10373

Diagrams 5527 & 5534-2

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-10-1-91

Office No. H-10373

LOCALITY

State California

General Locality Sacramento River

Locality Sherman Island to Decker Island

1991

CHIEF OF PARTY
LT G.F. Glang

LIBRARY & ARCHIVES

DATE February 23, 1993

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

CP-7
18659
18661 'A' + 'B'
18652 'E'
18656

10373

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.

H-10373

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-10-1-91

State: California

General locality: Sacramento River

Locality: Sherman Island to Decker Island

Scale: 1:10,000 Date of survey: April 8 - July 3, 1991

Instructions dated: June 5, 1991 Project No.: OPR-L208-PHP

Vessel: Launch 1101 (0651), Monark 1102 (0652)

Chief of party: LT Gerd F. Glang, NOAA

Surveyed by: LT Glang, LT Nodine, ST Bigelow, ST Rybarski, ET Wernicke, ST Baker

Soundings taken by echo sounder, ~~hand lead, pole~~: DE-719C

Graphic record scaled by: PHP Personnel

Graphic record checked by: PHP Personnel

Verification by: Leonardo T. Deodato Automated plot by: PHS Xynetics Plotter

~~Protracted by~~

Evaluation by: Gordon E. Kay

~~Verification by~~

Soundings in ~~fathoms~~ meters ~~feet~~ at ~~MLW~~ MLLW and decimeters

REMARKS: Time in UTC. Revisions and marginal notes in black were generated during office processing. All separates are filed with the hydrographic data, as a result page numbering may be interrupted or non-sequential.

AWOIS and SURF Rec'd 7/93

K.W.W.

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

U.S. GOVERNMENT PRINTING OFFICE: 1986 - 652-007/41215

PACIFIC HYDROGRAPHIC PARTY

LT GERD F. GLANG, NOAA, Chief of Party

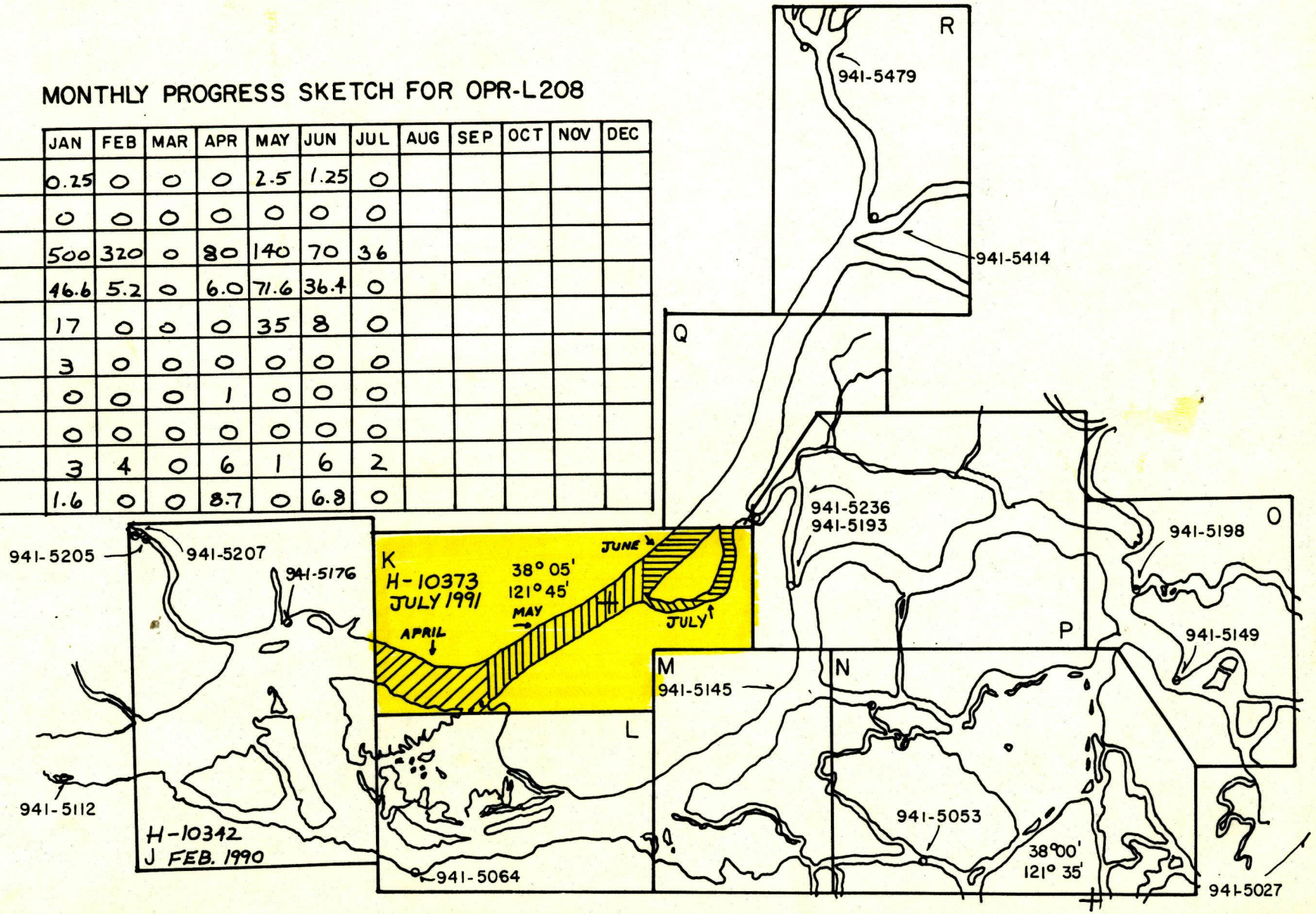
OPR-L208

SACRAMENTO RIVER, CA. SHEETS J, K, L, M, N, O, P, Q, R

JAN. - 1991

MONTHLY PROGRESS SKETCH FOR OPR-L208

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
SQ.N.M. Sdgs.	0.25	0	0	0	2.5	1.25	0					
L.N.M. Misc Dist	0	0	0	0	0	0	0					
L.N.M. Dist To& Fr	500	320	0	80	140	70	36					
L.N.M. Sdg. Line	46.6	5.2	0	6.0	71.6	36.4	0					
Bottom Samples	17	0	0	0	35	8	0					
Control Stations	3	0	0	0	0	0	0					
Tide Gages	0	0	0	1	0	0	0					
Wire Drag S.N.M.	0	0	0	0	0	0	0					
AWOIS Items	3	4	0	6	1	6	2					
Shoreline Ver.	1.6	0	0	8.7	0	6.8	0					



Descriptive Report to Accompany Hydrographic Survey H-10373

Field Number PHP-10-1-91
Scale 1:10,000
1991

Pacific Hydrographic Party
Chief of Party: LT Gerd F. Glang

A. PROJECT

This survey was conducted in accordance with Hydrographic Project Instructions OPR-L208-PHP, Sacramento River, California, dated June 05, 1990.

Hydrographic survey H-10373 was conducted to obtain data for maintenance of existing nautical charts, and for a new series of 1:12,500-scale charts. This project also responds to the San Francisco Pilots Association and the U.S. Army Corps of Engineers (COE), Bay Model Engineering Office, by aiding the update of the bay model.

This survey's sheet letter is "K", as specified by the project instructions.

B. AREA SURVEYED *See Evaluation Report section 1*

The area surveyed for H-10373 covers the Sacramento River, Sherman Island to Decker Island, including Horseshoe Bend. This survey is bounded to the north by latitude 38°06'~~21~~23"N; to the south by a line drawn from latitude 38°03'1~~3~~2"N, longitude 121°48'04"W, to latitude 38°03'18"N and that parallel's intersection with the western shore of Sherman Island. To the west, this survey is bounded by longitude 121°49'53"W.

Data acquisition was conducted from April 08 through July 03, 1991.

C. SOUNDING VESSELS

NOAA Launch 1102 (EDP No. 0652), a 22-foot SeaArk, was used to conduct all sounding data acquisition, collect bottom samples, conduct velocity casts, and verify shoreline. NOAA Launch 1101 (EDP No. 0651), a 29-foot Jensen, was used on DN 176 and DN 183 for bottom drags and detached positions only. No sounding or height data is associated with this vessel.

No changes to the standard vessel sounding configurations were necessary.

Sounding lines were run at 100 meter spacing, per Section 4.3 of the Hydrographic Manual.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

This survey was completed with the following HDAPS Programs:

Program Name	Program Version	Installation Date
DISC_UTIL	1.00	04/22/91
MB	0.00	04/22/91
HJ	0.00	04/22/91
AUTOST	1.10	06/26/91
SURVEY	6.02	06/26/91
POINT	1.31	06/26/91
PLOTALL	1.95	06/26/91
PRINTOUT	2.30	04/22/91
CARTO	1.20	04/22/91
BASELINE	1.10	04/22/91
QUICK	1.10	04/22/91
CONVERT	2.42	06/26/91
INVERSE	1.31	06/26/91
LOADNEW	1.30	04/22/91
GLOBAL	1.11	06/26/91
REJECT	1.00	04/22/91
MAKEFIX	1.00	04/22/91
BIGABST	1.13	06/26/91
REAPPLY	1.32	06/26/91
DIAGNOSTIC	2.70	04/22/91
HPRAZ	1.22	06/26/91
FILESYS	2.11	06/26/91
BACKUP	2.00	04/22/91
BACKOLD	1.11	06/26/91
NEWCONT	1.10	04/22/91
LISTAWOIS	1.20	04/22/91
PREDICT	1.11	06/26/91
POSTSUR	5.12	06/26/91
READPROJS	1.07	06/26/91
SOFTCHECK	1.11	06/26/91
DP	1.11	06/26/91
MANU_DATA	1.11	06/26/91
RAMSAVER	1.00	04/22/91
REFTIDE1	*.**	04/22/91
Vers	*.**	06/26/91
DAS_SURV	6.03	06/26/91
CAT_KEYS	.99B	06/26/91
CSTAT_UP	1.00	06/26/91
CATALOGER	*.**	06/26/91
EXCESS	3.00	06/26/91
GRAPHEDIT	1.60	06/26/91

The PC-DAS SURVEY Program, version 3.7, was used for on-line data acquisition aboard the survey vessels.

The following non-HDAPS computer programs were used:

VELOCITY	(IBM PC)	1.11	3/9/90
NADCON	(IBM PC)	1.01	9/89

Significant software problems encountered include errors in the MAKEFIX Program, version 1.00, BIGABST Program, version 1.13, PC-DAS SURVEY Program, version 3.7, and the CONVERT Program, version 2.41.

MAKEFIX was used on several occasions and, on DN 140 specifically, apparently caused the data header to be corrupted at a line beginning. The data catalog is not updated when MAKEFIX is used (see annotations in the RMPO for DN 140), *filed with the survey records.*

BIGABST does not correctly compute mileage for range/azimuth (R/Az) data, nor does it properly count DP's when several have been rejected on a particular DN.

