29 ADT, August 29, 2002:
55° 29' 25.5" N, 132° 37' 15.0" W

Hollis Ferry Terminal West Dolphin Light (22407)

Hollis Ferry Terminal West Dolphin Light was found in good condition and appears to serve it's intended purpose.

<u>USCG Light list name</u>	Hollis Ferry Terminal West Dolphin Light
<u>Name on chart</u>	No Name
<u>USCG Light list number</u>	22407
<u>Characteristic</u>	F R
Height	34 feet
<u>Range</u>	none listed
<u>Structure</u>	On dolphin
<u>Remarks</u>	Private aid

Light List position Published 2002, vol. VI:
55° 29' 24" N, 132° 37' 18" W

Surveyed position, 12:14:38 ADT, August 29, 2002:
55° 29' 25.5" N, 132° 37' 21.4" W



The Inter-island Ferry

The Inter-island ferry system began operation between Ketchikan and Hollis with the *MV Prince of Wales* in January 2002. The inter-island ferry dock, located in Clark Bay, was positioned during this hydrographic survey and its data is enclosed in this package.⁶² The vessel's length is 198 feet with a beam of 51 feet, a draft of 12 feet and capable of making 15 knots. This will ultimately be a two-ferry system. The first ferry, *MV Prince of Wales*, provides passenger and vehicle transportation from Hollis to Ketchikan. The second one will provide passenger and vehicle ferry transportation from Coffman Cove, on the northern end of Prince of Wales Island, to Wrangell and Petersburg. Construction for the second ferry, the *M/V Stikine*, is to begin in 2002, with service as early as 2003. Refer to the route map on the following page. Maintaining the current charts accurately is necessary for the safety of this ferry service.⁶³






MV Prince of Wales







Proposed Inter-Island Ferry Route for 2003

TVI Reports⁶⁴
Traditional Verification Items Reports






Summary of Sheet E Traditional Shoreline Verification

TARGET ID	VERIFIED	LATITUDE N	LONGITUDE W	UTM EASTING	UTM NORTHING	HEIGHT (+) OR DEPTH (-) AT MLLW (Meters)	HEIGHT (+) AT MHW (Meters)	SUBSHEET	PICTURE ID	PICTURE
1046 ⁶⁵	Yes	55° 28' 48.58"	132° 37' 15.82"	650339.09	6150797.44	+1.48	N/A	ESL-5	1046	
1083 ⁶⁶	Yes	55° 28' 52.82"	132° 37' 11.20"	650415.64	6150931.36	-0.16	N/A	ESL-5	No Picture	No Picture
1128	Yes	55° 28' 49.63"	132° 37' 1.12"	650596.04	6150838.92	-0.09	N/A	ESL-5	1128	
1197	Yes	55° 28' 55.19"	132° 37' 8.16"	650466.59	6151006.38	+0.05	N/A	ESL-5	1197	
2370	Yes	55° 29' 12.53"	132° 37' 2.21"	650571.94	6151551.52	+0.34	N/A	ESL-5	MVC-061F	


Summary of Sheet E Traditional Shoreline Verification

TARGET ID	VERIFIED	LATITUDE N	LONGITUDE W	UTM EASTING	UTM NORTHING	HEIGHT (+) OR DEPTH (-) AT MLLW (Meters)	HEIGHT (+) AT MHW (Meters)	SUBSHEET	PICTURE ID	PICTURE
3175	Yes	55° 27' 12.02"	132° 39' 57.38"	647603.8	6147717.31	+1.89	N/A	ESL-1	P7180014	
3149	Yes	55° 27' 10.54"	132° 39' 54.67"	647652.94	6147673.08	+2.40	N/A	ESL-1	P7180013	
6451 ⁶⁷	Yes	55° 29' 17.42"	132° 36' 57.73"	650626.1	6151699.8	+0.21	N/A	ESL-6	P8100109	
6460	Yes	55° 29' 12.53"	132° 37' 2.21"	650552.57	6151545.8	+0.71	N/A	ESL-6	P8100110	



Summary of Sheet E Traditional Shoreline Verification

TARGET ID	VERIFIED	LATITUDE N	LONGITUDE W	UTM EASTING	UTM NORTHING	HEIGHT (+) OR DEPTH (-) AT MLLW (Meters)	HEIGHT (+) AT MHW (Meters)	SUBSHEET	PICTURE ID	PICTURE
6556	Yes	55° 29' 1.91"	132° 37' 22.06"	650215.54	6151205.8	-0.53	N/A	ESL-6	P8100113	
3435	Yes	55° 29' 37.19"	132° 36' 24.07"	651195.58	6152330.82	+4.00	N/A	ESL-7	P7180015	
3641	Yes	55° 29' 57.80"	132° 35' 17.78"	652336.51	6153008.15	+1.24	N/A	ESL-7	P7180017	
3788	Yes	55° 30' 56.12"	132° 31' 41.48"	656066.74	6154943.76	+2.16	N/A	ESL-11	P7190026	
5883 ⁶⁸	Yes	55° 28' 39.68"	132° 39' 4.91"	648433.75	6150457.4	+0.99	N/A	ESL-2	P8100098	



Summary of Sheet E Traditional Shoreline Verification

TARGET ID	VERIFIED	LATITUDE N	LONGITUDE W	UTM EASTING	UTM NORTHING	HEIGHT (+) OR DEPTH (-) AT MLLW (Meters)	HEIGHT (+) AT MHW (Meters)	SUBSHEET	PICTURE ID	PICTURE
5856 ⁶⁹	Yes	55° 28' 37.87"	132° 39' 18.37"	648199.43	6150393.4	+1.05	N/A	ESL-2	P8100098	
5376	Yes	55° 30' 22.39"	132° 33' 20.49"	654367.24	6153839.91	Shoreline	N/A	ESL-13	No Picture	No Picture
5401	Yes	55° 30' 19.23"	132° 33' 26.10"	654272.26	6153738.83	Shoreline	N/A	ESL-13	No Picture	No Picture
5521	Yes	55° 30' 23.60"	132° 33' 35.19"	654085.48	6153821.38	+1.47	N/A	ESL-13	No Picture	No Picture

Summary of Sheet E Traditional Shoreline Verification

TARGET ID	VERIFIED	LATITUDE N	LONGITUDE W	UTM EASTING	UTM NORTHING	HEIGHT (+) OR DEPTH (-) AT MLLW (Meters)	HEIGHT (+) AT MHW (Meters)	SUBSHEET	PICTURE ID	PICTURE
5498	Yes	55° 30' 23.60"	132° 33' 35.19" ⁷⁰	654106.96	6153808.23	Shoreline	N/A	ESL-13	No Picture	No Picture
5561	Yes	55° 30' 23.60"	132° 33' 35.19" ⁷¹	654108.17	6153868.2	+1.56	N/A	ESL-13	P8090050	
4894	Yes	55° 28' 17.88"	132° 36' 57.81"	650687.74	6149859.51	+1.75	N/A	ESL-17	MVC-138F	

Summary of Sheet E Traditional Shoreline Verification

TARGET ID	VERIFIED	LATITUDE N	LONGITUDE W	UTM EASTING	UTM NORTHING	HEIGHT (+) OR DEPTH (-) AT MLLW (Meters)	HEIGHT (+) AT MHW (Meters)	SUBSHEET	PICTURE ID	PICTURE
1576 ⁷²	Yes	55° 28' 47.68"	132° 39' 10.31"	648306.9	6150719.04	+0.91	N/A	ESL-4	1576&1593	
1593 ⁷³	Yes	55° 28' 47.68"	132° 39' 10.31"	648330.67	6150701.48	+0.99	N/A	ESL-4	1576&1593	

PITBI Reports⁷⁴
(Potential Item to Be Investigated)

Sheet E Potential Items To Be Investigated

Shoreline sheet	DN	Target	Northing ⁷⁵ UTM	Easting ⁷⁶ UTM	Latitude N	Longitude W	Description
ESL-6	180	2190	650236.5	6151936.93	55.4904	-132.622	Multiple Dolphins And Pier
ESL-6	222	6659	650011.01	6151540.41	55.4869	-132.626	Log boom stick
ESL-6	222	6795	649674.11	6151842.62	55.4897	-132.631	Rock not charted correctly. Charted position is SW, 70 m.
ESL-6	222	6752	649563.62	6151754.51	55.489	-132.633	Rock not charted correctly. Charted position is E, 41 m.
ESL-7	222	4124	652259.93	6153031.19	55.4996	-132.589	Rock not charted

Sheet E Potential Items To Be Investigated

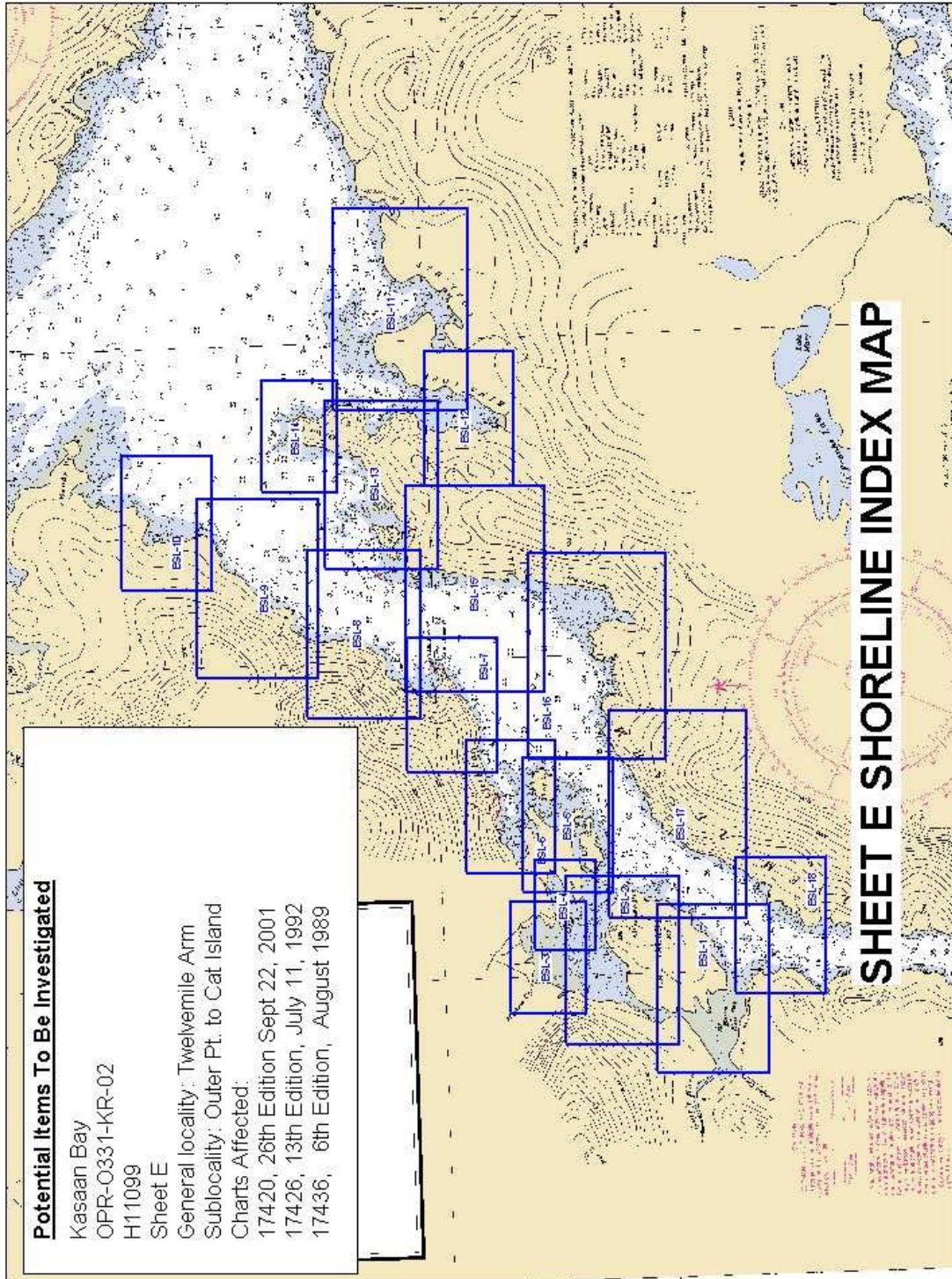
Shoreline sheet	DN	Target	Northing ⁷⁷ UTM	Easting ⁷⁸ UTM	Latitude N	Longitude W	Description
ESL-6	222	6499	650464.99	6151516.66	55.4866	-132.619	Rock not charted or not charted correctly. Charted rocks are E, 50 m..
ESL-11	220	3698	657336.43	6153801.63	55.5049	-132.509	Rock not charted
ESL-15	222	5641	653982.45	6152776.84	55.4968	-132.562	Rock not charted
ESL-2	222	5782	648609.15	6149091.41	55.4654	-132.649	Rock not charted
ESL-7	222	4190	651784.26	6152500.57	55.495	-132.597	Rock not charted

