H11075

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. RA-20-03-01

Registry No. H11075

LOCALITY

State Alaska

General Locality Approaches to Seward

Sublocality **East of Aialik Cape**

2001

CHIEF OF PARTY
Captain James C. Gardner, NOAA

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.

H-11075

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.

RA 20-03-01

State **Alaska**

General Locality **Approaches to Seward**

Sublocality **East of Aialik Cape**

Scale **1:20,000** Date of Survey **Aug 13 - Sept 20, 2001**

Instructions Date **7/26/2001** Project No. **OPR-P359-RA-2001**

Vessel **Rainier-(2120),RA-1(2121),RA-2(2122),RA-3(2123),RA-5(2125),RA-6(2126)**

Chief of Party **CAPT JAMES C. GARDNER, NOAA, Commanding**

Surveyed by **Ship personnel and physical scientists from Pacific & Atlantic Hydrographic Branches**

Soundings taken by echo sounder, hand lead, pole **Seabeam/Elac 1050DMK, Knudson 320 M**

Graphic record scaled by **RAINIER PERSONNEL**

Graphic record checked by **RAINIER PERSONNEL**

Evaluation by **R. Shipley** Automated plot by **HP Design Jet 1050C**

Verification by **E. Domingo, R. Shipley**

Soundings in **Fathoms** at **MLLW**

REMARKS: **All times are UTC.**

Revisions and annotations appearing as endnotes were generated durning office processing.

All depths listed in this report are referenced to mean lower low water unless otherwise noted.

UTM Projection (zone 6).

Descriptive Report to Accompany Hydrographic Survey H11075

Project OPR-P359-RA-01
Approaches to Seward, Alaska
Scale 1:20,000
August - September 2001
NOAA Ship RAINIER
Chief of Party: Captain James C. Gardner, NOAA

A. AREA SURVEYED

This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-P359-RA-01, dated July 26, 2001, and the Draft Standing Project Instructions dated March 21, 2001. The project responds to requests from a U.S Senator, the Southwest Alaska Pilots Association, Cruise Lines, and NIMA. This project will respond to a request from Senator Ted Stevens, on behalf of the city of Seward, for contemporary hydrography in Resurrection Bay that will support the National Tsunami Inundation Mapping Program. This program is critical to the community of Seward, due to its history of severe tsunami damage.

The survey covers the area east of Aialik Cape. The survey's northern limit is latitude 59°45'21"N[1] and the southern limit is latitude 59° 38' 47"N[2]. The survey's western limit is longitude 149°32'11"W[3] and the eastern limit is longitude 149°12'24"W[4].

One hundred percent shallow-water multibeam (SWMB) coverage was obtained in the survey area in waters 10 meters and deeper. In waters from 4 meters to 10 meters, SWMB data were obtained at 25-meter line spacing, and in these areas additional coverage was collected to obtain least depths over features or shoals. Vertical-beam echo sounder data were acquired in depths from 4 to 25 meters in select areas, at a line spacing of 100 meters, to define the four-meter curve and to aid in the planning of SWMB data acquisition.

Data acquisition was conducted from August 13, 2001 to September 20, 2001 (DN 225 to DN263).

B. DATA ACQUISTION AND PROCESSING

A complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods can be found in the *OPR-P359-RA-01 Data Acquisition and Processing Report* [5], submitted under separate cover. Items specific to this survey, and any deviations from the aforementioned report are discussed in the following sections.

B1. Equipment and Vessels

Data were acquired by RAINIER and her survey launches (vessel numbers 2120, 2121, 2122, 2123, 2125, 2126, and 2127). Vessels 2120, 2121, 2123, and 2126 were used to acquire shallow-water multibeam (SWMB) soundings and sound velocity profiles. Vessels 2122 and 2125 were used to acquire vertical beam echosounder data (VBES), and detached positions (DPs), for shoreline verification. Vessel 2125 was used to acquire bottom samples and vessel 2127 was used to acquire detached positions during shoreline verification. No unusual vessel configurations or problems were encountered during this survey.[6]

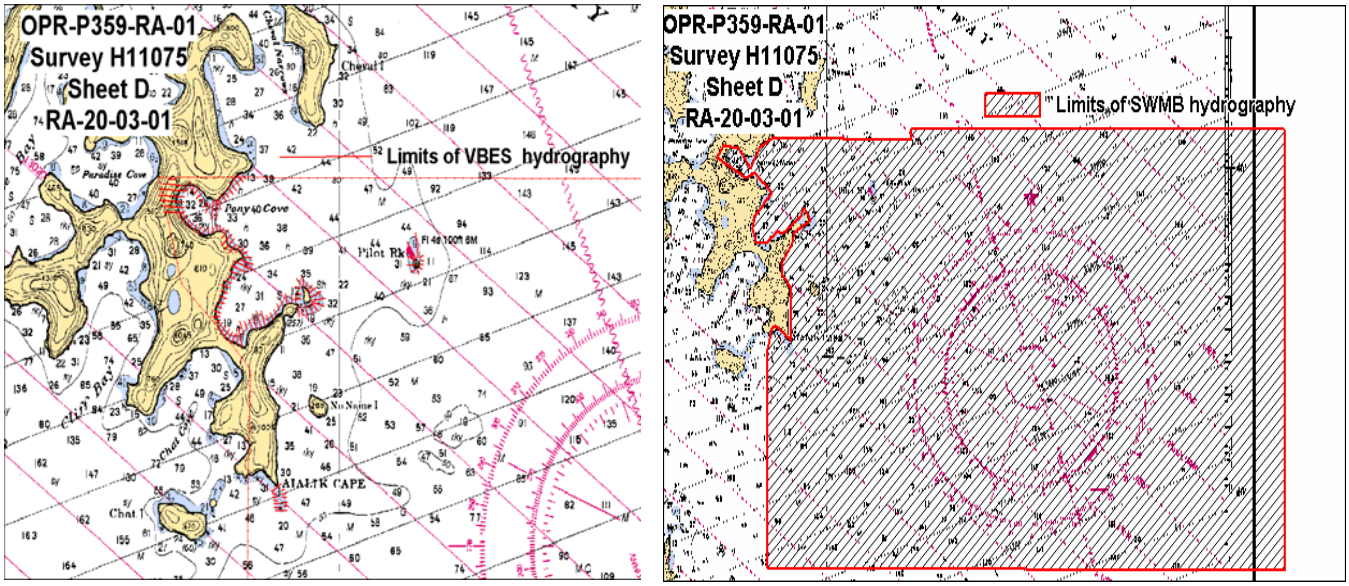

Figure 1. H11075 Survey Limits

B2. Quality Control

Crosslines

Shallow-Water Multibeam (SWMB) crosslines totaled 30 nautical miles, comprising 7.7 % of SWMB hydrography. The Quality Control Report (CARIS HIPS) for the checkline file averaged 88.9129%, with a depth tolerance factor of 0.013, which conforms to International Hydrographic Organization Order I specifications detailed in Special Publication S-44, Edition 4, as well as NOS Hydrographic Surveys Specifications and Deliverables Manual (HSSDM). See Appendix V [7] for the detailed report. This low QCR agreement is possibly due to steep and irregular bathymetry on H11075. All data was examined thoroughly during subset cleaning, and the Hydrographer believes through manual examination of the data the accuracy standards have been met and crossline agreement is good.[8]