PC-DAS SURVEY apparently miscounts the fix numbers. This error occurred randomly and could only be corrected by a careful review of the RMPO vs. the echogram. In addition, on several occasions, the SURVEY Program did not send an event marker to the echosounder and no visual record of a fix appeared on the echogram. When fixes appeared in the wrong numerical order (i.e. duplicate fixes occurred on-line), MAKEFIX was used to attempt to correct the numbering. As noted above, MAKEFIX often created more confusion while trying to correct the misnumbered fixes. It is not clear if the fix numbering problem is operator induced. *The printout and echogram are in agreement.*

The CONVERT Program prior to version 2.42 did not recognize multiple control setups within the same data file. When data was collected using R/Az positioning methods and several setups were required, the CONVERT Program applied the same C-O corrector to all minirangers (MR) used to control the arcs. This problem was corrected after contacting the HDAPS Program Office.

The RMPO was annotated when software problems affected the data.

E. SONAR EQUIPMENT

Not applicable.

F. SOUNDING EQUIPMENT

Raytheon DE-719C Fathometers, S/N 10280 (Launch 1102) and S/N 6241

(Launch 1101), modified with an Odom Hydrographic Systems, Inc. Digitrace, were used for the entire survey. No problems were experienced with these echosounders.

Soundings were recorded in meters, with an assumed speed of sound through water of 1500 m/sec. Depths encountered in the survey area range from 0.1 meters to 26.31 meters.

The digitized soundings from the echosounder were closely monitored for comparison with the analogue trace to ensure a reasonable agreement between the two. Any necessary adjustments in this comparison were noted on the echogram. The only manipulation of this instrument was in the adjustment of the sensitivity, speed of sound, and tide and draft controls.

Survey records were scanned by PHP employees in accordance with the Hydrographic Manual, with the digital sounding taking precedence over the analogue trace. The digital sounding is generally deeper than the analogue trace. The error typically occurs over sloping bottom and is apparently due to the digital sounding being recorded approximately two seconds before the event mark occurs on the analog echogram. The error increases with depth, ranging from 0.2 meters at a 4.0-meter depth up to 0.7 meters, at a depth of 22 meters. This error is not an uncommon characteristic of the Raytheon DE719-C/Odom Digitrace combination. No corrections were made to the data for this error.

G. CORRECTIONS TO ECHO SOUNDINGS

Corrections for the speed of sound through the water column were computed from data obtained with an Applied Microsystems Laboratories (AML) Velocity of Sound Profiler (S/N 03004). The VELOCITY Program was used for determining the speed of sound correctors.

The following casts were taken:

Cast	Day	Depth	Position	
1	135	15.8	38°04.0'N	121°46.0'W
2	140	15.0	38°04.0'N	121°46.0'W
3	150	14.5	38°04.0'N	121°46.0'W
4	158	19.7	38°06.2'N	121°42.7'W
5	165	16.0	38°05.0'N	121°44.7'W
6	171	20.4	38°06.2'N	121°42.7'W
7	177	20.3	38°06.2'N	121°42.7'W

The AML instrument was calibrated by Northwest Regional Calibration Center on March 19, 1991. A copy of the calibration report is included in Separate IV (Sounding Equipment Calibration and Corrections), filed with the survey records.

Weather permitting, lead line comparisons were taken daily to determine instrument error and to verify static draft. The instrument errors computed varied from 0.0 to +0.2 meters. This instrument correction was not applied to final field sheet soundings as it was not constant and may have been due to bottom type and individual operators. Lead line comparisons were annotated on the echograms and a lead line log is included in Separate IV, *filed with the survey records.*

A static draft of 0.30 meters was applied on-line via the offset table. This was measured from a punch mark on the side of Launch 1102, two feet above the transducer, to the water surface, then subtracted from the difference. The data were applied to all soundings acquired with the echosounder. The offset tables are included in Separate IV, *filed with the survey records.*

Settlement and squat measurements for Launch 1102 were performed on July 10, 1989 in the vicinity of Benicia Point, near the city wharf, and off nearby islets of Benicia. The level method was used. Settlement and squat correctors were determined and applied to all survey data on-line. Offset Table 1 is for Launch 1101 and Offset Table 2 is for Launch 1102. Data from the settlement and squat determination are included Separate IV, *filed with the survey records.*

The Final Field Sheet was plotted using predicted tides determined from San Francisco, California, using tidal zones and correctors designated in the project instructions. Three zones were designated for the survey area. The three zones were meaned (per telecon with PHS) to produce one zone (+3.5 hr HW, +4.35 hr LW, x 0.74 height ratio) and applied to all sounding data. Data for DN 183 and DN 184 were collected after the Three Mile Slough tide gage was levelled and turned off. This should not be of any consequence as no sounding data was obtained on these days.

Approved water levels were requested from the Sea and Lake Levels Branch, N/OMA12, in a letter dated July 10, 1991. A copy of this letter is included in Appendix V, *filed with the survey records.*

H. CONTROL STATIONS *See Evaluation Report section 2.*

The horizontal control datum for this project is North American Datum (NAD) 1983. A copy of the HDAPS Control Station Table is *attached.* ~~included in Appendix III.~~

Five lights in the Sacramento River Deep Water Ship Channel (SRDWSC) were obscured on the Final Field Sheet (FFS) by horizontal control stations:

The full name of these lights (offshore features) are "Sacramento River Deep Water Ship Channel"

Station No.	Offshore Feature
Sta. 704	
Sta. 705*	Light 7
Sta. 706	Light 10
Sta. 707*	Light 11
Sta. 733	Light 16
Sta. 711	Light 17

*Stations not used to control this survey.

The Pacific Photogrammetric Party (PPP) from Seattle, Washington located all control stations, except three, using Global Positioning System (GPS) receivers to Third Order, Class I, accuracy. Station 700, Blackjack (1931), Station 701, Kirker (1946), and Station 730/13, NO 8 USE (1931), were positioned from the NGS CONUS database. The 1991 OPR-L208-PHP Horizontal Control Report is scheduled for completion by Pacific Photogrammetric Party personnel and is scheduled for submission in September, 1991 by PPP. A breakout of unadjusted and preliminary field positions, provided by PPP, is ~~included in Appendix III.~~ Attached. See Evaluation Report Section 2

Station 701 (Kirker, 1946), Station 716 (Point Beenar Light) and Station 730/13 (NO 8 USE, 1931) do not plot within the limits of the Final Field Sheet. ✓

I. HYDROGRAPHIC POSITION CONTROL

Survey Methods

Hydrographic position control was accomplished using the Motorola Mini-Ranger (MR) Falcon 484 positioning system which provided accuracy to meet the 1:10,000-scale survey requirements. ✓ Range/range and range/azimuth positioning methods were used during this project.

When using three or four lines-of-position (LOPs), a critical system check is continuously obtained by observing the error circle radii (ECR) and the maximum residual (maxres) values on the Navitronics PC-DAS screen in the survey vessel. Fixes which had erratic lines of position indicated by high residuals on the "raw" listing were "smoothed" during processing. Positions were "smoothed" by dead reckoning between two accurate positions. ✓ If more than four consecutive positions had high residuals with an erratic track plot, the data were rejected and later rerun. A point position recomputation was also used when fix data was erratic and the smoothing process was not adequate enough to save the data. Positions were recomputed by rejecting an LOP or reaccepting an LOP that was turned-off manually or automatically while on line. If, after point position recomputation, acceptable ECR and maximum residual values were indicated, the data were then

smoothed and saved. Raw data printouts were annotated to reflect these edits.

Critical System Checks

Range/Range critical systems checks consisted of monitoring the ECR and maximum residual values per FPM Section 3.1.3.3.

Range/Azimuth (R/Az) critical systems checks were conducted daily at known fixed-points to confirm MR correctors and MR/T2 positions. All fixed-point residual check values were less than 5 meters per FPM Section 3.1.3.3. In addition, the T2 observer initialed and checked the theodolite to known stations and compared these angles to computed check angles. Echograms and the Raw Master Printout (RMPO) for each day of R/Az data acquisition are annotated with the initial and check angles. Copies of the inverse computations and static calibration forms are included in the daily data files. A Wild T2, S/N 276812, was used for all R/Az data acquisition. The MR and T2 were positioned over the same station on all occasions except DN 165. On this day, the MR was located at Station 713 and the T2 on Station 714. Data collection was discontinued when it was judged the angles of intersection between the range arcs and the azimuth angles were no longer acceptable (less than approximately 75°).

Mini-Ranger Falcon Calibrations

Baseline calibrations were performed on March 20, 1991 in accordance with FPM Section 3.1.2.1. The baseline correctors were incorporated into the PC-DAS C-O Tables and applied on-line. C-O Table 1 is for Launch 1101 and C-O Table 2 is for Launch 1102. All records of these calibrations are included in Separate III (Horizontal Position Control And Corrections To Position Data). Filed with the survey records.

Positioning Equipment

The following RPU-R/T combinations were used:

Vessel EDP No.	RPU-R/T Serial No.
0651	F0243/H3705
0652	F0259/C1680

The following MR transponders were used:

MR Transponder Serial No.	Code
911634	1
G3510	2
F3251	3
F3047	4
B1214	5
F3256	6
B1411	7
911723	8
911632	9

All equipment serial numbers are annotated on the RMPO.

J. SHORELINE *See Evaluation Report, Section 2*

Shoreline detail shown on the final field sheet was transferred by hand from: TP-01059, 1:20,000-scale, NAD 1927 (between longitude 121°42'W and 121°44'W only); TP-01252, 1:10,000-scale, NAD 1927 (from longitude 121°44'W to 121°49'W); and TP-01251, 1:10,000-scale, NAD 1927 (west of longitude 121°49'W). NAD 27 datum ticks were applied to the NAD 83 field sheets and are shown in red on the FFS. Datum transformation from NAD 83 to NAD 27 was in accordance with FPM Section 7.4.

Field notes from shoreline verification can be found on the echograms, in the sounding volume, on the FFS, and the FFS Overlay. A Detached Position Listing created by the HDAPS DP Program is included in the data files. The echograms for DP's acquired on DN 98, DN 106 and DN 107 were inadvertently omitted.

Shoreline was verified by its junction with the hydrographic data and by visual inspection. The majority of shoreline agreed well with the shoreline manuscript, although some distortion was apparent while aligning the TP-sheets with the NAD 27 datum ticks on the FFS. Shoreline changes are shown in red on the FFS. The shoreline manuscript should take precedence over the current charted shoreline. Shoreline changes noted in red on the FFS should take precedence over the shoreline manuscripts and the charted shoreline. Shoreline changes appear to be due mostly to gradual erosion of the northern shore of the Sacramento River.
Concur

K. CROSSLINES

The 12.4 NM of channel lines, representing 16.4% of the hydrography on H-10373, were used for crossline comparisons. These crossline soundings agree to within 0.5 to 1.0 meters of the mainscheme soundings. In a few areas, where channel lines parallel the steep contours of the dredged channel, crossline to mainscheme comparison

was more difficult, but appeared to differ by no more than 2.0 meters.