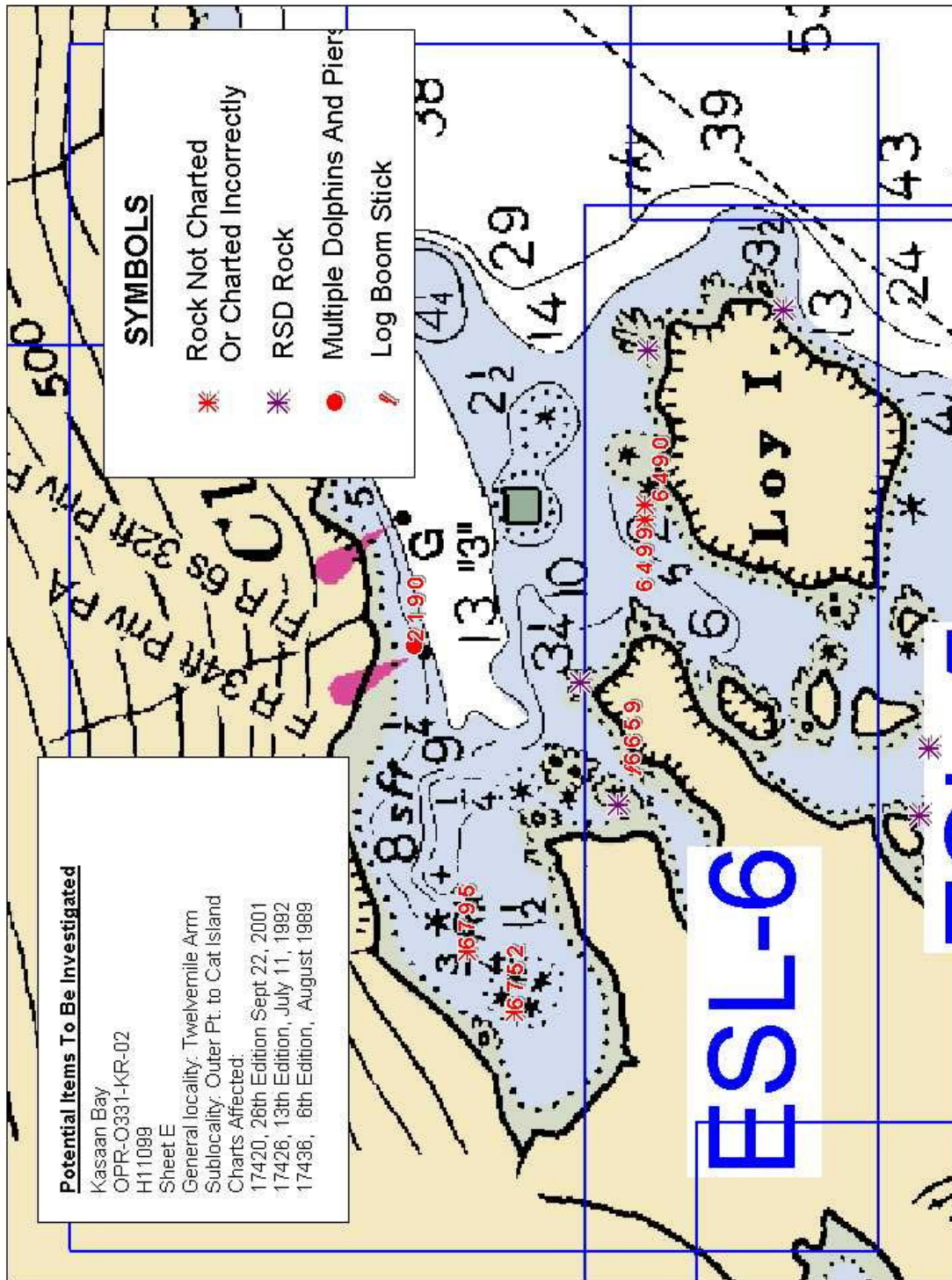
Sheet E Potential Items To Be Investigated

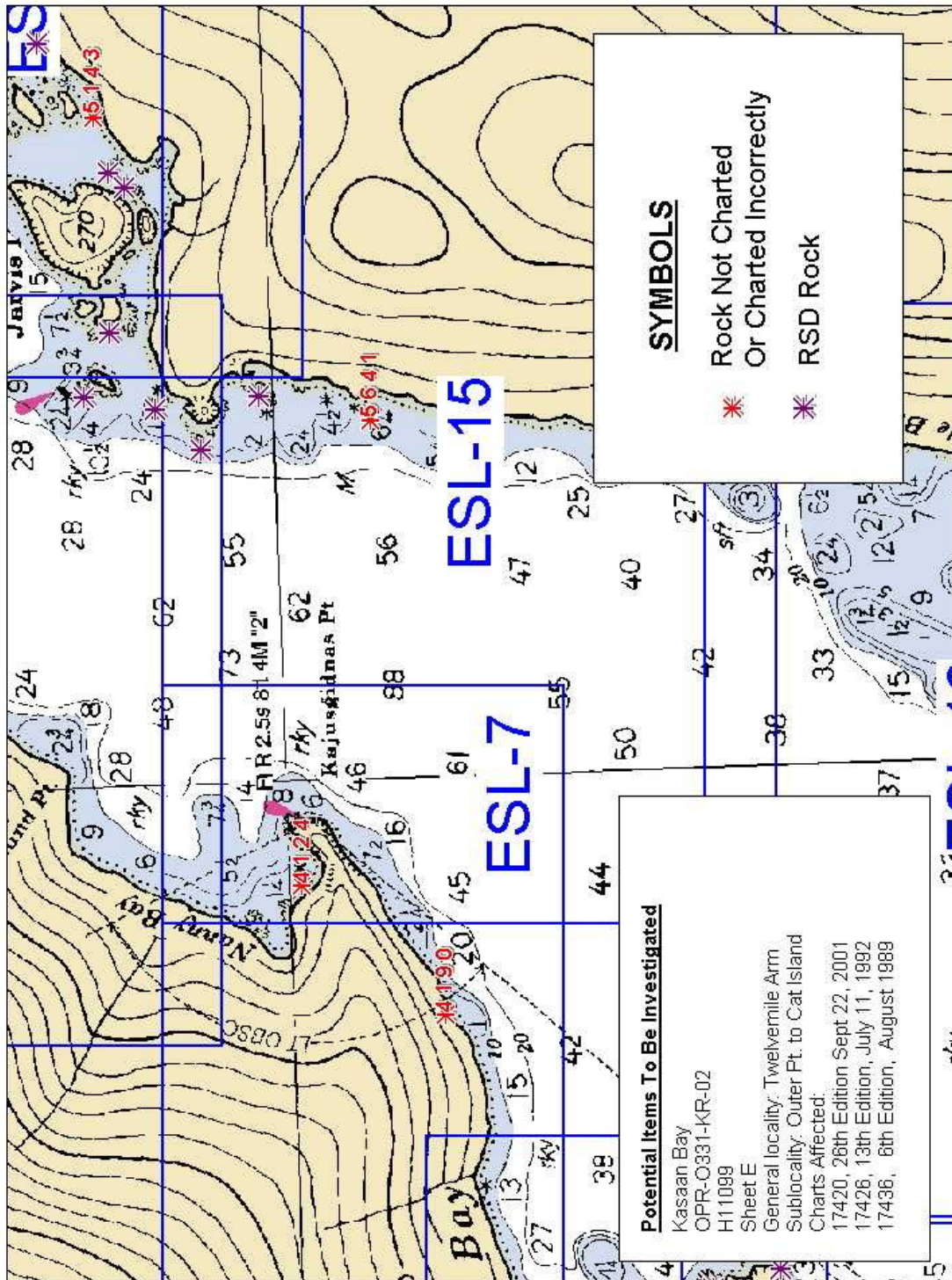
Shoreline sheet	DN	Target	Northing⁷⁹ UTM	Easting⁸⁰ UTM	Latitude N	Longitude W	Description
ESL-10	221	4479	654705.02	6157595.45	55.5398	-132.548	Rock not charted correctly. Charted position is N, 70m.
ESL-16	222	4983 ⁸¹	652397.34	6150214.04	55.4743	-132.589	Rock not charted
ESL-10	221	4309 ⁸²	655262.53	6158179.73	55.5449	-132.539	Mooring Bouy (Temporary per local knowledge)

