

3966

U. S. SURVEY  
L. & A.  
JUL 7 1917  
Ann. No.

Diag. Ch. No. 5530-4

Form 504  
 DEPARTMENT OF COMMERCE  
 U. S. COAST AND GEODETIC SURVEY

State: *California*

11-5613

DESCRIPTIVE REPORT.

*Hyd.* Sheet No. **3966**

LOCALITY:

*San Francisco Bay,*  
*Vicinity of Point*  
*San Bruno.*

1917

CHIEF OF PARTY:

*F. Westdahl.*

3966

DESCRIPTIVE REPORT

To accompany hydrographic sheet No. 4, entitled

U. S. Coast and Geodetic Survey

E. Lester Jones, Superintendent

HYDROGRAPHY OFF POINT SAN BRUNO, SAN FRANCISCO BAY

CALIFORNIA

By F. Westdahl, Assistant

May 24th to June 16th, 1917

Scale 1/10,000

This sheet shows the results of a hydrographic examination in the vicinity of Point San Bruno, made under instructions from the Superintendent dated April 28th, 1917, and at the request and expense of the South San Francisco Land and Improvement Company to furnish reliable data for dredging a channel from the water front owned by the Company to the main channel of the bay in the most favorable direction.

The sheet itself contains all the information sought, and therefore this report will only describe the means and method of the survey.

The projection was made by the undersigned in the San Francisco suboffice. It was extended so as to include Point Avisadero on the north, and the three Oyster houses north of Point San Mateo on the south, because Hunters

Point Chimney and the Oyster houses, having been determined by triangulation, were relied upon to furnish the extreme right and left hand objects for position in case the examination had been extended to across the main channel as originally intended. Owing to the extraordinary bad weather encountered and the consequent greater expense of the work the plan was curtailed and the area limited to the immediate vicinity of Point San Bruno. The other triangulation points used in this survey are "Lower Sierra Point", "Oyster Point", and "Baden Packing Ho. Chimney", all plotted by coordinates. The three radio masts on Point San Bruno I found plotted on a topographic tracing and transferred them to this sheet. All other points used are determined by sextant angles. Signals were erected at Lower Sierra Pt. and at Oyster Pt. All others are natural objects needing no signals. At Oyster Pt. station was found an iron pipe set in cement, and on the cap in raised letters "U. S. E. D. Harbor Monument No -". Upon inquiry at the U.S. Engineers office I was informed this monument was set directly over the C. and G. Survey station. At Lower Sierra Pt. the ground had been dug up by some one evidently searching for the station, and among the debris I found remains of what had been the subsurface part of the center pole. A signal was erected here which I am sure by the topography is within 1 or 2 feet of the center and amply close enough

for a hydrographic signal. The cut on this signal from Oyster Point passes directly through the plotted position.

The boat used in this survey was a 14 ft. dingey propelled by two pairs of sculls. A recorder and a leadsman were employed for the work, but the hands to pull the boat were taken from the roustabout gang of the Western Meat Company, available when the weather was suitable for surveying. The recorder was an assistant in the City Engineers office, and the leadsman was also employed as an inspector in the same office. Neither of them had any previous experience in hydrographic work, but I may mention here, as a matter of interest, that both demanded and were paid at the rate of \$5.00 per day each while so employed even when the weather was too boisterous for work. As I am unable to control my right hand in any kind of pen work the recorder has done all the drafting on this sheet. The positions have been plotted by myself.

No plotting could be done in so small a boat, and as there was only one sextant available for the work and the recorder never had used such an instrument, I measured both angles myself and steered the boat. The method adopted was to stop pulling and back the sculls at time for position, and after the angles were measured and read to pull ahead again, noting the time of starting. The operation rarely

consumed more than 30 seconds of time.

A plain staff tide gauge was fastened to the corner pile of Western Meat Companys wharf in the excavated area on the south side of Point San Bruno. High and low waters were observed continuously for 5 days and nights, and from the 10 high and 10 low waters obtained a plane of reference was computed by comparison with the same tides at the Presidio Tide station, according to formula on Form 248.

