6008

Form 504
Ed. June, 1928

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
R. S. PATTON, *Director*



*State:* CALIFORNIA

# DESCRIPTIVE REPORT

*Topographic*
*Hydrographic* } *Sheet No.* 0 (T-5618)
6008

LOCALITY

PORTIONS OF MOKELUMNE RIVER AND SNODGRASS SLOUGH, WITH DREDGER CUTS, VICINITY OF WALNUT GROVE AND THORNTON.

*1934*

CHIEF OF PARTY

LIEUT. L. P. RAYNOR

U. S. GOVERNMENT PRINTING OFFICE: 1930

6008

Form 537
Ed. Dec., 1930

REG. NO. 6008

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

# HYDROGRAPHIC TITLE SHEET

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. O (T-5012)

REGISTER NO. 6008

State CALIFORNIA

General locality SACRAMENTO RIVER

Locality VORDEN TO WESTERN PACIFIC R. R.

Scale 1:10,000 Date of survey 3/26 to 3/30 & 5/1/ 1934

Vessel HELEN F (Leased Launch)

Chief of Party LIEUT. L. P. RAYNOR

Surveyed by LIEUT. L. P. RAYNOR & N. G. KORNEEFF

Protracted by THOMAS M. MEANS

Soundings penciled by THOMAS M. MEANS

Soundings in [redacted] feet

Plane of reference MLLW

Subdivision of wire dragged areas by

Inked by Paul H. Scherr

Verified by Paul H. Scherr

Instructions dated SEPTEMBER 2, 1933 et.al., 19

Remarks: HYDROGRAPHIC SIGNALS PLOTTED BY: THOMAS M. MEANS

U. S. GOVERNMENT PRINTING OFFICE, 1931

DESCRIPTIVE REPORT

of

HYDROGRAPHIC SHEET O (T-5019)

AUTHORITY, LIMITS, PARTY, DATES:

The INSTRUCTIONS for this work are contained in the following letters:

1. 22 LE 1990 March 17, 1933
2. 22 AHH 1990 August 12, 1933
3. SUPPLEMENTAL INSTRUCTIONS, PROJECT 98 HT Sept. 2, 1933
4. 26 RS 1990 Nov. 9, 1933
5. 22 AHH 1990 Nov. 16, 1933
6. 22 MEN 1990 Dec. 2, 1933

This sheet covers the Mokelumne River from about latitude 38° 15' 15" to the Western Pacific R.R. Drawbridge in longitude 121° 25' 45"; Snodgrass Slough from latitude 38° 15' to limits of navigation, about latitude 38° 19', together with the dredger cuts draining lowlands north of the Mokelumne River. The work was done by party under direction of the Chief of Party except that in the Mokelumne River where the party was in charge of N. G. Korneeff, Observer. The work was done during the period from March 26 to 30, with additional work to fill in splits on May 1, 1934.

GENERAL NOTES:

Most of the waterways are rarely used except by small pleasure and fishing craft and the intricacies of the channels deter most of the owners from using these waters, as no adequate charts have been available in the past. In the Mokelumne River and the dredger cuts the bottom is fairly even and depths shallow. Snodgrass Slough above the Southern Pacific R.R. Bridge has a very uneven bottom. This is due to excessive dredging for the building of the levees along its west side. There are two levees here, one back about 100 meters from the shoreline. It is some 25 feet in elevation and was probably built primarily for protection of the cultivated land from overflow in high Sacramento River floods which emptied into Snodgrass Slough. The levees in this area have a solid foundation and require no rebuilding unless overtopped and broken by flood waters. Along the sides of all the streams is a heavy growth of small trees and bushes.

The survey showing depths in Snodgrass Slough is perhaps of particular interest due to the proposed plan in State Water Control which calls for the transfer of water from the Sacramento River to the San Joaquin Delta via Snodgrass Slough, vide page 237, Bulletin No. 27 of the State of California, Department of Public Works.

SURVEY METHODS:

The method of locating the hydrographic signals was, for the most part, the same as followed in other parts of the Delta Region surveyed, namely:

A. By spotting directly from topographic detail shown on the lithographic print of the photo compilation the tule points, gables of buildings, intersection of the highwater line by ditch lines, etc. As an elaboration of this it became necessary, in some cases, to measure distances along the levees with tape or stadia from some known point and locate signals in accordance with method fully explained on page 36, vol. 3 of this sheet.