Junctions

The following survey junctions with H11075.[9]

Registry #	Scale	Date	Junction side
H11074	1:20,000	2001	North

At the time of this report, processing of survey H11074 was not complete. Comparisons of the junction with this survey will be discussed in the Descriptive Report for H11074.[10]

Final comparisons will be made at the Pacific Hydrographic Branch (PHB) after the application of smooth tides.[11]

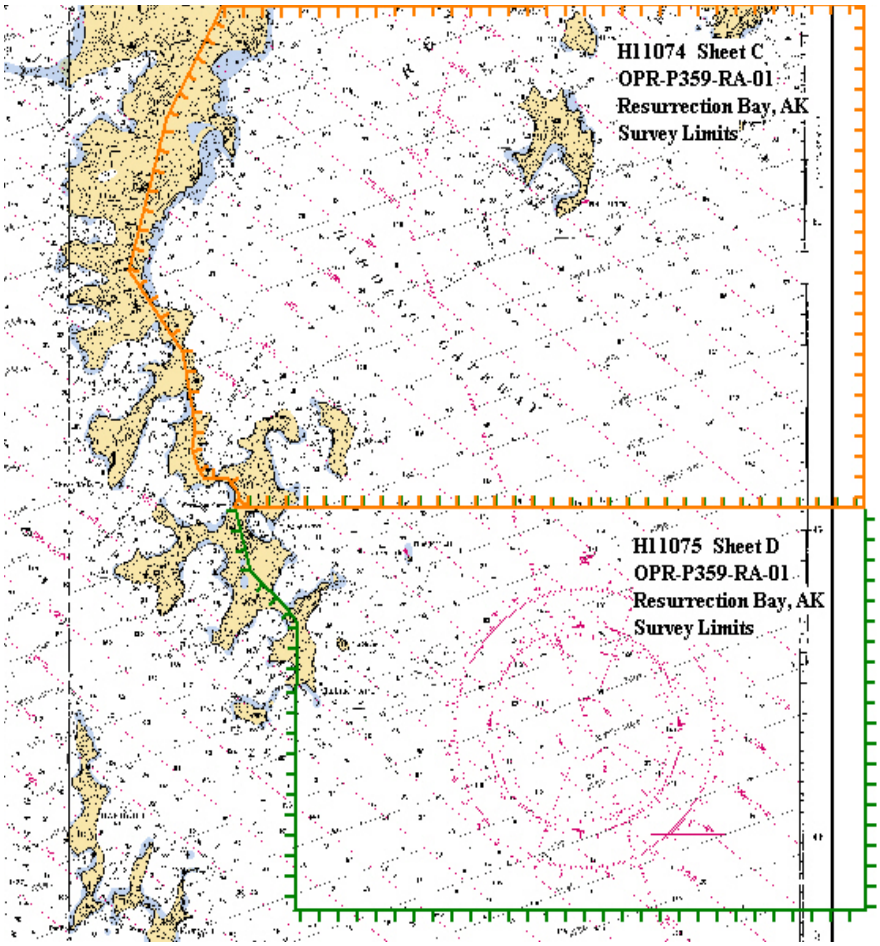

Figure 2. H11075 Junction Surveys

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Data Quality Factors

In subset cleaning, a navigation time latency of unknown origin was observed in several days of acquired multibeam data from RA-3 and RAINIER systems. This navigational latency appear to vary on a daily basis, and appeared as “shifts” over prominent features on adjacent SWMB lines. To correct for these errors, a navigation time latency corrector was calculated and entered into the appropriate Vessel Configuration Files (VCFs) for each day RA-3 and RAINIER acquired data on this survey. All affected data were again corrected for SVP, and merged, in HDCS following the changes to the VCFs. The VCFs are included with the digital data. These data have also been forwarded to NOAA’s Hydrographic Systems and Technology Programs (HSTP), N/CS11 for analysis of this behavior.

Small errors in the data due to the measurement and application of sound velocity were apparent in the data during subset processing. This was exhibited as "smiles" and "frowns" across multibeam swaths. Several lines of data often exhibited no errors at one end of the line, while exhibiting errors at the other end, indicating a changing water mass throughout the survey area. To attempt to correct these errors , sound velocity corrector profiles were often applied based on the geographic position of the cast, rather than the time the cast was collected. Such application was performed on a line-by-line basis only on individual lines that exhibited profound sound velocity problems. Despite the best efforts of the Hydrographer to conduct sufficient sound velocity casts distributed both spatially and temporally, and to

correct for sound velocity errors in post processing through methods previously mentioned, small sound velocity errors were still noticeable in several regions. To compensate, the Hydrographer, where possible, reduced the outer beam filter to 50° off nadir to reject soundings obviously in error on the outer beams. The Hydrographer believes, through manual examination of the data, that the remaining errors are negligible and the data still meet depth accuracy standards set forth in the HSSDM.[12]

B3. Data Reduction

Data reduction procedures for survey H11075 conform to those detailed in the *OPR-P359-RA-01 Data Acquisition and Processing Report.*

C. VERTICAL AND HORIZONTAL CONTROL

A complete description of vertical and horizontal control for survey H11075 can be found in the *OPR-P359-RA-01 Horizontal and Vertical Control Report,*[13] submitted under separate cover. A summary of horizontal and vertical control for this survey follows.

Horizontal Control

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Differential GPS (DGPS) was the sole method of positioning. Differential corrections from U.S. Coast Guard beacons at Cape Hinchinbrook, AK (292 kHz) and Kenai, AK (310 kHz) were utilized during this survey. Launch-to-launch DGPS performance checks were performed weekly in accordance with Section 3.2 of the FPM. Copies of the performance checks are included in the *OPR-P359-RA-01 Horizontal and Vertical Control Report*.

Vertical Control

Tide zoning for this survey is consistent with the Project Instructions. HDCS multibeam data were reduced to mean lower-low water (MLLW) using unverified tides from station Seward, AK (945-5090) adjusted using a height ratio corrector of 1.01 and a time corrector of 0.00 minutes. These data were used to create the tide corrector file "H11075_Observed.tid”." These data and correctors were also used in creating HPS tide table 01, which was used to reduce detached positions (DPs) to MLLW.