L. JUNCTIONS *See Evaluation Report section 5*

Hydrography on this sheet junctions to the west with H-10342 (Suisun Bay and San Joaquin River, North of Pittsburg, 1:10,000, February 1991). There are no contemporary surveys which junction along the northeastern or southern limits of this sheet.

For comparison, soundings from this survey were plotted in standard units (feet) and junctioned with a ~~blueprint~~ copy of the PHP H-10342 FFS. The comparison was only approximate, but showed junction soundings agreed to within 2 feet and contours generally matched.

Overlapping junction soundings were not obtained per section 4.3.2 of the Hydrographic Manual.

M. COMPARISON WITH PRIOR SURVEYS *See Evaluation Report Section 6*

This survey was compared to the following prior surveys:

Survey No.	Scale	Year
H-6753	1:10,000	1942
H-7797	1:10,000	1950
TP-01059*	1:20,000	1979

* Used between longitudes 121°42'W and 121°44'W only.

One AWOIS item originated from a prior survey. AWOIS #51455, located at latitude 38°03'12.8"N, longitude 121°48'40.4"W, an obstruction originating from TP-01252/83-84 was found to be a V-shaped pier in ruins. The surveyed position (Pos #530, DN 134) was approximately 35 meters northeast of the scaled position. This difference is probably due to an error in the scaled position. The shoreline in the vicinity was inspected visually at low tide. The hydrographer recommends charting the pier ruins at the surveyed position. *Concur Chart pier in ruins as shown on the Smooth Sheet at latitude 38/03/19.32N, longitude 121/48/39.15W*

Sounding agreement between the present survey and H-7977 was good, generally 1 to 2 feet, with the present survey being the shallower of the two, with the exception of the dredged area of the SRDWSC. This general shoaling may be attributed to natural sedimentation and the movement of bottom material from the constant dredging. There has been some change to the shoreline due to the erosion of the steep bluffs on the north shore. The south shore has also changed, east and west of a point near latitude 38°03'15"N, longitude 121°47'45"W. Prior to the 1942 survey a levee existed at

this area. The levee broke, creating Sherman Lake and some small islands which are eroding. These changes are accurately depicted on the shoreline manuscript, and should take precedence over prior survey H-7977. CONCUR

Comparison was made with prior survey H-6753 at the eastern junction with H-7977. Sounding agreement was fair to poor with disagreement of as much as 3 to 13 feet; this survey generally being the shoaler of the two. There is some disagreement with the H-6753 shoreline. These changes are accurately depicted on the shoreline manuscript, and should take precedence over prior survey H-6753. CONCUR

Comparison was made with TP-01059*. Shoreline and features agree well with this survey. Additional items were located and can be found described in Section N of this report and on the Final Field Sheets. ✓

N. COMPARISON WITH THE CHART *see Evaluation Report section 7*

Comparisons were made with the following largest-scale charts covering the present survey area:

Chart No.	Edition	Date
18652	27th	August 18, 1990
18661	20th	June 9, 1990
18659	10th	July 7, 1990

✓

There were no danger to navigation reports submitted with survey H-10373.

Sounding agreement between charted soundings and H-10373 was fair to poor. Differences of 1 meter to 3 meters were not uncommon throughout the survey area, especially in Horseshoe Bend and off Decker Island, southeast of the SRDWSC. The Sacramento River (proper) was never surveyed by the National Ocean Service; a small portion of the river (within the limits of H-10373) was surveyed in 1942 and 1950. During the 1930's, the U.S. Army Corps of Engineers (COE) did basic surveys of the Sacramento and San Joaquin Rivers; COE surveys are still the major hydrographic charting source for these areas, which probably accounts for the poor sounding agreement. Charted depths are indicated on the chart tabulations. Sounding agreement between the tabulated channel depths and H-10373 agree to within 0.5 to 1.8 meters, with the charted soundings being the shoaler of the two. The COE frequently dredges the SRDWSC and is planning to dredge from approximately Decker Island North End Light to Cache Slough, beginning October 1990. *See attached Memorandum Supplement to Hydrographic Survey H-10373, August 16, 1991.* ✓

A total of 15 of 16 AWOIS items assigned to sheet "K" were addressed on this survey. These items appear on the overlay and ✓

descriptions are filed by DN with the data. Some of these items are described in this section for further clarification.

AWOIS #51565 is reassigned to Sheet "L" (PHP-10-2-91), H-10398.

AWOIS #51594 originates from LNM32/1978 (8/11/78)--12th CGD, as three pile stumps (covered 1 foot at MHW), located at latitude 38°04'56.7"N, longitude 121°45'29.8"W. A bottom drag was conducted on DN 183 at the scaled position, covering 150 meters in both directions out to 75 meters offshore with no findings. Detached positions (Pos.#6013-6015) were taken at the center of the search radii for each of the three drags. The hydrographer recommends the deletion of the obstruction at the charted position. Do not concur survey requirements not met. @ 250 meter search radius required. Retain as charted.

AWOIS #51617 originates from an unknown source (probably a 1961 photo revision) and is a row of piles, 2000 meters long, on the east side of Decker Island, in Horseshoe Bend. The center position, scaled from the chart, is at latitude 38°05'34.7"N, longitude 121°42'34.8"W. Visual inspection of the shoreline on DN 163 (by boat) found two small groups of 6-inch diameter piles located near the center position. These groups of piles paralleled the shoreline. These piles were either flush with the sand or bared 0.1 to 0.2 meters and were at or above the high water line. Due to the extent of this feature the hydrographer walked the entire eastern shoreline of Decker Island. Upon closer inspection, several groups of 6 inch diameter piles, all paralleling the shoreline, were found throughout the entire extent of the search area, baring 0.1 to 1.0 meter. The piles were, again, at or above the high water line. These piles appear to be the ruins of a bulkhead which extended along the entire east side of Decker Island, inside Horseshoe Bend (which was once the Sacramento River, prior to the dredging of the main waterway), south to a point near Decker Landing. Detached positions (Pos #1281 and 1283, DN 163) were taken at the northern and southern limits of the search area. The hydrographer recommends deleting the 2000-meter long row of piles on the east side of Decker Island as they are not a navigational danger. Concur

AWOIS #51618 originates from CL855/1980--USPS; obstruction, coils of 1 inch wire cable located at latitude 38°05'43.7"N, longitude 121°42'33.8"W. Upon visual inspection of the shoreline, several pieces and coils of wire cable were found alongshore while searching for AWOIS #51617. The sections of cable were found over a large area, near the same extent as AWOIS #51617, and were found to be located only above the high water line and buried by sand. Some sections of cable were engulfed and overgrown by trees on shore, which may indicate the length of time these features have existed. Disproval DP's taken on DN 163 (Pos #1281 and #1283), along with the field notes, for AWOIS #51617 verify the search area for AWOIS #51618. The hydrographer recommends retaining the obstruction at the charted position. Concur

AWOIS #51657 originates from LNM30/86 (7/24/86)--12th COD, as a dangerous submerged wreck (PA), barge carrying large boulders, sunk in latitude 38°03'23.7"N, longitude 121°47'27.8"W. Main scheme hydrography was run in the area on DN 127. A visual inspection was made (DN 134) at the charted position at low tide, with negative results. After running mainscheme hydrography on DN 127, a steep shallow contact was found on the echogram (Pos #367.28) closer to a charted obstruction. This contact was investigated after searching the approximate position for AWOIS #51657. A submerged barge with large rocks and timber was found, ~~baring~~ wrecked --0.2 meters at MLLW. Detached positions were taken at the northeast and southwest ends (Pos #531 and #534, respectively) with the exposed rock located near the center of the wreck. The near duplicate description of the item in the AWOIS file, when compared to the recovered item, and the fact that the charted wreck had an approximate position, concludes that the charted obstruction is the charted wreck (PA). The hydrographer recommends the deletion of the charted wreck (PA), located at latitude 38°03'23.7"N, longitude 21°47'27.8"W, and the deletion of the charted obstructions located at (scaled from chart) latitude 38°03'29.3"N, longitude 121°47'35.9"W. Recommend charting a wreck centered (scaled from survey) at latitude 38°03'28.4"N, longitude 121°47'36.3"W. Concur @ Concur

All AWOIS items regarding shoal soundings appear in this section only and are not described further in the data files.

AWOIS #51595 originates from an unknown source (probably U.S. Army Corps of Engineer data, charted before 1936) as a 17-foot shoal sounding. A 150-meter radius sounding development was conducted on DN 155, Vessel 0652, Pos #983-#1019, using 25-meter line spacing, centered at latitude 38°03'14.7"N, longitude 121°44'17.3"W. There was no evidence of a 17-foot shoal sounding upon completion of the sounding development. The hydrographer recommends the deletion of the charted 17-foot shoal sounding. Recommend data from this survey supersede the charted 17-foot sounding. Concur

AWOIS #51616 originates from BP111632--COE, August 1980 as an unsupported 15.1-foot shoal depth. A 100-meter radius sounding development was conducted on DN 156, Vessel 0652, Pos #1086-#1101, using 25-meter line spacing, centered at latitude 38°05'40.7"N, longitude 121°43'55.8"W. There was no evidence of a 15.1-foot shoal sounding upon completion of the sounding development. The hydrographer recommends the deletion of the charted 15.1-foot shoal sounding. Recommend data from this survey be used to supersede the charted 15.1-foot sounding. *Note: This AWOIS item's published position was corrected per telecon with N/CG24 on June 5, 1991. The corrected position is given above. @ Concur

4.6m

Numerous uncharted stumps and snags exist along the banks of the Sacramento River and its adjoining waterways. At high water, these obstructions are subject to movement and can create a serious

navigational hazard. Per conversation with BMC R.C. Rogala, Officer in Charge, U.S. Coast Guard Station Rio Vista, California, the Coast Guard handles many cases each year where vessels hit these obstructions, causing injury to passengers and damage to vessels. The hydrographer has towed some of these obstructions (some weighing tons) to shore several times during the course of the survey. Detached positions were not taken on these types of obstructions as they are high water features and/or non-permanent (floating) features and subject to movement. The hydrographer recommends amending the charted Caution Note B, to include: "Numerous stumps and snags exist along the banks of the Sacramento River and its adjoining waterways. At high water, these obstructions are subject to movement and can create a serious navigational hazard." CONCUR

O. ADEQUACY OF SURVEY

This survey is a complete basic hydrographic survey and is adequate to supersede all prior surveys within their common areas. Concur Six bottom samples at the northeast portion of this survey were inadvertently omitted.

P. AIDS TO NAVIGATION See Evaluation Report section 7.d

One floating aid to navigation is within the survey area. This buoy was located by detached position and serves its intended purpose (Pos #541, DN 134), at latitude 38/03/40.66N, longitude 121/47/58.72"W.