The soundings were recorded to the nearest foot only, whether above or below the mark, and as the bottom throughout the area consists almost entirely of soft mud in which the lead sinks more or less, to which is added the uncertainty of the fractions of feet of the tide reduction, it is not to be wondered at that the curves of equal depth present a ragged appearance. Only in a few crossings does the discrepancy amount to more than one foot, and the shoalest sounding is plotted in every instance.

To the eastward of Point San Bruno this examination <sup>shows</sup> little or no change in depth, the 18 ft. curve being found about the same distance from shore as given on the published chart; but due east from Oyster Point there seems to be a decided deepening. I found also in running the lines of soundings on ranges that there was a current setting to the southeast or northwest respectively on the flood or ebb in the area between the Beacon pile and Pt. San Bruno. My advice

to the South San Francisco Land and Improvement Company is therefore to follow this lead and dredge the new channel in that direction. Remains of the old, twice dredged channel directly across the natural ebb and flood currents are clearly traced in this survey, but it can evidently not be maintained without the protection of sheetpiling or jetties. Any channel dredged through this soft mud bottom would have to be protected or maintained by constant dredging, but the above proposed new direction, working with nature, offers probably greater hopes of effectiveness.

All changes in shoreline, such as new bulkhead, new land made by filling, and wharves etc. not shown on the topographical tracing of the 1894 resurvey, have been determined by sextant angles and plotted in red on this sheet. The edge of the marsh southward of Pt. San Bruno shows the effects of erosions during southerly storms. The present edge has been sketched and shown in red by aid of the positions of the sounding boat at high water mark as far as the survey extends in that direction.

Numerous and important changes have been made in the topography of Point San Bruno. Large industrial plants are located there and more are constantly being added. The present hydrographic examination was requested by the Company because still greater facilities in water transportation

are contemplated. The town of South San Francisco is growing at a rapid rate, and a topographic resurvey would undoubtedly be desirable, especially after the changes now planned have been completed.

Respectfully submitted

*J. Westdahl*

Assistant C. and G. Survey

O. & G. SURVEY  
 L. & A.  
 JUL 7 1917  
 Acc. No.

Statistics Sheet No(1) 3966

Date, 1917	Letter	Volume	Angles	Soundings	Miles Nautical	Vessels
May 24	a	1	112	431	7.2	Small
" 26	b	1	111	428	8.1	dingey
" 30	c	1	105	316	6.0	"
" 31	d	1	103	397	7.2	"
June 1	e	1+2	96	425	7.7	"
" 2	f	2	98	390	7.4	"
" 5	g	2	26	109	2.0	"
" 8	h	2	80	313	5.7	"
" 9	i	2	82	335	6.1	"
" 11	j	2	72	279	5.5	"
" 12	k	2	112	448	8.1	"
" 13	l	3	49	208	3.6	"
" 14	m	3	77	281	4.0	"
" 15	n	3	94	337	6.7	"
" 16	o	3	112	414	6.6	"
Totals			1329	5071	89.9	



VEC  
Sept. 1 1917

J.S.S.  
S.P.A.  
H.C.

HYDROGRAPHIC SHEET 3966.

San Francisco Bay, California, by F. Westdahl in  
1917.

TIDES.

	Pt. San Bruno Feet.
Mean lower low water, or plane of reference on staff	3.7
Mean range of tide	5.4

Hydrographic Sheet No. 3966.

San Francisco Bay; Vicinity of Pt. San Bruno.

This sheet was compiled and inked by the Field Party. The projection has been verified and found practically true although distorted to some small degree.

The projecting has been quite thoroughly verified and found to be correct although the positions were not marked as intelligibly as they might have been.

The soundings were found to be about 50% in error due to changes made in "Division of Tides" and to the method of reduction used by the field party. It appears that any fraction above .5 was plotted as the next largest foot while the office method is to use .8 as the limit. This necessitated changing practically all the curves of equal depth and illustrates the necessity of instructing the Field Parties to avoid inking in soundings and curves.

The work so far as it applies to the survey appears good and is sufficient to develop the bottom closely. The lines and soundings appear plenty close for a good development.

John D. Torrey

March 14, 1919.