

10158

Diagram# 5531

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic
Field No. PHP-10-2-84
Office No..... H-10158

LOCALITY

State California
General Locality .. San Francisco Bay
Locality Coyote Creek & Vicinity

1985

CHIEF OF PARTY
LT(JG) P.T. Steele

LIBRARY & ARCHIVES

DATE April 30, 1986

☆U.S. GOV. PRINTING OFFICE: 1980-766-230

25
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25A & inset } TO SIGN OFF SEE
Inset 10 } "RECORD OF APPLICATION"

HYDROGRAPHIC TITLE SHEET

H-10158

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.

PHP 10-2-84

State California

General locality San Francisco Bay

Locality Coyote Creek and Vicinity

Scale 1:10,000 Date of survey Sept. 24, 1984 to April 5, 1985

Instructions dated August 11, 1981 Project No. OPR-L123-PHP-81

Vessel Pacific Hydrographic Party LCH 654, LCH 651

Chief of party LT(JG) Paul T. Steele, NOAA

Surveyed by LT(JG) J.A. Miller, F. Rosario, B. Lund, T. Martin, M. Bigelow

Soundings taken by echo sounder, hand lead, pole Ross Fineline 5000 and Raytheon 719B Fathometers
Echosounder

Graphic record scaled by Field Personnel

Graphic record checked by Field Personnel

Verification by Matthew Sanders Automated plot by PMC Xynetics Plotter

Evaluation by Gordon E. Kay

Soundings in ~~fathoms~~ ~~FOK~~ at ~~MLLW~~ Feet at MLLW

REMARKS: Marginal notes in black were made during evaluation of H-10158 at the Pacific Marine Center, Seattle, Washington. Separates are filed in the back of the accordion folder. Notes in red in the D.R. were added during Examination.

STANDARDS CK'D 5-2-86

C. Kay

✓ AWOIS and SURK red 8/86

SP 4-25-97

PROGRESS SKETCH TO ACCOMPANY ANNUAL FIELD OPERATIONS REPORT

OPR-LI23

SAN FRANCISCO BAY, CALIFORNIA

JAN. 1 - DEC. 31, 1984

37°40' —
|
122° 15' —

PACIFIC HYDROGRAPHIC PARTY

Chief of Party:

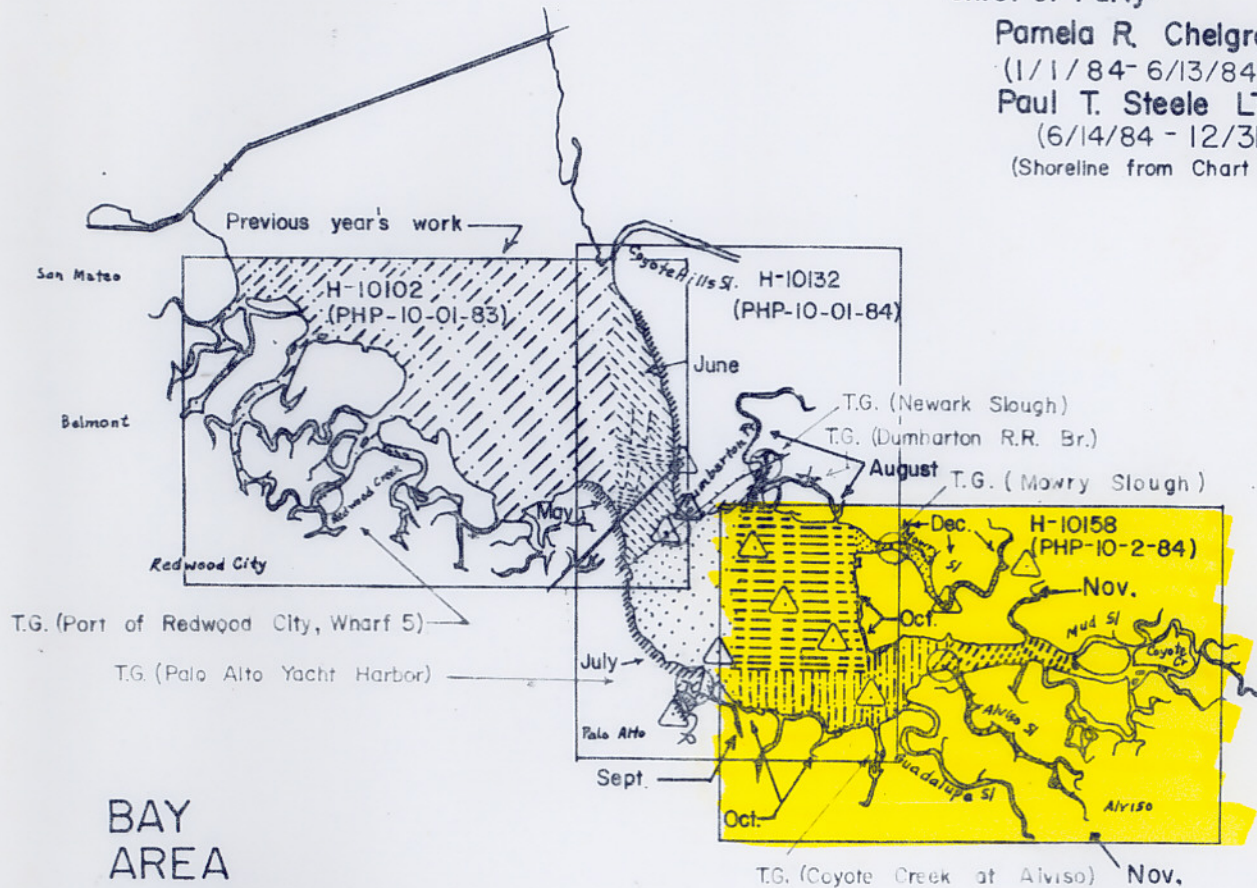
Pamela R. Chelgren LCDR, NOAA

(1/1/84 - 6/13/84)

Paul T. Steele LTJG, NOAA

(6/14/84 - 12/31/84)

(Shoreline from Chart 18680)



BAY
AREA
SURVEY
EXPEDITION

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
SQ.N.M., Sdgs	—	0.1	0.0	0.0	0.9	325	425	4.5	3.2	0.55	1.7	1.9
L.N.M. Misc. Dist.	8	16	18	11	10	40	58.3	68.0	98.0	72.0	21.0	5.5
L.N.M. Dist. To & Fr.	2	10	18	17	29	54	90.2	65.5	54.2	73.0	61.0	26.0
L.N.M. Sdg. Line	—	1.6	1.5	0.0	16.6	72.0	92.6	97.7	92.3	10.6	34.1	13.6
Bottom Samples	—	—	—	1	—	11	—	10	—	4	—	—
Control Stations	—	10	—	1	—	—	—	—	—	—	—	—
Tide Gauges	—	—	—	—	1	—	1	—	—	—	1	—
Shoreline Verification L.N.M.	9	—	—	—	—	—	22	—	—	6.7	6.0	7.0
Wire Drag, Sq.N.M.	—	—	—	—	—	—	—	—	—	4.1	—	—

— 37° 20'
|
121° 55' —

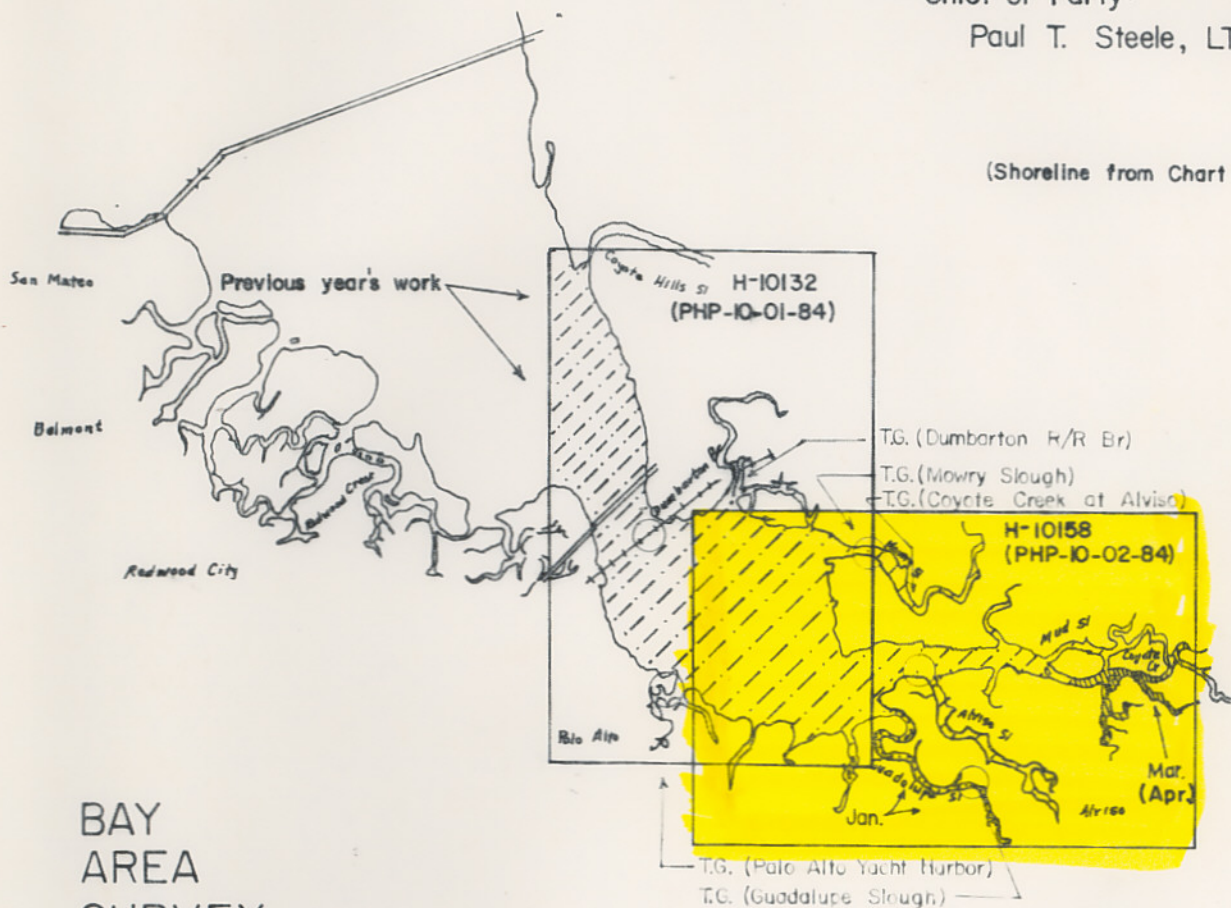
PROGRESS SKETCH TO ACCOMPANY ANNUAL FIELD OPERATIONS REPORT

OPR-LI23
 SAN FRANCISCO BAY, CALIFORNIA
 JAN. 1 - APR. 5 1985

37°40' —
 |
 — 122° 15'

PACIFIC HYDROGRAPHIC PARTY
 Chief of Party:
 Paul T. Steele, LTJG, NOAA

(Shoreline from Chart 18680)



BAY
 AREA
 SURVEY
 EXPEDITION

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
SQ.N.M., Sdgs	0.65	0.60	0.60	0.30								
L.N.M. Misc. Dist.	8.0	27.5	15.5	2.6								
L.N.M. Dist. To & Fr.	56.2	69.0	54.0	30.0								
L.N.M. Sdg. Line	15.3	20.6	10.6	1.8								
Bottom Samples	—	20	10.0	—								
Control Stations	—	—	—	—								
Tide Gauges	1	—	—	—								
Shoreline Verification L.N.M.	7	—	5	—								
Wire Drag, Sq.N.M.	—	—	—	0.1								

— 37° 20'
 |
 — 121° 55'

A. PROJECT.

Survey H-10158 (PHP-10-2-84, sheet "0") was accomplished in accordance with project instructions OPR-L123-PHP-81, San Francisco Bay, Bay Area Survey Expedition (BASE), dated August 11, 1981. Changes to the above project instructions which apply to this survey are Change number 1, dated August 17, 1981; Change number 2, dated April 19, 1982; Change number 3, dated June 10, 1982; Change number 4, dated December 29, 1982; and Change number 5, dated July 18, 1983.

B. AREA SURVEYED.

Survey H-10158 was conducted in the extreme southern portion of San Francisco Bay, encompassing a 10.0 square nautical mile portion of the southeastern end of San Francisco Bay and the sloughs in that portion. Hydrographic operations on survey H-10158 began on 24 September 1984 (JD 268) and ended on 5 April 1985 (JD 095).

Limits of survey H-10158 are bounded on the north by 37/^{29 30}~~20~~/00N, on the east by 121/56/30W, on the south by 37/25/15N and on the west by 122/05/~~20~~¹⁰W.

C. SOUNDING VESSELS.

Vessel	Hull No.	EDP No.
Launch	1101	0651
Skiff	594	0654

Launch 1101, a 29 foot aluminum survey launch propelled by a turbo-charged jet drive, was used for all sounding data acquisition to the west of the fixed railroad bridge (37/27/36N, 121/58/27W) in Coyote Creek. To the east of the railroad bridge skiff 594 (a 17 foot Boston Whaler) was used for all soundings.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS.

Launch 1101 is equipped with a standard Ross Fineline fathometer and digitizing system which utilizes a centerline mounted, 7.5 degree, 100 KHz transducer. Launch 1101 is also equipped with a 45 degree wide beam transducer and two side looking digital transducers for navigational use in sloughs and creeks. The Ross system on launch 1101 consists of the following instruments:

Component	Model No.	S/N
Power inverter	2000	1003
Transceiver	4000	1097
Analog recorder	5000	1082
Digitizer	6000	3787

Sounding Instrument Accuracy and Adjustments.

The Ross echo sounding system simultaneously produces an analog fathogram and a digitized depth value. Digitized soundings sampled by the logging system at predetermined time intervals are the primary source of data on the field sheet, but these are supplemented by depths scaled from the analog record in areas where digitized soundings were incorrect or lacking. The digitized depths are sometimes triggered by a source other than the bottom (algae, fish, etc.) or an instrument generated source such as the initial or blanking trace. In these instances the digitized depths were replaced by values scaled from the fathogram.

Initial error occurs when the fathometer's transmit pulse trace is not adjusted to coincide with zero on the fathogram paper. The initial trace alignment was monitored and adjusted during survey operations. Any depths scaled from fathograms with initial error were corrected before being applied to the survey.

Phase errors are caused by faulty stylus belt timing in the analog recorder due to belt stretching or improper internal adjustment. The system was checked for phase error at the beginning and end of each survey day (or whenever the analog paper was changed) by introducing simulated depths (e.g. 10', 20', 30', etc.) into the analog recorder via the digitizer phase calibrate mode. The analog trace was then compared to the simulated digital depth and the equipment was adjusted as necessary.

The instrument corrector is the corrector used to adjust the actual static transducer draft for sounding system characteristics. The instrument corrector is the difference between the measured static draft and the apparent static draft obtained from bar check data. Historically and on this survey the instrument corrector for Launch 1101 is +0.2 ft. Instrument correctors were applied to the Smooth Field Sheets, and included in all Velocity Tables.

The analog's speed had no inconsistencies on this survey.

Sounding equipment on skiff 594 (Boston Whaler) consisted of a Raytheon 719 B Survey Fathometer, serial number 6241. The transducer was mounted amidships on the port side of the boat at the same location each day of use.

The Raytheon fathometer was closely monitored for three sources

of error. These were: the calibrate zero function; the speed of sound function; and the tide and draft function. These three functions are adjusted by the operator. Soundings were rejected and re-run if the calibrate zero or speed of sound was found to be wandering. If the tide and draft mark moved off of the zero line on the fatho paper the soundings were adjusted during the scanning process. In no instance was the tide and draft error more than 0.2 foot.

