4910

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Form 504
Ed. June, 1928

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
E. Lester Jones, Director

State: South Carolina

DESCRIPTIVE REPORT

~~Topographic~~ Hydrographic } Sheet No. 8 4910

LOCALITY

~~Cooper River~~

~~Vicinity of~~ Charleston

Cooper River, Moreland to Seaboard A.L.R.R.

1928

CHIEF OF PARTY

R.F.A. Studds

U. S. GOVERNMENT PRINTING OFFICE: 1928

4910

D E S C R I P T I V E R E P O R T

TO ACCOMPANY

HYDROGRAPHIC SHEET NO. 8

Nov. 7 to Dec. 28, 1928. Cooper River, Vicinity of Charleston, S.C.

Launch ELSIE R.F.A.Studds, In Charge.

Instructions dated December 17, 1927; June 20, 1928.

INTRODUCTION:

This is the second of three sheets on a scale of 1:10,000 covering a survey of the Cooper River. The sheets begin at a junction with the limit of H2189 in the vicinity of Woods Point and extend to the Seaboard Air Line Railroad bridge in the West Branch of the Cooper River and to Quimby Creek in the East Branch of the Cooper River.

The three sheets join each other and are laid out so that they include the creeks bordering the river.

This sheet extends from Moreland to the Seaboard Air Line Railroad bridge, which is the limit of hydrography in the West Branch of the Cooper River, and to Higgins Landing in the East Branch of the Cooper River.

GENERAL:

Inasmuch as there were no facilities for obtaining supplies in the immediate vicinity of the working grounds, Charleston was used as a base. The ELSIE was too small to accommodate all members of the crew and consequently some of the party were housed in a tent ashore. This enabled the Launch to anchor on the working grounds, returning to Charleston only when supplies were needed.

Very little sounding was done with the ELSIE, small motorboats being better suited to the surveyed area.

SURVEY METHODS:

CONTROL was furnished from a scheme of third-order triangulation extended up the Cooper River from the line Field-Goose Creek in the vicinity of North Charleston. Hydrographic signals were located by theodolite cuts from the main scheme, the cuts being plotted directly on the hydrographic sheet. One signal, "Sign", was located by the

hydrographic party, and its position is recorded in the sounding record.

TOPOGRAPHY for the area of this sheet is shown on Topographic Sheet "D".

Two small sloughs are shown on the hydrographic sheet and only the mouths shown on the topographic sheet. The shoreline of these sloughs was sketched in by the hydrographic party and is so stated by a pencilled note on the smooth sheet.

HYDROGRAPHY in Cooper River and the two Branches was performed by a system of cross and diagonal lines supplemented by lines run parallel to the axes of the rivers. These latter lines were run with the current in order to obtain the best results. Shoal indications and channels were developed.

All hydrography was controlled by fixed positions except the slough connecting East Branch of Cooper River, at Higgins Landing, to the Cooper River in the vicinity of triangulation station "Ruth". Soundings were located in this slough by running a mid-river course and noting the time abeam recognizable features of the shoreline, e. g. points, bends, etc. Only sufficient soundings were taken here that would indicate the depths.

TIDES: Tidal data ~~was~~ are obtained from four gauges for the reduction of soundings on this sheet. One gauge was located at Red Bank Landing, shown on Sheet 7; one at Dean Hall; one at the Seaboard Air Line Railroad bridge; and one at Quimby Creek. The location of this last gauge is shown on Sheet 9.

All gauges were compared to the Primary Tide Station at Charleston, S. C. and values obtained for lunitidal intervals and for ranges. For areas too distant from any one gauge, a time correction and ratio of ranges were applied to the observed tides to obtain reductions.

RESULTS:

As a result of the development, channels and shoals are well defined. There is no previous survey available for comparison.

23' appears to be the greatest depth that can be carried in the Cooper River as far as the Tee. 16' can be carried to the limit of hydrography in the West Branch and to the limit of this sheet in the East Branch. These depths are all more than adequate for the types of boats using these rivers.

Several shoals were discovered and the more important ones indicated on the smooth sheet by a pencilled arrow.

Several places are noted on the sheet where soundings do not agree. One such place lies in the vicinity of triangulation station "Bad". A possible reason for discrepancies here may be that fixes were very difficult to obtain, because of the tall grass bordering the river. A superstructure was built on the launch after some sounding had been done, in order to overcome this difficulty. The river bottom is very uneven at places and this may also account for disagreements in adjacent soundings.

The first sounding before position 83D of 17' disagrees with the first sounding after position 128G of 23'. The 23' sounding is not checked by the leadsman, while the 17' sounding is, which would indicate that the latter is correct. However, the 23' sounding makes

the smoother depth curve and it is possible the recorder did not record the exact time of the sounding. A few seconds delay in sounding at the regular time interval would make both soundings agree with others in the vicinity. plotted 17 feet

The fourth sounding after position 87G of 30' appears to have been read one fathom too deep by the leadsman. plotted as 24 ft.

The first sounding after position 35N appears to have been read one fathom too deep, altho the sounding is shown in the record as having been checked by the leadsman. plotted as recorded

CONCLUSION:

Names shown on this sheet were obtained from Topographic Sheet "D". Authority for their adoption is given in the Descriptive Report of that sheet.

Landmarks for this area are also given in the Descriptive Report of the Topographic Sheet.

The extent of regular traffic on the river consists of a tug, towing two barges, which makes three round trips weekly from Quimby Creek to Charleston, and several small freight boats which do not run on schedule. The river is occasionally used by yachts, especially during the hunting season.