The vertical datum for this project is Mean Lower-Low Water (MLLW). The operating National Water Level Observation Network (NWLON) primary tide station at Seward (945-5090) will serve as control for datum determination and as the primary source for water level reducers for survey H11075. RAINIER personnel installed and maintained a tide gauge at the following subordinate station in accordance with the Project Instructions:

Station Name	Station #	Latitude	Longitude	Installed & Maintained
Agnes Cove	945-5120	59° 46.9’ N	149° 34.6’	RAINIER Personnel

The Pacific Hydrographic Branch will apply final approved (smooth) tides to the survey data during final processing. A request for delivery of final approved (smooth) tides for survey H11075 was forwarded to N/OPS1 on October 12, 2001 in accordance with FPM 4.8.[14]

D. RESULTS AND RECOMMENDATIONS

D.1 Automated Wreck and Obstruction Information System (AWOIS) Investigations

No AWOIS items were located within the limits of H11075.[15]

D.2 Chart Comparison[16]

Survey H11075 was compared with chart 16682 (14th Ed., June 20, 1998, 1:81,847)[17], chart 16683 (9th Ed.; January 29, 2000 1:81,436)[18]. Depths from Chart 16682 and 16683 adequately agree with the current survey, with differences generally two fathoms or less. In areas where dramatic discrepancies were noted, these were most likely the result of increased bottom coverage using SWMB methods. Notable differences are addressed below. All of the items discussed were covered with 100% shallow-water multibeam. The following comparisons address items not otherwise submitted as dangers to navigation (refer to section D.4).

In the vicinity of a charted (16682 and 16683) 143-fathom sounding, the present survey revealed a depth of 133 fathoms at 59° 45’28.13”N, 149° 19’09.88” W (369701.7 E, 6626718.7 N).[19]

In the vicinity of a charted (16682) 113-fathom sounding, the present survey revealed a depth of 103 fathoms at 59°40'57.889"N, 149°31'31.863"W (357808.5 E, 6618786.2 N).[20]

In the vicinity of a charted (16682) 121-fathom sounding, the present survey revealed a depth of 99 fathoms at 59°40'51.191"N, 149°29'47.404"W (359433.9E, 6618517.3N).[21]

In the vicinity of a charted (16682) 116-fathom sounding, the present survey revealed a depth of 98 fathoms at 59°40'50.991"N, 149°25'42.976"W (363255.5E, 6618369.2N).[22]

In the vicinity of a charted (16682) 112-fathom sounding, the present survey revealed a depth of 101 fathoms at 59°39'34.092"N, 149°24'50.824"W (363984.4E, 6615961.7N).[23]

In the vicinity of a charted (16682) 140-fathom sounding, the present survey revealed a depth of 125 fathoms at 59°44'35.980"N, 149°17'56.636"W (370788.5E, 6625066.4N).[24]

In the vicinity of a charted (16682) 65-fathom sounding, the present survey revealed a rocky area with a least depth of 46 fathoms at 59°43'41.013"N, 149°26'44.000"W (362495.2E, 6623661.4N).[25]

In the vicinity of a charted (16682) 36-fathom sounding, the present survey revealed a rocky area with a least depth of 17.7 fathoms at 59°44'09.313"N, 149°28'01.747"W (361313.8E, 6624581.4N).[26]

Between charted (16682) 91-fathom, 133-fathom, and 121-fathom soundings, the present survey revealed a rocky area with a least depth of 67 fathoms at 59°40'32.669"N, 149°30'05.141"W (359135E, 6617955N).[27]

In the vicinity of a charted (16682) 23-fathom sounding, the present survey revealed a depth of 11.7 fathoms at 59°43'18.097"N, 149°30'04.240"W (359342E, 6623069.5N).[28]

In the vicinity of a charted (16682) 25-fathom sounding, the present survey revealed a depth of 10.5 fathoms at 59°43'00.117"N, 149°30'16.453"W (359130.3E, 6622520.7N).[29]

In the vicinity of a charted (16682) 9-fathom sounding, the present survey revealed a depth of 31fathoms at 59°44'40.517"N, 149°28'13.186"W (361171.2E, 6625552.9N). This sounding was covered with 100% SWMB.[30]

In the vicinity of a charted (16682) 19-fathom sounding, the present survey revealed a depth of 21 fathoms at 59°42'58.397"N, 149°27'02.292"W (362160.9E, 6622354.2N). This sounding was covered with 100% SWMB.[31]

In the vicinity of a charted (16682) 19-fathom sounding, the present survey revealed a depth of 37 fathoms at 59°43'17.215"N, 149°30'36.069"W (358843.9E, 6623061N). This sounding was covered with 100% SWMB.[32]

In the vicinity of a charted (16682) 11-fathom sounding, the present survey revealed a depth of 18.2 fathoms at 59°44'17.723"N, 149°32'40.028"W (356979.9E 6625005.6N). This area was steep and irregular and covered by 100% SWMB.[33]

In the vicinity of a charted (16682) 11-fathom sounding, the present survey revealed a depth of 18.4 fathoms at 59°43'39.456"N, 149°31'24.801"W (358109E, 6623777.5N). This area was steep and irregular and covered by 100% SWMB.[34]

In the vicinity of a charted (16682) 8-fathom sounding, the present survey revealed a depth of 25 fathoms at 59°45'07.040"N, 149°33'47.531"W (355985.3E, 6626571N). This area was steep and irregular and covered by 100% SWMB.[35]

In the vicinity of a charted (16682) 8-fathom sounding, the present survey revealed a depth of 21 fathoms at 59°43'57.875"N, 149°32'00.697"W (357570.4E, 6624368.4N). This area was steep and covered by 100% SWMB.[36]

In the vicinity of a charted (16682) 15-fathom sounding, the present survey revealed a depth of 22 fathoms at 59°43'22.160"N, 149°31'41.233"W (357,832.1E, 6,623,252.5N). This area is steep and irregular and covered by 100% SWMB.[37]

Between a charted (16682) 32-fathom sounding and a charted (16682) 22-fathom sounding, the present survey revealed a depth of 15.7 fathoms at 59°44'12.527"N, 149°30'00.959"W (359456.7E, 6624750.5N).[38]

The present survey revealed irregular and rocky bathymetry around “No Name Island” and “Pilot Rock” as evidenced in the SWMB data and on the DTMs of the region. Because these are not isolated rocks, the Hydrographer recommends charting current soundings, with notations of “rocky” as appropriate.[39]

Final sounding comparisons will be made at the Pacific Hydrographic Branch after the application of smooth tides.

D.3 Shoreline

N/NGS3 supplied photogrammetric shoreline data in vector format as Cartographic Feature Files (CFF) from project GC10494. The CFF vector shoreline data were converted for use in HYPACK for field verification and were used as the primary shoreline source. In addition, features shown on the current editions of chart 16682 were digitized in MapInfo by RAINER personnel and displayed in HYPACK for field verification.