On JD 088 the Raytheon 719 B fathometer recorded an excessive amount of "noise" on the analog trace. The fathometer was being used in the south channel of Coyote Creek (east of the fixed railroad bridge) from the Santa Clara County waste water outfall out towards the main channel of Coyote Creek. The sensitivity switch was turned completely off and checked several times during sounding acquisition. There was a large amount of froth and bubbles produced by water from the outfall (flowing over a small dam). Much more froth was seen on JD 088 than on other days. It is believed that the "noise" observed on the fathogram was caused by this turbulence. The analog record for JD 088 was carefully scanned to insure that no errors in recording depths were made and that no peaks or obstructions were missed.

Static Transducer Draft.

The static transducer draft values for the hull mounted transducer on launch 1101 (EDP 0651) was physically measured in two parts. The first part was done while the launch was out of the water. The distance between the transducer face and the bottom of a black line painted on the hull above the water line was accurately measured using a surveying level (Lietz B-1, S/N 214303) and rod. The second part was done with the launch in the water with a normal crew and fuel load on board. The distance between the bottom of the painted black line and the actual water line was measured with a steel tape.

The actual static transducer depth is the distance obtained in part 1 minus the distance measured in part 2. The actual static draft was measured at 1.63 feet.

On each day the Raytheon fathometer was used the transducer draft was measured by marking the observed waterline on the transducer housing and then, with the transducer out of the water, measuring from the marked waterline to the face of the transducer. Three different drafts were used for data collected with this fathometer, as follows:

JD (1985)	MEASURED DRAFT
073-074	1.8
080-081	1.8
088	1.6
095	1.3

Sound Velocity Correctors.

Bar checks were made twice daily only when wind and sea conditions permitted. An average of one check per day was normal. Most days the wind ~~is~~ too strong in the afternoon for the lightweight jet launch to obtain usable bar check data. An 11x1 foot aluminum bar suspended on 1/4 inch steel chains with wiretied and painted markings at 5 foot intervals was used to obtain bar check data. Chain markings were checked for accuracy prior to beginning the survey and after its completion and found to be accurate. Bar checks were abstracted daily using a measured static draft value of 1.6 feet (for launch 1101). ✓

Bar checks for the Raytheon DE 719 B fathometer were conducted twice a day when wind and current conditions permitted. The bar for the Whaler is a 0.5 meter aluminum disk which is attached to one of the measured chains from the bar on launch 1101. This chain is marked in five foot increments. An attempt was made on each bar check to find depths greater than 10 feet in order to increase the velocity data and insure a more accurate depiction of the velocity corrector curve. However, the depths in the upper end of Coyote Creek where the Raytheon fathometer was used are less than 10 feet (except for an observed 13.8 foot sounding next to the railroad bridge), thus each bar check was only taken to the five foot measurement. Velocity correctors for depths greater than 5 feet were interpolated from the cumulative graph of all the Raytheon bar check data. *SEE REPROCESSING REPORT, dated July 11, 1985, attached Examination*

Sound velocity correctors were computed using the mean of the daily values for each bar depth and the appropriate static draft and instrument corrector values for the transducer being used. The overall point corrector value for depth was plotted on a depth versus velocity corrector grid and connected by a smooth curve. The bar depth versus velocity corrector plot was the source of the sound velocity corrector tables applicable to soundings on survey H-10158. The following table is appropriate for the dates shown. ✓

Table	Inclusive Dates
I	JD268/84 - JD341/84
II	JD002/85 - JD093/85
III	JD073/85 - JD095/85*

 ✓

*Raytheon DE 719 B Survey Fathometer only.

Soundings on the smooth field sheet are corrected for sound velocity using all three sound velocity tables. ✓

Settlement and Squat Corrections.

The digital speed for launch 1101 log was originally acquired in April, 1984, to test for ground effect, which is the change in ✓

speed when moving to and from shallow water (see Ground Effect Report, May, 1984). From this testing it was determined that one method to help reduce the need for ground effect correctors was to operate the launch by constant speed through the water instead of a fixed rpm. This decision was cleared through PMC and the speed log was permanently mounted in the hull of launch 1101. All soundings collected with launch 1101 were annotated as to speed through the water, not rpm's. Speed through the water was likewise used during the the settlement and squat test. ✓

Settlement and squat measurements for launch 1101 were observed on 24 January 1985 (JD 24) just north of the Southern Pacific Railroad Company bridge at Dumbarton Point, south San Francisco Bay. Changes in transducer draft versus speed were measured by sighting from a stable level gun on the beach (Lietz B-1, S/N 214303) to a stadia rod held perpendicularly on the launch cabin top (or deck) above the transducer. The change in transducer draft at a specific speed (measured in nautical miles per hour) was computed as the difference in rod elevation measured with the launch at rest and underway. Measurements were made at each speed with the launch running either towards or away from the level gun. Several rod readings taken during the run were averaged and static rod elevation was determined by averaging rod readings taken before and after each run with the launch dead in the water. This procedure eliminated any error due to changing tide level (during our measurements the tide was at a high and changing very slowly). Changes in transducer draft due to settlement and squat were measured at regular intervals (which included all standard survey speeds) through the range of 3.5 nm/hr to 11.0 nm/hr with all surveying equipment installed and a normal fuel and crew load on board. These point values were plotted and connected to yield continuous speed versus draft correction curves. ✓

Settlement and squat measurements were not taken on the wide beam transducer on launch 1101 because this transducer is only used at idle speed and not subject to settlement and squat considerations at this speed. ✓

Settlement and squat measurements were not taken on the Boston Whaler (skiff 594). This vessel was only run at slow idle speed during sounding acquisition. ✓

Settlement and squat corrections are not applied to the field sheet, but are incorporated on the TC/TI tape. ✓

Leadline PHP-1 and fiberglass tapes were used for least depths and item measurements. Smooth Field Sheet soundings were corrected for leadline calibration and (where appropriate) tape angle. For leadline calibration information see Appendix D, "Abstracts of Corrections to Echo Soundings", following this report. ✓

The correctors applied to soundings on the smooth field sheet are:

Launch 1101 (EDP 0651) Tide correctors
Static draft correction
Velocity correctors (Tables I - II) ✓

Skiff 594 (EDP 0654) Tide correctors
Static draft correction
Velocity correctors (Table III)

E. HYDROGRAPHIC SHEETS.

Due to plotter size limitations, hydrographic sheet H-10158 was divided into two 1:10,000 scale field sheets (PHP-10-2-84 north and PHP-10-2-84 south) along latitude 037°27'16"N. Two 1:5000 scale semi-smooth expansion sheets were plotted to aid in analysis and least depth determination in the area of Coyote Creek east of the fixed railroad bridge. One 1:5000 scale semi-smooth expansion sheet was plotted to aid in analysis of the coverage of a bottom wire drag in Guadalupe Slough. The sheets were constructed by PHP party members with program RK201 on a Modified Transverse Mercator projection. ✓

A few shorelines and other non-essential soundings were plotted on overlays to avoid congestion on the smooth field sheets. All essential soundings were transferred to the smooth sheets. ✓

Field records were forwarded to the Pacific Marine Center, Nautical Chart Branch, Seattle, Washington, for verification and smooth plotting. ✓

F. CONTROL STATIONS.

Control stations used on survey H-10158 ^{which ~~have been~~ *which* ~~located~~ *and were*} and described by PHP personnel are:

Report	Station	Location Method
Horizontal Control Report CG/NOAA 03-82	GREEN CARD, 1982	Traverse
Horizontal Control Report Dumbarton Bridge-Mud Slough OPR-L123-PHP-81	SAN FRANCISCO BAY SOUTH CH LT 16	Intersection
	SAN FRANCISCO BAY SOUTH CH LT 17	"
	SAN FRANCISCO BAY SOUTH CH LT 18	"
	SAN FRANCISCO BAY SOUTH CH DBN 20	"
	MAYFIELD SLOUGH ENT LT 8	"
	SEWAGE BURN	"
	TRANSFORMER POLE	"
	DUMP S.W.	Traverse
	ARDEN SALT CO. TANK, 1931 (verified by PHP)	Intersection
	MALLARD, 1931	Traverse
Survey H-10132, Coyote Hills Slough to Long Point, 1984- 1985	MOFFET FIELD HANG- ER #1 ROT BCN	Hydrographic (Wild T-2 Theodolite)

Geodetic computations were based on the 1927 North American Datum. Hydrographic data was processed using unadjusted field geographic positions for the new stations established or located by the party. See Horizontal Control and Descriptive Reports listed above for a complete discussion of horizontal control procedures, equipment, computations and observations.

See signal Tape listing.

G. HYDROGRAPHIC POSITION CONTROL.

Launch position control on survey H-10158 was accomplished entirely with a Motorola Mini-Ranger III ultra-high frequency transponder system ~~except~~ ^{AND} ~~for~~ visual sextant fixes on two detached positions (sextant angles were used to check Mini-Ranger rates on numerous detached positions). The Mini-Ranger system was operated in the range-range configuration.

Electronic Control Equipment.

The following electronic positioning equipment was used on this survey:

Motorola Mini-Ranger Mobile Station
Launch 1101, Skiff 594

Mini-Ranger Console S/N 701 JD 268/84 to JD 095/85

Transceiver (RT unit) S/N C1927 JD 268/84 to JD 022/85
 S/N C1680 JD 023/85 to JD 095/85

Motorola Mini-Ranger Reference Stations

Mini-Ranger Transponder,	Code 5	S/N 4499
" "	Code 7	S/N 4079
" "	Code 8	S/N 1161
" "	Code A	S/N 911632
" "	Code B	S/N 911059
" "	Code C	S/N E2712

Position Control Equipment Operation.

The initial baseline calibration (BLC) for data collected on this survey was performed on 19 September 1984 over a measured base line between MAYFIELD SLOUGH ENT LT 8, 1984, and a recoverable point called FIRE HYDRANT CALIBRATION POINT (positioned 1984, measured slope distance of 1200.5 meters). Console S/N 701 and R/T S/N C-1927 were calibrated at this time. The ending BLC for R/T S/N C-1927 and the beginning BLC for R/T S/N C-1680 was performed along the RED HILL TOP/TURK RM4 range (measured slope distance of 2175.6 meters), on 22 January, 1985. R/T S/N C-1680 was installed in launch 1101 because "better" correctors were observed with this R/T.

The ending baseline calibration for the survey was performed on 23 April 1985 (JD 113) along the REDHILL TOP/TURK RM 4 range.

Corrector/Minimum Signal Strength

Beginning

Ending

	Code 5	Code 7	Code 8	Code A	Code B
Date of BLC					
Console S/N 701, R/T S/N C-1927 19 Sept. 1985	-11/3	-6/3	+3/3	-4/3	-7/5
Console S/N 701, R/T S/N C-1927 22 Jan. 1985	*	-4/8	+2/3	*	*
Variation between beginning and ending BLC	-	+2	-1	-	-

* Could not calibrate these codes because decoder boards had been changed. ✓

	Code B	Code C	Code 7	Code 8
Dates of BLC				
Console S/N 701, R/T S/N C-1680 22 Jan. 1985	-1/7	-2/6	+5/5	+3/4
Console S/N 701, R/T S/N C-1680 23 April 1985	0/9	-3/4	+5/5	+3/4
Variation between beginning and ending BLC	+1	-1	0	0

Days In Use/Code/Variation From BLC OF
Mini-Ranger Transponders

JD	Code	S/N	BLC Corr.	Range Of Systems Check Variation From BLC
268-003	B	911959	-7	+2 to -1 meters
268-321	A	911632	-4	+1 to -1 "
268	7	4079	-6	-1 "
321-003	5	4499	-11	+3 to -2 "
325-003	B	1161	+3	+4 to 0 "
New BLC Performed On JD 022/85				
030-094	B	911959	-1	+2 to -2 "
030-094	C	E2712	-2	+3 to -2 "
030-095	7	4079	+5	+4 to -2 "
037-095	B	1161	+2	+4 to -2 "

The following is a list of positioning equipment failures.

1. 11/16/84, (JD 321) code A, S/N 911632, would not come on-line. All tests were performed to no avail. This unit was sent to PMC for replacement.
2. 1/18/85, (JD 018/85) codes 5 & B, S/N's 4499 & 911059, would not come on line or were erratic during a BLC. Decoder boards were replaced and the units came on-line.

These three transponders (codes A, 5, B) had valid daily system checks covering all periods of hydrography in which they were used. For this reason it was decided that all hydrography using these transponders was of good quality, with the exception of JD 321. On this day code A (S/N 911632) failed. All hydrography for this day using code A was rejected. Code 5 (S/N 4499) replaced code A and the hydrography was re-acquired.

Mini-Ranger system checks were performed at least once each day except one day where no system/calibration check was performed due to weather, and one day where the launch was aground and no system check was possible. In both cases system checks on later days verified system correctors. All system checks were "critical" system checks performed using the "fixed point" (or "calibration pole") method. Fixed aids to navigation, (located to Third Order Class I standards) used for system check/calibration purposes were;

San Francisco Bay South Channel Light	16	Signal # 216	
"	"	" # 217	
"	"	" # 218	
San Francisco Bay South Channel DBN	20	" # 220	✓
Mayfield Slough Entrance Light	8	" # 230	

In addition to the above fixed aids a point was positioned on the fixed railroad bridge in Coyote Creek for calibration purposes. Skiff 594 used this point (called Calibration Point) during work on the east side of this bridge. This point is a hydro signal and was positioned from station DUMP S.W. by the "direct" method using a Wild T-2 theodolite and EDM. All computations are included with this report. ✓

During system/calibration checks the observed distance from the electronic station was corrected for antenna offset and was compared with the computed slope distance to yield the observed system corrector. The observed corrector was then compared with the BLC and required to agree within five meters. All system checks met this requirement. ✓

Signal strength was annotated on the raw data printout frequently during sounding acquisition and minimum signal strength alarms were set to alert the operator to less than minimum signal strengths. All soundings with bad rates were re-positioned using "time and course" (T&C) methods. No data was submitted with less than minimum signal strengths. ✓

Andist correctors are not needed for survey H-10158. All sounding transducers on launch 1101 and skiff 594 are within a five meter horizontal distance of the Mini-Ranger antenna. The horizontal distance to the two transducers on launch 1101 from the Mini-Ranger antenna is: ✓

Hull mounted narrow beam	0.1 meters
Hull mounted wide beam	1.7 meters

The horizontal distance to the side mounted transducer from the Mini-Ranger antenna on skiff 594 is: ✓

Side mounted transducer	0.6 meters
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Sextants used for visual work include the following:

Tamaya	S/N 3725	✓
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Leupold & Stevens	S/N 993	
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Index error was adjusted to zero on both sextants before using.

All soundings were covered by a Mini-Ranger systems check and ✓

were within +/- 5 meters of the baseline correctors. There were no unusual methods of electronic control operations and no unusual atmospheric conditions affecting data quality. For further information on electronic calibrations see Appendix E, "Abstracts of Corrections to Electronic Position Control".

H. SHORELINE.

Shoreline information for survey H-10158 was taken from a 1981 Revision Print of Shoreline Manuscript TP-00538 (1:20,000 scale), -BP116947 TP-00538 was photographically enlarged to 1:10,000 for comparison purposes. Shoreline details and features have been transferred to the smooth field sheet. The complete shoreline for this survey was observed in the field, either by boat or land vehicle, and TP-00538 was compared to the field observations.