Five non-floating aids to navigation were located within the survey area:

Non-Floating Aid	Survey Position	Light List Position
SACRAMENTO RIVER DEEP WATER SHIP CHANNEL (SRDWSC)		
Fl R Light 8 LLN 7200	38° 03′ 34.5**6**"N 121° 48′ 30.6**4**"W	No published position.
Fl R Light 12 LLN 7220	38° 03′ 44.**78**"N 121° 47′ 3**1.0**"W **.95"**	38° 03.7′N 121° 47.6′W
Light is now approximately 225 meters northeast of its charted position and is still serving its purpose.		
Fl G Light 13 LLN 7225	38° 04′ 40.**65**"N 121° 46′ 02.**8**"W **.10"**	No published position.
Fl R Light 14 LLN 7230	38° 04′ 3**5.35**"N 121° 45′ 57.**4**"W **.70"**	No published position.

Fl G Light 15 LLN 7235	38° 05′ 23.3"N 121° 44′ 33.8"W	No published position.
Fl R Light 18 LLN 7250	38° 05′ 34.9"N 121° 44′ 07.0"W	38° 05.6′N 121° 44.1′W

The following aids to navigation were located to Third Order, Class I standards by the Pacific Photogrammetric Party from Seattle, Washington. Light 7 was also located by hydrographic method on DN 134.

Non-Floating Aid	Survey Position	Light List Position
SACRAMENTO RIVER DEEP WATER SHIP CHANNEL (SRDWSC)		
Fl G Light 7 LLN 7195	38° 03′ 44.0"N 121° 48′ 31.7"W	38° 03.7′N 121° 48.5′W
Fl R Light 10 LLN 7210	38° 03′ 35.0"W 121° 47′ 59.5"W	No published position.
Fl G Light 11 LLN 7215	38° 03′ 51.5"N 121° 47′ 38.1"W	38° 03.8′N 121° 47.5′W
Fl G Light 17 LLN 7245	38° 05′ 38.8"N 121° 44′ 11.8"W	No published position.

The two charted pipeline areas crossing the Sacramento River exist. Four pipeline crossing signs were located on DN 98 (Pos #12 and #13) and on DN 107 (Pos #49 and #53) and appear on the FFS and it's overlay. See smooth sheet.

The three charted overhead cable crossings exist. Overhead clearances were computed using zenith distances measured from Station 708 (SAI 199 2, 1991) on DN 176. DP's ~~simultaneously~~ taken directly beneath the overhead cables on DN 176 (Pos #6003 to #6005) were used to compute the cable elevations and were subsequently rejected from the edited HDAPS data. The charted overhead clearances are adequate. Supporting computations and observation records are included with DN 176 data.

A mooring buoy ~~located~~ charted at latitude 38°05′17"N, longitude 121°44′28"W does not exist. History of ownership was traced to the USCG Aids to Navigation Team, San Francisco. Although they have no record of this particular buoy having been placed or removed, they did conduct searches for all USCG mooring buoys, including this one, located on chart 18661. In addition to PHP's visual search, the CG's visual search in early 1990 was negative. A copy of a CG

message requesting removal of the buoy from the chart is provided in Appendix VI. (attached) See attached Memo Supplement to Hydrographic Survey H-10373, August 16, 1991.

Q. STATISTICS

Description	Quantities
Total Positions:	
1101	8
1102	~~1454~~ 1231
Detached Positions:	
1101	8
1102	~~156~~ 189
Total Nautical Miles of Hydro	109.5 ✓
Sq. Nautical Miles of Hydrography	3.75 ✓
Bottom Samples	43 ✓
Velocity Casts	7 ✓
Days of Production	30 ✓

R. MISCELLANEOUS

Bottom samples were taken in accordance with Hydrographic Manual Section 1.6.3. In accordance with the Project Instructions, samples were not submitted to the Smithsonian Institution. Bottom sample positions are plotted on the overlay and are listed on the Oceanographic Log Sheet-M, NOAA Form 75-44, which may be found in Separate II, *filed with the survey records.* ✓

Silting and sedimentation of the Sacramento River, particularly in the Sacramento Deep Water Ship Channel (SRDWSC) does occur. As discussed in Section N, the COE periodically surveys the SRDWSC and dredges accordingly. ✓

Significant deeps occur immediately offshore of the east and west entrance of Horseshoe Bend. These are apparently of natural origin. ✓

No anomalous tidal conditions were observed. ✓

Per Project Instructions, no current observations were conducted in the survey area. ✓

No magnetic anomalies were observed. ✓

S. RECOMMENDATIONS ✓

None.

T. REFERRAL TO REPORTS

TITLE	DATE
1991 Horizontal Control Report, OPR-L208-PHP (by PPP)	September, 1991
1991 Coast Pilot Report, OPR-L208-PHP	October, 1991

No separate Electronic Control Report or Corrections to Echo Soundings Report is scheduled for submittal.

Respectfully Submitted,

Thomas M. Rybarski
Launch Hydrographer in Charge

Approved and Forwarded,

Gerd F. Glang
Lieutenant, NOAA
Chief of Party

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Coast and Geodetic Survey
Seattle, Washington 98115-0070

Pacific Hydrographic Party
USATF 801 Beach Drive
Rio Vista, CA 94571-2003
(707) 374-5642

August 16, 1991

MEMORANDUM FOR: Dennis Hill
Chief, Hydrographic Processing Unit, N/CG2451

FROM: Gerd F. Glang
Lieutenant Gerd F. Glang, NOAA
Chief, Pacific Hydrographic Party, N/CG2453

SUBJECT: Supplement to Hydrographic Survey H-10373

This supplement clarifies items covered in the Descriptive Report for H-10373. Please insert a copy of this letter into the Descriptive Report for reference.

DR Section N, page 10 - COE dredging of the Sacramento River Deepwater Ship Channel occurs only after COE surveys have determined a need. The COE surveys the SRDWSC annually, after winter run-off has moved sediment. The COE determines from these surveys if dredging is required. At this time, the COE plans no dredging operations on the SRDWSC. (Per telecon with Bob Kelley, Sacramento COE, 916-557-5250).

DR Section P, page 14 - The mooring buoy located at latitude 38°05'17"N, longitude 121°44'28"W on chart 18661 was probably a private buoy. Telecon with Ms. Denny, CG District 11 OAN, indicates the buoy may have belonged to Dutra Dredging. Dutra also owns the private mooring buoy positioned in Horseshoe Bend (DN 163, Pos. #1274). Ms. Denny was investigating further, but indicated that Dutra Dredging does move mooring buoys periodically. It is likely that the missing buoy was moved by Dutra and not reported to the CG. The CG message for DR Appendix VI is attached. Additional information will be forwarded when available.

Atch

cc: 245

DN 134

AWOIS INVESTIGATION

AWOIS #51451 ✓ DATE: 5-14-91 ✓

CHART #18659 ✓ LAUNCH: 1102 ✓

ITEM DESCRIPTION: Piles, charted as subm (uncovs at MLLW). ✓

SOURCE: CL279/78--CAS18659(1977)
19

****

GEOGRAPHIC POSITION *NAD 83*

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	38°03'31.21"N	121°49'13.04"W	
OBSERVED:	38°03'31.17"N	121°49'13.61"W	# 527 ✓

POSITIONED BY: Range/Range

METHOD OF INVESTIGATION: Visual sighting

FINDINGS:
Subm pile approx 20m to waterline. Cov 0.3m at MLLW.

****

DIVING INVESTIGATION

DIVERS:
SEARCH RADIUS:
WATER VISIBILITY:
MAXIMUM DEPTH: BOTTOM TIME:
LEAST DEPTH:

FINDINGS:

****

CHARTING RECOMMENDATIONS:
The hydrographer recommends the piles remain as charted. *do not Concur*
Delete Charted Subm. piles. Chart subm piles as shown on smooth sheet.

16661 This 18659

DN 098

AWOIS INVESTIGATION

AWOIS #51452 ✓ DATE: 4-8-91 ✓

CHART #18659 ✓ LAUNCH: 1102 ✓

ITEM DESCRIPTION: Piles charted as subm with snags inshore of this position.

SOURCE: CL279/78--CAS18659(1977)
19

****

GEOGRAPHIC POSITION NAD83

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	38°03'17.61"N ✓	121°48'21.24"W	
OBSERVED:	38°03'17.71"N	121°48'21.13"W	# 7 ✓

POSITIONED BY: Range/Range

METHOD OF INVESTIGATION: Visual sighting

FINDINGS: Group of piles. ~~Bares~~ uncovers 0.7 1.0 at MLLW

****

DIVING INVESTIGATION

DIVERS:
SEARCH RADIUS:
WATER VISIBILITY:
MAXIMUM DEPTH: BOTTOM TIME:
LEAST DEPTH:

FINDINGS:

****

CHARTING RECOMMENDATIONS: Delete charted subm. piles.
The hydrographer recommends charting piles at the surveyed position. Concur

18661 Thru 18659

DN 098

AWOIS INVESTIGATION

AWOIS #51453 ✓ DATE: 4-8-91

CHART #18659 ✓ LAUNCH: 1102

ITEM DESCRIPTION: Piles, charted as subm (uncovs. at MLLW).

SOURCE: CL279/78--CAS18659(1977)

****

GEOGRAPHIC POSITION NAD 83

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	38°03'19.11"N ✓	121°48'35.34"W ✓	
OBSERVED:	38°03'19.29"N	121°48'35.10"W	# 9 ✓

18661 thru 18659

POSITIONED BY: Range/Range

METHOD OF INVESTIGATION: Visual sighting

FINDINGS:
Snag 12m long parallel to shore. At low water the branches stick straight up giving the appearance of small piles or stakes. ~~Bares~~ Uncovers 1.0m at MLLW. ✓ 0.7

****

DIVING INVESTIGATION

DIVERS:
S.EARCH RADIUS:
WATER VISIBILITY:
MAXIMUM DEPTH: BOTTOM TIME:
LEAST DEPTH:

FINDINGS:

****

CHARTING RECOMMENDATIONS: Delete the charted subm. stakes.
The hydrographer recommends charting a snag at the surveyed position. Concur

18661 Thru 18659

DN 098

AWOIS INVESTIGATION

AWOIS #51454 ✓ DATE: 4-8-91 ✓

CHART #18659 ✓ LAUNCH: 1102 ✓

ITEM DESCRIPTION: Stake uncovs. at MLLW, charted as subm. ✓

SOURCE: CL279/78--CAS18659(1977)
19

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	38°03'19.61"N ✓	121°48'36.94"W ✓	
OBSERVED:	38°03'19.74"N 5	121°48'36.84"W ✓	# 23

POSITIONED BY: Range/Range

METHOD OF INVESTIGATION: Visual sighting

FINDINGS:
4" X 4" stakes 10m S.W. of charted subm stakes. ~~Bares~~ UNcovers 0.3m at MLLW.
0.3 meters = .98 feet = 1.0 ft

****

DIVING INVESTIGATION

DIVERS:
SEARCH RADIUS:
WATER VISIBILITY:
MAXIMUM DEPTH: BOTTOM TIME:
LEAST DEPTH:

FINDINGS:

****

CHARTING RECOMMENDATIONS: Delete the charted subm. stake.
The hydrographer recommends the charting as subm stakes. do not concur
Chart stake, as shown on Smooth Sheet.