Shoreline verification was conducted near predicted low water in accordance with the Hydrographic Letter Instructions and FPM 6.1 and 6.2. For this survey, the general limit of safe navigation of a survey launch was five to twenty meters offshore of the apparent low-water line. Water depths along this limit of safe navigation were approximately four meters at Mean Lower-Low Water (MLLW). Features unreachable by survey launch are depicted on the Detached Position Plot as the Hydrographer's approximate representation of the shoreline.

Detached Positions (DPs) taken during shoreline verification were recorded in HYPACK and on DP forms and processed in HPS. These indicate revisions to features and features not found on the CFF or chart. In addition, annotations describing shoreline were recorded on hard copy of digital shoreline.[40] DP forms are included in Section I of the *Separates to be Included with Survey Data*. Several digital photographs were taken along with the detached positions. The photographs are included with the digital data, named according to corresponding fix number. Printouts of the photos are also included at the end of this report.[41]

A detailed Detached Position Plot, in both paper copy and MapInfo format, is provided showing all detached positions with notes relating to each feature.[42] The updated shoreline and features are also depicted on the final sounding plot.[43] Verified CFF shoreline that did not require revision is in the MapInfo table "H11075_CFFshoreline." New features, changes to the shoreline, and verified features from the CFF and Charted Shoreline are depicted in the MapInfo table "H11075_ShorelineUpdates."

During initial shoreline comparison in the field, the CFF shoreline appeared to have large discrepancies with the actual shoreline in areas south of Cheval Narrows. The discrepancy in some places was more than 400 meters between the CFF high-water line (HWL) and the actual shoreline. After discussing these discrepancies with NGS, Remote Sensing Division (RSD), RAINIER was informed that horizontal control in Resurrection Bay at the time of shoreline compilation was considered inadequate. In an effort to provide better control to NGS and correct the position errors in the CFF shoreline, RAINIER personnel established several horizontal control points within the survey limits and this new information was forwarded to RSD for re-compilation of the vector shoreline. NGS forwarded revised CFF shoreline to RAINIER on September 18, 2001. RAINIER personnel verified the newly compiled shoreline, and detached positions were acquired to delineate all prominent features depicted on the revised shoreline. These detached positions are depicted on the final Detached Position plot and are labeled as "CFF MHW verification". The revised CFF shoreline agreed very well with the actual shoreline. Refer to the *OPR-P359-RA-01 Horizontal and Vertical Control Report* for details on field methods for obtaining horizontal control.

The features found during this survey generally matched those of the revised source and charted shoreline.[44] Changes and new features were found and are depicted on the final Detached Position Plot. A few items of significance are addressed below.

Source Shoreline Changes and New Features

The revised CFF MHW line agrees well with current hydrography, but a discrepancy of approximately 20 meters still exists between CFF rocks and surveyed rock positions. Rocks not depicted on the CFF prior to the revision were positioned in the field and identified as "new" rocks. During final review with the revised CFF, several of these "new" rocks were found to correspond to CFF rocks with a shift of twenty meters as described above. The DP remarks were subsequently changed in HPS to denote that they correspond to CFF rocks.[45]

A new rock ledge on the north side of Pilot Rock was positioned at 59°44’33.04”N, 149°28’14.6”W (361140.5E, 6625322.6N, position #20541, western extent of ledge) and 59°44’34.08”N, 149°28’13.83”W (361154.2E, 6625354.2W, position #20542, northern extent of ledge).[46]

The CFF rock at 59°42’18.94”N, 149°31’27.2”W (357976.9E, 6621289.5N, position #20641) was found to be a broken ledge. The western extent of the ledge was located at 59°42’18.41”N, 149°31’29.13”W (357946.1E, 6621274.3N, position #20640) and the eastern extent of the ledge was located at 59°42’17.77”N, 149°31’25.52”W (358001.7E, 6621252.2N, position #20642). The Hydrographer recommends removing the CFF rock and charting a broken ledge as depicted on the Detached Position and Bottom Sample Plot.[47]

A new foul area centered on position 59°44’04.41”N, 149°30’50.55”W (358673.1E, 6624528.8N) was delineated and is based upon detached positions #70054, 70053, and the general limit of safe navigation determined during shoreline verification. This area is foul with rocks. A charted (16682) islet at 59°44’03.77”N, 149°30’52.28”W (358645.3E, 6624510N) appeared to be several individual rocks within the foul area. A CFF rock located at 59°44’03.58” N, 149°30’55.8” W (358590.2E, 6624506.2N, position # 70054) marks the seaward most extent of the foul area. A CFF islet located at 59°44’06.62”N, 149°30’42.71”W (358798.1E, 6624592.3N, position #70053) marks the eastern extent of the foul area. The CFF rock located at 59°44’05.31” N, 149°30’52.34” W (358646.1E, 6624557.7N, position #51758) falls inside this new foul area. The Hydrographer recommends retaining the CFF rocks located in this foul area, and charting the foul area and new rocks as depicted on the Detached Position and Bottom Sample plot.[48]

The CFF rock at 59°44’50.0N, 149°32’55.67W (356774.128E, 6626012.97N) was visually identified in the field. The Hydrographer was unable to acquire a detached position on this rock because a new rock was found approximately 30 meters offshore of the CFF rock. This new rock was positioned at 59°44’50.89N, 149°32’56.17W (356767.3E, 6626040.7W, position #70035). The Hydrographer recommends charting these rocks as depicted on the Detached Position and Bottom Sample Plot.[49]

The CFF rock at 59°44’46.36” N, 149°32’47.09” W (356903.7E, 6625895.4N, position # 51759) is the southern extent of a broken ledge. The seaward most extent of the broken ledge was located at 59°44’48.04” N,149°32’45.86” W (356925.0E, 6625946.6N, position #20748). The Hydrographer recommends removing the CFF rock and charting a broken ledge as depicted on the Detached Position and Bottom Sample plot.[50]

The CFF islet at 59°43’54.59”N, 149°31’20.34” W (358196.5E, 6624242.8N, position #20764) was not depicted on the original CFF shoreline provided. Hydrographers located a “new” rock (vegetation was not present on the feature) at the above position. The revised CFF shoreline depicted an islet at the above position. The Hydrographer believes that the description of “rock” given in the field is accurate and recommends charting a rock as depicted on the Detached Position and Bottom Sample Plot.[51]

The CFF islet at 59°43’09.02”N, 149°30’47.71”W (358,652.4E, 6,622,814.4N, position #20583) was not depicted on the original CFF shoreline provided. Hydrographers located a “new” rock (vegetation was not present) at the above position. The revised CFF shoreline depicted an islet at the above position. The Hydrographer believes that the description of “rock” given in the field is accurate and recommends charting a rock as depicted on the Detached Position and Bottom Sample Plot.[52]