The shoreline in Alviso Slough at the town of Alviso is undergoing rapid and significant siltation. The channel is open for small boats all the way to the Gold Street railroad bridge. However, the weed and marsh areas have encroached on many of the old docks and piers. Because of the narrowness of the channel in this area, the scale of the survey, the small amount of boat traffic, and the rate of change taking place, no comprehensive attempt was made to accurately re-define the marsh areas.

Detached positions were taken on the ends of three floating docks and piers at the town of Alviso which do not show on TP-00538. In addition, detached positions were taken on the north and south limits of the dock areas on the east shore of Alviso Slough. Taped distances to these docks were measured and described in the D.P. sounding volume for launch 0651 (see D.P.s # 2551, 2553, JD 037). These additional docks have been accurately drawn on the smooth field sheet. Notes have been made on both the 1:20000 paper copy of TP-00538 and the 1:10000 mylar boat sheet (south) which are included with this survey.

The Alviso Marina and boat ramp (37/25/48.^{9.12}~~7~~¹²N, 121/58/48.^{.66}~~8~~¹⁸W) is dry at all but the highest of tides. Detached positions, leadline depths, and sounding lines were taken in the marina. A full discussion of this area may be found in section K, "Comparison With Prior Surveys", and section L, "Comparison With The Chart".
SEE NEWSPAPER ARTICLE AT END OF REPORT.

The ramp along the southwest shore of Alviso Slough which is shown on TP-00538 (near D.P. #2598, JD 066) was not found. There is an indentation into the high water line with a small seaplane moored in it. There is no pavement or gravel, nor other signs that this is used as a boat ramp. It is recommended that this feature not be charted. *CONCUR*

Detached position #2597 (JD 066, 37/25/26.0⁶~~5~~⁶N, 121/58/38.6⁶~~5~~⁶W) is on the channel most of 3 piles that are in a row, at the town of Alviso. Two of the piles are well up in the marsh and not accessible by boat. TP-00538 depicts a pier attached to these 3 piles. No pier was found attached to these piles in the field.

SMOOTH SHEET SHOWS Post# 2597, AS A PILE (6) WITH NOTATION "PIER IN RUINS"

This pier was removed from the shoreline depiction on the smooth field sheet. *CHART AREA AS SHOWN ON THE SMOOTH SHEET*

It should be noted that hydrography was acquired east of the fixed railroad bridge in Coyote Creek (037/27/36N, 121/58/27W). There was no photo coverage for this area. The observed shoreline for this area was compared to NOAA Chart 18651, 33rd ed., Sept. 1982. Differences between the charted shoreline and the hydrography were noted, as follows:

Coyote Creek has narrowed or filled in along both banks from just east of the fixed railroad bridge to the junction between the south and north branches (37/27/33N, 121/57/54W). The shoreline hydrography along these banks was run approximately 15 meters from the high water line. In addition, D.P. #5222, JD 081, was taken approximately 2 meters into the mouth of the channel that connects Coyote Creek with Mud Slough. This fix was taken near a high tide and was within 2 or 3 meters from the high water line of the north bank. The new shoreline depiction on the smooth field sheet is based on this detached position and hydrographic data, supported by the annotations in the Sounding Volume for Skiff 594 (EDP # 0654) (see JD 073, JD 080). Changes to the charted shoreline are shown in red ink on the smooth field sheet.

lat. 37°27'44"
long. 121°57'59"

CHART AREA AS SHOWN ON SMOOTH SHEET

The channel joining Coyote Creek with Mud Slough (37/27/48N, 121/58/00W) is considerably narrower than depicted (see D.P. #5222, JD 081). It was not possible, even at high tide, to get a 17 foot Boston Whaler (skiff 594) more than a few meters into the channel. The channel is choked with weeds on both sides. From land on the north shore of Mud Slough PHP personnel observed the northern end of the channel where it meets Mud Slough. The width of this end of the channel was estimated to be 5-7 feet and also choked with weeds. At low tide it is nothing more than a drainage for the marsh area that it flows through.

ditch
All other areas of shoreline on Survey H-10158 are verified and accurate as depicted on TP-00538.

Answers to "Notes to Hydrographer" marked in red on the 1:20000 paper copy of TP-00538 follow (detached positions are described fully in the sounding volumes and on the raw data printout).

Note	Lat.	Long.	Description
OVHD CABLE	037/26/ ² 29	122/0 ^{4 00} 1 / ^{5A} 5A	The overhead cable is there and is accurate as charted.
PILE (2)	037/27/ ^{13.57} 24	122/02/55.18	See D.P. # 2572, JD 044
SUBM QBSTR	037/27/09	122/0 ^{1 59.91} 1 / ⁰⁶ 06	See D.P. # 8039, JD 093, - See sec. 1, pg 22
PIER RUINS (6) pile and	37/27/ ^{08.90} 08.90	122/0 ⁵⁸ 08 / ^{00.88} 00.88	D.P. # ¹²⁹³ 2630 , JD ³¹⁹ 094
PLATFORM (2) (4' x 4' WOOD)	037/28/0 ^{7.0} 29	121/59/4 ^{58.99} 60.99	See D.P. # 2286, JD 031
PIER & PILES PIER RUINS	037/27/4 ^{0.10} 0.10	121/59/3 ^{3.71} 3.71	See D.P.s # 2492, 2493, JD 037
Two DOLPHINS (4)	037/27/3 ^{7.98} 7.98	121/58/26.04	See D.P.s # 2452, 2453, JD 036
OVHD CABLES	037/25/24	121/58/25	There are overhead cables at this location.
<i>THESE CABLES ARE OUTSIDE OF HYDROGRAPHIC OPERATIONS AND ARE NOT SHOWN ON THE SHOOT SHEET</i>			

All other "Notes To Hydrographer" on TP-00538 are discussed in the Descriptive Report for Survey H-10132, "Coyote Hills Slough To Long Point", 1984-1985.

It should be noted that several of the existing transmission towers spanning Coyote Creek (37/27/48N, 122/01/24W) are due to be removed by the Pacific Gas and Electric Co. in late 1985. These towers will be replaced by new towers built upon new footings in the creek. PHP personnel met with the project engineer and acquired a blue print of the work*, which is included with this survey. It is expected that the four towers that are currently positioned to third order accuracy and in the NGS horizontal control network are to be removed. These four control stations are as follows:

** This information is filed with the SEPERATES, IN THE RAW DATA COHIER.*

Name	Lat.	Long.	Quad/#
Tower Guadalupe Slough, Near, Tall Transmission Twr 1	037/28/04.155	122/01/13.410	371222/1098
Guadalupe Slough Across Bay Transmission Twr 2	037/27/57.468	122/01/18.641	371222/1081
Guadalupe Slough Across Bay Transmission Twr 3	037/27/50.646	122/01/24.056	371222/1082 ✓
Guadalupe Slough Across Bay Transmission Twr 4	037/27/43.928	122/01/29.349	371222/1083

The point of contact for this project is as follows:

Mr. Praderm Adam Srichantra
Line Construction Dept.
Pacific Gas & Electric Co.
Rm. 5A74
77 Beale St.
San Francisco, Ca. 94106
(415) 972-5739 ✓

The following additional changes to TP-00538 should be noted:

Item	Latitude	Longitude	Action
Charleston Slough S Side Tall Trans Twr, 1931, quad # 371222/ 1077	37/27/27.703	122/05/54.783	Destroyed Tower is plotted on H-10132 and described as being destroyed after use as a control station in D.R. See form 76-40 attached ✓
San Francisco S CH LT 19 - WAS REPLACED WITH A GREEN CAN BOY Lighting, now is a pile (STEEL) COV IFT AT MLLW which is attached to	37/27/33	122/03/02	Destroyed 7 Both ARE SHOWN ON THE SMOOKA SHEET.

The following control stations are seaward of the shoreline:

Station	Signal #
San Francisco Bay, South End, South Channel Light 16	216
San Francisco Bay, South End, South Channel Light 17	217
San Francisco Bay, South End, South Channel Light 18	218
San Francisco Bay, South End, South Channel Daybeacon 20	220
Mayfield Slough Entrance Light 8	230

I. CROSSLINES.

Crosslines comprise 9.5% of soundings. In comparing the crossline soundings to the mainscheme there is 100% agreement within 2 feet, with 99% agreement within 1 foot. This comparison is considered good and meets the comparison criteria specified in section 4.6.1 of the Hydrographic Manual.

J. JUNCTIONS.

This survey junctions ^{to the Northwest} with ~~one contemporary~~ survey, H-10132 (1:10,000 scale, 1984-1985), ~~to the northwest.~~

The junctions with Survey H-10132 at the mouths of Mowry Slough and Coyote Creek are within 2 feet, with depths on survey H-10158 consistently shallower. This may be attributed to the 0.1 foot difference in the height ratio multiplier for predicted tides between these surveys. In addition, slight inaccuracies in the predicted tides have been noted in the field during work on H-10158, especially after periods of heavy rainfall. It is expected that with the application of real tides these apparent discrepancies will be resolved. *AFTER APPLICATION OF REAL TIDES, H-10158 SMOOTH SHEET IS DEEPER BY 2 FEET WHEN COMPARED TO THE FIELD SHEET*

K. COMPARISON WITH PRIOR SURVEYS.

Presurvey Review Item number 46 (PSR #46).

This PSR ^{0.46} item is a visible wreck charted at 37/27/47N, 122/01/11W. Information on this wreck originated with a paper copy of an aerial photograph supplied by Santa Clara County and dated 1970. This wreck was positioned by D.P. 1944, JD 339. It was located by a three point fix that closed with an inverse distance check of 3.31 meters. The wreck consists of a steel or

iron hull approximately 15 to 18 feet long. It is on the east shore of Alviso Slough where it junctions with Coyote Creek. The wreck is well out of the channel and visible at all tides. ✓

The new position for PSR #46, visible wreck, ⁽¹⁰⁾/₁ is; 37/27/40. ~~40~~ ⁴⁰ N, 122/01/10. ~~5~~ ³ W. *This wreck should remain as charted.*

Presurvey Review Item number 47 (PSR #47).

PSR #47 is the Alviso Marina, charted at 37/25/50N, 121/58/46W, where shoaling was reported in 1975 (U.S. Power Squadron report, CL 2179/75). Launch hydrography, leadline soundings, and detached positions were run in the marina on JD 037 (positions 2520 to 2543). Depths as plotted on the smooth field sheet are -7 feet. Alviso Marina goes completely dry at low tide, with only 2-3 feet of water at high tide (see photos that accompany this report). Most of the boats in the marina have settled firmly in the mud. Refer to the newspaper article in Appendix L., "Supplemental Information". ✓

It is recommended that the chart be updated to show Alviso Marina dry at MLLW. *Smooth Sheet contains note: "dry at MLLW, 2-3 feet deep at MHW"* CONCUR

PRIOR SURVEY H-8281, 1:10,000 SCALE, MARCH 1956 TO MAY 1957.

The comparisons between surveys H-10158 and H-8281 fall mainly in the mud flat areas. Depths are 0 to 1 foot shoaler on this survey. ✓

It should be noted that ^{Stevens Creek (formerly ~~NAME~~ added to Smooth Sheet)} Whisman Slough (37/26/45N, 122/03/45W) has been widened and straightened since H-8281. Depths were still found to be negative within the slough. ✓

Jaegel Slough (37/26/45N, 122/02/50W on H-8281) has been filled in. There was no evidence of the old channel or drainage on this survey. ✓

It should be noted that sounding lines on H-10158 west of Guadalupe Slough were spaced wider than normal. Soundings from Survey H-10132 (1984-1985), photogrammetry from TP-00538, and crosslines from this survey showed this area to have consistent negative depths. The decision was made by the chief of party not to develop the area at 100 meter line spacing. Representative sounding lines spaced between 250 and 620 meters were run instead. ✓

PRIOR SURVEY H-8282, 1:10,000 SCALE, APRIL 1956 TO MAY 1957.

SEE EVALUATION REPORT, SECTION 4

The comparison between surveys H-10158 and H-8282 shows a general trend of shoaling in the sloughs and creeks of the survey area. In the mud flat areas that are dry at MLLW depths are 1 to 2 feet shoaler on H-10158. The big changes, however, are in the channels of the sloughs, where depths were found to be 3 to 11 feet ✓

shoaler than H-8282. Specific comparisons of depths follow.

Coyote Creek

The mud flats along the north shore of Coyote Creek from Calaveras Point east to the PGE towers has expanded south, narrowing the channel. Near S. Ch. DBN 20 (37/27/30N, 122/02/50W) the zero foot curve on the south side of the channel has shifted northwest. Depths in the channel in this area and to the PGE towers are 1 to 10 feet shoaler on this survey. The large mud shoal just east of the PGE towers has expanded, closing the small channel that ran close to the south shore and re-joined the main channel west of Mud Slough. A general shoaling trend of 3 to 11 feet was found in the main channel from the PGE towers east to the fixed railroad bridge in Coyote Creek. The greatest depth difference is to be found at 37/27/54N, 121/59/40W. A 14 foot sounding was plotted at this location on the prior survey. This survey found only 2 and ~~4~~ foot depths at this location. ✓

Two submerged pipeline crossings in Coyote Creek and Mud Slough that are found on the prior survey have been confirmed by Leslie Salt Co. personnel as still being in-place.* Other additional submerged pipelines in Coyote Creek and Alviso Slough were also reported by Leslie Salt Co. No evidence of these pipes were found in the field or on the analog fathometer record. Because no first-hand position information was acquired by PHP these pipelines were not shown on the smooth field sheet. A complete report with recommendations was sent to the Chart Information Section, N/CG222. A copy of this report is included in Appendix K, "Dangers To Navigation". ✓

* THESE PIPELINES HAVE BEEN CARRIED FORWARD FROM H-8282 IN VIOLET INK, AND SHOULD REMAIN AS CHARTED.
Guadalupe Slough

Near S. Ch. DBN 20 the depths are 3 feet shoaler on H-10158. In the channel and half-way to the PGE towers in Guadalupe Slough this survey is 6 to 8 feet shoaler (37/27/10N, 122/02/31W). At the PGE towers depths are 3 feet less. At the first bend in the slough (37/26/58N, 122/01/41W) depths are 6 feet less. Just north of the U.S. Navy fuel pier (37/26/25N, 122/01/41W) the channel goes to zero depths, which are 10 to 12 feet shoaler than the prior survey. At the fuel pier depths are 3 to 5 feet less. ✓
Upstream from the pier the channel narrows and goes to zeros for much of the remaining soundings. At the southern limits of hydrography in Guadalupe Slough there is a change in the channel from H-8282. The big horseshoe bend (37/25/48N, 122/00/21W) has been cut by the slough and is now an island. CHART AREA AS SHOWN ON SOUTH SHEET.

The "Field Tide Note" for the Upper Guadalupe Slough Tide Gage (Appendix B) describes 2 to 3 feet of siltation observed at the gage site since 1977. ✓

Alviso Slough

The shoreline and mud flats from Guadalupe Slough to Alviso Slough show 0 to 1 foot shoaler depth differences on H-10158.

At the mouth of Alviso Slough (37/27/34N, 122/01/12W) depths on this survey are 1 to 6 feet shoaler. The channel as depicted by the zero foot curves are also narrower. The slough goes to zeros at the first bend (37/27/00N, 122/01/09W), which is 7 feet shoaler than the prior survey. At the second bend the channel again goes to zeros, which is 8 to 9 feet less. Soundings on this survey are primarily 0 and -1 for the rest of the way to the town of Alviso (4 to 9 feet shoaler than the prior survey).