B. By sextant three-point fixes using objects or detail located on the photo compilation.

C. By using the print as a planetable sheet and locating by planetable and stadia. In the area from SW 16 to about SM 49 it became necessary, for the accurate location of the signals, to make a projection on a blank aluminum sheet, coated with tanned gum arabic, and run in the signals and shoreline by the usual planetable methods. This sheet, together with its descriptive report, has already been sent to Washington.

Boat positions were determined by usual sextant three-point fix or by taking bearings with magnetic compass 24874 using pelorus with the same number and measuring distance with range finder #7277. The range finder was tested on March 26 and 30, 1934, with double readings from 12 to 90 meters and 90 to 12 meters and at either beginning or end of day at some even number of feet between 30 and 40 meters. The readings of the range finder were considered reliable up to at least 50 meters, beyond this they were used with caution. Soundings were obtained with leadline or pole and read to the nearest tenth of a foot. Reduction in sounding records, in all cases, was to nearest $\frac{1}{4}$ foot while plotting on smooth sheet was to nearest $\frac{1}{2}$ foot up to 9$\frac{1}{2}$ feet, beyond 10 feet in even feet in accordance with authority in letter of December 2, 1933.

OVERHEAD CLEARANCES OF POWER LINES AND BRIDGES:

The permit for the erection of triangulation station, Snodgrass Slough, East, Middle, and West Poles calls for a vertical clearance of 95 feet above ~~MHW~~ HW in accordance with report of U. S. Engineers submitted to you some time ago. The clearance was determined with range finder No. 7277 on March 28, 1934, and found to be 113 feet, (but is properly shown on the smooth sheet as 95 ft. in accordance with permit limits), above MHW as determined by tidal observations at highway bridge over Snodgrass Slough just north of the power line crossing.

113' ± M.H.W. shown on sheet. see review for (10 b 2)

Vertical clearance of both spans of drawbridge over Snodgrass Slough, just north of the above power line, was found to be 17$\frac{1}{2}$ ft. above MHW, while horizontal clearance was 74 feet, west span and 73 feet, east draw span. The vertical clearance under the Southern

Pacific R.R. drawbridge over Snodgrass Slough is 19.1 feet above MHW; horizontal clearance is 63½ feet. The small wooden bridge near BS 15 has a clearance of 2½ feet MHW and a horizontal clearance of 13 feet.

Benson Ferry Highway Drawbridge was found to have a vertical clearance of 18 feet at MHW and a horizontal clearance of 65½ ft. The left or south draw only can be used. The vertical clearance at the Western Pacific R.R. drawbridge was found to be 15 ft. at MHW and a horizontal clearance of left or south span of 59 feet. The vertical clearance at the fixed R.R. bridge near CN 15 is 15 feet at MHW and horizontal clearance 75 feet, while the clearance under the suspended gas pipe line just east of the railroad is 13 feet at MHW and the horizontal clearance is the width of the stream at this point.

TIDAL DATA:

The tide reducers and datums were obtained from the records of portable automatic tide gages at the highway drawbridge over Snodgrass Slough and at the Benson Ferry Bridge over the Mokelumne River. The plane of reference for reduction of soundings was MLLW, which was determined to be 2.3 feet on the staff at Snodgrass Slough and -0.5 on the staff at the Benson Ferry Bridge. Tables used for reduction of soundings while using these gages follow:

SNODGRASS SLOUGH

| Staff reads: | | |
|---|---|---|
| 1.0 to 1.5 | add | 1 ft. |
| 1.5 to 2.0 | " | ½ ft. |
| 2.0 to 2.5 | zero | |
| 2.5 to 3.0 | subtract | ½ ft. |
| 3.0 to 3.5 | " | 1 ft. |
| 3.5 to 4.0 | " | 1½ ft. |
| 4.0 to 4.5 | " | 2 ft. |
| 4.5 to 5.0 | " | 2½ ft. |
| 5.0 to 5.5 | " | 3 ft. |
| 5.5 to 6.0 | " | 3½ ft. |
| 6.0 to 6.5 | " | 4 ft. |
| 6.5 to 7.0 | " | 4½ ft. |
| 7.0 to 7.5 | " | 5 ft. |

BENSON FERRY BRIDGE

| Staff reads: | | |
|---|---|---|
| -0.8 to -0.3 | zero | |
| -0.3 to 0.2 | subtract | ½ ft. |
| 0.2 to 00.7 | " | 1 ft. |
| 0.7 to 1.2 | " | 1½ ft. |
| 1.2 to 1.7 | " | 2 ft. |
| 1.7 to 2.2 | " | 2½ ft. |
| 2.2 to 2.7 | " | 3 ft. |
| 2.7 to 33.2 | " | 3½ ft. |
| 3.2 to 3.7 | " | 4 ft. |
| 3.7 to 4.2 | " | 4½ ft. |
| 4.2 to 4.7 | " | 5 ft. |

The areas and times for which each gage is to be used are indicated with appropriate notes in red on the boat sheet. The tide reducers for Snodgrass Slough and tributaries are perhaps the least satisfactory of any work that we have done and the time of tide had largely to be estimated for the various sections.