18661 Thru 18659

DN 134

AWOIS INVESTIGATION

AWOIS #51455 DATE: 5-14-91

CHART #18659 LAUNCH: 1102

ITEM DESCRIPTION: Obstruction,position scaled from map.

SOURCE: TP-01252/83-84
19

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	38°03'18.81"N	121°48'40.44"W	
OBSERVED:	38°03'19.31"N	121°48'39.14"W	# 530

POSITIONED BY: Range/Range

METHOD OF INVESTIGATION: Visual sighting.

FINDINGS:
Center offshore end of "V" shaped pier ruins w/55 gallon drum at offshore end. ~~Cov~~ Awash 0.1m @ MLLW.

****

DIVING INVESTIGATION

DIVERS:
SEARCH RADIUS:
WATER VISIBILITY:
MAXIMUM DEPTH: BOTTOM TIME:
LEAST DEPTH:

.FINDINGS:

****

CHARTING RECOMMENDATIONS:
The hydrographer recommends revising the charted obstruction to pier ruins at the surveyed position. See Descriptive Report, section M, page 9.

16661 thru 16659

DN 106 /

AWOIS INVESTIGATION

AWOIS #51456 ✓ DATE: 4-16-91 ✓

CHART #18659 ✓ LAUNCH: 1102 ✓

ITEM DESCRIPTION: Ruins, position scaled from chart

SOURCE: Unknown ✓

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	38°04'04.30"N ✓	121°49'15.14"W ✓	
OBSERVED:	38°04'05.45"N ✓	121°49'14.31"W ✓	# 38

POSITIONED BY: Range/Range

METHOD OF INVESTIGATION: Visual sighting

FINDINGS:
Offshore end of pier ruins, 14m long 5m wide. ~~Bares~~ uncovers 0.3m at MLLW

****

DIVING INVESTIGATION

DIVERS: .
SEARCH RADIUS:
WATER VISIBILITY:
MAXIMUM DEPTH: BOTTOM TIME:
LEAST DEPTH:

FINDINGS:

****

CHARTING RECOMMENDATIONS: Delete the charted ruins.
The hydrographer recommends the ruins remain as charted. Do Not Concur
Chart pier ruins as shown on the smooth sheet.

18661 thru 18659

DN 183

AWOIS INVESTIGATION

AWOIS #51577 DATE: 7-2-91

CHART #18~~5~~1 LAUNCH: 1101

ITEM DESCRIPTION: Row of Piles (Two Piles PA Charted)

SOURCE: CL1840/72 USPS

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	38°03'43.71"N	121°46'57.84"W	
OBSERVED:	38°03'43.51"N	121°46'57.78"W	# 6008
	38°03'42.67"N	121°46'59.17"W	# 6009
	38°03'44.21"N	121°46'55.97"W	# 6010

POSITIONED BY: Range/Range

METHOD OF INVESTIGATION:
Three (3) 50m Bottom drags, one at each position, dragging in both directions around the GP (CW and CCW). Center of drag secured onshore. AWOIS GP is approximately 3m from shore.

FINDINGS: No snags, negative contact.

****

DIVING INVESTIGATION

DIVERS:
SEARCH RADIUS:
WATER VISIBILITY:
MAXIMUM DEPTH: BOTTOM TIME:
LEAST DEPTH:

FINDINGS:

****

CHARTING RECOMMENDATIONS:
The hydrographer recommends the removal of row of piles from the chart. Concur

DN 176

AWOIS INVESTIGATION

AWOIS #51593 ✓ DATE: 6-25-91 ✓

CHART #18661 ✓ LAUNCH: 1101 ✓

ITEM DESCRIPTION: 3 Piles

SOURCE: Unknown, possible 1959 photo revision. ✓

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	38°04'53.20"N ✓	121°43'58.83"W ✓	
OBSERVED:	38°04'53.26"N	121°43'58.80"W	# 6000-
	38°04'53.92"N	121°44'00.49"W	# 6001

POSITIONED BY: Range/Range

METHOD OF INVESTIGATION:
Two (2) 50m bottom drags, one at each position, dragging in both directions of GP (CW and CCW).

FINDINGS: No snags, negative contact.

75 meter radius search required.

****

DIVING INVESTIGATION

DIVERS:
SEARCH RADIUS:
WATER VISIBILITY:
MAXIMUM DEPTH: BOTTOM TIME:
LEAST DEPTH:

FINDINGS:

****

CHARTING RECOMMENDATIONS:
The hydrographer recommends deleting the piles at the charted position. ~~Do not concur. Survey requirements not met. Retain as charted.~~
Pier and pile located in vicinity, revise chart as shown on present survey.

DN 183

AWOIS INVESTIGATION

AWOIS #51594 ✓ DATE: 7-2-91 ✓

CHART #18661 ✓ LAUNCH: 1101 ✓

ITEM DESCRIPTION: Three Pile Stumps. Approx one half mile above Light 13, 50 yds from the North bank.
Charted as a Obstn PA

SOURCE: LNM32/78(8/11/78)-12th CGD
19

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	38°04'56.70"N ✓	121°45'29.83"W ✓	
OBSERVED:	38°04'56.85"	121°45'29.75"	# 6013
	38°04'58.27"	121°45'27.59"	# 6014
	38°04'56.30"	121°45'33.04"	# 6015

POSITIONED BY: Range/Range

METHOD OF INVESTIGATION:
Three (3) 75m Bottom drags, one at each position. Effective search area was 150m@ in both directions (NE & SW) of the GP, from river bank out 150m. Drags were performed in CW and CCW direction at each position.

FINDINGS: No snags, negative contact.

@ *Survey requirements of 250 meter each direction not met.*

****

DIVING INVESTIGATION

DIVERS:
SEARCH RADIUS:
WATER VISIBILITY:
MAXIMUM DEPTH: BOTTOM TIME:
LEAST DEPTH:

FINDINGS:

****

CHARTING RECOMMENDATIONS:
The hydrographer recommends deleting the 3 pile stumps from the chart. *See Descriptive Report, Section N, page 11.* → Retain as charted

DN 155

AWOIS INVESTIGATION

AWOIS #51595 DATE: 6-4-91

CHART #18661 = 5.4M LAUNCH: 1102

ITEM DESCRIPTION: Charted 17-foot shoal sounding.

SOURCE: Unknown (Probably COE)

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	38°05'14.70"	121°44'17.33"	
OBSERVED:			# 984- # 1019

POSITIONED BY: Range/Range

METHOD OF INVESTIGATION: 25M M/S Splits

FINDINGS: No shoal depth found. See Descriptive Report. Contours regular.

****

DIVING INVESTIGATION

DIVERS:
SEARCH RADIUS:
WATER VISIBILITY:
MAXIMUM DEPTH: BOTTOM TIME:
LEAST DEPTH:

FINDINGS:

****

CHARTING RECOMMENDATIONS: See Descriptive Report, section N, page 12.

OK

DN 156

AWOIS INVESTIGATION

AWOIS #51616 ✓ DATE: 6-5-91

CHART #18661 ✓ LAUNCH: 1102

ITEM DESCRIPTION: Charted 15.1 ✓-foot shoal sounding (unsupported).

SOURCE: BP111632--COE ✓

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	38°05'40.7" ✓	121°43'55.8" ✓	
OBSERVED:			# 1086- # 1101

POSITIONED BY: Range/Range

METHOD OF INVESTIGATION: 25M M/S Dev.

FINDINGS: See Descriptive Report. No shoal depth found. Contours regular.

****

DIVING INVESTIGATION

DIVERS:
SEARCH RADIUS:
WATER VISIBILITY:
MAXIMUM DEPTH: BOTTOM TIME:
LEAST DEPTH:

FINDINGS:

****

CHARTING RECOMMENDATIONS: See Descriptive Report, section N, page 12.

OK

DN 163

AWOIS INVESTIGATION

AWOIS #51617 ✓ DATE: 6-12-91

CHART #18661 LAUNCH: 1102

ITEM DESCRIPTION: Row of Piles (2000m long, East side Decker Island).

SOURCE: Unknown, probably a 1961 photo revision.

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	38°05'34.70"N ✓	121°42'34.83"W ✓	
OBSERVED:			# 1281- # 1283

POSITIONED BY: Range/Azmith

METHOD OF INVESTIGATION:
Visual sighting. The hydrographer walked the entire shoreline between position # 1281 and # 1283.

FINDINGS: 4" and 6" dia piles were found throughout entire area in patches. Piles are at the HWL and are High Water Features.

****

DIVING INVESTIGATION

DIVERS:
SEARCH RADIUS:
WATER VISIBILITY:
MAXIMUM DEPTH: BOTTOM TIME:
LEAST DEPTH:

FINDINGS:

****

CHARTING RECOMMENDATIONS:
The hydrographer recommends the deletion of the charted piles due to the fact that they are at, or above, the high water line. *See Descriptive Report, Section N, page 11.*

DN 163

AWOIS INVESTIGATION

AWOIS #51618 DATE: 6-12-91

CHART #18661 LAUNCH: 1102

ITEM DESCRIPTION: Obstruction, coils of 1-inch wire cable.

SOURCE: CL855/80--USPS
19

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	38°05'43.70" ✓	121°42'33.83" ✓	
OBSERVED:			# 1281- # 1283

POSITIONED BY: Range/Azimuth

METHOD OF INVESTIGATION: ✓ Hydrographer walked shoreline while searching for AWOIS #51617. See Descriptive Report.

FINDINGS: Found wire cable buried in sand of intertidal zone, and around/over HWL trees.

****

DIVING INVESTIGATION

DIVERS:
SEARCH RADIUS:
WATER VISIBILITY:
MAXIMUM DEPTH: BOTTOM TIME:
LEAST DEPTH:

FINDINGS:

****

CHARTING RECOMMENDATIONS: Recommend retaining charted obstruction. See Descriptive Report, Section N, page 11.

DN 156

AWOIS INVESTIGATION

AWOIS #51619 ✓ DATE: 6-5-91

CHART #18661 ✓ LAUNCH: 1102

ITEM DESCRIPTION: 26 piles (15-20FT from shoreline) at Chinese Cut.

SOURCE: CL1391/69--USPS

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	38°06'11.70"N ✓	121°43'33.83"W ✓	
OBSERVED:	38°06'13.94"N	121°43'31.00"W	# 1140 -0.8 MLLW
	38°06'11.60"N	121°43'33.45"W	# 1142 -0.3 "
	38°06'09.54"N	121°43'36.20"W	# 1143 -0.3 "

POSITIONED BY: Range/Range

METHOD OF INVESTIGATION: Visual sighting

FINDINGS: Row of 12" Dia Piles. ~~Baros~~ UNCOVERS 0.8m at MLLW (highest point at Pos #1140).

****

DIVING INVESTIGATION

DIVERS:
SEARCH RADIUS:
WATER VISIBILITY:
MAXIMUM DEPTH: BOTTOM TIME:
LEAST DEPTH:

FINDINGS:

****

CHARTING RECOMMENDATIONS: Delete the charted piles.
The hydrographer recommends the piles remain as charted. DO NOT CONCUR
Chart piles as shown on smooth sheet.