The CFF rock located south of Pilot Rock at 59°44’27.93”N, 149°28’10.16”W (361203.9E, 6625161.9N, position #51761) is the seaward most extent of a broken ledge. The northern extent is located at 59°44’28.96”N, 149°28’11.6”W (361182.7E, 6625194.6N, position #51762). The Hydrographer

recommends removing the CFF rock and charting a broken ledge as depicted on the Detached Position and Bottom Sample plot.[53]

Charted Features

The Hydrographer noted discrepancies between the charted (16682) HWL and current hydrography. The discrepancy in most places was a shift of the chart of approximately 150 meters to the east. Because of this shift, the Hydrographer believes that the charted islet south of Aialik Cape at 59°42'19.3"N, 149°31'26.13"W (357985.9E, 6621304.3N) is the same as the islet positioned approximately 100 meters west of the charted islet, at 59°42'19.76"N, 149°31'31.51"W (357910.4E, 6621317.4N, positions #20637, 20638,20639). The surveyed position of the islet agrees with the CFF shoreline. The Hydrographer recommends revising the position of the charted islet based upon data from this survey.[54]

The charted islet located south of Aialik Cape at 59°42'10.67"N, 149°31'21.9"W (358049.89E,6621030.60N) is believed to be the same as the islet positioned approximately 100 meters northwest of the charted islet. The western extent of the surveyed islet is 59°42'11.64"N, 149°31'27.24"W (357967.7E, 6621063.9N, position #51746) and the southeastern extent is 59°42'11.42"N, 149°31'24.9"W (358,004.0E, 6,621,055.5N, position #51747). The surveyed position of the islet agrees with the CFF shoreline. The Hydrographer recommends revising the position of the charted islet based upon data from this survey.[55]

The charted (16682) islets at 59°45'03.06"N, 149°32'57.83"W (356755.9E, 6626418.1N) near the entrance to Pony Cove were disproved by 100% SWMB. Three CFF rocks and one "new rock" were located approximately 100 meters west of the charted islets. Because of the approximate 100-meter shift described in the previous paragraph, the Hydrographer believes that the surveyed rocks correspond to the charted islets. The following table lists these rocks and their positions:

Fix Number	Latitude	Longitude	Easting	Northing	Source
70050	59°45'02.99"N	149°33'04.76"W	356647.8E	6626420.1N	CFF Rock
70051	59°45'04.01"N	149°33'00.38"W	356717.3E	6626448.8N	CFF Rock
70052	59°45'05.92"N	149°33'02.96"W	356679.4E	6626509.6N	CFF Rock
70033	59°44'59.46"N	149°33'02.84"W	356673.5E	6626309.8N	Charted Rock

The Hydrographer recommends charting the rocks based upon data from this survey.[56]

A new cove located west of Aialik Cape, and centered on position 59°42'28.85"N, 149°31'59.92"W (357477.3E, 6621615.4N) was not originally depicted on CFF shoreline provided to RAINIER. Detached positions were taken to delineate the cove (positions #20629 –20636) prior to receiving the revised CFF shoreline. These detached positions are labeled on the Detached Position Plot as "New Ext MHW line." The revised CFF shoreline for this area agrees well with current hydrography and accurately depicts the cove. Two additional detached positions were acquired to verify the revised CFF shoreline (positions #51740 and 51742). These detached positions are labeled on the Detached Position Plot as "CFF MHW verification." The cove was covered with 100% SWMB. The Hydrographer recommends charting the MHW line based upon CFF shoreline [57]

The charted (16682) islet located at 59°44'33.39"N, 149°32'14.67"W (357394.2E, 6625474.8N) was disproved by a visual search and 100% SWMB. An islet was located approximately 80 meters west of the charted islet. Due to the discrepancy between the charted (16682) MHW line and current hydrography, the Hydrographer believes that the charted islet is the same as the surveyed islet. The

surveyed islet was accurately depicted on the CFF. The Hydrographer recommends revising the position of the charted islet based upon data from this survey.[58]

Recommendations

The Hydrographer recommends that the shoreline as depicted on the Detached Position Plot and Final Field Sheet supersede and complement shoreline information compiled on the CFF and charts as noted. These revisions are recorded in the MapInfo digital files named "H11075_Shoreline" and "H11075_ShorelineUpdates." In addition, field notes made by the Hydrographer, including verification of source features and descriptions of shoreline classification, are submitted in the digital MapInfo file "H11075_ShorelineNotes." The Hydrographer recommends charting the Mean High-Water line based upon the revised CFF from GC10494, with revisions and additions from this survey.[59]

D.4 Dangers to Navigation

Seven (7) dangers to navigation were found and reported to the Pacific Hydrographic Branch for verification and final submission to the Thirteenth Coast guard District on November 1, 2001. A copy of the preliminary Danger to Navigation Report is included in Appendix I.[60] A copy of the final report will be inserted by PHB following verification and submission to the U.S Coast Guard.[61]

D.5 Aids to Navigation

Survey H11075 contained one Aid to Navigation (ATON). Because of its location on top of Pilot Rock, a detached position was not taken. The light was verified visually, and appeared to be correctly charted and serve its intended purpose.[62]

D.6 Miscellaneous

Seventeen (17) bottom samples were collected for this survey and are depicted on the Detached Position and Bottom Sample Plot.[63]

E. APPROVAL

As Chief of Party, I have ensured that standard field surveying and processing procedures were followed in producing this examination in accordance with the Hydrographic Manual, Fourth Edition, Hydrographic Survey Guidelines, Field Procedures Manual and the NOS Hydrographic Surveys Specifications and Deliverables, as updated for 2001.

The digital data and supporting records have been reviewed by me, are considered complete and adequate for charting purposes, and are approved. All records are forwarded for final review and processing to N/CS34, Pacific Hydrographic Branch.

Survey H11075 is complete and adequate to supersede charted soundings in their common areas. No additional work is required for this survey.

Listed below are supplemental reports submitted separately that contain additional information relevant to this survey:

Title	Date Sent	Office
Data Acquisition and Processing Report for OPR-P359-RA-01	TBD [64]	N/CS34
Horizontal and Vertical Control Report for OPR-P359-RA-01	TBD [65]	N/CS34
Tides and Water Levels Package for OPR-P359-RA-01	October 29, 2001	N/OPS1
Coast Pilot Report for OPR-P359-RA-01	TBD [66]	N/CS26

Approved and Forwarded: James C. Gardner

James C. Gardner
Captain, NOAA
Commanding Officer

In addition, the following individuals were also responsible for overseeing data acquisition and processing of this survey:

Survey Sheet Manager: Monica Cisternelli

Monica Cisternelli
Physical Scientist, NOAA

Field Operations Officer: E. J. Van Den Ameele

Edward J. Van Den Ameele
Lieutenant, NOAA

Revisions Compiled During Office Processing and Certification

[1] PHB Revision--Strikethrough ~~59°45'21"N~~ and replace with 59°45'43"N.
[2] PHB Revision--Strikethrough ~~59°38'47"N~~ and replace with 59°38'31"N.
[3] PHB Revision--Strikethrough ~~149°32'11"W~~ and replace with 149°34'06"W.
[4] PHB Revision--Strikethrough ~~149°12'24"W~~ and replace with 149°11'48"W.
[5] Filed with Project Records.
[6] Concur with hydrographer's statements.
[7] Filed with the hydrographic data.
[8] Concur with hydrographer's statements.
[9] Junction was also made with H11010 during office processing (1:20,000, 2000, west). Junctions were made during office processing. There was good agreement and "Joins" notes have been added to the smooth sheet.
[10] Concur. See endnote 11.
[11] Concur with clarification. Junction comparisons were made with H-11074 and H-11010 during office processing. Soundings and depth curves are in good agreement and "Joins" notes have been added to the smooth sheet.
[12] Concur with hydrographer's statements.
[13] Filed with the project records.
[14] Approved Tide Note dated March 29, 2002 is attached.
[15] Concur
[16] During office processing, survey H11075 was also compared to chart 16880 (10th Ed., July 10, 1999), 1:200,000. No significant soundings were found to pull forward in the small area not covered by charts 16682 and 16683.
[17] During office processing, survey H11074 was compared to chart 16882 (16th Ed., Dec. 5, 2005).
[18] During office processing, survey H11074 was compared to chart 16883 (10th Ed., Dec.5, 2005).
[19]Concur. Chart using current survey information.
[20]Concur. Chart using current survey information.
[21]Concur. Chart using current survey information.
[22]Concur. Chart using current survey information.
[23]Concur. Chart using current survey information.
[24]Concur. Chart using current survey information.
[25]Concur. Chart using current survey information.
[26]Concur. Chart using current survey information.
[27]Concur. Chart using current survey information.
[28]Concur. Chart using current survey information.
[29] Do not concur. The smoothsheet reveals a depth of 5.5 fathoms at this location. Chart using current survey information.
[30]Concur. Chart using current survey information.
[31]Concur. Chart using current survey information.
[32]Concur. Chart using current survey information.

[33]Do not concur. The chart shows a 10 fathom 5 foot sounding at this position. The smooth sheet indicates a depth of approximately 20 fathoms at this position. Chart as shown on the Hdrawing.
[34]Do not concur. The chart shows a 10 fathom 5 foot sounding at this position. The smooth sheet indicates a depth of approximately 27 fathoms at this position. Chart as shown on the Hdrawing.
[35]Do not concur. The chart shows a 7 fathom 5 foot sounding at this position. The smooth sheet indicates a depth of approximately 20 fathoms at this position. Chart as shown on the Hdrawing.
[36] Concur. Chart using current survey information.
[37]Concur. Chart using current survey information.
[38] Concur. Chart using current survey information.
[39] Concur with clarification. Chart the area as shown on the hdrawing.
[40] Plot filed with the hydrographic data.
[41] Photos filed with the hydrographic data.
[42]Plots filed with the hydrographic data.
[43]Plot filed with the hydrographic data.
[44] Concur
[45] Concur with hydrographer's statements.
[46] Concur with clarification. Chart as depicted on the Hdrawing.
[47] Concur with clarification. Chart as depicted on the Hdrawing.
[48] Concur with clarification. Chart as depicted on the Hdrawing.
[49] Concur with clarification. Chart as depicted on the Hdrawing.
[50] Concur with clarification. Chart as depicted on the Hdrawing.
[51] Concur with clarification. Chart as depicted on the Hdrawing.
[52] Concur with clarification. Chart as depicted on the Hdrawing.
[53] Concur with clarification. Chart as depicted on the Hdrawing.
[54] Concur with clarification. Chart as depicted on the Hdrawing.
[55] Concur with clarification. Chart as depicted on the Hdrawing.
[56] Concur with clarification. Chart as depicted on the Hdrawing.
[57] Concur with clarification. Chart as depicted on the Hdrawing.
[58] Concur with clarification. Chart as depicted on the Hdrawing.
[59] Concur with clarification. Shoreline information provided by the hydrographer has been analyzed during office processing and shown on the smoothsheet as warranted.
[60] PHB Revision--Strikethrough ~~Appendix I~~ and add this report.
[61] Concur.
[62] The evaluator recommends that MCD use the latest ATONIS information to chart the aid to navigation.
[63] Concur. Chart bottom samples as shown on the smooth sheet. Some charted bottom samples were retained on the Hdrawing.
[64] Submitted 11/09/2001
[65] Submitted 12/12/2001
[66] Submitted 12/12/2001

Hydrographic Survey Registry Number: H11075

Survey Title: State: Alaska
Locality: Resurrection Bay
Sub-locality: East of Aialik Cape

Project Number: RA-20-03-01

Survey Dates: August 13 - September 20, 2001

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

CHARTS AFFECTED:

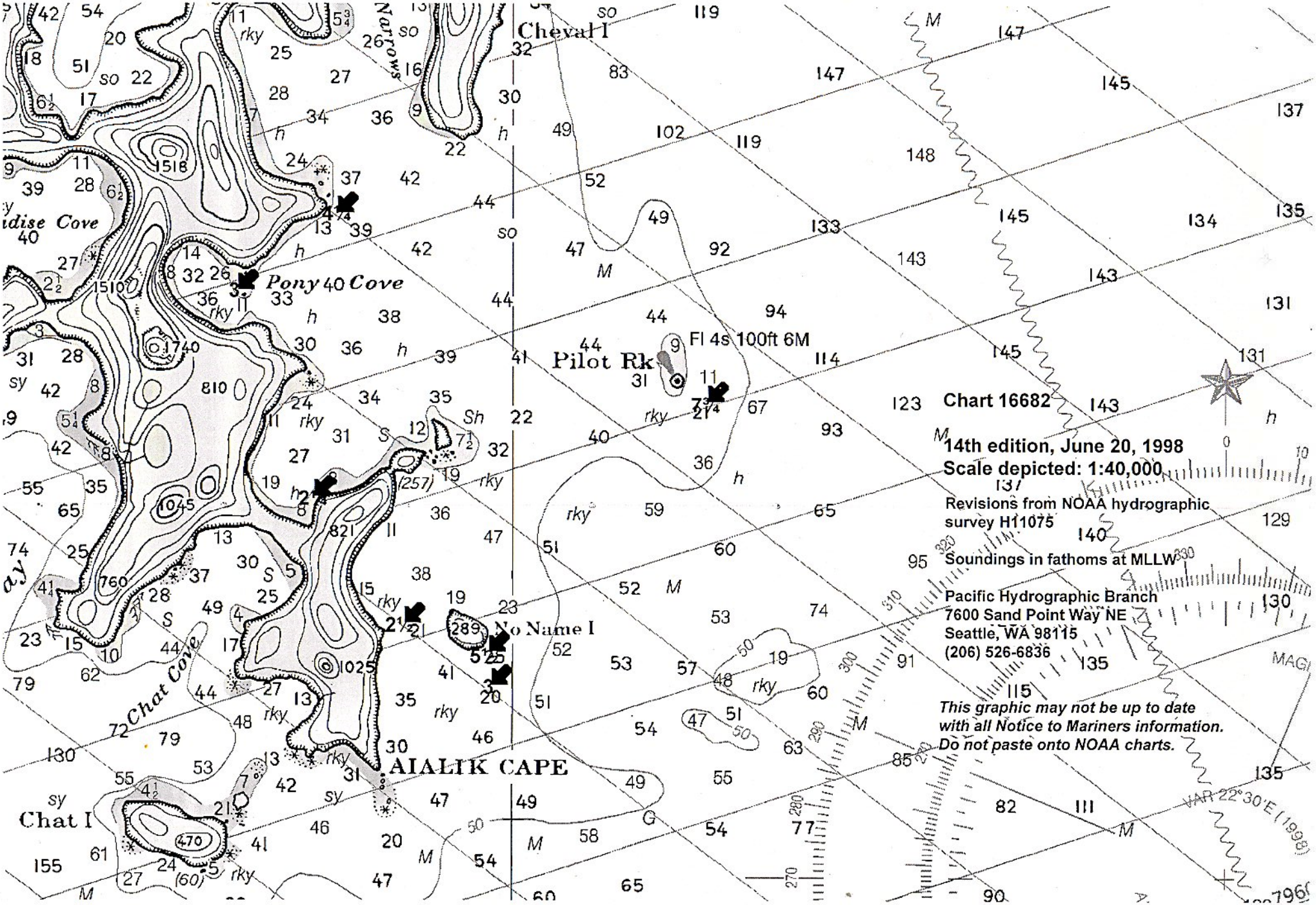
Chart	Scale	Edition	Date
16682	1:81,847	14th Ed.	June 20, 1998