However, the comparative unimportance of many of the channels indicates that the installation of other gages would be an unwarranted expense. It is believed the time zones have been estimated with a fair degree of accuracy.

CHANGES AND CORRECTIONS TO PHOTO COMPILATION:

Railroad drawbridge over Snodgrass Slough has been indicated and shoreline changed to show actual conditions at this place. Suspension bridge carrying pipeline over Consumnes River is shown on the smooth sheet. The shoreline between Benson Ferry Bridge and the Western Pacific R.R. Bridge which was revised with the planetable has been changed on the smooth sheet to agree with the revision. The planetable sheet was sent to and has been received by your office. In locating the center of the R.R. drawbridge over Snodgrass Slough, a three-point fix was taken with a sextant at center of draw or swing. As this only missed the center line of railroad by a few meters the railroad was assumed correct.

RECOVERABLE TRIANGULATION STATIONS:

The following marked third order triangulation stations determined by theodolite three-point fix were not shown on the photo-lithographic sheet sent to us: BEAR, CRUMP, DURBIN, LOBEN, LAKEBED. These were located in 1932 and 1933 during the field inspection of the air photos. The geographic positions of these stations were sent to Washington as triangulation data in July or August of last year.

LANDMARKS: List of landmarks is attached herewith.

DISCREPANCIES, SOUNDINGS:

There is a sounding of 28 feet on the line 106A to 107A which falls between soundings 38 and 34 on line 68A to 69A. A sounding of 24 feet on the line 70B to 71B falls between soundings 38 and 32 on line 100A to 101A. These discrepancies can probably be accounted for by the unevenness of the bottom due to dredging operations. A 22 ft. sounding is found on position 123B. This falls on a 17 ft. sounding on the line between 84B and 85B. The line 84 to 85B is a shore line and the distance off shore is not well controlled. It is quite probable that the sounding of 17 feet is slightly inshore of the 22 ft. shown on 123B. The fact that the sounding chair was between the boat and the shore also makes this probable.

omitted

The 28 and 24 ft soundings are slightly shoreward from the deeper soundings mentioned and are omitted due to congestion of soundings in the area. L.P.R.

omitted

The 17 ft sounding is plotted and the 22 ft. omitted as there are sufficient other soundings in the area of equal depth. The 22 ft sounding would cause extreme congestion in the area. L.P.R.

L P Raynor

L. P. Raynor
Chief of Party.

LPR:T

STATISTICS

T-5019

| DATE | DAY | VOL. | MILES | SOUNDINGS | POSITIONS |
|---|---|---|---|---|---|
| Mar. 26 | A | 1 | 9.2 | 833 | 129 |
| " 27 | B | 1 | 8.7 | 823 | 128 |
| " 28 | C | 1 & 2 | 9.5 | 952 | 131 |
| " 29 | D | 2 | 12.4 | 1038 | 109 |
| " 30 | E | 2 & 3 | 11.0 | 841 | 85 |
| May 1 | F | 3 | 1.0 | 44 | 16 |
| | | | 51.8 | 4531 | 598 |

HYDROGRAPHIC SIGNALS 131

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. 6008.

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

| | |
|---|---|
| Number of positions on sheet | 598 |
| Number of positions checked | 12 |
| Number of positions revised | 1 |
| Number of soundings recorded | 4531 |
| Number of soundings revised | 13 |
| Number of signals erroneously plotted or transferred | V |

Date: October 23rd 1934

Cartographer: Paul H. Scherr

| | | |
|---|---|---|
| Verification of protracting<br>Verification & inking of rocks and shoals | by P.H. Scherr | Time: 4hrs. |
| Verification of inking | by P.H. Scherr | Time: 26hrs. |
| Review | by John S. Rado | Time: 5 hrs |

Section of Field Records.

Report on H-6008.

Chief of Party -- L. P. Raynor.
Surveyed by -- L. P. Raynor, N. G. Korneeff.
Surveyed in March and May, 1934.
Verified and inked by P. H. Scherr.