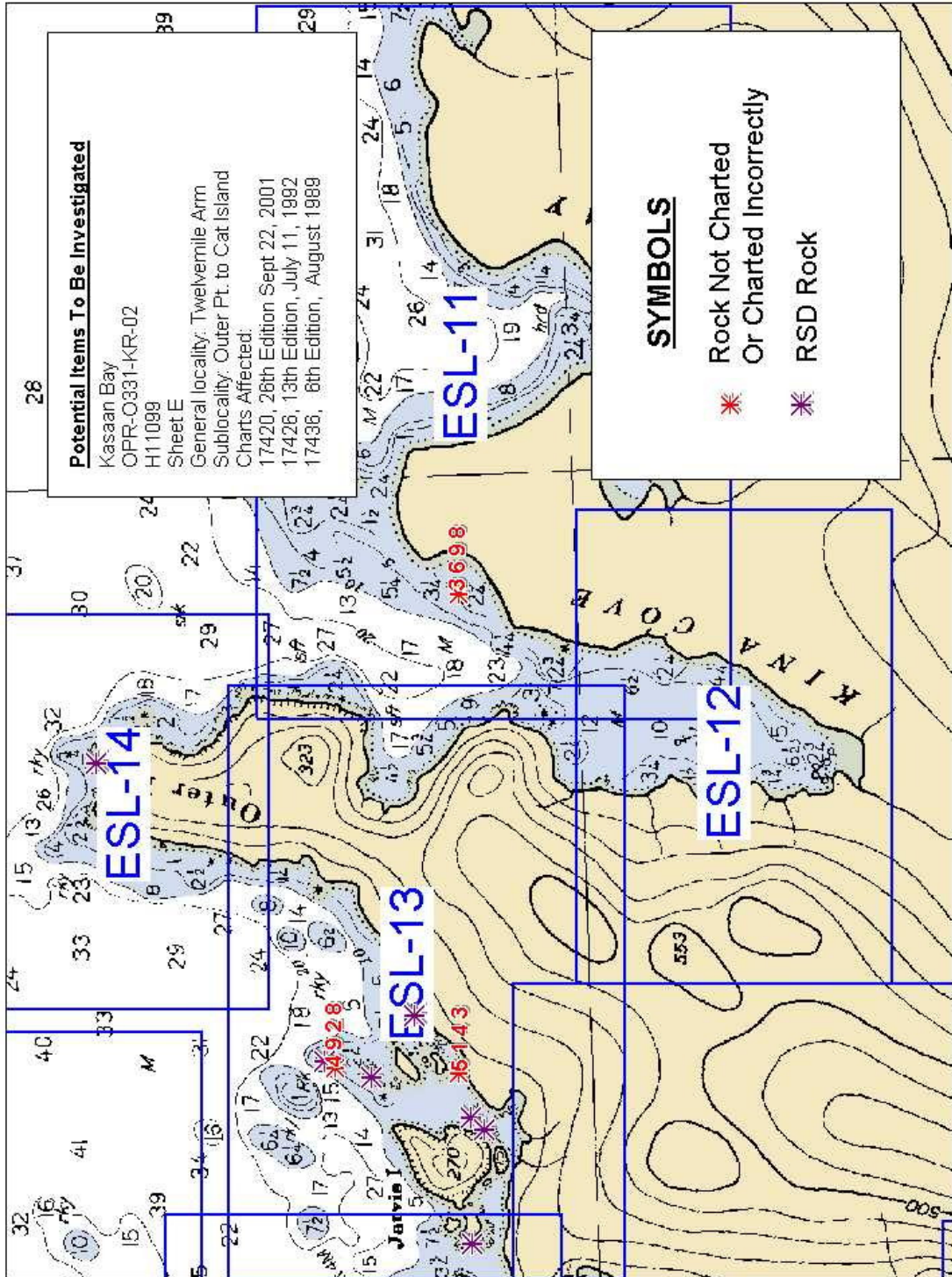
Sheet E Potential Items To Be Investigated

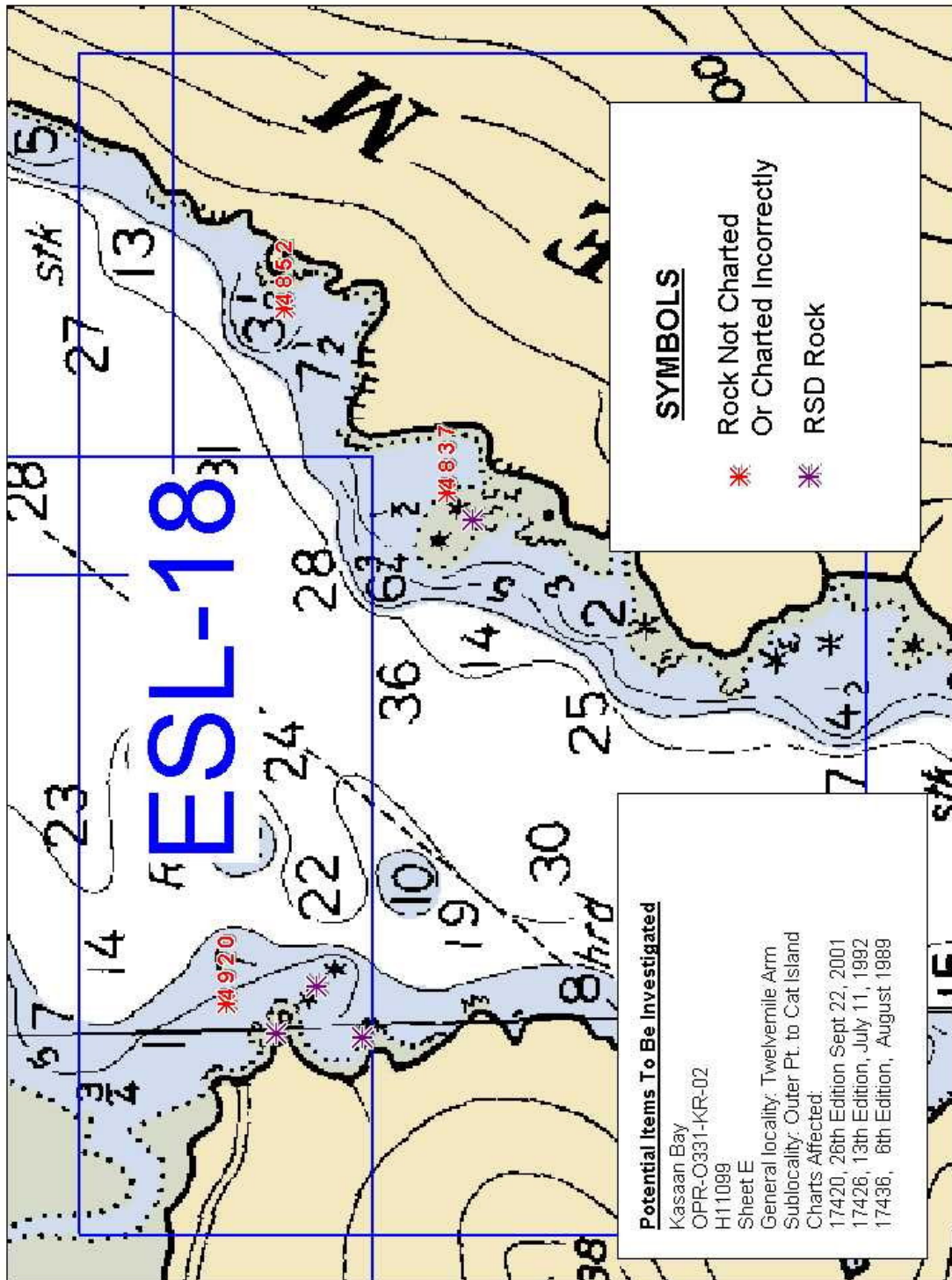
Shoreline sheet	DN	Target	Northing ⁸³ UTM	Easting ⁸⁴ UTM	Latitude N	Longitude W	Description
ESL-16	222	5029	653360.9	6150081.8	55.4728	-132.574	Houseboat and log boom
ESL-17	222	4890	650613.24	6149792.93	55.4711	-132.617	Rock not charted
ESL-18	222	4837	648566.76	6147439.97	55.4506	-132.651	Rock not charted
ESL-17	222	4882 ⁸⁵	649978.73	6149589.95	55.4694	-132.627	Rock not found
ESL-18	222	4852	648913.23	6147745.91	55.4532	-132.645	Rock not charted
ESL-18	222	4920	647608.76	6147853.78	55.4546	-132.666	Rock not charted
ESL-16	222	5020	653153.79	6150503.51	55.4766	-132.577	Rock not charted