DN 134

AWOIS INVESTIGATION

AWOIS #51657 ✓ DATE: 5-14-91 ✓

CHART #18661 ✓ LAUNCH: 1102 ✓

ITEM DESCRIPTION: Dangerous Subm Wk, PA barge carrying large boulders

SOURCE: LNM 30/86(7/24/86)--12th CGD

****

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	38°03'23.71"N ✓	121°47'27.84"W ✓	
OBSERVED:	38°03'29.82"N	121°47'33.52"W	# 531 -0.1 MLLW
	38°03'26.87"N	121°47'39.13"N	# 534 -0.2 "

POSITIONED BY: Range/Range

METHOD OF INVESTIGATION: Visual sighting

FINDINGS:
N.E. and S.W. end of wrecked barge w/large rocks ~~subm~~ uncovers -0.1 2.6m. The center of wreck has exposed rock and timber. Center ~~bares~~ uncovers -0.2m @ MLLW. Wreck is approx 30m wide.

****

DIVING INVESTIGATION

DIVERS:
SEARCH RADIUS:
WATER VISIBILITY:
MAXIMUM DEPTH: BOTTOM TIME:
LEAST DEPTH:

FINDINGS:

****

CHARTING RECOMMENDATIONS:
The hydrographer recommends the deletion of the charted wreck (PA), located at latitude 38°03'23.7"N, longitude 121°47'27.8"W, and the deletion of the charted obstructions located at (scaled from chart) latitude 38°03'29.3"N, longitude 121°47'35.9"W, and chart a wreck centered (scaled from survey) at latitude 38°03'28.4"N, longitude 121°47'36.3"W. See Descriptive Report, Sect N, page 12

OK

CONTROL STATIONS as of 29 Jul 1991

No	Type	Latitude	Longitude	H	Cart	Freq	Vel	Code	MM/DD/YY	Station Name
700	F	038:04:24.681	121:49:14.674	28	250	0.0	0.0	9	06/26/91	BLACKJACK 1931
701	F	037:58:27.108	121:55:48.811	391	250	0.0	0.0	1	07/11/91	KIRKER 1946
~~702~~	~~F~~	~~038:05:01.454~~	~~121:51:16.681~~	~~26~~	~~250~~	~~0.0~~	~~0.0~~		~~04/01/91~~	~~SILO 1990~~
~~703~~	~~F~~	~~038:03:56.090~~	~~121:50:05.056~~	~~7~~	~~250~~	~~0.0~~	~~0.0~~		~~04/01/91~~	~~SRDWSC LT 5 1990~~
704	7	038:03:51.157	121:50:07.539	7	250	0.0	0.0		04/01/91	SRDWSC LT 6 1990
~~705~~	~~F~~	~~038:03:44.034~~	~~121:48:31.761~~	~~7~~	~~243~~	~~0.0~~	~~0.0~~		~~04/01/91~~	~~SRDWSC LT 7 1990~~
706	F	038:03:35.033	121:47:59.557	7	250	0.0	0.0	6	07/03/91	SRDWSC LT 10 1990
~~707~~	~~F~~	~~038:03:51.495~~	~~121:47:38.147~~	~~7~~	~~243~~	~~0.0~~	~~0.0~~		~~04/01/91~~	~~SRDWSC LT 11 1990~~
708	F	038:05:01.518	121:44:21.332	4	250	0.0	0.0		04/01/91	SAI 199 2 1991
709	F	038:04:15.061	121:45:58.061	6	250	0.0	0.0		04/01/91	PG&E SIGNPOST 1991
710	F	038:03:48.126	121:46:46.421	4	250	0.0	0.0		05/03/91	SAI 202 2 1991
711	F	038:05:38.922	121:44:11.817	6	250	0.0	0.0		04/01/91	SRDWSC 17 1991
712	F	038:06:10.980	121:43:35.924	3	250	0.0	0.0		05/29/91	SAI 192 2 1991
713	F	038:07:07.203	121:42:30.435	38	250	0.0	0.0		04/01/91	NO 8 USE 1931
714	F	038:05:19.830	121:42:24.234	4	250	0.0	0.0		05/30/91	SHOE 1990
715	F	038:04:49.212	121:43:48.133	4	250	0.0	0.0		04/01/91	HORSE 1990
716	F	038:01:50.481	121:50:15.374	8	250	0.0	0.0	8	07/25/91	POINT BEENAR 1990
~~717~~	~~F~~	~~038:01:37.060~~	~~121:49:46.359~~	~~7~~	~~250~~	~~0.0~~	~~0.0~~		~~04/01/91~~	~~SJ RIVER LT 2 (OLD 4) 1990~~
~~718~~	~~F~~	~~038:01:14.563~~	~~121:49:13.214~~	~~3~~	~~250~~	~~0.0~~	~~0.0~~		~~04/01/91~~	~~HUMPHREYS 1990~~
~~719~~	~~F~~	~~038:01:20.803~~	~~121:48:25.974~~	~~8~~	~~250~~	~~0.0~~	~~0.0~~		~~04/01/91~~	~~SJ RIVER LT 7 1990~~
~~720~~	~~F~~	~~038:01:15.387~~	~~121:48:10.498~~	~~7~~	~~250~~	~~0.0~~	~~0.0~~	2	~~07/26/91~~	~~SJ RIVER LT 8 1990~~
~~721~~	~~F~~	~~038:01:46.950~~	~~121:45:59.597~~	~~6~~	~~250~~	~~0.0~~	~~0.0~~		~~04/01/91~~	~~SJ RIVER LT 11 1990~~
~~722~~	~~F~~	~~038:01:12.566~~	~~121:45:51.334~~	~~4~~	~~250~~	~~0.0~~	~~0.0~~		~~04/01/91~~	~~CCPWR 1990~~
~~723~~	~~F~~	~~038:01:44.875~~	~~121:44:20.666~~	~~7~~	~~250~~	~~0.0~~	~~0.0~~		~~04/01/91~~	~~SJ RIVER LT 17 1990~~
~~724~~	~~F~~	~~038:01:55.821~~	~~121:43:12.075~~	~~8~~	~~250~~	~~0.0~~	~~0.0~~		~~04/01/91~~	~~BLIND POINT 1990~~
~~725~~	~~F~~	~~038:01:38.084~~	~~121:41:39.205~~	~~3~~	~~250~~	~~0.0~~	~~0.0~~		~~04/01/91~~	~~DUTCH 2 1990~~
~~726~~	~~F~~	~~038:03:14.161~~	~~121:41:07.671~~	~~2~~	~~250~~	~~0.0~~	~~0.0~~		~~04/01/91~~	~~FALSE 1931~~
~~727~~	~~F~~	~~037:54:23.925~~	~~121:46:35.890~~	~~231~~	~~250~~	~~0.0~~	~~0.0~~		~~04/01/91~~	~~BRIONES~~
728	F	038:04:26.984	121:46:58.517	48	250	0.0	0.0	7	06/27/91	DOW 1990
~~729~~	~~F~~	~~037:13:53.432~~	~~121:26:12.039~~	~~794~~	~~250~~	~~0.0~~	~~0.0~~		~~04/01/91~~	~~DIABLO 1943~~
~~730~~	~~F~~	~~038:07:07.203~~	~~121:42:30.435~~	~~37~~	~~250~~	~~0.0~~	~~0.0~~		~~04/01/91~~	~~STA #31~~
~~731~~	~~F~~	~~038:09:33.368~~	~~121:42:22.051~~	~~0~~	~~250~~	~~0.0~~	~~0.0~~		~~04/01/91~~	~~RIO VISTA MUIN TANK~~
~~732~~	~~F~~	~~038:03:54.052~~	~~121:51:04.738~~	~~7~~	~~250~~	~~0.0~~	~~0.0~~		~~04/01/91~~	~~SRDWSC LT 1 1990~~
733	F	038:05:18.246	121:44:29.809	6	139	0.0	0.0		04/01/91	SRDWSC LT 16 1991
734	F	038:06:13.902	121:42:36.698	11	250	0.0	0.0		04/01/91	DECKER ISLAND N END LT 1991
~~735~~	~~F~~	~~038:02:10.146~~	~~121:42:31.270~~	~~7~~	~~250~~	~~0.0~~	~~0.0~~		~~04/01/91~~	~~SJ RIVER LT 19 1991~~
~~736~~	~~F~~	~~038:02:44.071~~	~~121:41:47.421~~	~~6~~	~~250~~	~~0.0~~	~~0.0~~		~~04/01/91~~	~~SJ RIVER LT 23 1991~~
~~737~~	~~F~~	~~038:03:25.081~~	~~121:41:52.585~~	~~3~~	~~250~~	~~0.0~~	~~0.0~~		~~04/01/91~~	~~HALSEY 1991~~
~~738~~	~~F~~	~~038:05:00.845~~	~~121:42:38.049~~	~~5~~	~~250~~	~~0.0~~	~~0.0~~		~~06/07/91~~	~~STA #39~~

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY
- [X] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [ ] TO BE CHARTED
- [X] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
Pacific Hydrographic Party, N/CG2453	CA	Sacramento River Sherman Is. to Decker Is.	7-29-91

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
OPR-L208-PHP	PHP-10-1-91	H-10373	NAD 83

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
Light "12"	Sacramento River Deep Water Ship Channel Light "12" (LLN 7220)	38 03′	44.70″	121 47′	31.94″		F-1-5-L 7-3-91	18652 SC 18661
	Prev appd L-9855(93)							

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	**NAME**	**ORIGINATOR**
OBJECTS INSPECTED FROM SEAWARD	ET E. O. Wernicke, ST R. Baker	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED ~~AND/OR VERIFIED~~	Gerd F. Glang LT Gerd F. Glang, NOAA, Chief of Party	FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ 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	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	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.

U.S. Department of Transportation
United States Coast Guard

Officer In Charge
U.S. Coast Guard
Aids to Navigation Team

MAILING ADDRESS:
Yerba Buena Island
San Francisco, CA
94130-5000
(415)399-3515

16500
July 26, 1991

Pacific Hydrographic Party
Attn: LT Gerd F. Glang
U.S. Department of Commerce
National Oceanic and Atmospheric Administration
USATF, 801 Beach Drive
Rio Vista, CA 94571-2003

Dear Mr Glang:

Here is the message you requested on CG mooring balls in the delta. There is one thing we noticed just after I talked to you, the mooring ball in question does not have CG next to it on the chart so we were thinking it might have been a private mooring ball. We don't keep private aid information here, but the contact in Coast Guard District 11 OAN is Ms. Denny. Her phone number is FTS 984-5412, or (213) 499-5412

Please feel free to call on us if we can be of any assistance.