1. The records conform to the requirements of the General Instructions with the exception that the notation "snag" is sometimes placed in the column for bottom characteristics. No description of these are given.

2. The depth curves were drawn.

3. The field plotting was complete with the exception that of the three lines of soundings which were run in Mokelumne River, only one was plotted on the smooth sheet and no overlays for this river accompanied the sheet. The omitted soundings were taken into consideration by the verifier and some of these inked in place of those penciled, where considered more critical.

4. No drafting done by the field party was changed in the office. Corrections to shore lines on the smooth sheet were made in the field.

5. The junction with H 6007 was made and is the only junction.

6. Remarks:

(a) The inked soundings peel off this sheet very easily and care should be used in handling the sheet.

(b) Concerning the note on P. 22 Vol. 1, nothing is found in the descriptive report to which it refers.

(c) The soundings from Position 92 B to the end of the line are not plotted. There is no further explanation of the note on Page 58, Volume 1.

(d) The crossing between 74-75C P.14, Volume 2 and 43-44C, Page 8, Volume 2 shows a difference in the depths. The left angle of Position 43C has been questioned.

Respectfully submitted

Paul H. Scherr.

Paul H. Scherr.

October 23, 1934.

Rac

September 18, 1934.

Division of Hydrography and Topography:

✓ Division of Charts:

Tide Reducers are approved in
3 volumes of sounding records for

HYDROGRAPHIC SHEET 6008

Locality **Vorden to Western Pacific RR, San Joaquin Delta, Calif.**

Chief of Party: **L. P. Raynor in 1934**
Plane of reference is **mean lower low water, reading**
2.3 ft. on tide staff at **Snodgrass Slough**
20.5 ft. below B. M. 1
**-0.5 ft. on tide staff at Benson Ferry Bridge**
**22.7 ft. below B.M. 1**
**2.0 ft on tide staff at New Hope Bridge**
**11.2 ft. below B.M. 1**

**Height of mean higher high water above plane of reference is**
**3.7 feet at Snodgrass Slough & New Hope Bridge and**
**3.0 ft. at Benson Ferry Bridge.**

Condition of records satisfactory except as noted below:

Paul P. Whitney

Chief, Division of Tides and Currents

Form 567
Rev. Jan. 1933

DIVISION OF CHARTS, FILE NO. _____

**DEPARTMENT OF COMMERCE**
**U.S. COAST AND GEODETIC SURVEY**

H 6008

# LANDMARKS FOR CHARTS

Stockton, California

July 12, 1934, 193

DIRECTOR, U.S. COAST AND GEODETIC SURVEY:

The following determined objects are prominent, can be readily distinguished from seaward from the description given below, and should be charted:

L. P. Raynor
*Chief of Party.*

| DESCRIPTION | POSITION | | | | | | METHOD OF DETERMINATION | CHARTS AFFECTED |
|---|---|---|---|---|---|---|---|---|
| | LATITUDE | | | LONGITUDE | | DATUM | | |
| | ° | ' | D.M. METERS | ° | ' | D.P. METERS | | |
| Latticed Steel Power Line Same on 283(1933) | 38 | 16 | 559 | 121 | 29 | 1314 | N.A. 1927 | Triangu- lation | New San Joaquin |
| Latticed Steel Power Line " | 38 | 16 | 551 | 121 | 29 | 1043 | " | " | " |
| Latticed Steel Power Line Same on 714(1933) | 38 | 16 | 546 | 121 | 29 | 858 | " | " | " |
| Latticed Steel Power Line Same on 283 (1933) | 38 | 15 | 1087 | 121 | 31 | 377 | " | " | " |
| Latticed Steel Power Line " | 38 | 15 | 1270 | 121 | 31 | 239 | " | " | " |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

A list of objects carefully selected because of their value as landmarks as determined from seaward, together with individual descriptions, must be furnished in a special report on this form, and a copy of such report must be attached by the Chief of Party to his descriptive report.

The selection, determination, and description of these points are an important factor in the value of the chart. Landmarks selected at appropriate intervals can be clearly charted. However, when none is outstanding, a group of two or three objects may by their interrelationship provide positive indentification. A group so selected should be indicated.

The description of each object should be short, but such as will clearly identify it; for example, a standpipe, elevated tank, gas tank, church spire, tall stack, red chimney, radio mast, etc. Assign numerals to landmarks to indicate: (1) Offshore, (2) inshore, (3) harbor, 1, 2, 3 would be a mark useful on all charts. Generally, flagstaffs and like objects are not sufficiently permanent to chart.