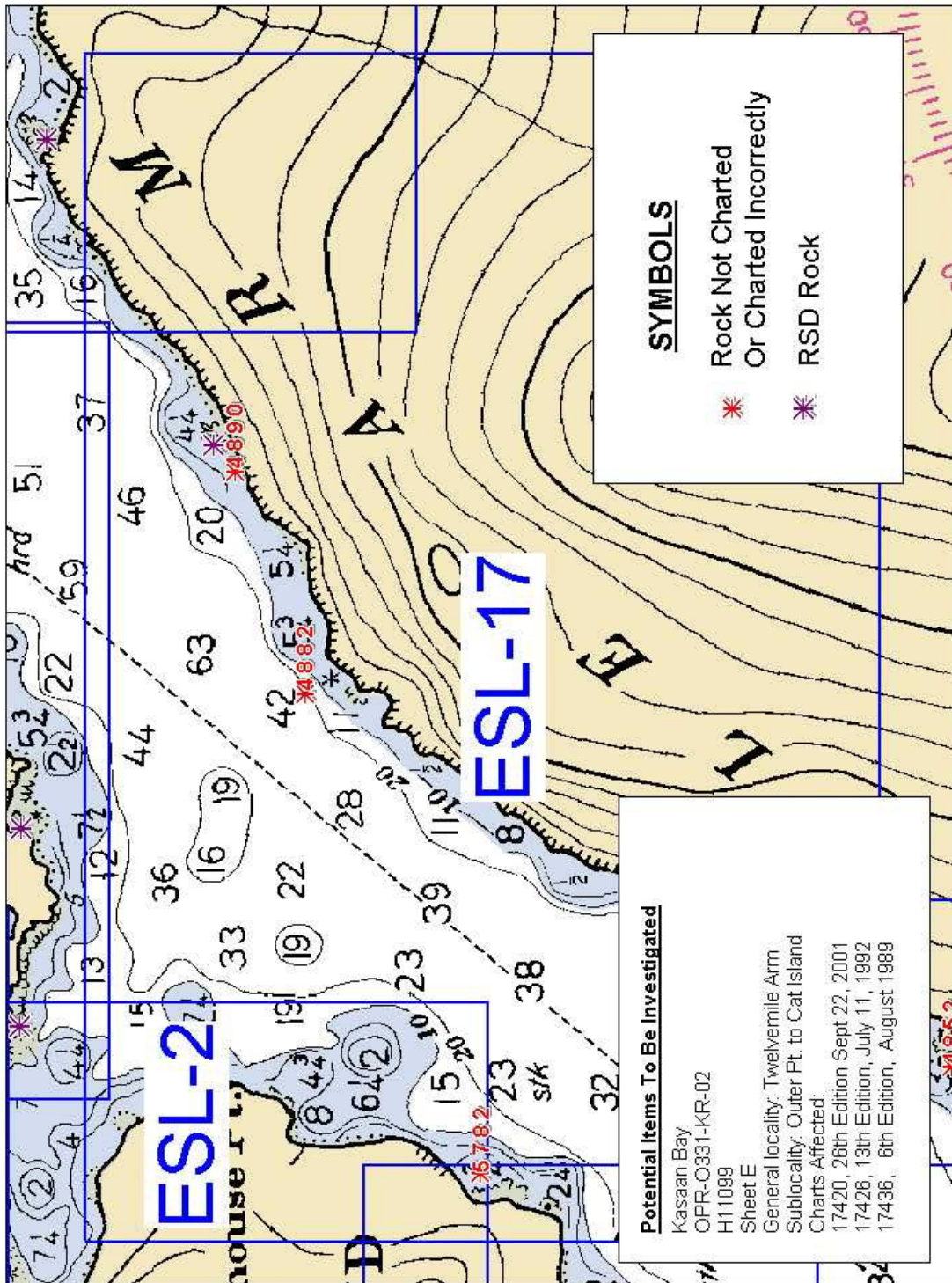


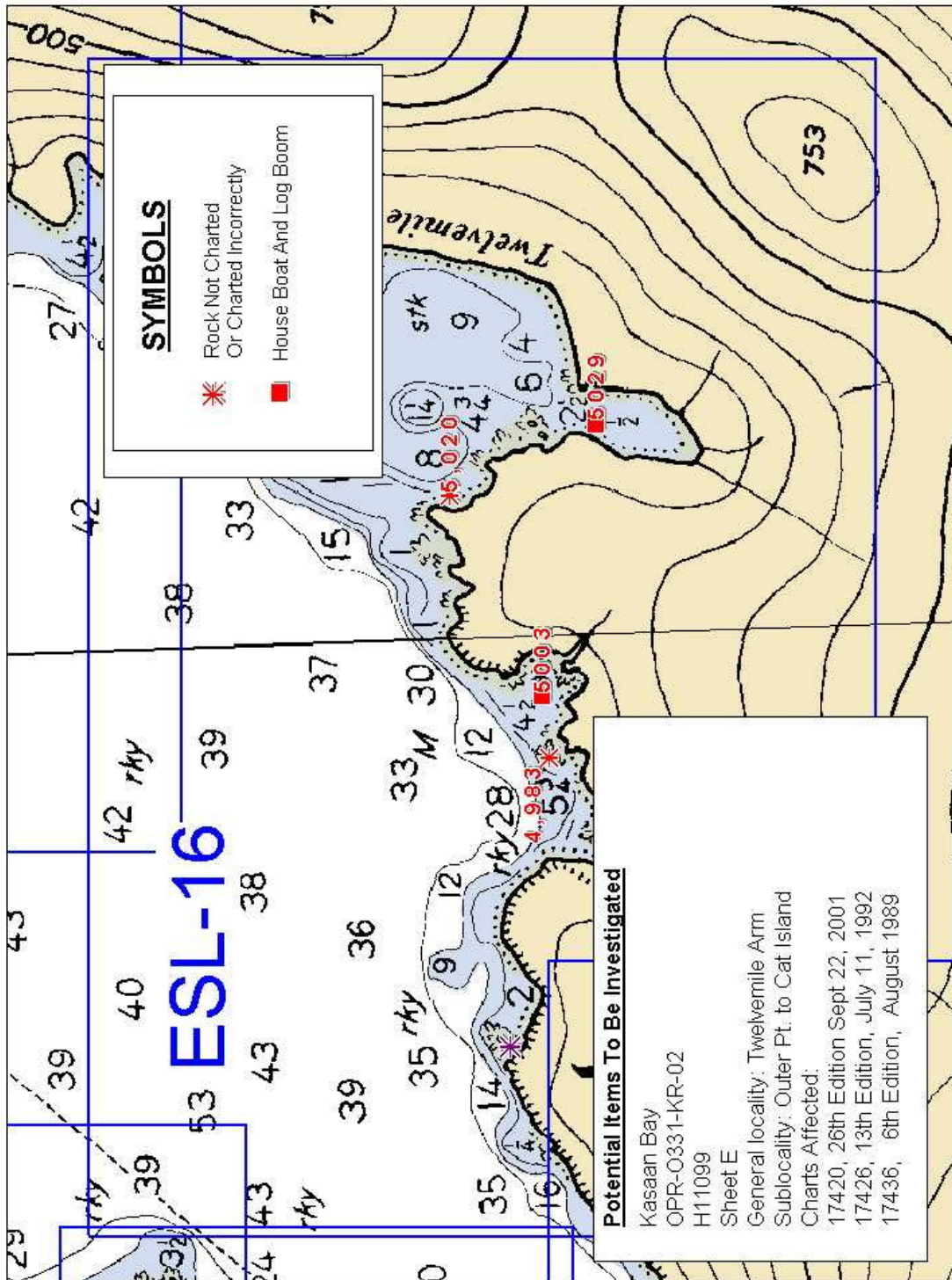


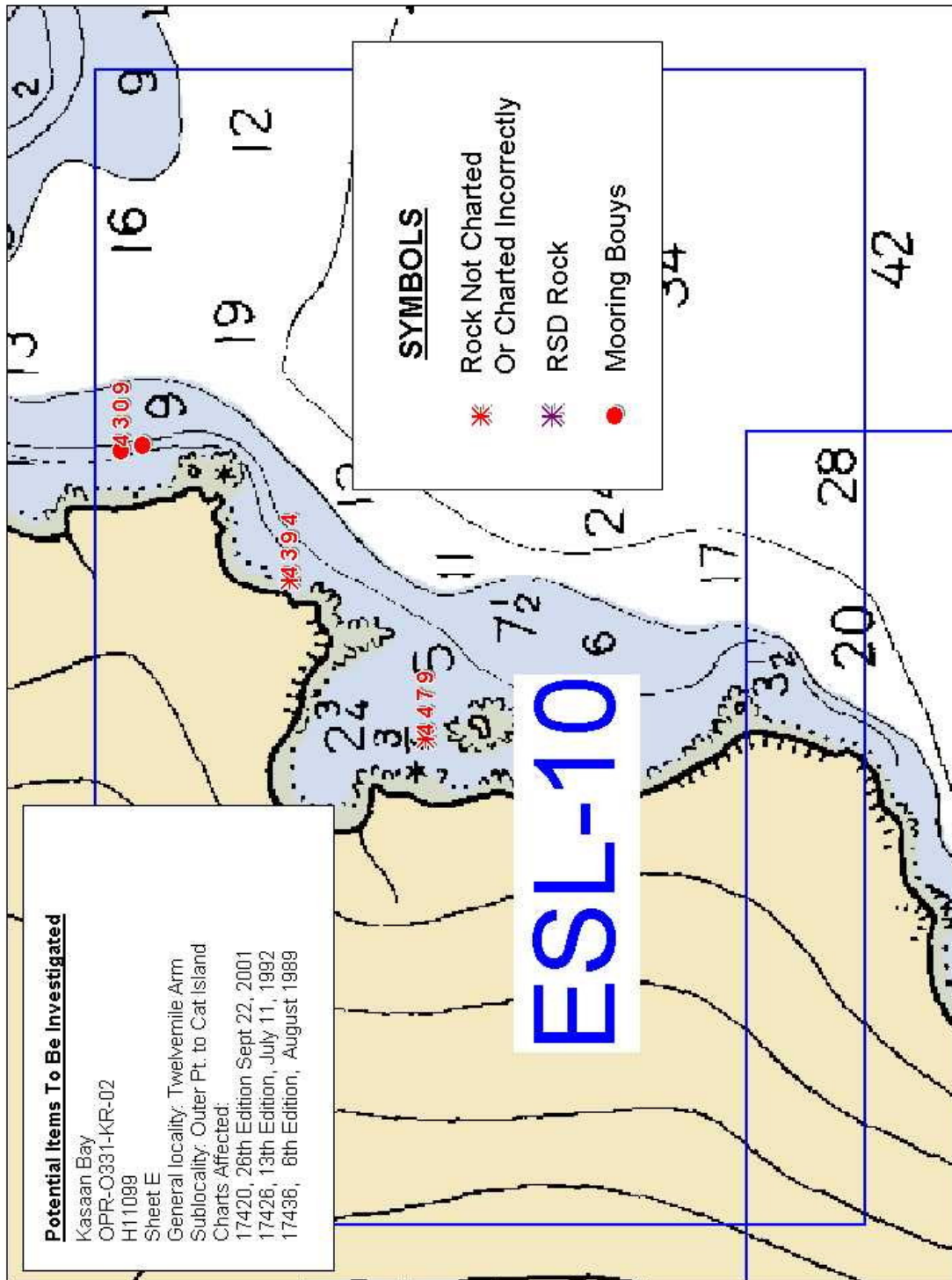










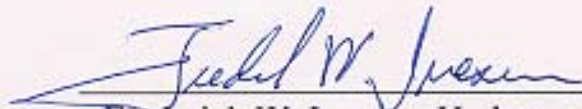


**LETTER OF APPROVAL
REGISTRY NO. H-11099**

This Report and the accompanying smooth sheet are respectfully submitted.

Field operations contributing to the accomplishment of survey H-11099 were conducted under my direct supervision with frequent personal checks of progress and adequacy. This report, smooth sheet, digital data, and accompanying records have been closely reviewed and are considered complete and adequate as per the Statement of Work. Other reports submitted with this survey include Data Acquisition and Processing Report, Vertical and Horizontal Report, and the Shoreline Verification Field Notes.

I believe this survey is complete and adequate for its intended purpose.


Frederick W. Iversen, Hydrographer
Terra Surveys, LLC

Date JUNE 12, 2003

APPENDIX I

Danger To Navigation Reports⁸⁶

Hydrographic Survey Registry Number: H11099

Survey Title: State: AK Locality: Twelve Mile Arm Sub-locality: Outer Point to Cat Island

Project Number: OPR-O331-KR-02

Survey Dates: June 15, 2002 - August 16, 2002

Depths are reduced to Mean Lower Low Water using verified tides.

Positions are based on the NAD83 horizontal datum.

CHARTS AFFECTED:

Chart	Scale	Edition	Date
17426	1:40,000	13 th	07/11/92
17420	1:229,376	26 th	09/22/01

Feature	Depth (fms)	Latitude (N)	Longitude (W)
Sounding	5 1/2	55° 28' 40.0"	132° 38' 58.0"
Sounding	5 1/2	55° 28' 36.0"	132° 38' 45.0"
Sounding	6 1/4	55° 28' 30.0"	132° 38' 42.0"
Sounding	3 3/4	55° 28' 32.0"	132° 38' 38.0"
Sounding	8	55° 28' 27.0"	132° 38' 37.0"

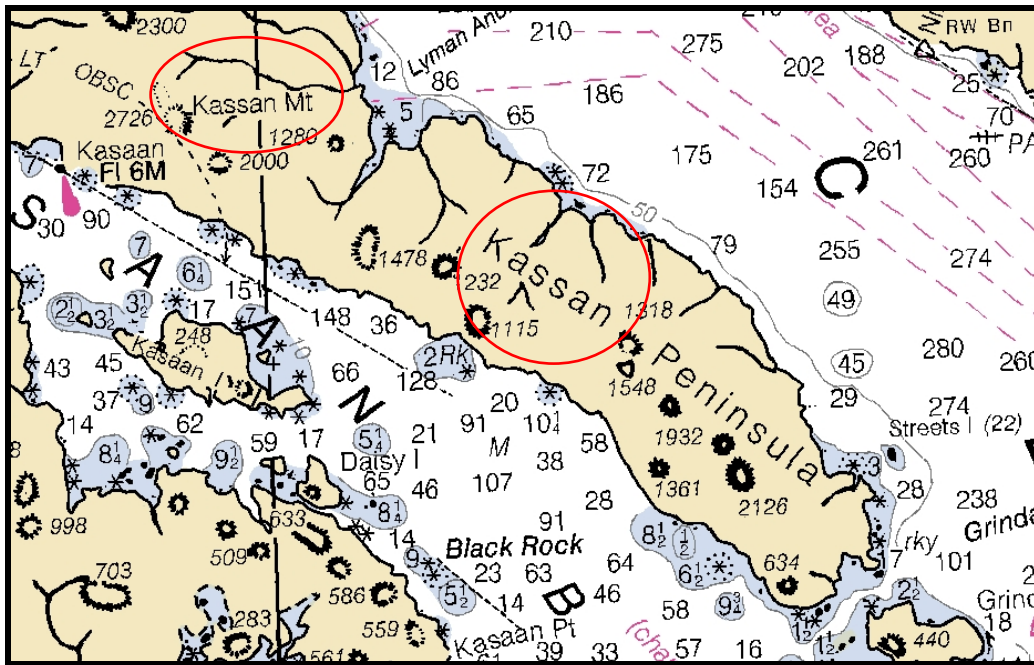
COMMENTS:

Questions concerning this report should be directed to the Chief, Pacific Hydrographic Branch (N/CS34) at (206) 526-6836.