The shoaling at the Alviso Marina has already been discussed (PSR #47). *The marina is the site of the now filled-in and re-shaped Steamboat Slough, which is depicted on H-8282.* At the town the channel is 4 to 6 feet shoaler up to the railroad bridge, which is the limits of hydrography and navigation for Alviso Slough.

** Do NOT CONCUR WITH THIS SENTENCE. THIS NAMED FEATURE IS NOT ON H-8282*

Mowry Slough - IS A FEEDER STREAM FOR THE AREA SALT BEDS.

Depths are 4 to 5 feet shoaler at the mouth of Mowry Slough on this survey. Depths are 1 to 6 feet shoaler on this survey for the length of the slough.

Pacific Hydrographic Party personnel are confident that the deepest parts of the channels were run on the centerlines in all the sloughs, using the 45 degree side-looking transducers of the Digital Side-Looking Navigation System (DSLNS)

L. COMPARISON WITH THE CHART

Chart 185⁶⁵¹1, 33rd edition, 1:40,000 scale, 9/18/82, was photographically enlarged to 1:10,000 scale by N/CG241, Rockville Md. and compared with survey H-10158. Change No. 5 of the project instructions (dated 18 July 1983) states, "Surveys beginning after October 1983 affecting chart 18651 shall be compared with the 34th edition". This edition of chart 18651 was not available to PHP personnel at the time of this report.

SEE EVALUATION REPORT SECTION 7, FOR THIS COMPARISON.

DANGERS TO NAVIGATION

A letter to the Commander, 12th Coast Guard District, dated 8 May 1985, was sent concerning the shoaling of the sloughs and creeks encompassed by this survey. Briefly, the letter made a general statement concerning the overall shoaling of of this area, with individual depth comparisons between the latest edition of chart 18651 and this survey in all of the sloughs. A copy of this letter is included in Appendix K, "Dangers To Navigation". A copy of this letter was also sent to Chart Information Section, N/CG222 and PMC.

SOUNDINGS NOTE TO COMPILER: THIS NARRATIVE OF SOUNDING DEPTHS, HAVE NOT BEEN CORRECTED FOR TIDES OR FINAL SOUNDING CORRECTIONS. REFER TO SOUTH SHEET FOR FINAL DEPICTION OF AREA.

The soundings on Survey H-10158 are overall shoaler than those on chart 18651, ranging from 1 to 10 feet less. General Mud flat shape and widths of channels, as depicted on the chart, are in basic agreement with the hydrography of this survey. However, a general expansion of the mud flats has been found to have taken place since the photography for the shoreline was flown in 1981.

Coyote Creek

In the area south of Calaveras Point (37/27/55N, 122/02/55W) the depiction of the exposed mud area is in close agreement with this survey. The channel in Coyote Creek heading east towards the PGE towers is 30 to 60 meters narrower than depicted on the chart. The zero foot curve east of S. Ch. DBN 20 has moved 100 meters to the northwest (37/27/30N, 122/02/54W).

Soundings are 8 to 10 feet shoaler on this survey at 37/27/32N, 122/02/57W. The soundings near S. Ch. DBN 20 are 7 to 10 feet less.

SOUTH CHANNEL DAY BEACH

The channel east from DBN 20 towards the PGE towers is 1 to 4 feet shoaler on this survey. The 13 foot sounding just west of the towers (37/27/48N, 122/01/30W) is now 10 feet.

East of the towers the main channel splits, with the north branch following the north shore, and the south branch flowing out of Alviso Slough. These channels have narrowed, with the mud flat separating the channels extending west to within 25 meters of the PGE towers (37/27/50N, 122/01/21W). Forty-five meter line spacing was run at the junction of these two channels. The small minor channel that follows the south shore east from the towers has closed off and no longer re-joins the main channel west of the Mud Slough junction. Depths in the area of 37/27/50N, 122/00/48W are 5 feet less than charted.

The northern channel from the towers east is 4 feet shoaler at 37/28/03N, 122/00/50W. Coyote Creek has narrowed considerably from 37/28/07N, 122/00/00W, all the way to the fixed railroad bridge. A significant depth change occurs at the 12 foot sounding found on the chart at 37/27/54N, 121/59/40W. This survey found only 3 feet of water at this location. Continuing east, the 4 foot sounding is now 3, the 7 foot sounding is now 1, the 4 foot sounding is now 1, the two 5 foot soundings have also shoaled to 1 foot.

CHART AREA AS SHOWN ON SOUTH SHEET

East of the railroad bridge the channel has narrowed considerably. A discussion of this may be found in section H, "Shoreline". The 2 foot sounding east of the bridge was found to agree with this survey. The 3 foot sounding is now 2.

CHART AREA AS SHOWN ON SOUTH SHEET

Due to turbulence from water coming over the spillway and the

danger of putting the boat in this confined area no soundings were taken in the extreme southern branch of Coyote Creek from the dam to the boat ramp (D.P.s 5225, 5227, JD 081, 37/26/23.97N, 121/57/24.74W) immediately north of it. ✓

* Mud Slough was found to be a narrow channel with little water at MLLW. There were no depths on the chart to compare to. Mud Slough receives virtually no boat traffic due to the shoal depths and the near inoperability of the swing bridge. The railroad bridge has not been opened in years and would require a massive amount of work, according to Southern Pacific Railroad personnel. For these reasons, coupled with the narrowness and shoal water conditions of Mud Slough, no attempt was made to survey east of the swing railroad bridge. ✓

* Mowry Slough

* ARE USED AS FEEDER STREAMS FOR THE AREA SALT BEDS
Depths at the mouth of Mowry Slough were found to be 4 to 5 feet less on this survey than charted. However, this survey found 3 and 4 foot soundings at 37/29/34N, 122/02/35W instead of the 1/2 foot sounding as charted. Mowry Slough goes to zeros just east of this location, in general agreement with the chart. ✓

Guadalupe Slough

The channel from DBN 20 into the mouth of Guadalupe Slough has narrowed over that depicted on the chart. This survey found depths to be 1 to 3 feet shoaler at 37/27/24N, 122/02/54W, and 4 to 7 feet less at 37/27/12N, 122/02/35W. Continuing south the depths are 3 to 5 feet less to the limits of hydrography, where 2 foot shoaler depths are found. ✓

Alviso Slough

This survey found a narrowing of the channel at the mouth of the slough. Depths are 3 feet less than charted at 37/27/40N, 122/01/16W. Heading south, depths are 4 to 5 feet less all the way to the town of Alviso. ✓

Sounding lines, leadline depths, and detached positions were taken in the Alviso Marina. For a complete description refer to PSR # 47, section K, "Comparison With Prior Surveys". Depths of 7 feet were found in the marina. It is recommended that for future editions of chart 18651 the Alviso Marina be shown dry at MLLW. *SMOOTH SHEET CONTAINS NOTE: "dry AT MLLW, 2-3 FEET DEEP AT MHW"* ✓

NON-SOUNDING FEATURES

Detached positions were taken on all piers, catwalks, and piles found on chart 18651 with the exception of a dolphin immediately east of the swing railroad bridge in Mud Slough. * For reasons ✓

* THIS FEATURE WAS TRANSFERRED TO SMOOTH SHEET FROM H-1202 IN VIOLET INK.

stated in the preceeding paragraphs no hydrography was run on the east side of this bridge. The dolphin was visually seen from shore but fixes were not attempted to the dolphin due to the inaccessability by boat, the extreme shoaling of Mud Slough, and the lack of boat traffic in the slough. It is recommended that this dolphin remain charted. ^{Correct} All of the other located objects, as depicted on the smooth field sheet, are plotted with the new positions. A d.p. was taken on the wreck at the mouth of Alviso Slough (PSR #46) and is discussed in section K, "Comparison With Prior Surveys". A bottom wire drag and diver circle search was performed over the charted obstruction at the mouth of Guadalupe Slough. Numerous other detached positions were taken on objects found during the course of this survey. A complete description of all detached positions taken on this survey may be found on the raw record printouts and in the sounding volumes. A discussion of some of the more important objects follows:

This feature was transferred from H-8282 to the Spanish Reef in Vekt n.s.k.

The charted submerged obstruction (position approximate, at 37/27/09N, 122/02/04W) near the mouth of Guadalupe Slough was searched for both with a bottom wire drag and a diver circle search. The method of the drag consisted of launch 1101 and the 17 foot Boston Whaler (skiff 0594) dragging a weighted steel cable between them over the charted location. This cable's length was set to 80 meters, which is the approximate width of Guadalupe Slough's channel in this area. Each end of the cable was attached to a 30 pound weight. Two 10 pound weights and floats were attached at 30 and 50 meter increments. Floats were also attached to the end weights. Both boats kept a careful, slow speed in order to insure that the weights and cable stayed on the bottom. Three east-west, west-east passes were made over the charted location from the PGE towers to buoy # 6 (positions 8000 to 8048, JD 093). The cable experienced a hang (D.P. 8039) at 37/27/08.8N, 122/01/59.91W. PHP divers performed a 25 meter circle search on JD 094 at this location (D.P. 2630, 37/27/08.7N, 122/01/59.99W). Nothing was found except hard ridges of mud or clay. A portion of this area was seen bare after the dive. The mud or clay ridges, the foot prints of the divers, and the track of the end weight was clearly seen in the exposed mud. This report recommends that the charted obstruction in Guadalupe Slough be removed from future editions of the chart. *Cancel*

✓

Detached positions were taken on the U.S. Navy fuel pier in Guadalupe Slough (D.P.s 2275 to 2281. JD 031). These d.p.s confirmed TP-00538 in the placement and location of the ^{fuel} pier, boat ramp, and small ^{pier} dock, but do not agree well with the chart. The pier and boat ramp appear to be the originals as depicted on the prior survey. It may be that the enlargement of chart 18651 distorted the placement of these features. Since these d.p.s agree with TP-00538 and the prior survey it is recommended that the new positions be used for the placement of these objects. *Cancel*

At the town of Alviso some new docks and floating piers have been positioned by this survey. A complete description of the area may be found in section H, "Shoreline".

✓

* Two pipeline crossings in Coyote Creek and Mud Slough were found on the prior surveys and are not on the current edition of the chart.* These pipelines are still in place, according to Leslie Salt Co. personnel. They also reported nine additional submerged pipelines that are not on the prior survey or the chart. The point of contact for these pipelines is;

*THESE TWO PIPELINES WERE TRANSFERRED FROM H-8202, TO THE SMOOTH SHEET IN VIOLET INK

Mr. Don Holmquist
Pond Supervisor
Leslie Salt Co.
7220 Central Ave.
Newark, CA. 94560
415-790-8168

For additional information on these pipelines refer to the letter written to the Chart Information Section, N/CG222, Appendix K, "Dangers To Navigation".

A small pier charted at 37/27/48N, 121/59/33W, south shore of Coyote Creek, was found to be in ruins. D.P.s 2492 and 2493, JD 037, positioned the ruins. *SMOOTH SHEET PORTRAYS "PIER RUINS". CHART AREA AS SHOWN ON PILES and SMOOTH SHEET*

San Francisco Bay S. Ch. LT 19 has been destroyed and should be taken off of the chart. A green can buoy, #19, is attached to the remains. D.P. 1296, JD 319, positioned the buoy. D.P. 2574, JD 058, is a dive that investigated the remains of the light. The least depth over the highest part of the remains was measured by tape and was found to be 4.2 feet below the surface at that time (174600 UTC). When corrected for predicted tides the remains of the light are awash at MLLW. A 25 meter circle search was performed around the remains. A steel pile, the light platform, and a wood pile are all that were found, all within 5 meters of the position for D.P. 2574 (37/27/35.70N, 122/03/01.20W). It is recommended that this be charted as an obstruction on future editions of chart 18651. *Obstruction, low 1st at MLLW (steel pile)*

All other non-sounding features on chart 18651 were found and positioned by this survey. Refer to the raw record printouts and the sounding volumes for complete descriptions and methods.

M. ADEQUACY OF THE SURVEY

This survey is considered complete and adequate to supersede prior surveys.

N. AIDS TO NAVIGATION.

All Coast Guard maintained fixed aids to navigation within the limits of survey H-10158 were located to third order or better accuracy. See Horizontal Control Report, "Dumbarton Bridge to Mud Slough", February, 1985.

Comparisons were made of the fixed aids to navigation positions

on survey H-10158, the U.S. Coast Guard Light List volume III, 1985, and the 1983 DIPFILE Listing for fixed aids to navigation. Those comparisons are:

1985 Light List Number	Aid	H-10158		DIPFILE		Variance (Meters)
		Latitude	Longitude	Latitude	Longitude	
698	San Francisco Bay South Ch Lt 16	37/29/34.514	122/05/09.177	37/29/34.48	122/05/09.12	1.7
699	San Francisco Bay South Ch Lt 17	37/28/43.716	122/04/33.452	37/28/43.00	122/04/32.00	42.0
700	San Francisco Bay South Ch Lt 18	37/28/12.299	122/03/46.321	37/28/12.26	122/03/46.07	6.3
	San Francisco Bay South Ch DBN 20	37/27/26.845	122/02/57.119	37/27/26.82	122/02/57.09	1.0

The characteristics of these lights are as follows:

<i>LIGHT</i> LT 16	FL R 4 sec with daymark
<i>LIGHT</i> LT 17	FL G 4 sec with daymark
<i>LIGHT</i> LT 18	FL R 4 sec with daymark
<i>DAYBEACON</i> DBN 20	red numbered daymark only

All fixed aids have been updated with field geographic positions. Refer to PHP's February, 1984, Horizontal Control Report, "Dumbarton Bridge to Mud Slough", for the geodetic information on these aids. *SEE EVALUATION REPORT SECTION 7, FOR BEACONS*

NOAA Form 76-40's have been attached in Appendix I for all of the fixed aids to navigation.

Floating aids to navigation within the limits of this survey are as follows:

D.P.#	JD.	DESCRIPTION	LAT.	LONG.
1290	319	Red nun buoy, #6	37/27/09.0 0 1	122/02/09.9 9 6
1291	319	Green can buoy, #3	37/27/09.91	122/02/22.8 8 61
1294	319	Red nun buoy, #2	37/27/13.5 5 67	122/02/46.3 3 75
1295	319	Green can buoy, #1	37/27/20.8 8 70	122/02/47.3 3 41
1296	319	Green can buoy, #19	37/27/35.7 7 4	122/03/00.9 9 85
2574	058	" " " "	" "	" "
1927	339	Red nun buoy, #4	37/27/08.22	122/02/29.4 4 76

A comparison of the positions of these buoys with NOAA Chart 18651, 33rd ed. (18 Sept. 1982) follows:

DESCRIPTION	H-10158 POSITION
Green can buoy #1	200 meters NW of charted position
Red nun buoy #2	460 meters NW of charted position
Green can buoy #3	100 meters W of charted position ✓
Red nun buoy #4	200 meters W of charted position
Red nun buoy # 6	50 meters W of charted position
Green can buoy #19	Not presently charted. This buoy is attached to the remains of the now destroyed S. Ch. Lt 19 (see D.P. 2574, JD 058, and NOAA Form 76-40, "Non-Floating Aids Or Landmarks For Charts", App. I). ✓

All floating aids were positioned by three-point fixes and checked using program RK 561. These buoys adequately mark the entrance to Guadalupe Slough. It is recommended that the chart be updated using these new positions. *CONCUR*

All existing bridges and overhead cables on H-10158 are shown adequately on chart 18651. *CONCUR*

There is a submerged pipeline crossing in Mowry Slough (37/29/02N, 122/01/16W) that is not on NOAA Chart 18651. The ends of the pipes where they enter the water were positioned (D.P.s ✓

1951 and 1952, JD 339). This pipeline is 24 inches in diameter. No trace of the pipe was found on the bathogram when sounding lines were run over it.