U.S. GOVERNMENT PRINTING OFFICE: 1934 25379

Section of Field Records

# REVIEW OF HYDROGRAPHIC SURVEY NO. 6008 (1934)

Vicinity of Walnut Grove & Thornton and Snodgrass Slough (with dredger cuts), Portions of Mokelumne River, Calif.
Instructions dated March 17, 1933 (L.P.Raynor).
" " Sept. 2, 1933 ( " " ).
Surveyed March - May, 1934.

Pole and Hand Lead Soundings - 3 Point Fixes, and compass bearings and range finder distances on shore signals.

Chief of Party - L. P. Raynor.
Surveyed by - L. P. Raynor; N. G. Korneeff.
Protracted and soundings penciled by - Thomas M. Means.
Verified and inked by - P. H. Scherr.

1. Condition of Records.

The records are neat and legible and conform to the requirements of the Hydrographic Manual.

2. Compliance with Instructions for the Project.

The survey satisfies the instructions for the project with the exception that an additional line should have been run in Snodgrass Slough between lat. 38°18' and 38°18'.3 to better define the channel and depth curves.

3. Sounding Line Crossings.

There are a few cross lines in the wider portions of Snodgrass Slough. They make satisfactory crossings.

4. Depth Curves.

The depth curves are satisfactory.

5. Junctions With Contemporary Surveys.

The junction with H. 6007 (1934) on the south is satisfactory. There is apparently no sheet to the north of the present one (see D. R. pg. 1, par. 1).

6. Comparisons With Prior Surveys.

There are no prior surveys in the area covered by H. 6008 (1934).

7. Comparison With Chart.

There is no chart covering the area of this survey.

8. Field Plotting.

The field plotting was satisfactory.

9. Additional Field Work Recommended.

While no additional work is recommended within the limits of the present survey, attention is called to the fact that the slough to the north of the Mokelumne River at the eastern end of the sheet, has (as far as our records go) not been surveyed to the head of navigation. Since there is no air photo compilation sheet covering this area it is uncertain how far to the eastward this slough extends. Good water appears to exist here.

10. Miscellaneous Matters.

a. Offshore Topo. Signals.

The two topo. signals SW 42 and SW 44 at approximate lat. 38°17'.2, long. 121°30'.2 are on the outer edge of the overhanging brush. (See revision sheet of T-5019 (1933) and D. R. for same.)

b. Clearances - Bridges and Power Lines.

(1) The railroad drawbridge at lat. 38°15'.95, long. 121°29'.80 is recorded by the field party for H-6008 (1934) as having a vertical clearance of 19.1 ft. at MHW , and a horizontal clearance of 63.5 feet. The U. S. Engineers (see Chart Letter 439 (1933)) list this same bridge as having a vertical clearance of 19.2 feet at M.L.W. and a horizontal clearance of 66 feet. The values as recorded in the records for H-6008 (1934) are shown on the sheet.

(2) The overhead cable clearance at lat. 38°16'.3, long. 121°29'.7, as determined on the present survey is 113 feet at M.H.W., whereas the U. S. Engineer's permit gives the clearance as 95 feet at H. W. (see pg. 2, D. R.). The clearance as determined by the present field party is shown on the sheet.

11. Superseding Old Surveys.

There are no surveys to be superseded by H-6008 (1934).

12. Reviewed by: John G. Ladd, October 1934.

Inspected by: A. L. Shalowitz.

Examined and approved:

K. T. Adams,
Chief, Section of Field Records.

L. O. Colbert
Chief, Division of Charts.

Chief, Section of Field Work.

Chief, Division of H. & T.

applied to drawing of Chart 5528
Jan. 21, 1935 - J.T.

Survey No. H-6008
T-5019

Date Jan. 26, 1935

# GEOGRAPHIC NAMES
Calif.

Chart No.

Names approved Jan. 26, 1935. Helen M. Stevens
Harlow Bacon

Diagram No.

*, Approved by the Division of Geographic Names, Department of Interior.

¢, Not Approved by the Division of Geographic Names, Department of Interior.

R, Referred to the Division of Geographic Names, Department of Interior.

~~Geographic Name Stanford T-5019~~

| Status | Name on Survey | Name on Chart | New Names in local use | Names assigned by Field | Location |
|---|---|---|---|---|---|
| | Snodgrass Slough | -- | | | |
| | Mokelumne River | -- | | | |
| | Sacramento River | -- | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

(M 100)