APPENDIX II

List of Geographic Names

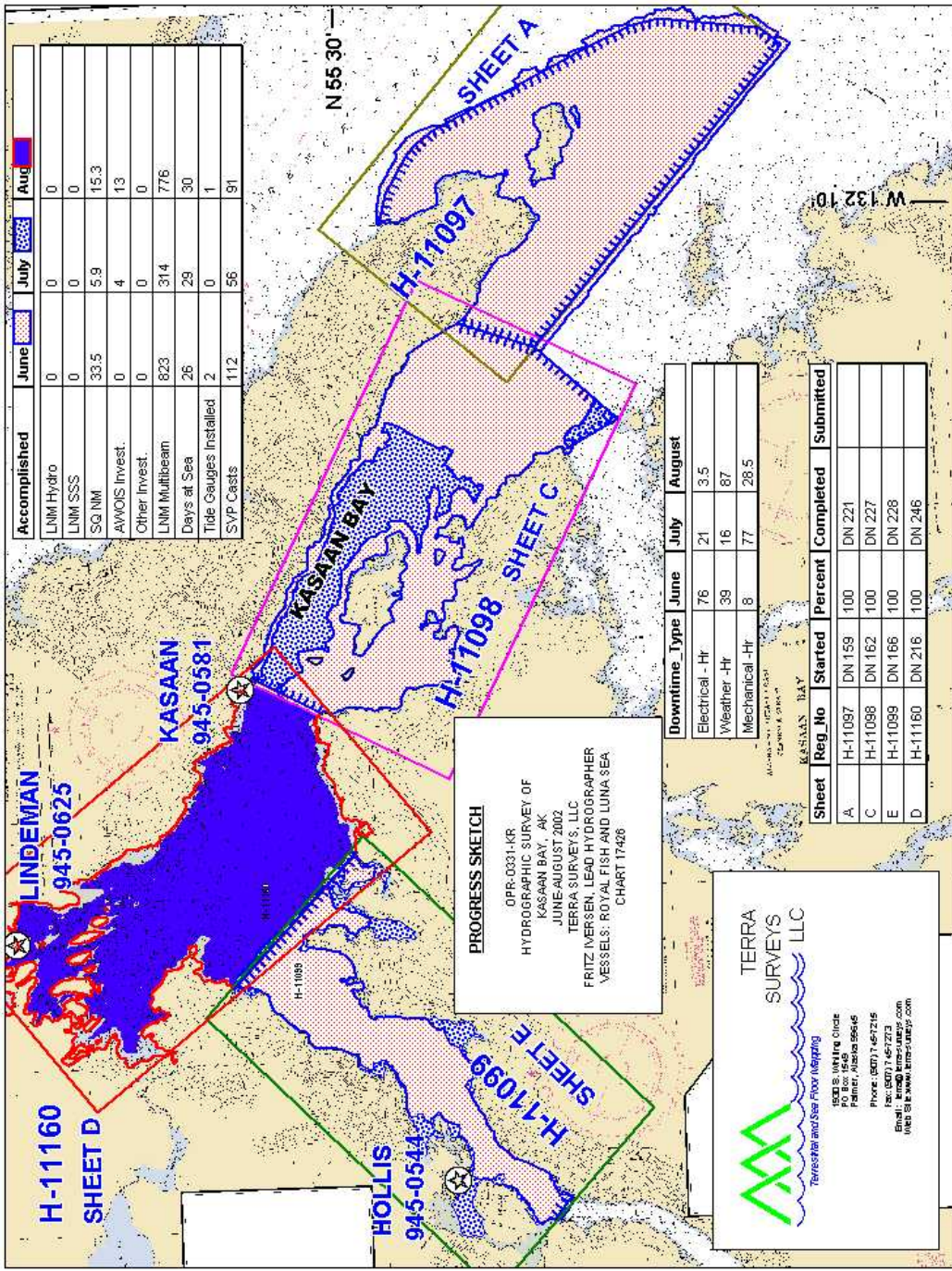
The geographic names Kasaan Peninsula and Kasaan Mountain were found to be misspelled as *Kassan Peninsula* and *Kassan Mountain* on Chart 17420. Local knowledge and all other references found for the area support the proper spelling as Kasaan Peninsula and Kasaan Mountain.⁸⁷



Portion of Chart 17420 showing the misspelling of geographical names

APPENDIX III

Progress Sketch



Accomplished	June	July	Aug
LNM Hydro	0	0	0
LNM SSS	0	0	0
SO NM	33.5	5.9	15.3
AWOIS Invest.	0	4	13
Other Invest.	0	0	0
LNM Multibeam	823	314	776
Days at Sea	26	29	30
Tide Gauges Installed	2	0	1
SVP Casts	112	56	91

PROGRESS SKETCH
 OPR-0331-KR
 HYDROGRAPHIC SURVEY OF
 KASAAN BAY, AK
 JUNE-AUGUST 2002
 TERRA SURVEYS, LLC
 FRITZ MERSEN, LEAD HYDROGRAPHER
 VESSELS: ROYAL FISH AND LUNA SEA
 CHART 17420

Downtime Type	June	July	August
Electrical - Hr	76	21	3.5
Weather - Hr	39	16	87
Mechanical - Hr	8	77	28.5

Sheet	Reg. No	Started	Percent	Completed	Submitted
A	H-11097	DN 159	100	DN 221	
C	H-11098	DN 162	100	DN 227	
E	H-11099	DN 166	100	DN 228	
D	H-11160	DN 216	100	DN 246	

TERRA SURVEYS LLC
 Register and Sea Floor Mapping

10415 Waring Circle
 Palmer, Alaska 99646
 Phone: (907) 467216
 Fax: (907) 467273
 Email: info@terra-surveys.com
 Web Site: www.terra-surveys.com

APPENDIX IV

Tides and Water Levels

2002 FIELD and FINAL TIDE NOTE

Hydrographic Sheet: H11099

Sheet E

Outer Point to Cat Island

Twelvemile Arm, Alaska

NOAA Project No:		OPR-0331-KR-2002 Kasaan Bay, Alaska				
NOAA Contract No:		50-DGNC-0-90003				
The NOS Ketchikan, AK tide station (945-0460) served as control for the subordinate stations on this project. Datum determinations were made for the tertiary subordinate stations: Kasaan Bay (945-0581), and Hollis Anchorage (945-0544). The NTDE 1960-78 was utilized.						
Location and Time Meridian	Name:	Lat (NAD 83)	Long (NAD 83)	Time Meridian:		
	Kasaan Bay	55° 32' 05"	132° 23' 48"	0° (UTC)		
	Hollis Anchorage	55° 28' 45"	132° 38' 30"	0° (UTC)		
Time Period and Datum Reference	Name:	Established:	Removed:	MLLW	MHW	units
	Kasaan Bay	6/4/2002	9/5/2002	0.000	4.496	meters
	Hollis Anchorage	6/1/2002	9/4/2002	0.000	4.553	meters
Tide observer	Terra Surveys, LLC 1930 South Whiting Circle Palmer, AK 99645 (907) 745-7215					
Gauges	Design Analysis H350XL/355 bubbler systems.					
Installation	Each gauge was secured inside a waterproof case, and fastened vertically inside of an enclosed Rubbermaid Garden Toolshed. Refer to the tide station package for additional site specific details of installation.					
Tide staff	No tide staff was installed. Leveling was performed from a tidal benchmark to the water surface. The water height was read using a metric rod with a stilling well attached to remove interference from waves.					
Benchmarks	The following benchmarks were installed at these sites: Kasaan Bay: 0581 A 2002, 0581 B 2002, 0581 C 2002, 0581 D 2002 Hollis Anchorage: none The following benchmarks were recovered at these sites: Kasaan Bay: BM 2 1911, BM 7 1963 Hollis Anchorage: BM 1 1924, BM 2 1924, BM 3 1924, BM 4 1953, BM 5 1960					
Levels	Benchmarks were leveled at the installation and removal of the tidal station. The benchmarks and station datums were connected through frequent measurements to the water. The level runs closed within NOS tolerance.					
Final Tidal Zoning	This sheet is covered by tide zones SA102 and SA103.					
Reduction of Hydrographic data	Terra Surveys, LLC (the prime contractor) was provided with preliminary datums developed by LCMF during June 2002 based upon a short series simultaneous comparison between Ketchikan and the primary subordinate station. Six minute tide data reduced to MLLW and smoothed with a 5th order 5 hour polynomial curve fit was provided to Terra Surveys throughout the field season. In September 2002, LCMF finalized datums and forwarded all data necessary to reduce hydrographic soundings to the prime contractor.					

APPENDIX V

Supplemental Survey Records and Correspondence

Subject:

Terra Surveys Inc. OPR-0331-KR-02 Kasaan Shoreline Verification Processing Procedures

From:

Anne Dollard <Adollard@terra sond.com>

Date:

Thu, 02 Feb 2006 15:44:11 -0900

To:

beth.taylor@noaa.gov

Terra Surveys Inc. OPR-0331-KR-02 Kasaan Shoreline Verification Processing Procedures

In response to recent phone conversations and E mails with NOAA rep Beth Taylor, who is reviewing our work; find a summary below to further clarify Terra Surveys processing procedures in regard to shoreline verification.

The RSD data and charted features often varied and disagreed. We found the following scenarios we had to treat in different ways:

- RSD rocks where there was no charted rock
- Charted rocks where there was no RSD rock
- New rocks not represented by Chart or RSD
- Rocks (near a charted rock) not charted correctly

The table of Traditional Shoreline Verification Items (TVI) listed in each Sheet's Descriptive Report, Section D2 Additional Results lists the position of the boat where the target was taken, **not** the actual position of the item corrected for range and bearing. The plotted positions of features on the smoothsheet are **either** the verified RSD position or the target position when the range and bearing are at or near zero from the boat. The reasoning for this was to preserve the RSD data whenever possible without having to compute all new positions. The TVI positions **that are plotted on the smoothsheet** essentially have the same position as the corresponding RSD values when the range and bearing were at or near zero, and are interchangeable.⁸⁸ Refer to the delivered velum overlay⁸⁹ for an overall comparison of RSD, Charted and Target positions.

Apologies for the confusion.

Anne Dollard
TerraSond Ltd.