DANGERS:

Feature	Depth(fms)	Latitude	Longitude
Sounding	2¼	59°43'50.050"N	149°32'16.499"W
Sounding	2½	59°43'07.797"N	149°31'19.341"W
Sounding	3	59°42'47.244"N	149°30'18.047"W
Sounding	3	59°44'59.589"N	149°33'06.399"W
Sounding	4¼	59°45'25.197"N	149°32'00.959"W
Sounding	5½	59°42'57.504"N	149°30'23.039"W
Sounding	7¾	59°44'21.411"N	149°27'56.504"W

COMMENTS:

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


Cheval I
Narrows
Pony Cove
Pilot Rk
Fl 4s 100ft 6M
No Name I
Chat Cove
AIALIK CAPE
Chat I
Chart 16682
14th edition, June 20, 1998
Scale depicted: 1:40,000
Revisions from NOAA hydrographic survey H11075
Soundings in fathoms at MLLW
Pacific Hydrographic Branch
7600 Sand Point Way NE
Seattle, WA 98115
(206) 526-6836
This graphic may not be up to date with all Notice to Mariners information.
Do not paste onto NOAA charts.
VAR 22°30'E (1998)

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: March 29, 2002

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-P359-RA-2001
HYDROGRAPHIC SHEET: H11075

LOCALITY: Resurrection Bay, AK
TIME PERIOD: Aug. 14 - Sept. 19, 2001

TIDE STATION USED: 945-5090 Seward, AK
Lat. 60° 7.2'N Lon. 149° 25.6'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.947 meters

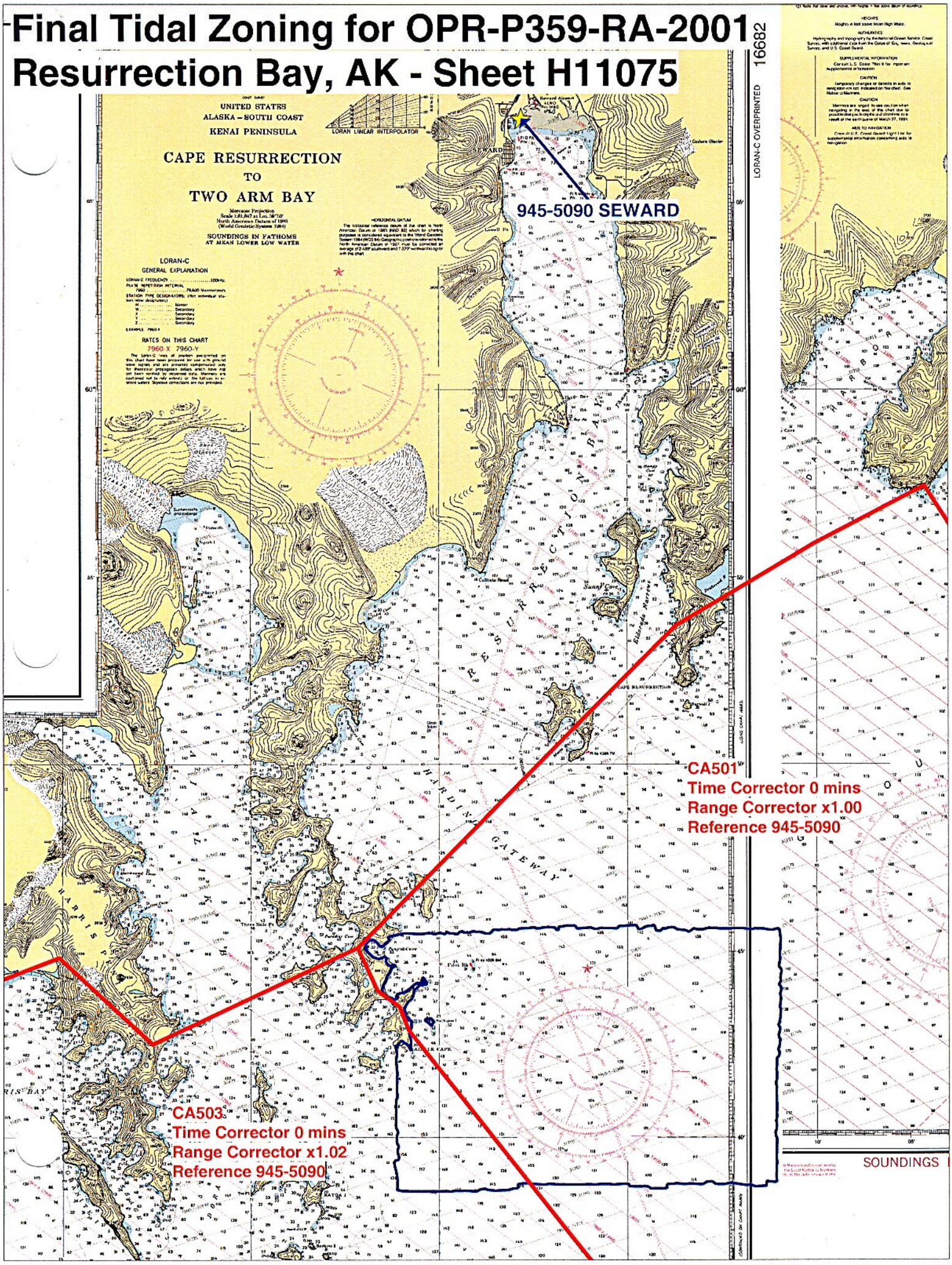
REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: CA501 & CA503.