CHART AREA AS SHOWN ON SMOOTH SHEET

An abandoned submarine cable runs under Mowry Slough from station TRANSFORMER POLE (signal # 660) to a pump house on the south shore of the slough (see D.P.s 1925, 1926, 1948, JD 339). This is on Leslie Salt Co. property. Mr. Steven Harris, Maintenance Staff Supervisor at Leslie Salt Co. (phone # 415-797-1820), confirmed that the cable is no longer used.

Cable Crossing added to Smooth Sheet.

CHART AREA AS SHOWN ON SMOOTH SHEET

Because of the small amount of traffic, the narrowness of the channel, and the scale of the chart it is recommended that the above mentioned pipeline and abandoned submarine cable in Mowry Slough not be charted. *THIS SITUATION IS LEFT TO THE DISCRETION OF THE CHART COMPILES*

There are two submerged pipelines crossing Coyote Creek and Mud Slough. These are described in section L, "Comparison With The Chart". *THESE PIPELINES WERE TRANSFERRED FROM # 9122, TO THE SMOOTH SHEET. So changed*

CHART AREA AS SHOWN ON SMOOTH SHEET.

There are no ferry routes within the limits of this survey.

Q. STATISTICS.

	LAUNCH 1101 (0651)	SKIFF 394 (0654)	TOTAL
Total number of positions	1658	279	1937/1860
Nautical miles of sounding lines	101.05	10.85	111.90
Square miles of hydrography	7.5	2.5	10.0

Number of bottom samples	28
Number of tide stations	4
Number of current stations	0
Number of velocity casts	0
Number of magnetic stations	0

P. MISCELLANEOUS.

Per Project Instructions, twenty-eight bottom samples were sent

to the the Curator, Division of Paleobiology, Smithsonian Institute. ✓

Q. RECOMMENDATIONS.

One to two foot tide corrector inaccuracies have been observed on this survey. In addition, PHP divers noticed errors of up to 60 minutes in the predicted slack water times listed in the 1984 Tidal Current Tables. Although no formal observations were made it is recommended that notice be taken, and the appropriate record investigations made by Tides and Water Levels. ✓

Refer to section H, "Shoreline", regarding the planned construction of new transmission towers in Coyote Creek. ✓

R. AUTOMATED DATA PROCESSING.

DEC PDP 8/e Computer.

<u>Number</u>	<u>Name</u>	<u>Version</u>	<u>Date</u>	
RK201	Grid, Signal, and Lattice Plot		4/18/75	
RK211	Range-Range Non-Real Time Plot		2/13/84	
RK212	Visual Station Table Load		4/01/74	
RK215	Visual Non-Real Time Plot		2/11/81	
RK216	Range-Azimuth Non-Real Time Plot		2/24/84	
RK300	Utility Computations		10/21/80	✓
RK330	Reformat and Data Check		5/04/76	
PM360	Electronic Corrector Abstract		2/02/76	
AM500	Predicted Tide Generator		11/10/72	
RK561	H/R Geodetic Calibration		12/01/82	
AM602	Elinore-Line Oriented Editor		12/08/82	

Hewlett Packard 9815A Calculator.

<u>Number</u>	<u>Name</u>	<u>Version</u>	<u>Date</u>	
811101	Geodetic Package		Feb. 1983	✓
TR-1-01	Triangulation Package		--	
821201	EDMI Revision #2		Feb. 1983	

S. REFERRAL TO REPORTS.

Other project reports covering this survey area are: Date

- 1) Horizontal Control Report, CG/NOAA 3/82 ✓
- 2) Horizontal Control Report, PHP, Dumbarton Bridge to Mud Slough 2/85

3) Coast Pilot Report, OPR-L123-PHP-81

1/85

4) Tide Station Reports and levelling records on all project area tide stations submitted, as required, to N/OMS121.

Respectfully submitted by, ✓

John A. Miller

John A. Miller, LT(JG), NOAA

Approval Sheet

H-10158

OPR-L123-PHP-81

The Chief of Party has inspected all field sheets and field data on a weekly basis. All field sheets, reports, and records are complete. This survey is adequate for charting purposes and no additional field work is necessary.

Approved by:

A handwritten signature in cursive script, appearing to read "Paul T. Steele", with a horizontal line extending to the right.

Lt(jg) Paul T. Steele, NOAA
Chief of Party
Pacific Hydrographic Party,
NOS



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
 NATIONAL OCEAN SERVICE

PACIFIC HYDROGRAPHIC PARTY
 2501 Embarcadero Way
 Palo Alto, Ca. 94303

10 May 1985

Commander
 12th Coast Guard District
 Building 51, Government Island
 Alameda, California 94501

Dear Sir:

The following conditions were observed by the Pacific Hydrographic Party, NOS, NOAA, during activities on survey H-10158, "Sloughs At SE End Of San Francisco Bay, CA", Sept. 1984 to April 1985. This information will be used to update future editions of nautical charts 18651 and 18652, but are considered important enough to warrant immediate publication.

SHOALING:

Survey H-10158 consists of the area of Coyote Creek, Alviso Slough, Guadalupe Slough, and Mowry Slough, south San Francisco Bay. Some significant shoaling has taken place in the sloughs and creeks in this area. The soundings on Survey H-10158 are overall shoaler than those on the latest edition of NOAA Charts 18651 and 18652, ranging from 1 to 10 feet less. The following depth changes are representative of the shoaling and should be corrected as indicated on charts 18651 and 18652:

Coyote Creek

Latitude	Longitude	Charted Depth	Surveyed Depth
37/27/32N	122/02/57W	12	4
37/27/34N	122/02/46W	10	3
Next Depth East		11	7
" "	" "	5	2
" "	" "	10	8
" "	" "	8	2
" "	" "	8	7
" "	" "	11	8
" "	" "	13	10
" "	" "	2	0
" "	" "	8	4
" "	" "	8	4
" "	" "	5	0
" "	" "	7	3
" "	" "	3	0
" "	" "	1/2	0



Latitude	Longitude	Charted Depth	Surveyed Depth
Next Depth East		8	3
" " "		5	3
" " "		5	2
37/27/54N	121/59/40W	12	3
Next Depth East		4	3
" " "		7	1
" " "		4	1
" " "		5	1
" " "		5	1
" " "		2	2
" " "		3	2

Guadalupe Slough

37/27/24N	122/02/54W	5	2
37/27/12N	122/02/35W	9	2
37/27/10N	122/02/21W	6	2
Next Depth Upstream		6	3
" " "		5	3
" " "		12	6
" " "		9	4
" " "		10	6
" " "		7	4
" " "		5	4
" " "		11	6
" " "		9	4
" " "		8	4
" " "		10	5
" " "		7	2
" " "		1	5
" " "		5	2
" " "		5	1
" " "		4	3
" " "		2	1
" " "		4	2
" " "		4	2
" " "		4	4
" " "		2	0

Alviso Slough

37/27/40N	122/01/16W	4	1
37/27/30N	122/01/11W	7	2
Next Depth Upstream		5	0
" " "		6	0
" " "		7	2
" " "		6	0
" " "		5	1
Surveyed Depths For The Rest Of Alviso Slough =			0

Alviso Marina has been found to be completely dry at MLLW. At MHW there is only 2 to 3 feet of water in the marina.

Nowry Slough

37/29/32N	122/03/06W	8	3
37/29/33N	122/02/52W	7	3

The NOAA Pacific Hydrographic Field Party will be surveying in San Pablo Bay beginning 15 May 1985. If anyone has knowledge of any uncharted or mis-charted items which could be considered hazards to navigation they are requested to contact the Chief of Party, Pacific Hydrographic Field Party, 1801 E. Fairview Ave., Seattle, Wa., 98102.

Respectfully,



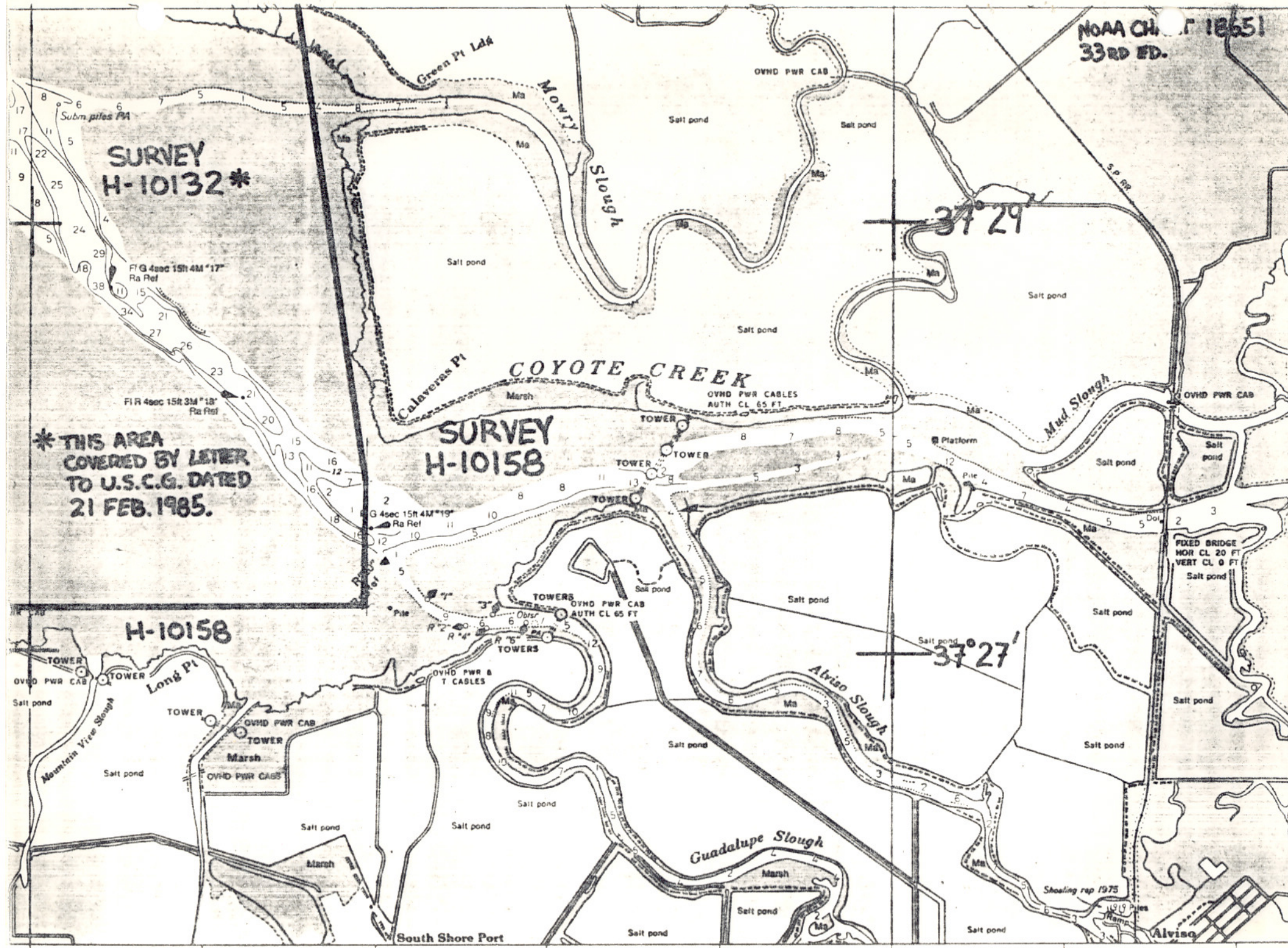
Paul T. Steele, LT(JG), NOAA
Chief of Party

Attachments

**SURVEY
H-10132***

**SURVEY
H-10158**

* THIS AREA
COVERED BY LETTER
TO U.S.C.G. DATED
21 FEB. 1985.



37°29'

37°27'

H-10158

South Shore Port

Alviso



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

PACIFIC HYDROGRAPHIC PARTY
2501 Embarcadero Way
Palo Alto Ca. 94303

10 May 1985

Chief
Chart Information Section
N/C8222
Rockville, Md. 20852

Dear Sir:

The Pacific Hydrographic Party has completed Survey H-10158, "Sloughs At SE End Of San Francisco Bay, Ca." The comparison with Survey H-8282 (1956-1957) found two submerged pipelines in Coyote Creek and Mud Slough that are plotted on the prior survey but not on the chart. PHP personnel contacted Leslie Salt Co., who are the owners of the property that surround the sloughs. The pond supervisor, Mr. Don Holmquist, informed PHP that these pipelines are still present, with the addition of several others. Mr. Holmquist provided a marked copy of a U.S.G.S. Topographic Quad map of the area with the pipelines shown in red and in pencil. He also informed us that engineering drawings were not readily available. He did state that he works frequently with the pipes and is quite sure of their location. No evidence of these submerged pipelines were found during data acquisition on the current survey. Since PHP did not physically locate these pipes they are not depicted on the smooth field sheet for Survey H-10158.

It is recommended, due to the width of the channels and the amount of traffic, that only the pipelines crossing Coyote Creek at lat. 37/28/00N, long. 121/59/45W, and Alviso Slough at lat. 37/26/20N, long. 121/59/46, be charted.



For further information on these features contact;

Mr. Don Holmquist
Pond Supervisor
Leslie Salt Co.
7220 Central Ave.
Newark, Ca. 94560
415-790-8168

Or contact the Chief of Party.

Respectfully,



Paul T. Steele, LT(JG), NOAA
Chief of Party

Attachments

4150000m.N.
T. 5 S.