Hydrographic Survey Registry Number: H-11099⁹⁰

Survey Title: State:AK Locality: Kasaan Bay Sub-locality: Outer Pt. to Cat Island

Project Number: OPR-O331-KR-02

Survey Dates: August 10 (DN 222) , 2003

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

CHARTS AFFECTED:

Chart 17420 Scale 1:229,376 Edition 26 Date 9/22/01

Chart 17426 Scale 1:10,000 Edition 13 Date 10/02/93

DANGERS:

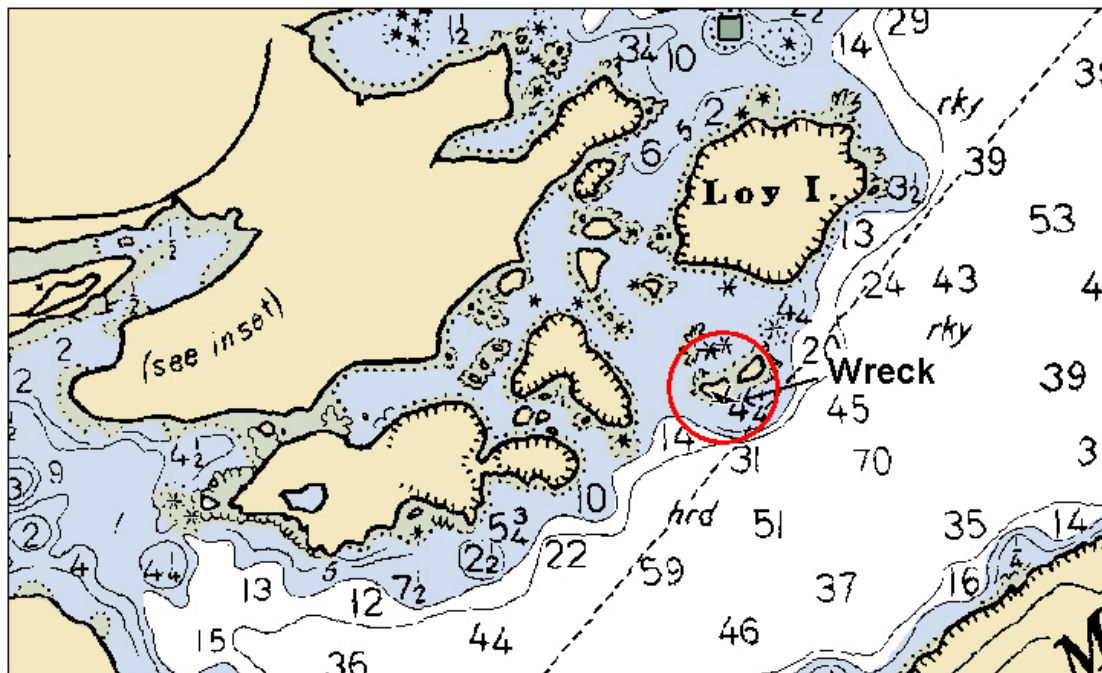
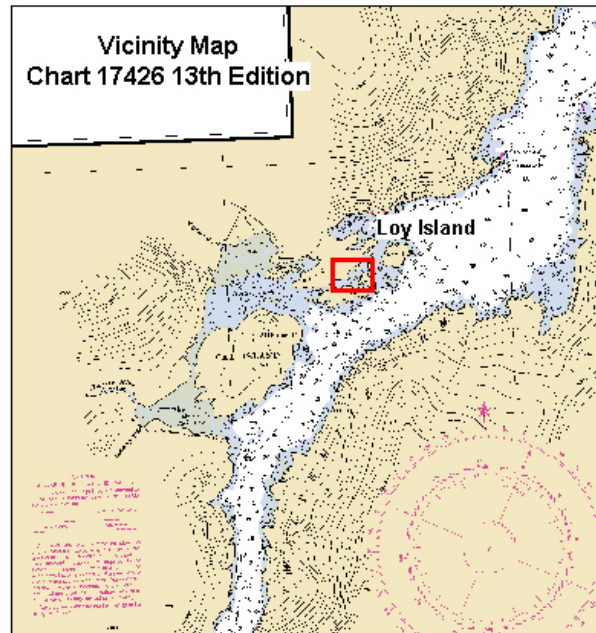
Feature	Depth(ft or fms)	Latitude	Longitude
Wreck	2.0 fms above MLLW 0.5 fms below MHW	55°28'45"	132°37'08"

COMMENTS:

A wooden skiff, approximately 30 feet long, was discovered on the south shore of an Islet south of Loy Island at the above position. This wreck does not float and is submerged at MHW. See the following page for a location map of the item.

Terra Surveys, LLC
DTON Map
Submitted: February 9, 2003

Item: Wreck
55°28'45"N 132°37'08"W





H 11099 DTON Item

RECRD VESSLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

NATIVLAT	<input type="text" value="55/29/51.86"/>	NATIVLON	<input type="text" value="132/29/15.61"/>	Convert	NATIVDATUM	<input type="text" value="31"/>
LAT83	<input type="text" value="55/29/51.86"/>	LONG83	<input type="text" value="132/29/15.61"/>	Update GP	GPQUALITY	<input type="text" value="Med"/>
	<input type="text" value="55"/> <input type="text" value="29"/> <input type="text" value="51.86"/>		<input type="text" value="132"/> <input type="text" value="29"/> <input type="text" value="15.61"/>		GPSOURCE	<input type="text" value="Scaled"/>
LATDEC	<input type="text" value="55.497738888889"/>	LONDEC	<input type="text" value="132.48766944444"/>			

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECNIQ

Techniqnote

History

Fieldnote
 Lat 55° 29' 50.98" N Long 132° 29' 28.00" W
 Lat 55° 29' 50.05" N Long 132° 29' 30.91" W
 Position Determined By: Garmin Etrex GPS
 Investigation Summary: This item fell outside the limits of hydrography. A 700-meter, visual shoreline investigation was done for one hour at low tide. The AWOIS radius was totally exposed during this search. Any remnants, if they existed, would have been visible. No dolphins were found. The AWOIS history lists this area as the most seaward location of a group of dolphins.
 Charting Recommendation
 Based on the results of survey H-11099, the Hydrographer recommends removal of the Submerged piles symbols from the chart and removal of the AWOIS item.
 Recommended Least Depth: Not applicable."/>

Proprietary

YEARSUNK NIMANUM SYSTEMNUM [Print Record](#)

RECRD VESSLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

NATIVLAT	<input type="text" value="55/29/22.45"/>	NATIVLON	<input type="text" value="132/31/17.05"/>	Convert	NATIVDATUM	<input type="text" value="31"/>
LAT83	<input type="text" value="55/29/22.45"/>	LONG83	<input type="text" value="132/31/17.05"/>	Update GP	GPQUALITY	<input type="text" value="Med"/>
	<input type="text" value="55"/> <input type="text" value="29"/> <input type="text" value="22.45"/>		<input type="text" value="132"/> <input type="text" value="31"/> <input type="text" value="17.05"/>		GPSOURCE	<input type="text" value="Scaled"/>
LATDEC	<input type="text" value="55.489569444444"/>	LONDEC	<input type="text" value="132.521402777778"/>			

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECNIQ
 Techniqnote

History

Fieldnote
 Position Determined By: Differential GPS
 Investigation Summary: A 200-meter radius area was searched for two hours in addition to investigation in the office. The position for this item falls outside the limits of hydrography. The northern half of the search area has full coverage. The southern half was searched visually during shoreline verification at low tide. The AWOIS history lists log storage dolphins at this location. No Dolphins were found.
 Charting Recommendation
 Based on the results of survey H-11099, the Hydrographer recommends removal of the dolphin symbol on the affected charts.
 Recommended Least Depth: Not applicable"/>

Proprietary

YEARSUNK NIMANUM SYSTEMNUM [Print Record](#)

RECRD VESSLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

NATIVLAT	<input type="text" value="55/28/48.48"/>	NATIVLON	<input type="text" value="132/39/08.27"/>	<input type="button" value="Convert"/>	NATIVDATUM	<input type="text" value="31"/>
LAT83	<input type="text" value="55/28/48.48"/>	LONG83	<input type="text" value="132/39/08.27"/>	<input type="button" value="Update GP"/>	GPQUALITY	<input type="text" value="Med"/>
	<input type="text" value="55"/> <input type="text" value="28"/> <input type="text" value="48.48"/>		<input type="text" value="132"/> <input type="text" value="39"/> <input type="text" value="8.27"/>		GPSOURCE	<input type="text" value="Scaled"/>
LATDEC	<input type="text" value="55.480133333333"/>	LONDEC	<input type="text" value="132.65229722222"/>			

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECNIQ
 Techniqnote

History

Fieldnote

Proprietary

YEARSUNK NIMANUM SYSTEMNUM

RECRD VESSLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

NATIVLAT	<input type="text" value="55/29/15.84"/>	NATIVLON	<input type="text" value="132/39/22.05"/>	<input type="button" value="Convert"/>	NATIVDATUM	<input type="text" value="31"/>
LAT83	<input type="text" value="55/29/15.84"/>	LONG83	<input type="text" value="132/39/22.05"/>	<input type="button" value="Update GP"/>	GPQUALITY	<input type="text" value="Med"/>
	<input type="text" value="55"/> <input type="text" value="29"/> <input type="text" value="15.84"/>		<input type="text" value="132"/> <input type="text" value="39"/> <input type="text" value="22.05"/>		GPSOURCE	<input type="text" value="Scaled"/>
LATDEC	<input type="text" value="55.487733333333"/>	LONDEC	<input type="text" value="132.656125"/>			

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECNIQ
 Techniqnote

History

Fieldnote
 Position Determined By: Garmin Etrex GPS
 Investigation Summary: This item was outside the limits of hydrography. A 250-meter radius was searched on foot. A position was established at two pilings with a 225-square meter dilapidated barge and machinery, 100-meters from the historical position.
 Charting Recommendation
 Recommendations: Based on the results of survey H-11099, the Hydrographer recommends updating the charted submerged pile symbol to a visible ruins symbol and adding a wreck symbol. The position should also be updated to the 2002 position, Lat 55° 29' 14.28" N Long 132° 39' 26.26" W
 Recommended Least Depth/Height: This item is greater then 0.7 meters above MHW classifying it as a visible obstruction."/>

Proprietary

YEARSUNK NIMANUM SYSTEMNUM

RECRD VESSLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

NATIVLAT	<input type="text" value="55/28/49.10"/>	NATIVLON	<input type="text" value="132/39/36.94"/>	Convert	NATIVDATUM	<input type="text" value="31"/>
LAT83	<input type="text" value="55/28/49.10"/>	LONG83	<input type="text" value="132/39/36.94"/>	Update GP	GPQUALITY	<input type="text" value="High"/>
	<input type="text" value="55"/> <input type="text" value="28"/> <input type="text" value="49.1"/>		<input type="text" value="132"/> <input type="text" value="39"/> <input type="text" value="36.94"/>		GPSOURCE	<input type="text" value="Scaled"/>
LATDEC	<input type="text" value="55.480305555556"/>	LONDEC	<input type="text" value="132.66026111111"/>			

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECNIQ

Techniqnote

History

Fieldnote

Proprietary

YEARSUNK NIMANUM SYSTEMNUM [Print Record](#)

RECRD VESSLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

NATIVLAT	<input type="text" value="55/28/51.31"/>	NATIVLON	<input type="text" value="132/39/47.48"/>	Convert	NATIVDATUM	<input type="text" value="31"/>
LAT83	<input type="text" value="55/28/51.31"/>	LONG83	<input type="text" value="132/39/47.48"/>	Update GP	GPQUALITY	<input type="text" value="Med"/>
	<input type="text" value="55"/> <input type="text" value="28"/> <input type="text" value="51.31"/>		<input type="text" value="132"/> <input type="text" value="39"/> <input type="text" value="47.48"/>		GPSOURCE	<input type="text" value="Scaled"/>
LATDEC	<input type="text" value="55.480919444444"/>	LONDEC	<input type="text" value="132.66318888889"/>			