Sincerely,

K.S. TAYLOR
Petty Officer Second Class
U.S. Coast Guard

CORRECTED COPY
DESTROY ALL
PREVIOUS COPIES

COGARDGRU SFRAN MSG ROUTING

OPCEN 1	ALOPS	BASE
CO BD	ADMIN	SUPPLY
OP BD	GRU ENG	NODI
DEPGRU	MEDICAL	NMEX
OPS	PAO	NIOO
AOPS/ATON 1	ANT 1	AUX
SR CONT	STA	FILE
RMIC	STA ENG	OTHER

NC MS RV DE GS

202102Z MAR 90
FM COGARD ANT SAN FRANCISCO CA
TO CCGDELEVEN LONG BEACH CA//OAN//
INFO ZEN/COMCOGARDGRU SAN FRANSICO CA
COGARD STA RIO VISTA CA
BT
UNCLAS //N16511//
SUBJ: REMOVAL OF COAST GUARD MOORING BUOYS ON SAN JOAQUIN RIVER
AND OLD RIVER ~~SAC~~
A. YOUR 122235Z JAN 90
1. BUOY CHARTED ~~AS~~ CG MOORING BUOY ON CHART 18661,
POSITION 38-01-48N, 121-34-50W FOUND MISSING. WIRE SWEPT AREA
FOR 2.5 HOURS WITH NEG RESULTS. THIS IS A SMALL AREA WHERE
OLD RIVER MEETS SAND MOUND SLOUGH
2. BUOY CHARTED AS CG MOORING BUOY ON CHART 18661,
POSITION 38-04-02N, 121-40-41.5W LOCATED AND REMOVED, AID HAS
BEEN DISCONTINUED.
3. ACCORDING TO OUR RECORDS THERE SHOULDBE NO CG MOORING BALLS
CHARTED ON 18661 OR 18662
4. REQUEST CHART CORRECTIONS AND LNM
BT
NNNN
-d(3lr
TOD-03:20:21:18:37

CORRECTED COPY
DESTROY ALL
PREVIOUS COPIES

APPROVAL SHEET

for

SURVEY H-10373

I have reviewed the Descriptive Report, Final Field Sheets, and accompanying records for accuracy, completeness, compliance with project instructions, and adherence to required standards and procedures. Since my tenure as Chief of Party (June 29, 1991), I have supervised all field work on a daily basis to ensure a quality survey is forwarded for verification. I have personally examined the Final Field Sheets and all records of this survey. The data are forwarded for final review and processing to N/CG245, Pacific Hydrographic Section.

Approved and Forwarded,

Gerd F. Glang

Gerd F. Glang
Lieutenant, NOAA
Chief, Pacific Hydrographic Party

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Rockville, Maryland 20852

ORIGINAL

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: October 3, 1991

MARINE CENTER: Pacific

OPR: L-208

HYDROGRAPHIC SHEET: H-10373

LOCALITY: Sacramento River, Sherman Island to Decker Island, CA.

TIME PERIOD: April 29 - June 26, 1991

TIDE STATIONS USED: 941-5176 Collinsville, CA.
Lat. 38° 4.4'N Lon.121° 50.9'W

941-5236 Three Mile Slough, CA.
Lat. 38° 6.4'N Lon. 121° 42.0'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 941-5176 = 2.14 ft.
941-5236 = 2.93 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 941-5176 = 3.7 ft.
941-5236 = 4.0 ft.

REMARKS: RECOMMENDED ZONING

1. East of longitude 121° 50.0'W and west of longitude 121° 46.0'W, apply a +0 hr. 10 min. time correction and heights are direct on 941-5176.

2. East of longitude 121° 46.0'W and west of longitude 121° 42.0'W, zone direct on 941-5236.

James R. Hubbard

CHIEF, DATUMS SECTION

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER
H-10373

Name on Survey	A ON CHART NO. 18661	B On Chart No. 18652 SC	C TP-01251	D TP-01251	E TP-01059	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H	K U.S. LIGHT LIST	
CALIFORNIA (TITLE)	X	X	X	X	X					1
CHINESE CUT	X	X			X					2
DECKER ISLAND	X	X		X	X					3
DECKER LANDING	X				X					4
EMMATON	X	X			X					5
HORSESHOE BEND	X	X		X	X					6
SACRAMENTO RIVER	X	X	X	X	X					7
SHERMAN ISLAND	X	X	X	X						8
SHERMAN LAKE				X						9
TOLAND LANDING	X	X		X	X					10
										11
										12
										13
										14
				Approved:						15
										16
				Charles E. Harrington						17
				Chief Geographer - N/CG2x5						18
				NOV - 7 1991						19
										20
										21
										22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 77-27(H)
(9-83)

U.S. DEPARTMENT OF COMMERCE

HYDROGRAPHIC SURVEY STATISTICS

REGISTRY NUMBER
H-10373

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	SMOOTH OVERLAYS: POS., ARC, EXCESS	6
DESCRIPTIVE REPORT	1	FIELD SHEETS AND OTHER OVERLAYS	2

DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS	
ACCORDION FILES	1					
ENVELOPES						
VOLUMES	2					
CAHIERS						
BOXES						

SHORELINE DATA

SHORELINE MAPS (List): TP-01059, TP-01251, TP-01252

PHOTOBATHYMETRIC MAPS (List): N/A

NOTES TO THE HYDROGRAPHER (List): N/A

SPECIAL REPORTS (List): N/A

NAUTICAL CHARTS (List): 18659 11th Ed., 6/13/92, 18652SC 28th Ed. 9/18/92

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			3233
POSITIONS REVISED			
SOUNDINGS REVISED			109
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	*EVALUATION*	*TOTALS*
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	55.0		55.0
VERIFICATION OF SOUNDINGS	269.5		269.5
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	95.0		95.0
COMPARISON WITH PRIOR SURVEYS AND CHARTS		22.0	22.0
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		38.0	38.0
GEOGRAPHIC NAMES			
OTHER* Digitization	419.5	60.0	479.5
*USE OTHER SIDE OF FORM FOR REMARKS — TOTALS	419.5	60.0	479.5

Pre-processing Examination by M. Brown	*Beginning Date* 8/6/91	*Ending Date* 8/21/92
Verification of Field Data by L. Deodato	*Time (Hours)* 419.5	*Ending Date* 6/7/92
Verification Check by J. Stringham	*Time (Hours)* 41	*Ending Date* 10/26/92
Evaluation and Analysis by G. Kay	*Time (Hours)* 60	*Ending Date* 10/29/92
Inspection by D. Hill	*Time (Hours)* 2	*Ending Date* 2/8/93

EVALUATION REPORT
H-10373

1. INTRODUCTION

Survey H-10373 is a basic hydrographic survey accomplished by the Pacific Hydrographic Party, under the following Project Instructions.

OPR-L208-PHP dated June 5, 1990.

This survey covers an area in the Sacramento River between Sherman and Decker Islands, California. The survey area extends from latitude 38/06/25.5N; south to latitude 38/03/12N. The eastern limit is longitude 121/42/14W; the western limit is longitude 121/49/53W. The bottom consists of mud and sand. Depths range from 0.0 meter along the shore to 12.3 meters in the center of the dredged part of the river.

Predicted tides for San Francisco, California, were used for the reduction of soundings during field processing. Approved hourly heights zoned from Collinsville, California, gage 941-5176, and Three Mile Slough, California, gage 941-5236, were used during office processing.

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic. NAD 83 is used as the horizontal datum for plotting and position computations. The settlement and squat correctors were reaccomplished. The sound velocity and electronic control correctors are adequate. An accompanying computer printout contains the parameters and the correctors.

A digital file has been generated for this survey that includes categories of information required to meet Hydrographic Survey Guideline No. 52, Standard Digital Data Exchange Format, April 15, 1986. Certain feature descriptive information, however, may not be 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

Sections H and I hydrographer's report contain adequate discussions of horizontal control and hydrographic positioning. More detailed information on horizontal control is found in the following.

1991 Horizontal Control Report OPR-L208-PHP

Positions of horizontal control stations used during hydrography are 1990 and 1991 field and published values based on NAD 83. These values were used during office processing. The smooth sheet and accompanying overlays are annotated with NAD 27 adjustment ticks based on values determined with the NGS program NADCON. Geographic positions based on NAD 27 may be plotted on the smooth sheet using the NAD 83 projection by applying the following corrections.

Latitude: -0.291 seconds (-8.974 meters)
Longitude: 3.841 seconds (93.620 meters)

The year of establishment of control stations shown on the smooth sheet originates with the previously listed horizontal control report and the published data.

The final coordinates for the following control stations used during this survey have been received from NGS: 701, 704, 705 (A), 706, 708, 709, 711, 712, 715, 716, 728 and 734. The coordinates used during this survey have been checked against the final coordinates for significance and the changes found to be not significant. The positions for these stations used on this survey are field positions.

The quality of sixty-eight positions exceeds the positional limits in terms of error circle radius and residual, or these positions have angles of intersection less than thirty degrees or more than 150 degrees. The soundings positioned by these fixes are consistent with the surroundings. These fixes are considered acceptable.

The following class III shoreline maps apply to this survey.

Number	Date of Photography	Scale	Datum
TP-01059	April 1979	1:20,000	NAD 27
TP-01251	November 1983, March 1984	1:10,000	NAD 27
TP-01252	November 1983, March 1984	1:10,000	NAD 27

The high waterline revision centered at latitude 38/05/46N, longitude 121/44/09W, is depicted on the smooth sheet in dashed red ink. This is considered adequate to supersede the common photogrammetrically delineated shoreline.

3. HYDROGRAPHY

Except as noted below, hydrography is adequate to:

a. delineate the bottom configuration, determine least depths, and draw the standard depth curves;

b. reveal there are no significant discrepancies or anomalies requiring further investigation; and

c. show the survey was properly controlled and soundings are correctly plotted.

Because of the steep slope of the bottom along the river banks, the hydrographer could not completely delineate the zero curve.

A 0.9 meter shoal at latitude 38/03/35.01N, longitude 121/47/17.52W, was not sufficiently developed to determine the shape and extent of this shoal.

4. CONDITION OF SURVEY

The hydrographic records and reports received for processing are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No. 3, the Hydrographic Survey Guidelines, and the Field Procedures Manual, March 1991 Edition, except for the following.

The hydrographer did not compare with the largest scale chart of the area as required by the Project Instructions, section 6.11 (chart 18659, 10th edition).

5. JUNCTIONS

Survey H-10373 junctions with the following surveys.

Survey	Year	Scale	Area
H-10342	1990-91	1:10,000	West
H-10398	1991	1:10,000	South

The junctions with surveys H-10342 and H-10398 are complete.

There are no junction surveys to the northeast. A comparison was made to chart 18661 SC, 21st edition. Charted soundings do not agree well with the present survey. The sources of these charted soundings are US Army Corps of Engineer's surveys.

6. COMPARISON WITH PRIOR SURVEYS

H-6753 (1942) 1:10,000
H-7797 (1950) 1:10,000

These surveys provide the prior coverage of this survey area west of longitude 121/47/30W.

Major changes have occurred along the river since these prior surveys were completed. Changes included dredging of the deep water ship channel and the erosion of the southern shoreline of the Sacramento River caused by periodic flooding. Other sections of the river are now a half a meter shoaler while other sections are now a half a meter deeper. Due to the changes to the hydrographic area, present survey soundings do not agree well with the prior survey.