945-5300

4148

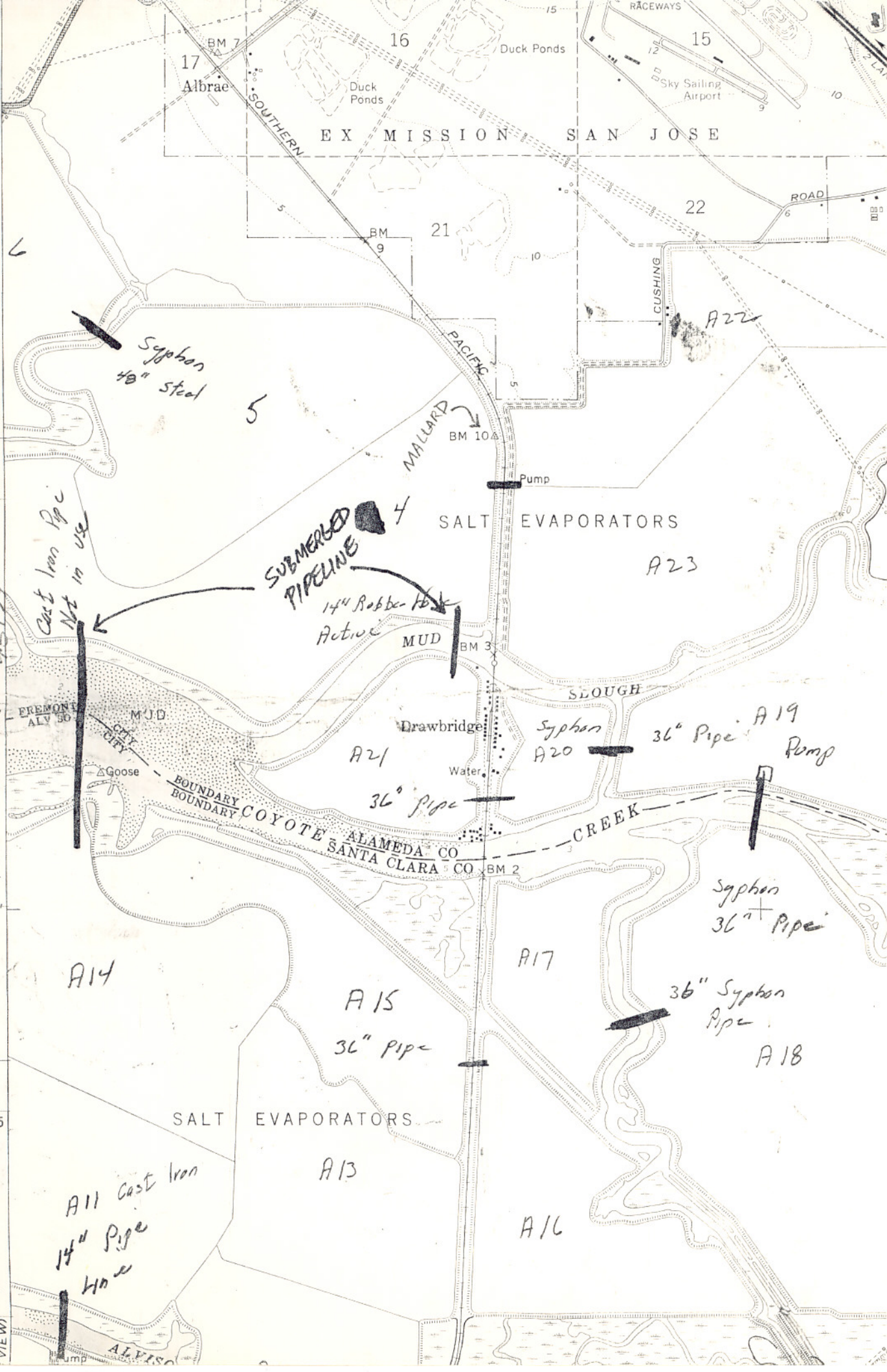
95174

700 LOS ESTADOS

27'30"

4145

GIUSTI
MTEL
PTY DIRECTOR
DEPT WATER
POL CONTROL



BM 7
Albrae

16

Duck Ponds

15

RACEWAYS
Sky Sailing Airport

EX MISSION SAN JOSE

BM 9

21

22

ROAD

CUSHING

A22

PACIFIC

MALLARD

BM 10A

Pump

SALT EVAPORATORS

A23

SUBMERGED PIPELINE

14" Rubber Hose Active

MUD

BM 3

SLOUGH

Drawbridge

Syphon A20

36" Pipe A19 Pump

A21

Water

36" pipe

CREEK

Syphon 36" Pipe

A14

A17

A15

36" pipe

36" Syphon Pipe A18

SALT EVAPORATORS

A13

A16

All Cast Iron
14" Pipe
40"

ALPISO

County sees little hope for Alviso Marina

By Ed Pope
Mercury News Staff Writer

Larry Norris is not one to keep boaters in suspense about the prospects of saving the county-operated Alviso Marina.

"If I were them, I'd get my boat out of there as fast as I could," said the Santa Clara County director of parks and recreation. "It's not realistic to think that the marina can survive."

And, Norris said, the 76-slip facility at the south end of San Francisco Bay is not the only county-operated marina that is slowly being buried in mud.

"We have the same problems at Palo Alto," Norris said. "Our lease expires next year, and we do not intend to renew that lease."

The 70-slip Palo Alto Marina "could go on for another three years," Norris said, "but the mud is building up at a rapid rate."

In the early 1970s, Norris said, the people of Palo Alto, voting on an environmental issue, agreed to let the marina return to its natural state. One of six options listed in a 1980 study of the Alviso Marina commissioned by the county reached the same conclusion: Let

it return to salt marsh.

The silting problem has plagued the Alviso marina almost from the time it opened in 1968. There is little flushing action in the South Bay, and mud carried in by the tide and silt carried downstream by the Guadalupe River just sit there.

In recent years, boat owners have had difficulty getting their craft out, even at high tide.

At low tide, the 40 boats still moored in the marina sink into the muck, which grips some so tightly that owners can't

shake them loose even when the tide comes in.

As a result, owners of many the boats seemingly have given up, and the sailboats, cabin cruisers and runabouts are showing the ravages of wind, rain and sun. Paint is peeling; wood and canvas are rotting, and the entire marina has taken on the air of a ghost flotilla.

Norris' comments came in response to the complaints of several Alviso boat owners, who said they can use their boats only infrequently because they

Continued on Page 8B

Alviso Marina doomed, county says

Continued from Page 1B
must go out at high tide and wait for another flood tide before they can get back in. That generally means staying out on the bay for at least 12 hours.

The county twice dredged the marina, but each time, the silting took over again within three months. Now, Norris said, there simply isn't any money for dredging.

"Right now, it would cost \$250,000, and we don't have it. Politically, I don't think I can get it," Norris said. "The board of supervisors would like us to do two things: take care of the stranded boaters and get some private enterprise to take over the operation of the marina.

Concession agreement

"To make dredging of the marina viable, all government agencies would have to approve (commercial) redevelopment of Alviso to generate money," Norris said. "We're anxious to develop a concession agreement at Alviso to save the marina."

The county owns 13 acres adjacent to the marina that it has never developed.

"There is potential for more berthing slips," Norris noted, "(but) it will never be a profitable enterprise on its own. We could easily spend \$6 million there without any guarantee that it would work for the long term."

The 1980 engineering study by

Ruth and Going Inc. came up with six potential plans to mitigate the silting of the marina. Four of the plans called for a lock system at the entrance of the marina into Alviso Slough to maintain a higher water level in the marina.

"But the locks could have trapped boaters in open water during storms," according to Tom Carolan, a retired mechanical engineer who has operated a marine repair facility next to the marina since 1968.

Double lock system

Plan 5 called for a double lock system to solve that problem and for expansion of the marina to 400 berths. Plan 6 would have allowed

the marina to return to marshland while the county constructed a storage facility for 240 boats and a crane to lift stored boats in and out of the water.

The cost — an estimated \$6 million — shot the plans involving locks out of the water. Plan 6 was eliminated when the county built a flood-control levee through the area.

In 1981, the county staff recommended that "the marina continue to operate as a county recreation facility without any further capital improvement or maintenance dredging until adequate funding is established or marina activity ceases because of sediment conditions."



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102-3767

July 11, 1985

N/MOP211/GEK

TO: N/MOP223 - Chief, Pacific Hydrographic Party

FROM: N/MOP - Robert L. Sandquist
Robert L. Sandquist

SUBJECT: Preprocessing Examination of H-10158, California, San Francisco Bay, Sloughs at Southeast End of San Francisco Bay

Hydrographic survey H-10158, California, San Francisco Bay, Sloughs at Southeast end of San Francisco Bay has been reviewed in accordance with Hydrographic Survey Guideline No. 15, and the Preprocessing Examination Critique for this survey work is attached. H-10158 is accepted for Pacific Marine Center processing. Please express my appreciation to the officers and crew for their efforts in accomplishing this survey.

The Preprocessing Examination Critique is designed to provide information which will be useful to the command for maintaining the quality of future hydrographic surveys. Accordingly, the constructive use of this information by the field party is encouraged. Comments on specific critique items are welcome.

Attachment

cc: ✓ N/MOP21x2
N/MOP211 (2)
N/MOA232





U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Pacific Marine Center
Nautical Chart Branch
7600 Sand Point Way NE, BIN C15700
Seattle, Washington 98115-0070

Robert L. Sandquist 7-11-85
N/MOP21x2/GEK

TO: N/MOP - Robert L. Sandquist

FROM: N/MOP21 - David W. Yeager *David W. Yeager*

SUBJECT: Preprocessing Examination for H-10158

I. SURVEY INFORMATION

- A. Field No. PHP 10-2-84 Registry No. H-10158
- B. State: California
General Locality: San Francisco Bay
Sublocality: Sloughs at SE end
- C. Project Instructions: OPR-L123-PHP-81
Original dated: August 11, 1981
Change No. 1 dated: August 17, 1981
Change No. 2 dated: April 19, 1981
Change No. 3 dated: June 10, 1982
Change No. 4 dated: December 29, 1982
Change No. 5 dated: July 18, 1983
- D. Dates:
Field Work Commenced: September 24, 1984
Field Work Completed: April 5, 1985
plus six weeks: May 17, 1985
Data received at Marine Center: June 18, 1985
plus one month: July 18, 1985
Examination critique transmitted to field: July 12, 1985
Target for completion of Marine Center processing: _____



II. PREPROCESSING EXAMINATION CRITIQUE

Hydrographic survey H-10158 was performed by personnel of the NOAA Pacific Hydrographic Party, Lt.(JG) Paul T. Steele, Chief of Party. The following personnel supervised portions of the data acquisition: Lt.(JG) J.A. Miller, Mr. F. Rosario, Mr. B. Lund, Mr. T. Martin, Mr. M. Bigelow.

B. Compliance with Instructions

The field data was not received in a timely manner. Field data was not transmitted to the Pacific Marine Center until 27 days past the allowed 6 weeks after the completion of field work (see attachment 1).

"In the event the six weeks submission date cannot be met, the Director, PMC, shall be advised, an estimated submission date provided, and a request for an extension to this new submission date shall be made. In any case, however, tide data must be submitted as soon as possible so that approved tides can be provided on schedule." P.M.C. OORDER Appendix Q.

C. Final Field Sheets

The legibility of the final field sheets are very good and will aid in the verification of this survey.

D. Descriptive Report

The Descriptive Report is very good, complete and well written. A small exception to this point is found in the Field Tide Note where a recommendation of how to adequately zone the area of the south bay was not given, but instead leaves the zoning dilemma with the oceanographer in Rockville Maryland (see attachment 2). It is the field party who through direct field observations can best possibly give a recommendation.

G. Sounding Correctors

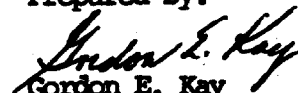
The sound velocity table for the skiff 594 (Raytheon 719B Echosounder) was generated from bar check data limited to one depth, 5 feet, because of the shallow depths in the survey area (see attachment 3 and 4). At least one other point as a minimum is necessary to determine a curve. Although it is desirable to make bar checks in the area surveyed by the vessel, when this is not possible and sound velocity corrections must be determined by direct comparison methods, bar checks outside the surveyed area, as close and representative as possible may be necessary. Or a series of lead lines, another direct comparison method, could have been made. Because of the shallow depths in the survey area the maximum discrepancy does not exceed 0.1 foot; therefore, the velocity table as submitted is accepted.

N. Survey Acceptance

The preprocessing examination for H-10158 was conducted under the time constraints of Hydrographic Survey Guideline No. 15. All comments contained herein are based on a spot check of the data, and it is possible that some problem areas have not been addressed.

Based upon the data examined and the qualifications expressed in this report, H-10158 is in compliance with the project instructions. I recommend that the survey be accepted for Nautical Chart Branch processing.

Prepared by:


Gordon E. Kay
Cartographer

SIGNAL TAPE LISTING
 H-10158
 PHP- 10-2-84

+ 114 0	37 31 49712	122 04 12940	250 0046 000000	GREEN CARD 1982	PHP	
* 216 0	37 29 34514	122 05 09177	139 0006 000000	SAN FRANCISCO BAY S, CH, LT 16, 1984	PHP	<i>Field Position</i>
* 217 0	37 28 43716	122 04 33452	139 0006 000000	SAN FRANCISCO BAY S, CH, LT 17, 1984	PHP	<i>Field Position</i>
* 218 0	37 28 12299	122 03 46321	139 0006 000000	SAN FRANCISCO BAY S, CH, LT 18, 1984	PHP	<i>Field Position</i>
* 220 0	37 27 26845	122 02 57119	139 0006 000000	SAN FRANCISCO BAY S, CH, DBN 20, 1984	PHP	<i>Field Position</i>
230 0	37 28 04969	122 05 46891	139 0009 000000	MAYFIELD SLOUGH ENT, LT 8	PHP	
+ 601 0	37 27 10798	122 06 35626	250 0015 000000	SEWAGE BURN, 1984	PHP	<i>Field Position</i>
* 660 0	37 28 41581	122 01 32711	250 0008 000000	TRANSFORMER POLE, 1984	PHP	<i>Field Position</i>
700 0	37 31 04213	122 01 55834	139 0000 000000	ARDEN SALT CO, LANK 1931		371221/2036
701 0	37 24 47100	122 03 10461	252 0000 000000	MOFFET FIELD HANGER #1 ROT BGN	PHP (HYDRO)	
* 706 0	37 29 27466	121 59 45452	139 0015 000000	DUMP S.W., 1985	PHP	<i>Field Position</i>
* 750 0	37 28 45134	121 58 22382	250 0003 000000	MALLARD 1931		371213/1039

* *Signals plotted on smooth sheet*
 + *Signals used for horizontal control as indicated on final printout.*
See Examination Report.

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

NONFLOATING AIDS ~~ON~~ FOR CHARTS

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

REPORTING UNIT
(Field Party, Ship or Office)
PACIFIC HYDROGRAPHIC PARTY

LOCALITY
S. SAN FRANCISCO BAY

DATE
4/23/85

STATE
CALIFORNIA

DATUM
NA 1927

REPORTING UNIT
(Field Party, Ship or Office)
PACIFIC HYDROGRAPHIC PARTY

LOCALITY
S. SAN FRANCISCO BAY

DATE
4/23/85

STATE
CALIFORNIA

DATUM
NA 1927

REPORTING UNIT
(Field Party, Ship or Office)
PACIFIC HYDROGRAPHIC PARTY

ORIGINATING ACTIVITY
 HYDROGRAPHIC PARTY
 GEODETIC PARTY
 PHOTO FIELD PARTY
 COMPILATION ACTIVITY
 FINAL REVIEWER
 QUALITY CONTROL & REVIEW GRP.
 COAST PILOT BRANCH
(See reverse for responsible personnel)

CHARTING NAME

DESCRIPTION
(Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)

LATITUDE
° / ' " D.M. Meters

LONGITUDE
° / ' " D.P. Meters

POSITION

METHOD AND DATE OF LOCATION
(See instructions on reverse side)

OFFICE

FIELD

CHARTS AFFECTED

OPR PROJECT NO.
OPR-L123-PHP-81

JOB NUMBER
H-10158

DATE
4/23/85

STATE
CALIFORNIA

DATUM
NA 1927

REPORTING UNIT
(Field Party, Ship or Office)
PACIFIC HYDROGRAPHIC PARTY

LOCALITY
S. SAN FRANCISCO BAY

DATE
4/23/85

STATE
CALIFORNIA

DATUM
NA 1927

REPORTING UNIT
(Field Party, Ship or Office)
PACIFIC HYDROGRAPHIC PARTY

CHARTING NAME
LIGHT

DESCRIPTION
SAN FRANCISCO BAY S. CH LT 16

LATITUDE
37 29

LONGITUDE
122 05

POSITION

METHOD AND DATE OF LOCATION
**F-L-3-6
2/9/84**

OFFICE

FIELD

CHARTS AFFECTED
**18651
18652**

CHARTING NAME
LIGHT

DESCRIPTION
SAN FRANCISCO BAY S. CH LT 17

LATITUDE
37 28

LONGITUDE
122 04

POSITION

METHOD AND DATE OF LOCATION
**F-L-3-6
2/9/84**

OFFICE

FIELD

CHARTS AFFECTED
**18651
18652**

CHARTING NAME
LIGHT

DESCRIPTION
SAN FRANCISCO BAY S. CH LT 18

LATITUDE
37 28

LONGITUDE
122 03

POSITION

METHOD AND DATE OF LOCATION
**F-L-3-6
2/9/84**

OFFICE

FIELD

CHARTS AFFECTED
**18651
18652**

CHARTING NAME
DAYBEACON

DESCRIPTION
SAN FRAN CISCO BAY S. CH DBN 20

LATITUDE
37 27

LONGITUDE
122 02

POSITION

METHOD AND DATE OF LOCATION
**F-L-3-6
2/9/84**

OFFICE

FIELD

CHARTS AFFECTED
**18651
18652**

CHARTING NAME
L-416(86)

DESCRIPTION
NOTE: ALL OF THE ABOVE STATIONS WERE INTERSECTED FROM STATIONS GREEN CARD 1982, AND SOUTH RED HILL 1896

LATITUDE

LONGITUDE


POSITION

METHOD AND DATE OF LOCATION

OFFICE

FIELD

CHARTS AFFECTED

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	PAUL T. STEELE, LTJG, NOAA
POSITIONS DETERMINED AND/OR VERIFIED	 PAUL T. STEELE, LTJG, NOAA
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	CHIEF OF PARTY

ORIGINATOR

PHOTO FIELD PARTY

HYDROGRAPHIC PARTY

GEODETIC PARTY

OTHER (Specify)

FIELD ACTIVITY REPRESENTATIVE

OFFICE ACTIVITY REPRESENTATIVE

REVIEWER

QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64.)