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECNIQ
 Techniqnote

History
 THE AWOIS POSITION IS THE APPROXIMATE CENTER OF THE TWO STRUCTURES.
 CL854/55--USACE PERMIT TO THE KETCHIKAN PULP COMPANY; FOR THE PLACEMENT OF LOG STORAGE DOLPHINS IN HOLLIS ANCHORAGE AS SHOWN ON A SKETCH. THE LOG STORAGE STRUCTURES ARE FROM:
 LAT. 55/28/48.68N, LONG. 132/40/00.98W (NAD83) TO LAT. 55/28/55.31N, LONG. 132/39/36.11W (NAD83)
 LAT. 55/28/47.21N, LONG. 132/39/59.87W (NAD83) TO LAT. 55/28/52.32N, LONG. 132/39/40.36W (NAD83)
 T-10696 (1960)--NOTED AS EXTENSIVE TOPO REVISIONS IN HOLLIS ANCHORAGE AND INSET. VISIBLE PILE CHANGED TO SUBMERGED PILE.
 (ENTERED 6/01 BY MBH)

Fieldnote
 Item Description (as charted): Dolphin
 Source: AWOIS record number 52772
 Charted Position: Lat 55/28/51.31N Long 132/39/47.48W
 Charts Affected: 17420, 26 th edition September 22, 2001
 17426, 13 th edition July 11, 1992
 Investigation
 Date(s)/Day Number(s):08/09/2002 DN 221 Survey Vessel Name:Workskiff
 Position Numbers/Time: 4309/ 02:57:07
 Investigation Method: Shoreline investigation
 Surveyed Position (NAD83): Search area Lat 55° 28' 51.99" N Long 132° 39' 44.53" W
 Position Determined By: Differential GPS
 Investigation Summary: A two-hour 510-meter by 80-meter corridor was searched, in addition to office investigation. This item falls outside the limits of hydrography, a search position was obtain during shoreline verification. Water clarity was good; the bottom was visible during the search. There are submerged piles symbols on the chart in this search corridor. No dolphins or piles were found anywhere within the search corridor.
 Charting Recommendation
 Based on the results of survey H-11099, the Hydrographer recommends removal of the Submerged piles symbols from the chart and removal of the AWOIS item.
 Recommended Least Depth: Not applicable.

Proprietary

YEARSUNK NIMANUM SYSTEMNUM [Print Record](#)

RECRD VESSLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

NATIVLAT	<input type="text" value="55/29/03.91"/>	NATIVLON	<input type="text" value="132/40/04.87"/>	Convert	NATIVDATUM	<input type="text" value="31"/>
LAT83	<input type="text" value="55/29/03.91"/>	LONG83	<input type="text" value="132/40/04.87"/>	Update GP	GPQUALITY	<input type="text" value="Med"/>
	<input type="text" value="55"/> <input type="text" value="29"/> <input type="text" value="3.91"/>		<input type="text" value="132"/> <input type="text" value="40"/> <input type="text" value="4.87"/>		GPSOURCE	<input type="text" value="Scaled"/>
LATDEC	<input type="text" value="55.484419444444"/>	LONDEC	<input type="text" value="132.66801944444"/>			

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECNIQ
 Techniqnote

History

Fieldnote
 Position Determined By: Garmin Etrex GPS
 Investigation Summary: This item fell outside the limits of hydrography. A two hour search on foot was conducted along a corridor 500-meters long and 50-meters wide along the shoreline where the charted dolphins are supposed to be located. The entire search corridor was exposed and visible. No dolphins were found in the search area. There was approximately 20 logs lying down above the high tide line in this area. These may be left over from the log storage area the dolphins once supported.
 Charting Recommendation
 Based on the results of survey H-11099, the Hydrographer recommends removal of the dolphin symbols .
 Recommended Least Depth: Not applicable"/>

Proprietary

YEARSUNK NIMANUM SYSTEMNUM [Print Record](#)

RECRD VESSLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

NATIVLAT	<input type="text" value="55/29/48.30"/>	NATIVLON	<input type="text" value="132/29/58.60"/>	Convert	NATIVDATUM	<input type="text" value="31"/>
LAT83	<input type="text" value="55/29/48.30"/>	LONG83	<input type="text" value="132/29/58.60"/>	<input type="button" value="Update GP"/>	GPQUALITY	<input type="text" value="High"/>
	<input type="text" value="55"/> <input type="text" value="29"/> <input type="text" value="48.3"/>		<input type="text" value="132"/> <input type="text" value="29"/> <input type="text" value="58.6"/>		GPSOURCE	<input type="text" value="Scaled"/>
LATDEC	<input type="text" value="55.49675"/>	LONDEC	<input type="text" value="132.49961111111"/>			

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECNIQ

Techniqnote

History

Fieldnote
 Position Determined By: Garmin Etrex GPS

 Investigation Summary: A 100-meter swath was searched for two hours in addition to investigation in the office. The position for this item falls outside the limits of hydrography. The Eastern portion of the search area has full coverage. The Western portion was searched visually during shoreline verification at low tide. The AWOIS history lists a dolphin used as a hydrographic control station at this location. No dolphins were found.

 Charting Recommendation
 Based on the results of survey H-11099, the Hydrographer recommends removal of the dolphin symbols.
 Recommended Least Depth: Not applicable"/>

Proprietary

YEARSUNK NIMANUM SYSTEMNUM

RECRD
 VESSLTERMS
 CHART
 AREA

 CARTOCODE
 SNDINGCODE
 DEPTH

NATIVLAT	<input type="text" value="55/29/50.24"/>	NATIVLON	<input type="text" value="132/29/47.65"/>	Convert	NATIVDATUM	<input type="text" value="31"/>
LAT83	<input type="text" value="55/29/50.24"/>	LONG83	<input type="text" value="132/29/47.65"/>	<input type="button" value="Update GP"/>	GPQUALITY	<input type="text" value="High"/>
	<input type="text" value="55"/> <input type="text" value="29"/> <input type="text" value="50.24"/>		<input type="text" value="132"/> <input type="text" value="29"/> <input type="text" value="47.65"/>		GPSOURCE	<input type="text" value="Scaled"/>
LATDEC	<input type="text" value="55.497288888889"/>	LONDEC	<input type="text" value="132.49656944444"/>			

PROJECT
 ITEMSTATUS
 SEARCHTYPE

 RADIUS
 INIT
 ASSIGNED

 TECNIQ

 Techniqnote

History

Fieldnote

Item Description (as charted): Pilings
 Source: AWOIS record number 52777
 Charted Position: Lat 55/29/50.24 N Long 132/29/47.65W
 Charts Affected: 17420, 26 th edition September 22, 2001
 17426, 13 th edition July 11, 1992

Investigation
 Date(s)/Day Number(s): 7/19/02 DN 200 Survey Vessel Name: Royal Fish/Workskiff
 Position Numbers/Time: 11/17:25:54 UTC
 Investigation Method: Shallow Water Multibeam Sonar, shoreline verification
 Surveyed Position (NAD83): Search area Lat 55° 29' 50.43" N Long 132° 29' 52.54" W
 Position Determined By: Differential GPS

Investigation Summary: A 100-meter swath was searched for two hours with bathymetry, shoreline verification, and office investigation. This area has 200% SWMB coverage. It has been the hydrographer's experience, this coverage would show a pile if it was there. The AWOIS history lists two pilings charted as one at this location. No pilings were found.

Charting Recommendation
 Based on the results of survey H-11099, the Hydrographer recommends removal of the pile symbol.
 Recommended Least Depth: MLLW (0 fathoms)

Proprietary

YEARSUNK
 NIMANUM
 SYSTEMNUM

RECRD VESSLTERMS CHART AREA
 CARTOCODE SNDINGCODE DEPTH

NATIVLAT	<input type="text" value="55/29/53.30"/>	NATIVLON	<input type="text" value="132/29/19.68"/>	Convert	NATIVDATUM	<input type="text" value="31"/>
LAT83	<input type="text" value="55/29/53.30"/>	LONG83	<input type="text" value="132/29/19.68"/>	<input type="button" value="Update GP"/>	GPQUALITY	<input type="text" value="High"/>
	<input type="text" value="55"/> <input type="text" value="29"/> <input type="text" value="53.3"/>		<input type="text" value="132"/> <input type="text" value="29"/> <input type="text" value="19.68"/>		GPSOURCE	<input type="text" value="Scaled"/>
LATDEC	<input type="text" value="55.498138888889"/>	LONDEC	<input type="text" value="132.4888"/>			

PROJECT ITEMSTATUS SEARCHTYPE
 RADIUS INIT ASSIGNED
 TECNIQ

Techniqnote

History

Fieldnote

Proprietary

YEARSUNK NIMANUM SYSTEMNUM

Revisions Compiled During Office Processing and Certification

¹ Concur.

² Concur with clarification. The Kasaan Bay vicinity resurvey comprised nine different survey numbers under two registries (OPR-0331-KR-02 and OPR-0331-KR-03). The deepest smooth sheet sounding displayed for survey H11099 is 88 fathoms.

³ Insert “east of”.

⁴ The maximum, tide corrected depth displayed on the smooth sheet is 88 fathoms. Portions of the MLLWL were also determined throughout the survey area.

⁵ Filed with the project reports.

⁶ Concur. The data is adequate to supersede all prior surveys and miscellaneous charted data in the survey area except as noted in this report and the Hdrawings.

⁷ Insert “SOW”.

⁸ Filed with the project reports.

⁹ Strikethrough ~~then~~, replace with “than”.

¹⁰ Strikethrough ~~this survey~~, replace with “H11099”.

¹¹ Insert “with”.

¹² Concur. In PHB processing, H11099 was also compared at its southern junction with H11237, OPR-0331-KR-03. The junction areas of soundings and contours showed excellent correlation. Shoreline areas south of approximately Lat 55/27/3.1N and Lon 132/38/56.6W on the east side showed discrepancies, with H11099 shoreline digressing from charted RSD on 17426, 14th Edition, continuous maintenance raster. Since H11237 closely matched charted MHWL, the evaluator recommends charting H11099 verified ledges in the area, but retaining the charted shoreline as depicted on the Hdrawing. On the west side south of approximately Lat 55/27/15N and Lon 132/40/1.9W, H11237 re-defined ledges and identified an islet in the area. Therefore it is recommended that H11099 not supersede charted shoreline and ledge data in this vicinity pending completion of 17426h11.237.

All data sets have been considered in compiling soundings and contours to the Hdrawing.

¹³ Filed with the project reports.

¹⁴ Strikethrough ~~is~~, replace with “are”.

¹⁵ Data Acquisition and Processing Report, filed with the project reports.

¹⁶ Concur. The data is adequate for charting.

¹⁷ Filed with the project reports.

¹⁸ Filed with the project reports. See Final Tide Note attached to this report for further information.

¹⁹ Office comparison was also made to Chart 17426, 14th Edition, and Chart 17420, 27th Edition, continuous maintenance rasters.

²⁰ Strikethrough ~~shift performed to compare depths~~, replace with “comparison of contours and soundings performed”.

²¹ Concur.

²² The evaluator concurs with the hydrographer’s findings from chart comparison except as noted below. Note that the hydrographer’s recommendations for charting are

generalized, advisory statements, and should not be used as guides for sounding selection or charting. Chart all areas with soundings and contours as shown on the smooth sheet and Hdrawing. Use smooth sheet positions, not approximate positions given in the discussions below.