Prior survey H-6753 has been superseded by prior survey H-7797, except data east of longitude 121/48/48W. Soundings and features west of longitude 121/48/48W that were not superseded by survey H-7797 were transferred from survey H-6753 to survey H-7797.

The following features on prior survey H-7797 were neither located or disproved during this survey. These features have been transferred to the smooth sheet and depicted as submerged.

Feature	Latitude North	Longitude West
subm ruins	38/04/09	121/49/27
subm ruins	38/04/01	121/49/04
subm ruins	38/03/49	121/48/26.5
subm ruins	38/03/46	121/48/13.5

With the transfer of the above features to the smooth sheet, survey H-10373 is adequate to supersede prior surveys H-6653 and H-7797 within the area of common coverage.

There are no hydrographic surveys east of longitude 121/47/30W.

TP-01059 (1979) 1:20,000

According to the project instructions, shoreline map TP-01059 should be considered a prior for comparison purposes for the area where it is not considered the basic data source. Therefore, as shoreline maps TP-01251 and TP-01252 do not extend east of approximate longitude 121/44/00W, shoreline map TP-01059 is considered the prior for comparison purposes for the area west of longitude 121/44/00W.

This survey supersedes shoreline map TP-01059 as a source for charted hydrography west of longitude 121/44/00W.

AWOIS item 51455, an obstruction at latitude 38/03/18.8N, longitude 121/48/40.4W, originates with shoreline map T-01252. This feature, a "V" shaped pier in ruins, was investigated by the hydrographer and is discussed in his report (section M, page 9).

7. COMPARISON WITH CHART

Chart	Edition	Date	Scale	Datum
18659	10th	July 7, 1990	1:10,000	NAD 83
18659	11th	June 13, 1992	1:10,000	NAD 83
18652 SC	27th	August 18, 1990	1:40,000	NAD 83
18652 SC	28th	September 18, 1992	1:40,000	NAD 83
18661 SC	20th	June 9, 1990	1:40,000	NAD 83
18661 SC	21st	May 9, 1992	1:40,000	NAD 83

a. Hydrography

Charted hydrography originates with the prior surveys H-6753 and H-7797, prior shoreline map TP-01059 and miscellaneous sources.

Refer to section N, page 11, of the hydrographer's report for the general comparison with the survey area.

The following features were not found or disproved during this survey. These features should remain as charted.

Feature	Latitude North	Longitude West	AWOIS Number
~~3 piles~~	~~38/04/53.20~~	~~121/43/58.83~~	~~51593~~ considered verified Awois deleted
Obstn PA	38/04/56.70	121/45/29.83	51594
Obstn	38/05/43.70	121/42/33.83	51618
subm ruins	38/03/40	121/48/16	

With the exceptions noted above, survey H-10373 is adequate to supersede charted hydrography within the common area.

b. AWOIS

AWOIS positions listed in the hydrographer's report have been converted to NAD 83.

There are 16 AWOIS items originating with miscellaneous sources assigned for investigation. The discussion and disposition of the items can be found either in the hydrographer's report

section N, pages 10-13, or in the item investigation reports that follow the hydrographer's report.

c. Controlling Depths

The controlling depth for this section of the Sacramento River Deep Water Ship Channel (SWDWSC) is 8.2 meters (26.9 feet). The channel depths found within this present survey equal or exceed the noted depth.

d. Aids to Navigation

Thirteen aids and one floating aid were located during this survey by either hydrographic or geodetic positioning methods. Aids that meet Third Order Class I standards have decimal places to the thousandths. The data reflects the final coordinates. The following information summarizes the results of survey H-10373 concerning aids to navigation.

The positions for the aids located during this survey follow.

Name	Light List Number	Latitude North	Longitude West
Sacramento River Deep Water Ship Channel Light "6"	7190	38/03/51.157	121/50/07.539
Sacramento River Deep Water Ship Channel Light "7"	7195	38/03/44.034	121/48/31.761
Sacramento River Deep Water Ship Channel Light "8"	7200	38/03/34.56	121/48/30.66
Sacramento River Deep Water Ship Channel Light "10"	7210	38/03/35.033	121/47/59.557
Sacramento River Deep Water Ship Channel Light "11"	7215	38/03/51.495	121/47/38.147
Sacramento River Deep Water Ship Channel Light "12"	7220	38/03/44.71	121/47/31.95
Sacramento River Deep Water Ship Channel Light "13"	7225	38/04/40.65	121/46/02.18
Sacramento River Deep Water Ship Channel Light "14"	7230	38/04/35.35	121/45/57.70
Sacramento River Deep Water Ship Channel Light "15"	7235	38/05/23.40	121/44/33.54
Sacramento River Deep Water Ship Channel Light "16"	7240	38/05/18.246	121/44/29.809
Sacramento River Deep Water Ship Channel Light "17"	7245	38/05/38.922	121/44/11.817
Sacramento River Deep Water Ship Channel Light "18"	7250	38/05/34.90	121/44/06.98
Decker Island North End Light	7300	38/06/13.902	121/42/36.698
Sacramento River Deep Water Ship Channel Lighted Buoy "9"	7205	38/03/40.66	121/47/58.72

All fixed aids and floating aids were located and serve their intended purpose. The hydrographer's report section P, page 13-14, contains a discussion on aids with positions that differ significantly from the charted positions.

e. Geographic Names

Names appearing on the smooth sheet and in the survey title have been approved by the Chief Geographer.

f. Dangers to Navigation

No reports of dangers to navigation were reported by the hydrographer to the USCG, DMAHTC and N/CG222.

No dangers to navigation were discovered during office processing.

8. COMPLIANCE WITH INSTRUCTIONS

Survey H-10373 adequately complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

This is an adequate hydrographic survey. Additional field work should be completed on a time available basis to investigate the 0.9 meter shoal mentioned in section 3 and the features to be retained as charted listed in section 7.a of this report.

Gordon E. Kay
Cartographer

APPROVAL SHEET
H-10373

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, comparison with prior surveys and verification or disproval of charted data. The digital data have been completed and all revisions and processing have been entered in the magnetic tape record for this survey. Final control, position, and sounding printouts have been made and are included with the survey records. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Dennis Hill Date: 2/8/93

Dennis J. Hill
Chief, Hydrographic Processing Unit
Pacific Hydrographic Section

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

Douglas G. Hennick Date: 2/9/93

Commander Douglas G. Hennick, NOAA
Chief, Pacific Hydrographic Section

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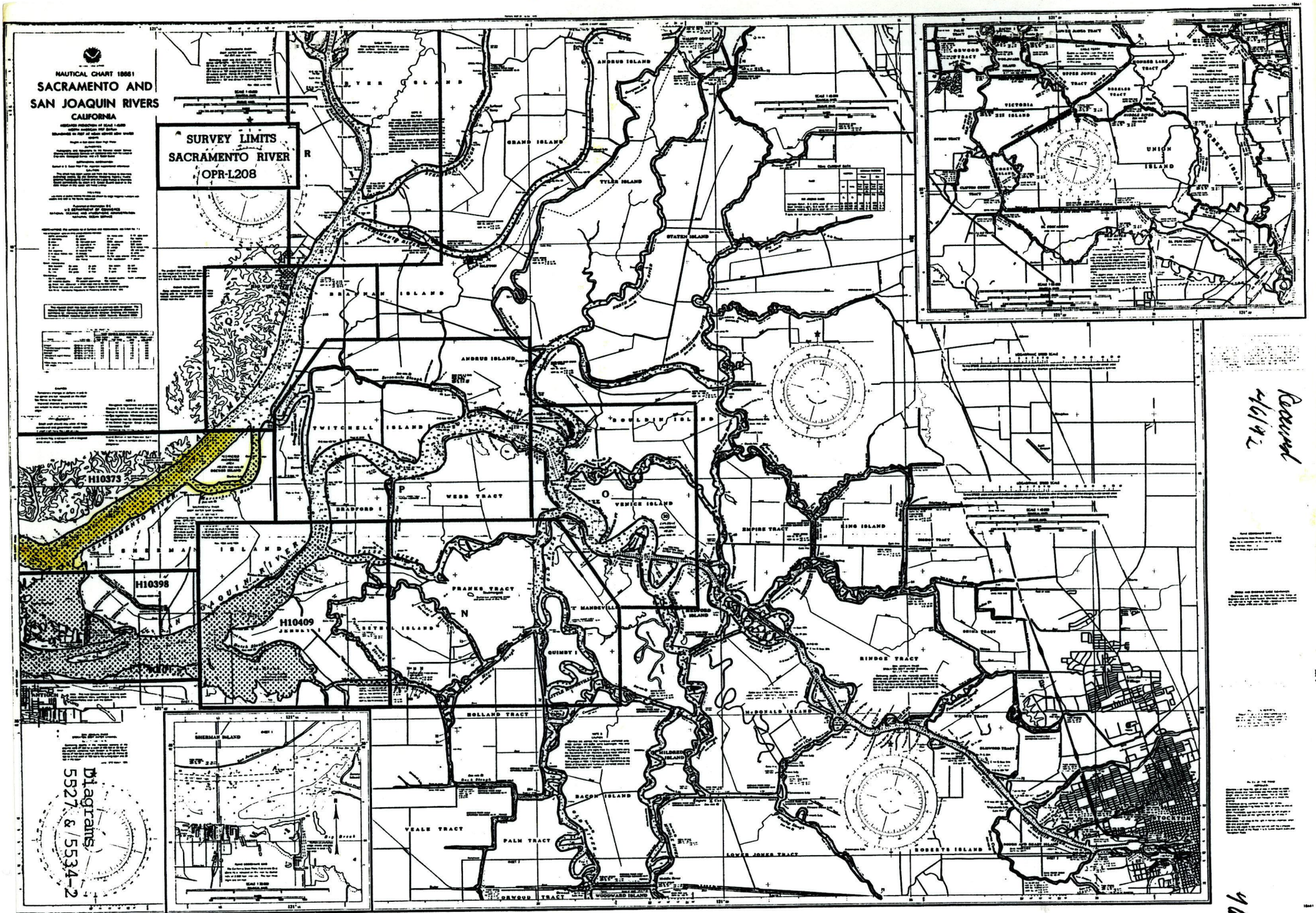
Final Approval

Approved:

Ronald Lee Date: 12-15-94

for J. Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic Survey



Diagrams 5527 & 5534-2

Received 4/6/92

96 A

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10373

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
18659	11-30-93		Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 14
18661	1-28-95		Full ~~Part~~ Before After Marine Center Approval Signed Via
			Drawing No. #23
18652	4-24-95		Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 32
18656	5-11-96		Full ~~Part Before~~ After Marine Center Approval Signed Via No Corr, superceded
			Drawing No. 56 by BP 149724-5
18010	4-26-97		
			Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 26
18652	3/31/98		
			Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 33 Removed mooring buoy.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.

NOAA FORM 75-96
(10-83)

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

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1. Letter all information.
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3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
18010	5/3/93	Gordon E. Kay	Full ~~Part Before~~ After Marine Center Approval Signed Via Examined No Sndgs
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.