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS

Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.

EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED

Enter the applicable data by symbols as follows:

- F - Field
- L - Located
- V - Verified
- 1 - Triangulation
- 2 - Traverse
- 3 - Intersection
- 4 - Resection
- 5 - Field Identified
- 6 - Theodolite
- 7 - Planetable
- 8 - Sextant

A. Field positions* require entry of method of location and date of field work.

EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.

EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED

When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.

EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

Enter 'V-Vis.' and date.

EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

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

ORIGINATING ACTIVITY

Replaces C&GS Form 567.

TO BE CHARTED
 TO BE REVISED
 TO BE DELETED

REPORTING UNIT
(If field party, ship or office)
PACIFIC HYDROGRAPHIC PARTY

STATE

CALIFORNIA

LOCALITY

S, SAN FRANCISCO BAY

DATE

4/23/85

HYDROGRAPHIC PARTY
 GEODETIC PARTY
 PHOTO FIELD PARTY
 COMPILATION ACTIVITY
 FINAL REVIEWER
 QUALITY CONTROL & REVIEW GRP.
 COAST PILOT BRANCH
(See reverse for responsible personnel)

The following objects HAVE HAVE NOT been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.:

JOB NUMBER

SURVEY NUMBER

DATUM

NA 1927

OPR-L123-PHP-81

H-10158

POSITION

METHOD AND DATE OF LOCATION
(See instructions on reverse side)

CHARTING NAME

DESCRIPTION
(Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses.)

LATITUDE

POSITION

LONGITUDE

OFFICE

FIELD

CHARTS AFFECTED

LIGHT

SAN FRANCISCO BAY S CH LT 19

37 27

35.71

122 03

01.51

VIS

1/12/84

18651-18652

TALLER TWR

CHARLESTON SLOUGH S SIDE TALL TRANS TOWER

37 27

27.70

122 06

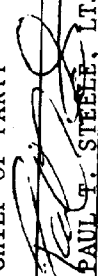
54.78

VIS

MARCH 1984

18651-18652

CH 2719 DELETED ON SWITLED 18651, L. 416/86) FOR 18652 & Dmsd/10

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	PAUL T. STEELE, LTJG, NOAA CHIEF OF PARTY
POSITIONS DETERMINED AND/OR VERIFIED	 PAUL T. STEELE, LTJG, NOAA
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	

ORIGINATOR

PHOTO FIELD PARTY

HYDROGRAPHIC PARTY

GEODETIC PARTY

OTHER (Specify)

FIELD ACTIVITY REPRESENTATIVE

OFFICE ACTIVITY REPRESENTATIVE

REVIEWER

QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64.)

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS

Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.

EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED

Enter the applicable data by symbols as follows:

- F - Field
- L - Located
- V - Verified
- 1 - Triangulation
- 2 - Traverse
- 3 - Intersection
- 4 - Resection
- 5 - Field Identified
- 6 - Theodolite
- 7 - Planetable
- 8 - Sextant

A. Field positions* require entry of method of location and date of field work.

EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.

EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED

When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.

EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

Enter 'V-Vis.' and date.

EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

FIELD TIDE NOTE

OPR-L123-PHP-81, (H10158)

Sloughs at Southeast End of San Francisco Bay

Reductions

Soundings on the field sheet were reduced on the basis of predicted tides for San Francisco (Fort Point, 941-4290), California. Tide correctors were generated at 0.2 foot intervals using the PDP-8e computer system and program AM 500, "Predicted Tide Generator".

Tide Zone Correctors

Predicted tides were adjusted with correctors supplied by the Tides and Water Levels Branch, Rockville, Maryland, 14 October 1983.

The correctors used on this sheet are listed as:

South of 37 30.0 N.
East of 122 05.0 W. apply X 1.75 range ratio and:
+ 1 hr. 05 min. HW time corrector
+ 2 hr. 05 min. LW time corrector

Stations

Four tide stations (ADR Gages) were installed, operated, and maintained by PHP personnel in conjunction with three permanent stations maintained and operated by NOAA, Pacific Tide Party.

The PHP operated stations are at the following sites:

Dumbarton Railroad Bridge, Ca. 941-4510
Position; 37/29/56 N. 122/06/23 W.
Digital Record; 40.3 feet above the staff.
Duration; 11 May 1983 to present

Coyote Creek, Ca. 941-4575
Position; 37/27.9 N. 122/01.4 W.
Digital Record; 30.2 feet above the staff.
Duration; 1 June 1984 to 18 April 1985

Short term stations operated by PHP in the sloughs are:

Mowry Slough, Ca. 941-4519
Position; 37/29/33.43 N. 122/02/42.07 W. (3 pt. fix)
Digital Record; 9.7 feet above the staff.
Duration; 19 November 1984 to 4 January 1985

Upper Guadalupe Slough, Ca. 941-4519
Position; 37/25/56.8 N. 122/00/18.6 W.

Digital Record; 10.0 feet above the staff.
Duration; 18 January 1985 to 11 February 1985

The PTP operated permanent stations are at the following sites:

Fort Point (San Francisco), Ca. 941-4290
Type; Primary
Position; 37/48.4 N. 122/27.9 W.

Alameda, Ca. 941-4750
Type; Secondary
Position; 37/46.5 N. 122/17.9 W.

San Mateo, Ca. 941-4458
Type; Secondary
Position; 37/34.8 N. 122/15.2 W.

Frequent checks with PTP confirmed that there were no breaks in the data on their stations during the times of survey acquisition.

Installation, Level, and Operation:

Dumbarton Railroad Bridge, Ca. (941-4510) was installed by PHP personnel per project instructions (OPR-L123-PHP-81, 11 August 1981, Change #5) on 18 July 1983. This station was used for Survey H-10102 and remains in place for control of survey H-10158. Fischer/Porter ADR gage, S/N 7404A0407M17, a floatwell, and a staff were installed on 11 May 1983. For details of the installation and maintenance of this station prior to the starting date of Survey H-10158 (24 September 1984), refer to the Descriptive Report to Accompany Survey H-10132, San Francisco Bay, Coyote Hills Slough to Long Point, PHP-10-1-84. The last levels conducted prior to Survey H-10158 were six month maintenance levels on 18 June 1984.

Levels run during the period of Survey H-10158 were conducted on 18 December 1984. No movement of the gage or staff was detected. Good records were obtained with no interruptions in the data during survey operations. The gage showed some flat spots in the data in the March 1985. This was traced to the slow clogging of the well. The well was plunged early in April 1985 and the data looks good to the end of the survey. No other problems were experienced with this station.

Coyote Creek, Ca. (941-4575) was installed at the 1975 historic site. A new staff was installed at the historic location on 2 November 1983. The new staff is attached to a redwood plank and this plank is bolted to the concrete tower footing and the original iron top bracket. Fischer/Porter ADR gage S/N 7403A3402M2 was installed atop the historic floatwell on 2 November 1983. The gage was started at the time of installation but N/DMA 121 was contacted and advised that the gage would not be tended regularly until the start of hydrography south of the Dumbarton Railroad Bridge gage (941-4510).

Regular observations at this station were started on 1 June 1983. The station was used throughout Survey H-10158. The station was leveled at installation (4 Nov. and 13, 15 Dec. 1983) and on 20 July 1984 (the start of hydrography using this station), on 12 February 1985, and on 16 and 18 April 1985. The April 1985 levels were the removal levels and they were run to seven recovered marks. No new marks were installed. The levels generally agree well with history and there is no apparent movement of either staff or gage. There seemed to be an anomaly concerning BM F555 1956. This mark seems to have moved roughly 1 cm. between 1979 and the present. At the time of the removal levels, it appeared to have returned to the pre-1979 value. The removal levels were extended to cover marks on either side of the suspect mark. The results verify the relative movement of BM F555 1956. There were no significant breaks in the data, none at all during times of hydrography.

Mowry Slough, Ca. 941-4519 was installed at the 1976 historic site. The original free standing piling was in place but in need of repairs. Re-inforcing work was done on the piling and some braces were added to the shoreward (north) side of the structure. The original staff was still in place but unreadable in the area of interest. A new staff was fabricated and installed on 19 November 1984. A new top section was installed on the well and the bottom section was serviced by NOAA/PHP divers. Fischer/Porter ADR gage S/N 7304A13B0M5 was installed atop the well with a std. coupling. Levels were run to five recovered marks on 26 November 1984. On 27 November 1984 a 7.12 foot drop in the tide level was noted in 30 min. PHP was notified through the normal evaluation procedures and subsequent investigation showed that this must have been temporary clogging of the intake, this did not re-occur. The station was levelled again on 3 January 1985 and discontinued on 4 January 1985. The same five recovered marks were used. All levels agree well with history and there were no breaks in the data during the period of operation.

Upper Guadalupe Slough, Ca. 941-4549 was installed at the 1976 historic site on 16 January 1985. This free standing piling also required re-inforcing work. Some new piling braces were installed and a new staff/plank was driven into the bottom and attached to the these braces. The historic well was full of debris and mud, therefore, unusable. NOAA/PHP divers cut the old well loose and it was pulled free of the bottom. The mud line on the old well was 2 ft. above the intake indicating siltation of 2 to 3 ft. since 1977. A new well was fabricated using side intakes starting 1.5 ft. above the bottom of the well. The new well was driven into the mud 1.2 ft. to allow the float some extra bottoming room as there was concern about the stations ability to record the lowest tides. Fischer/Porter ADR gage S/N 7304A13B0M5 (just removed from Mowry Slough) was installed atop the well with a std. steel coupling. Levels were run to three recovered marks as per PHP project instructions for stations in service for less than 30 days, on 17 January 1985. There are only three historic Bench Marks in the area. One of the historic marks was destroyed (4549 E 1976) and one was thoroughly searched for but not found (4549 C 1976). Removal levels

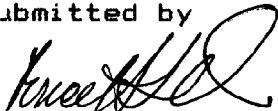
were run on 11 Febuary 1985. All levels agree well with history. There were no breaks in the data.

All levels were run to third order accuracy using a Leitz B1 Automatic Level S/N 214303 and a Keuffel and Esser 1 cm. Metagrad rod S/N B1-0167.

No survey data was acquired without the required tide support. Pacific Standard Time (120 West) was used for record keeping at all gages.

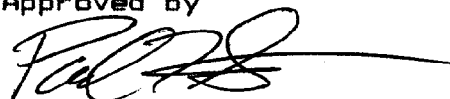
Predicted Tide Zoning has been a problem in the 'South Bay' and it is recommended that when the final zoning is performed for this survey, that the oceanographer attempt to separate the zones as realistically as possible.

Submitted by



Bruce H. Lund
Engineering Technician

Approved by



Lt(jg) Paul T. Steele, NOAA
Chief of Party, PHP

DATE: 7/19/85

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Marine Center: Pacific
OPR: L123
Hydrographic Sheet: H-10158

Locality: South San Francisco Bay, California

Time Period: September 24, 1984 - April 5, 1985

Tide Station Used: 941 4510 Dumbarton Bridge, CA
941 4519 Mowrey Slough, CA
941 4549 Guadalupe Slough, CA
941 4575 Coyote Creek, CA

Plane of Reference (Mean Lower Low Water):

941 4510 = 3.02 ft. 941 4549 = -0.21 ft.

941 4519 = 2.51 ft. 941 4575 = -0.44 ft.

Height of Mean High Water Above Plane of Reference:

941 4510 = 7.8 ft. 941 4549 = 8.4 ft.

941 4519 = 7.8 ft. 941 4575 = 8.3 ft.

Remarks: Recommended Zoning:
See Page 2


Chief, Tidal Datums Section

July 19, 1985

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

H-10158, OPR-L123

Recommended Zoning:

1. West of longitude $122^{\circ}05.0'$, zone direct on 941 4510.
2. East of longitude $122^{\circ}05.0'$ to $122^{\circ}03.5'$, zone on 941 4510 and apply x1.05 range ratio to all heights.
3. East of longitude $122^{\circ}03.5'$ to $122^{\circ}00.0'$.
 - a. In Mowrey Slough zone direct on 941 4519
 - b. In Guadalupe Slough zone direct on 941 4549
 - c. In Coyote Creek and Alviso Slough, zone direct on 941 4575
4. East of longitude $122^{\circ}00.0'$
 - a. In Alviso Slough zone on 941 4575 and apply +15 minute time correction and x1.04 range ratio to all heights.
 - b. In Coyote Creek zone on 941 4575 and apply +15 minute time correction to all heights.

GEOGRAPHIC NAMES

H-10158

Name on Survey	A PURCHASED NO. 18651 34th Ed. B ON PREVIOUS SURVEY NO. H-8281 C ON U.S. QUADRANGLE MAPS D FROM LOCAL INFORMATION E ON LOCAL MAPS F P.O. GUIDE OR MAP G RAND McNALLY ATLAS H U.S. LIGHT LIST K										
	Alviso	X									
Alviso Slough	X										2
Calaveras Point	X										3
Coyote Creek	X										4
Green Point LANDING	X										5
Guadalupe Slough	X										6
Mountain View Slough	X										7
Mowry Slough	X										8
Mud Slough	X										9
San Francisco Bay	X										10
Stevens Creek Whisman Slough			X								11
MOFFETT CHANNEL											12
											13
											14
											15
											16
											17
											18
											19
											20
											21
											22
											23
											24
											25

Approved:

Charles E. Harrington
Chief Geographer - N/CG 2x5

JAN 7 1987

HYDROGRAPHIC SURVEY STATISTICS

H-10158

RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		8
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		4
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES	2				
ENVELOPES					
VOLUMES	3				
CAHIERS					
BOXES					

SHORELINE DATA

SHORELINE MAPS (List):
 PHOTOBATHYMETRIC MAPS (List):
 NOTES TO THE HYDROGRAPHER (List): OPR-L123-PHP-80 (Vol 1-3), PHP-81, PHP-82, PHP-83 (Vol 1-2)
 SPECIAL REPORTS (List): Horizontal Control Report
 NAUTICAL CHARTS (List): Chart Enlargements of : Chart 18561 33rd Edition and Chart 18561 34th Ed.