²³ Areas labeled *rky* on the smooth sheet have been depicted on the Hdrawing as space permits. Charted *rky* areas verified by the survey have been retained in green on the Hdrawing where space permits, or moved slightly to accommodate soundings. Chart *rky* areas according to the Hdrawing. See endnote 56 for information regarding MHWL revisions.

²⁴ Concur.

²⁵ Concur with clarification. Dangers to Navigation submitted after PHB review are listed in Appendix I, attached to this report. See endnote 86 for further information.

²⁶ This item was not submitted as a DtoN after PHB review.

²⁷ This item was not submitted as a DtoN after PHB review.

²⁸ Concur with clarification. Chart areas based on the Hdrawing.

²⁹ Concur with clarification. The area discussed is at the junction between H11099 and H11160. It has been compiled on 17426H11.160.

³⁰ See endnote 29.

³¹ The position does not coincide with the location of Figure 4. The area discussed and illustrated in Figure 4 is in the vicinity of Lat 55 29 45N, Lon 132 35 47W.

³² ~~Strikethrough by Bathymetry.~~

³³ Concur. MHWL has been updated on Chart 17426, 14th Edition, continuous maintenance raster.

³⁴ While the position given falls within the bounds of Figure 5, it is well inshore of the shoreline. The shoreline changes discussed are in the vicinity of Lat 55 28 30N, Lon 132 35 44W.

³⁵ ~~Strikethrough by Bathymetry.~~

³⁶ Concur. MHWL has been updated on Chart 17426, 14th Edition, continuous maintenance raster.

³⁷ The general position of the islet is Lat 55 30 41N, Lon 132 32 33W. The MHWL revision is shown as a dashed red line on level 1 of the Hdrawing. Chart islet according to the smooth sheet and Hdrawing.

³⁸ Concur with clarification. The islet appears on Chart 17426, 14th Edition, continuous maintenance raster. Chart islet and ledge according to the smooth sheet.

³⁹ The general position of the islet is Lat 55 30 41N, Lon 132 32 33W. Chart according to the smooth sheet.

⁴⁰ ~~Strikethrough by Bathymetry.~~

⁴¹ Concur with clarification. The shoreline has been updated on Chart 17426, 14th Edition, continuous maintenance raster. Chart shoreline according to the smooth sheet.

⁴² Concur with clarification. The following list is not comprehensive. Smooth sheet soundings disagree with charted soundings in many areas. In some area, shoals and rocks are charted deeper than their H11099 depths. Chart all areas according to the smooth sheet.

⁴³ Five Dangers to Navigation were submitted after PHB review. See Dangers to Navigation report attached to this report.

⁴⁴ Concur with clarification. See AWOIS report 52766.

⁴⁵ Concur. See AWOIS report 52767.

⁴⁶ Concur with clarification. The surveyed positions given by the hydrographer define the extents of a reef. Chart reef as depicted on the Hdrawing and remove charted rock and ED notation from affected charts. Chart surrounding areas according to H11099 smooth sheet and Hdrawing. See AWOIS report 52769. For further information, see TVI Reports, targets 1576 and 1593, in this report.

⁴⁷ Concur with clarification. See AWOIS report 52770.

⁴⁸ Concur with clarification. See AWOIS report 52771.

⁴⁹ Concur with clarification. See AWOIS report 52772.

⁵⁰ Concur. See AWOIS report 52773.

⁵¹ Concur. See AWOIS report 52776.

⁵² Concur. See AWOIS report 52777.

⁵³ Concur. See AWOIS report 52778.

⁵⁴ Chart these items according to the smooth sheet except as noted.

⁵⁵ Strikethrough ~~then~~, replace with “than”.

⁵⁶ Concur. Observed changes from RSD shoreline ranged from zero to about 45 meters. MHWL changes are shown as dashed red lines on Level 1 of the Hdrawing.

⁵⁷ Concur with clarification. The historic ferry dock has been removed from Chart 17426, 14th Edition, continuous maintenance raster, Kapp 2739 (main chart). However, inset 17426_2, Hollis Anchorage, Kapp 2740, still shows the historic ferry dock. Based on the hydrographer’s findings, the evaluator recommends removal of the historic ferry dock from the Hollis Anchorage inset.

The pile depicted on Chart 17426 and investigated by the hydrographer is displayed as two dolphins on 17426_2. Based on the hydrographer’s findings, the evaluator recommends removal of the pile symbol at Lat 55 28 51.44N, Lon 132 39 0.45W on Chart 17426, and the removal of the two dolphin symbols at Lat 55 28 51.0N, Lon 132 39 0.9W and Lat 55 28 51.2N, Lon 132 39 1.2W, along with the dol notation, on 17426_2, Hollis Anchorage inset.

⁵⁸ Do not concur. On the shoreline field map ESL-17, a note was added that the rock was later found in the data. Office examination of the DTM found a probable rock close to this location. See endnote 85 for further information. Retain rock as charted.

⁵⁹ Investigate itemized features as national survey priorities and budget allow.

⁶⁰ Chart aids to navigation using latest USCG data.

⁶¹ Strikethrough repeated ~~was found in good condition~~.

⁶² Filed with the project reports.

⁶³ Resurvey as national survey priorities and budget allow.

⁶⁴ The evaluator concurs with the hydrographer’s findings as listed below, except as endnoted. Note that positions listed in the following table are Detached Positions of the vessel at the time of observation and are not corrected for range and bearing. Chart the smooth sheet positions for all features except as noted. For further information, see the hydrographer’s supplemental email, attached to this report.

Due to scale, rocks have been incorporated into ledges on the Hdrawings where warranted.

At approximately Lat 55 30 9N, Lon 132 33 49W, an RSD rock was omitted from the smooth sheet. The rock appears on shoreline graphic ESL-15B and is verified at the location of a charted islet. Remove charted islet and chart extended ledge, as shown on the Hdrawing and verified in the shoreline graphic.

A charted rock at lat 55 27 9.9N, Lon 132 39 53.8W was not discussed by the hydrographer, but is in the vicinity of a -0.3 fathom (2 feet above MLLW) sounding. Retain rock as charted.

Several smooth sheet ledges near Jarvis Island showed unexplained gaps. Gaps appeared in the vicinity of the following locations:

✚ Lat 55 30 20.1N and Lon 132 33 15.3W

✚ Lat 55 30 25.4N and Lon 132 32 37.6W

✚ Lat 55 30 30.3N and Lon 132 32 37.7W

Extrapolating from charted and surveyed data, the gaps have been closed on the Hdrawing. Chart according to the Hdrawing.

⁶⁵ While the target is depicted on the smooth sheet as a rock, the Item Investigation Report states that it is the southern extent of a reef. It has been incorporated into the reef on the Hdrawing.

⁶⁶ While the target is depicted on the smooth sheet as a rock, the Item Investigation Report states that it is the northern extent of a reef. It has been incorporated into the reef on the Hdrawing.

⁶⁷ The target appears at the correct location on the smooth sheet as stated. It is mislabeled on the shoreline verification field map ESL-6 as 6374.

⁶⁸ While the target is depicted on the smooth sheet as a rock, the Item Investigation Report states that it is the eastern extent of a reef. It has been incorporated into the reef on the Hdrawing.

⁶⁹ While the target is depicted on the smooth sheet as a rock, the Item Investigation Report states that it is the western extent of a reef. It has been incorporated into the reef on the Hdrawing.

⁷⁰ The latitude and longitude are those of target 5521. The correct latitude is 55 30 21.66N and the correct longitude is 132 33 35.38W.

⁷¹ The latitude and longitude are those of target 5521. The correct latitude is 55 30 24.0N and the correct longitude is 132 33 35.19W.

⁷² The latitude and longitude are those of target 1593. The correct latitude is 55 28 48.28N and the correct longitude is 132 39 11.63W. The target is erroneously depicted as an independent rock on the smooth sheet. The Item Investigation Report states that it is the northeast extent of a reef. Chart reef according to the Hdrawing. Note that the position is also discussed in AWOIS report 52769.

⁷³ The target is erroneously depicted as an independent rock on the smooth sheet. The Item Investigation Report states that it is the southwest extent of a reef. Chart reef according to the Hdrawing. Note that the position is also discussed in AWOIS report 52769.

⁷⁴ Potential Items to Be Investigated have been shown on the smooth sheet and Hdrawing where they fall within survey limits and scope. The evaluator concurs with the hydrographer's findings except as noted. Note that positions in the following table are of

the boat at the time of observation and are not corrected for range and bearing. Chart these areas according to the smooth sheet.

⁷⁵ ~~Strikethrough Northing~~, replace with “Easting”.

⁷⁶ ~~Strikethrough Easting~~, replace with “Northing”.

⁷⁷ ~~Strikethrough Northing~~, replace with “Easting”.

⁷⁸ ~~Strikethrough Easting~~, replace with “Northing”.

⁷⁹ ~~Strikethrough Northing~~, replace with “Easting”.

⁸⁰ ~~Strikethrough Easting~~, replace with “Northing”.

⁸¹ On the shoreline field map, this position is labeled 4985.

⁸² This position falls within the survey limits of H11160.


⁸³ ~~Strikethrough Northing~~, replace with “Easting”.


⁸⁴ ~~Strikethrough Easting~~, replace with “Northing”.

⁸⁵ This is the same charted rock discussed under disprovals, page 58-59, and endnote 58.

The approximately 50-meter discrepancy in positions results from the PITBI position being that of the boat at the time of photography, not of the rock. On the shoreline field map ESL-17, a note was added that the rock was later found in the data. Office examination of the DTM found a probable rock close to this location. Retain rock as charted.

⁸⁶ Five Dangers to Navigation were submitted after PHB review. Differences between charted DtoNs and the smooth sheet are discussed below.

 DtoN Sounding, 3 3/4 fm, Lat 55° 28' 32.0"N, Lon 132° 38' 38.0"W is a rock. Chart 3 fm 5 ft *Rk* at smooth sheet position.

 DtoN Sounding, 8 fm, Lat 55° 28' 27.0"N, Lon 132° 38' 37.0"W is a rock. Chart 8 fm *Rk* at smooth sheet position.

Note that at Lat 55°28'45”N and Lon132°37'08”W, the hydrographer discovered a wreck and submitted it as a DtoN. After PHB review, the wreck was not reported as a DtoN because it lies on a reef. For further information, see the hydrographer’s report in Appendix V, attached to this report, and endnote 88.

⁸⁷ Concur. Correct spelling on Chart 17240.

⁸⁸ The evaluator concurs with the hydrographer’s discussion. Chart features according to the smooth sheet except as noted in this report.

⁸⁹ Filed with the project reports.

⁹⁰ Due to its location on a reef, the wreck discussed below was not reported as a DtoN after PHB review. The evaluator recommends that it be submitted to the AWOIS data base. It has been positioned on the Hdrawing using survey and charted information. Chart wreck symbol according to the Hdrawing.

APPROVAL SHEET
H11099

Initial Approvals:

The survey and associated records have been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, and verification or disproval of charted data. The survey records and digital data comply with NOS requirements except where noted in the Descriptive Report and are adequate to supersede prior surveys and nautical charts in the common area.

Bruce A. Olmstead
Bruce A. Olmstead
Cartographic Team
Pacific Hydrographic Branch

Date: 4/27/2006

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 Descriptive Report.

Donald W. Haines, CDR/NOAA
Donald W. Haines
CDR, NOAA
Chief, Pacific Hydrographic Branch

Date: 1 May 2006