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time.

For ----------
CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

Final Tidal Zoning for OPR-P359-RA-2001
Resurrection Bay, AK - Sheet H11075



Final tide zone node point locations for **OPR-P359-RA-2001, Sheet H11075**.

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

	Tide Station Order	AVG Time Correction	Range Correction
Zone CA501	945-5090	0	1.00
-148.826452 59.763477			
-149.070356 59.957131			
-149.070356 59.957131			
-149.169456 59.931179			
-149.290309 59.895001			
-149.567018 59.750298			
-149.527047 59.714435			
-149.307008 59.573642			
-149.157057 59.403902			
-148.655827 59.530663			
-148.826452 59.763477			
Zone CA503	945-5090	0	1.02
-149.157057 59.403902			
-149.307008 59.573642			
-149.527047 59.714435			
-149.535471 59.724965			
-149.554703 59.732175			
-149.572341 59.751306			
-149.753398 59.70809			
-149.836442 59.746797			
-149.99029 59.716885			
-150.036597 59.618401			
-150.110508 59.585271			
-149.957645 59.483644			
-149.853729 59.375614			
-149.157057 59.403902			

2001 FINAL FIELD TIDE NOTE
NOAA Ship RAINIER
CAPT James C. Gardner, NOAA / Commanding
Agnes Cove, AK
(945-5120)

Project: OPR-P359-RA-01, Approaches to Seward, Alaska

The operating tide station at Seward, Alaska (945-5090) serves as control for datum determination for this project. Agnes Cove (945-5120) tide station serves to provide information on zoning, tidal reducers, and harmonic constants for predictions. Agnes Cove (945-5120), Alaska serves zones CA501, CA500, CA503, and sheets C and D.

Geographic Locale — 59°46'24.9" N, 149°35'20.9" W (NAD 83)

Installation Date — August 14, 2001

Removal Date — September 20, 2001

Gauge Type — Sutron 8210 digital gauge:

	Installation	Removal	DCP S/N	CPU S/N	Paros S/N	GOES S/N
A4	08/14/01 (2307 UTC)	09/20/01 (2243 UTC)	002326	9902960	77958	33503560

Installation — The gauge was installed on a rock outcrop approximately 3 meters above the apparent high water line, at the base of a tree. The gauge was secured to the tree with parachute cord and covered with a tarp to protect it from the weather.

The orifice was attached to a sheer rock wall with lag bolts and angle iron and secured with wire ties. The orifice tubing was secured to the bedrock shore with eyebolts and tie wraps.

A GOES antenna was installed at the site with a GOES West-West orientation; its elevation was 21° and its azimuth was 140°.

Staff — A 3.00-meter staff was made by attaching a vitrified scale to a 2x4 piece of lumber. The bottom of the staff was secured to a bedrock ledge with two lag bolts. The top of the staff was braced to the ledge with two 2x4 pieces of lumber. (See attached digital photographs.)

The staff stop was the top of a hex head bolt screwed into the staff. The staff stop measured 3.00 meters above staff zero.

Gauge – Staff Comparison — The average gauge–staff difference for 3.0 hours of initial observations for Unit A4 was 8.290 meters, with a standard deviation of (+/-) 0.031 meters. Initial observations were taken on 08/15/01 for 2.4 hours and had to be completed 08/16/01, for 0.6 hours, due to the staff going dry.

An additional 1.9 hours of observations were completed on 08/16/01, 08/18/01, 09/03/01, 09/11/01, and 09/20/01 with an average gauge–staff difference of 8.311 meters, and a standard deviation of (+/-) 0.042 meters.

The overall average gauge–staff difference was 8.299 meters, with a standard deviation of (+/-) 0.037 meters.

Gauge Time — Universal Coordinated Time.

Bench Marks – The following benchmarks were established at this site: (Please refer to attached "Description of Bench Mark" forms NOAA 76-75 and digital photographs.)

"5120A 2001"
"5120B 2001"
"5120C 2001"
"5120D 2001"
"5120E 2001"

No historical benchmarks were recovered at this site, as this was a new site.

Levels — Opening levels closed within NOS tolerances on 08/16/01. Closing levels closed within NOS tolerances on 09/20/01. The Opening and Closing levels agree within 0.0038 meters.

Digital Records — Digital data files are stored on compact disk (CD).

File:	From:	To:
94551201.da1	08/14/01 (2307 UTC)	08/22/01 (2355 UTC)
94551201.da2	08/23/01 (0001 UTC)	09/02/01 (2355 UTC)
94551201.da3	09/03/01 (0001 UTC)	09/10/01 (2355 UTC)
94551201.da4	09/11/01 (0001 UTC)	09/20/01 (2243 UTC)

Station Remarks — GOES transmissions were interrupted on 08/16/01 and resumed successfully after repositioning the antenna on 08/18/01. GOES transmissions were interrupted on 08/20/01 and resumed successfully on 08/21/01. The antenna was apparently moved by weather and repositioned on 09/21/01 although no transmission problems occurred.

Permission to occupy this site should be obtained from the Kenai Fjords National Park Service. Contact the Seward Office at (907)-224-3175 (phone) or (907)-224-2144 (fax).

email
KEFJ_Superintendent@nps.gov

write to
National Park Service
PO Box 1727
Seward, AK 99664

APPROVAL SHEET
H11075

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.

Gary C. Nelson Date: 21 March 2006

Gary Nelson
Chief, Cartographic Team
Pacific Hydrographic Branch

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

CDR/NOAA Date: 21 MAR 2006

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

Kyle R. Ward

Digitally signed by Kyle R. Ward
DN: cn=Kyle R. Ward, c=US, ou=HSD, email=Kyle.Ward@NOAA.GOV
Reason: AWOIS and Surf Check Completed
Date: 2006.04.04 12:18:45 -04'00'

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H11075

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
16683	2/20/06	R. ShipLEY	Full ~~Part~~ ~~Before~~ After Marine Center Approval Signed Via FULL Application
			Drawing No. of SNdgs, CURVES and features from
			the smooth sheet
16682	2/27/06	R. Shipley	Full ~~Part~~ ~~Before~~ After Marine Center Approval Signed Via FULL Application on
			Drawing No. of SNdgs, CURVES and features from
			the smooth sheet
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.