OFFICE PROCESSING ACTIVITIES

The following statistics will be submitted with the cartographer's report on the survey

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET			1860
POSITIONS REVISED			7
SOUNDINGS REVISED			9
CONTROL STATIONS REVISED			0
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	83		83
VERIFICATION OF SOUNDINGS	148		148
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION VERIFICATION			
COMPILATION OF SMOOTH SHEET	59		59
COMPARISON WITH PRIOR SURVEYS AND CHARTS		51	51
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		73	73
GEOGRAPHIC NAMES			
OTHER: Digitizing			19
USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	290	124
			433

Pre-processing Examination by G. E. Kay	Beginning Date June 20, 1985	Ending Date July 10, 1985
Verification of Field Data by M.A. Sanders	Time (Hours) 290	Ending Date 7/29/86
Verification Check by S.A. Otsubo, B.A. Olmstead, J.S. Green	Time (Hours) 47.5	Ending Date 3/17/86
Evaluation and Analysis by Gordon E. Kay	Time (Hours) 124	Ending Date 3/17/86
Inspection by Dennis J. Hill	Time (Hours) 2	Ending Date 9/18/86

PACIFIC MARINE CENTER
EVALUATION REPORT
H-10158

1. INTRODUCTION

H-10158 was accomplished by the Pacific Hydrographic Party, in accordance with the following project instructions:

OPR-L123-PHP-81 San Francisco Bay, California, dated August 11, 1981
Change No. 1, dated August 17, 1981
Change No. 2, dated April 19, 1982
Change No. 3, dated June 10, 1982
Change No. 4, dated December 29, 1982
Change No. 5, dated July 18, 1983

This is a basic survey of the extreme southeastern portion of San Francisco Bay, California. The area surveyed includes Coyote Creek with its many tributary-sloughs; Mowry Slough, ^{Stevens} ~~Whisman~~ Slough, Mud Slough, Guadalupe Slough and Alviso Slough. The primary purpose of Mowry and Mud Slough and the upper portion of Coyote Creek is to provide water to the adjacent salt evaporation ponds. All of these waterways are confined by levees which are situated between the sloughs and salt evaporation ponds. When hydrography was run in these confined spaces, and plotted on the smooth sheet soundings appear along the highwater line.

This entire survey area is marked (when viewed on the aerial photographs) with numerous old river beds and oxbows. Historically this area is very changeable, but presently with the confinement of these waterways by the levees, the waterways are filling in and becoming shoaler, (see attached newspaper article at end of hydrographer's report).

Predicted tides used during field processing are based on the San Francisco Bay, Fort Point gage. Tide correctors used for the reductions of final soundings reflect approved hourly heights zoned from the following:

Coyote Creek, California (941-4575)
Dumbarton Bridge, California (941-4510)
Guadalupe Slough, California (941-4549)
Mowry Slough, California (941-4519)

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic. The revisions are contained in the final data listing.

A digital file for this survey has been generated and includes categories of information required to comply with N/CG2 Hydrographic Survey Guideline No. 23, Completion of Digital Hydrographic Surveys, September 7, 1983. Certain descriptive information, however, may not be included in the digital record due to the restrictions of the presently available cartographic codes. The user should refer to the smooth sheet for complete information.

2. CONTROL AND SHORELINE

Hydrographic control and positioning are adequately discussed in sections F and G of the hydrographer's report and in the Horizontal and Electronic Control Reports for OPR-L123-PHP-81 and the CG/NOAA 3/82, Dumbarton Bridge to Mud Slough report, dated February 1984⁵.

Horizontal control station positions used during hydrography are published positions based on the North American Datum of 1927.

Applicable shoreline manuscript is TP-00538, a ^{Revision Print (BP116947)} registered, Class III map, which originates from photographs dated March 1977 and May 1981. This shoreline was transferred to the smooth sheet in black ink.

Hydrographic operations continued 1.2 nautical miles past the limits of TP-00538 to longitude 121°56'03"W. The smooth sheet, shoreline from longitude 121°58'00"W to the chart limits at longitude 121°51'00"W is portrayed in brown ink from chart 18651, 33rd edition. Shoreline is not shown on the smooth sheet from longitude 121°57'00"W to 121°56'03"W because of the lack of a source document.

3. HYDROGRAPHY

Soundings at line crossings are in good agreement. The depth curves could be completely and adequately drawn. Delineation of the bottom configuration and the determination of least depths are adequate except in the narrow sloughs. Investigations of these waterways at tide stages above MLLW are not adequate for determining the limit of navigation at chart datum. One to three lines of channel - oriented sounding does not adequately portray the deeper portions of the channel. The bottom configuration of these sloughs is complex, changeable and cannot be readily described without an intensive investigation. Such an investigation is not warranted.

4. CONDITION OF SURVEY

The hydrographic records and reports are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change 3, except as noted in the Preprocessing Examination Report, dated July 11, 1985, and:

The hydrographer failed to investigate or make recommendations for disposition of piles, dolphins and piers from prior survey H-8282. Subsequently, prior survey features not disposed of were transferred to the smooth sheet.

Do not concur. See Exam. Rpt

"A basic hydrographic field survey is not complete until... prior survey findings in disagreement with or not supported by present survey data have been thoroughly investigated and resolved". Hydrographic Manual 4.1.1.7.

5. JUNCTIONS

H-10158 junctions in the northwest with H-10132 (1984) 1:10,000. The junction, ~~has been adequately effected~~. The junction note, "Joins", is in red ink. ~~will be discussed in the evaluation of that survey~~ ^{Adjoins}

6. COMPARISON WITH PRIOR SURVEYS

⁻¹⁹⁵⁷
H-8281 (1956) 1:10,000
H-8282 (1956) 1:10,000
⁻¹⁹⁵⁷

Present survey soundings do not compare well with these prior surveys. Shoaling has developed in all channels since 1956 producing soundings in the present survey that are 1 to 3 feet shoaler. The shoaling is attributed to normal alluviation of the area by tributary runoff and tidal action.

The following features were transferred from H-8282 in violet ink to the smooth sheet.

<u>Feature</u>	<u>Latitude North</u>	<u>Longitude West</u>
submerged pipeline (end)	37°28'08.7"	121°59'45.3"
submerged pipeline (end)	37°27'52.2"	121°59'45.1"
pipeline (end)	37°28'15.0"	121°58'30.6"
pipeline (end)	37°28'11.6"	121°58'31.0"
cable (end)	37°28'12.3"	121°58'21.3"
cable (end)	37°28'05.9"	121°58'21.5"
dolphin	37°28'10.8"	121°58'21.3"
dolphin	37°28'10.2"	121°58'21.8"
pier (centered at)	37°26'07.4"	122°01'33.2"

} disregard

} disregard

The name, "Whisman Slough", at latitude 37°26'12"N, longitude 122°04'00"W was transferred from H-8281 onto the smooth sheet. Disregard (Unapproved name) See Exam. Rpt.

With the transferring of features from H-8281 and H-8282 to the smooth sheet, H-10158 is adequate to supersede the above prior surveys within areas of common coverage.

7. COMPARISON WITH CHART

¹⁸⁶⁵
Chart ~~1856~~, 33rd Edition, dated September 13, 1982; scale 1:40,000. -
Chart ~~1856~~, 34th Edition, dated January 19, 1985; scale 1:40,000. -
¹⁸⁶⁵

Project Instructions Change No. 5 required the hydrographer to compare with the 34th Edition, but at the time of the survey this edition was not yet available. This comparison includes the 34th Edition.

a. Hydrography - Charted information originates with the prior surveys discussed in section 6 of this report and miscellaneous sources. For additional information see Section L. of the hydrographer's report.

Pre-survey review items #46 and #47, are adequately discussed in Section K (page 16-17) of the hydrographer's report.

The charts portray a channel, centered at latitude 37°28'00"N, longitude 121°57'45"W, connecting Mud Slough to Coyote Creek. The hydrographer comments that the channel bares at all stages of tide and in fact is not a channel. A highwater change, as per the field sheet, has been made along Coyote Creek, cutting off this charted channel. Chart area as shown on smooth sheet.

Present survey data reveals a small channel continuing up Mud Slough from its terminus at Coyote Creek. This channel is not presently charted. Chart areas as shown on smooth sheet.

Geographic names appearing on the smooth sheet have been plotted in accordance with this chart. One exception is Whisman Slough, which was ^{disregard} plotted in accordance with H-8281.

A Danger to Navigation Report, (copy appended) was submitted to the Twelfth Coast Guard District and the Defense Mapping Agency from NOAA's Pacific Hydrographic Party on May 10, 1985. No additional dangers were identified during office processing.

H-10158 is adequate to supersede charted hydrography within the common area.

b. Controlling Depths - There are no controlling depths within the limits of this survey.

c. Aids to Navigation - There are four fixed aids and six floating aids within the limits of this survey. These aids were located as follows:

Fixed Aids

<u>1985 Light List Number</u>	<u>Name</u>	<u>Latitude North</u>	<u>Longitude West</u>
698	Light #16	37°29'34.514"	122°05'09.177"
699	Light #17	37°28'43.716"	122°04'33.452"
700	Light #18	37°28'12.299"	122°03'46.321"
1985 LL Pg. No. 52	Daybeacon #20	37°27'26.845"	122°02'57.119"

Floating Aids

	<u>Name</u>	<u>Latitude North</u>	<u>Longitude West</u>
Not on Light List	Green can buoy #19	37°27'35.74"	122°03'00.95"
1985 LL Pg. No. 52	Green can buoy #1	37°27'20.87"	122°02'47.31"
1985 LL Pg. No. 52	Red nun buoy #2	37°27'13.57"	122°02'46.35"
1985 LL Pg. No. 52	Red nun buoy #4	37°27'08.22"	122°02'29.46"
1985 LL Pg. No. 52	Green can buoy #3	37°27'09.91"	122°02'22.61"
1985 LL Pg. No. 52	Red nun buoy #6	37°27'09.01"	122°02'09.96"

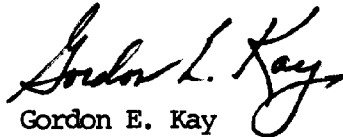
These charted aids to navigation have been located and determined to adequately serve their intended purposes.

8. COMPLIANCE WITH INSTRUCTIONS

H-10158 adequately complies with the project instructions noted in section 1 of this report.

9. ADDITIONAL FIELD WORK

This is an excellent basic survey. Additional field work is not recommended.



Gordon E. Kay
Cartographer

This survey has been examined and it meets Charting and Geodetic Services standards and requirements for use in nautical charting. The survey is recommended for approval.



Dennis Hill
Chief, Hydrographic Section

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10158

I have reviewed the smooth sheet, accompanying data, and reports of this hydrographic survey. Except as noted in the Evaluation Report, the hydrographic survey meets or exceeds Charting and Geodetic Services (C&GS) standards, complies with instructions, and is accurately and completely represented by the smooth sheet and digital data file for use in nautical charting.

Thomas W. Coleman 3/26/86
Chief, Nautical Chart Branch (Date)

CLEARANCE:

N/MOP2:LWMordock

SIGNATURE AND DATE:

Robert L. Sandert

After review of the smooth sheet and accompanying reports, I hereby certify this survey is accurate, complete, and meets appropriate standards with only the exceptions as noted above. The above recommendations are forwarded with my concurrence.

Robert L. Sandert 3/26/86
Director, Pacific Marine Center (Date)



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
 NATIONAL OCEAN SERVICE
 OFFICE OF CHARTING AND GEODETIC SERVICES
 ROCKVILLE, MARYLAND 20852

N/CG242:SRB

February 26, 1987

TO: N/CG24 - Roy K. Matsushige *RM*
 FROM: N/CG242 - *George K. Myers, Jr.*
 George K. Myers, Jr.
 SUBJECT: Examination of Hydrographic Survey H-10158 (1984-85), California, San Francisco Bay, Coyote Creek and Vicinity

Chief of Party Paul T. Steele
 Field Unit Pacific Hydrographic Party
 Processed by Pacific Marine Center
 Examined by S. R. Baumgardner

An examination of hydrographic survey H-10158 (1984-85) was accomplished to monitor the survey for adequacy with respect to data acquisition, conformance with applicable project instructions, delineation of the bottom, determination of least depths, navigational hazards, junctions, sounding line crossings, smooth plotting, shoreline transfer, decisions made and actions taken by the evaluator, and the cartographic presentation of data.

Cartographic deficiencies and constructive comments are noted on a 1/2-scale copy of the survey smooth sheet which will be forwarded to the marine center. Digital data on magnetic tape were not available during the examination of this survey. Therefore, an inspection of a graphic plot from the certified tape was not performed.

In general, the survey was found to conform to National Ocean Service standards and requirements except as stated in the Evaluation Report and as follows:

1. The 6-foot depth curve in Coyote Creek and the 0-foot depth curve in Mowry Slough are not in coincidence in the junctional areas of the present survey and H-10132 (1984-85). The evaluator states that an adequate junction was effected. } disregard SRB
2. During processing a large number of soundings were placed in excess unnecessarily.



3. In section 4 of the Evaluation Report (Condition of Survey) the hydrographer is cited for failure to investigate or make recommendations for disposition of piles, dolphins, and piers from prior survey H-8282 (1956-57).

This criticism is unjustified as all of the above features were adequately resolved, either by field investigation or documentation in the field report.

4. The apparent shoreline in marsh, as depicted on the Revision Print TP-00538 (BP-116947) based on aerial photography of 1977 and 1981, was not transferred to the smooth sheet as required. (See section 7.3.4 of the Hydrographic Manual.) The revision print should be used to ascertain the limits of apparent marsh shoreline for charting.

5. The NOAA Form 76-155 "Geographic Names" was not approved by the Chief Geographer as required. (See Hydrographic Survey Guideline No. 22.) Approval was obtained during this examination.

As a result, the name "Whisman Slough" was removed from the smooth sheet and replaced by the name "Stevens Creek," that existed at the time of the survey. Also, the name "Moffett Channel" was added for the channel located in latitude 37°25'35"N, longitude 122°00'40"W.

6. Chart 18652, 23rd edition, dated July 28, 1984, covers a portion of the present survey area and should have been referenced in section 7 of the Evaluation Report (Comparison with Chart). A comparison was accomplished during the examination. As a result, the present survey is adequate to supersede the charted hydrography within the common area.

7. Four towers, originating with Revision Print TP-00538, three in the vicinity of latitude 37°27'50"N, longitude 122°01'24"W, and one in latitude 37°27'11"N, longitude 122°01'55"W, were not transferred to the smooth sheet. Also, the triangulation station names of the towers located in Coyote Creek and Guadalupe Slough are incorrect on the smooth sheet. See Revision Print TP-00538 for the correct placement and names of the above.

8. The following stations plotted on the smooth sheet with triangulation symbols (code 139 or code 250) were not identified by the year of establishment.

<u>Station Number</u>	<u>Station Name</u>
216	SAN FRANCISCO BAY S CH LT 16
217	SAN FRANCISCO BAY S CH LT 17
218	SAN FRANCISCO BAY S CH LT 18
220	SAN FRANCISCO BAY S CH DBN 20
660	TRANSFORMER POLE
706	DUMP S W

All the stations were established in 1984, except Triangulation Station DUMP S W, which was established in 1985. Although formal documentation of acceptance of these stations by NGS is not as yet available to the examiner, it is assumed that specifications for triangulation stations have been complied

with and that the necessary records and computations will be forwarded and the stations accepted by NGS.

9. Red nun buoy "6," located in latitude $37^{\circ}27'09''\text{N}$, longitude $122^{\circ}02'10''\text{W}$, was mistakenly labeled C "6" instead of N "6."

DEPARTMENT OF COMMERCE
 National Oceanic and Atmospheric Administration
 National Ocean Survey
 Rockville, Maryland

Hydrographic Index No. 96M