The tidal current is so strong in the river that boats seldom run against it. The usual practice for the tug and barges is to tie up to piling and wait for a favorable tide.

R.F.A.Studds,
Jr. H & G E,
USC&G Survey.

Forwarded:

R.F.A.Studds,
Chief of Party,
USC&G Survey.

H Y D R O G R A P H I C S H E E T

-No. 8-

STATEMENT OF CHIEF OF PARTY

(in accordance with Paragraph 174, Special Publication 143)

This sheet and its accompanying records have been inspected and are approved.

The Geological Survey Advance Sheet of "Cordesville Quadrangle" is of no value in the compilation of the chart of this area, unless it can be used to supplement topography shown on Topographic Sheet "D".

R.F.A.Studds,
Chief of Party,
USC&G Survey.

STATISTICS FOR HYDROGRAPHIC SHEET, FIELD NO. 8.

Date	Letter	Volume	Positions	Soundings	Miles, statute
1928					
Nov. 7	A	1	83	202	3.6
8	B	1	162	464	9.3
12	C	1	239	645	18.7
15	D	2	130	329	10.4
20	E	2	75	233	9.1
23	F	2	103	236	5.2
25	G	2,3	177	477	13.6
27	H	3	253	604	16.5
28	J	3	4	5	0.4
Dec. 3	K	3	86	245	6.9
7	L	3,4	122	363	9.8
10	M	4	28	109	3.0
11	N	4	43	172	3.4
14	P	4	58	135	3.7
27	Q	4	55	147	4.4
28	R	4	24	37	1.1
		TOTALS.....	1642	4403	119.1

Area..... 1.9 sq. st. miles.

HYDROGRAPHIC SHEET

-NO. 8-

TIDAL DATA

Four portable automatic gauges were established in the Cooper River to govern the survey shown on the three hydrographic sheets. Comparisons were made with the primary tide station at Charleston and values obtained for lunitidal intervals and ranges for each of the gauges. For areas too distant from any one gauge, a time correction and ratio of ranges were applied to the observed tides to obtain reducers.

The two gauges located in the area covered by Sheet 8, are the gauge at Dean Hall in Latitude 33° 03.4', Longitude 79° 56.1, and the gauge at the Seaboard Air Line Railroad Bridge in Latitude 33° 05.6', Longitude 79° 56.5'.

The mean difference in lunitidal intervals between the Dean Hall gauge and the Red Bank Landing Gauge, which is shown on Sheet 7, is 76', the interval being greater at Dean Hall. The difference in ranges is 0.9, the range being greater at Red Bank Landing.

The mean difference in lunitidal intervals between the Seaboard Air Line Railroad bridge and Dean Hall gauges is 44', the interval being greater at the bridge. The difference in ranges is 0.1', the range being greater at the bridge also.

The mean difference in lunitidal intervals between Dean Hall gauge and Quimby Creek gauge, which is the gauge shown on Sheet 9, is 82', the interval being greater at Quimby Creek. The difference in ranges is 0.2', the range being greater at Quimby Creek, also.

Data for the two gauges shown on Sheet 8, are as follows:

	Referred to zero of staff	Referred to Plane of Reference
Dean Hall:		
Highest Tide Observed	13.8	5.4
Mean High Water	12.4	4.0
Mean Tide Level	10.4	2.0
Mean Low Water	8.4	0.0
Lowest Tide Observed	6.8	-1.6
Seaboard Air Line Railroad Bridge:		
Highest Tide Observed	9.2	5.1
Mean High Water	8.3	4.2
Mean Tide Level	6.2	2.1
Mean Low Water	4.1	0.0
Lowest Tide Observed	2.3	-1.8

R.F.A.Studds,
Chief of Party,
USC&G Survey.

Ecm

(Copy for Files - Field Records Section)

Division of Hydrography and Topography: August 28,1929

✓Division of Charts:

Tide Reducers are approved in
4 volumes of sounding records for

HYDROGRAPHIC SHEET **4910**

Locality: **Cooper River, S. C.**

Chief of Party: **R. F. A. Studds in 1928**
Plane of reference is **mean low water, reading**
8.4 ft. on tide staff at **Dean Hall**
~~ft. below P. M.~~
4.1 ft. on tide staff at S. A. L. R. R. Bridge

Allowance made for time and range

Condition of records satisfactory except as checked below:

1. Locality and sublocality of survey omitted.
2. Month and day of month omitted.
3. Time meridian not given at beginning of day's work.
4. Time (whether A.M. or P.M.) not given at beginning of day's work.
5. Soundings (whether in feet or fathoms) not clearly shown in record.
6. Leadline correction entered in wrong column.
7. Field reductions entered in "Office" column.
8. Location of tide gauge not given at beginning of day's work.
9. Leadline corrections not clearly stated.
10. Kind of sounding tube used not stated.
11. Sounding tube No. entered in column of "Soundings" instead of "Remarks".
12. Legibility of record could be improved.
13. Remarks.

H. A. Marmer
Chief, Division of Tides and Currents.

Report on H 4910

Chief of Party - R. F. A. Stubbs
Surveyed by - " " " "
Protracted and Soundings penciled by - Robert A. Earle
Verified and Inked by - John S. Ladd

1. The records conform to the requirements of the General Instructions.
2. The plan and character of development fulfills the requirements of the General Instructions
3. The sounding line crossings are adequate.
4. The Usual depth curves could be drawn.
5. The field plotting was complete and very accurately done.
6. Junctions with adjacent sheets were satisfactory.
7. The character and scope of the surveying was excellent and the field drafting was done with the utmost of care and accuracy.

John S. Ladd
Jr Cst Engr
Oct. 25-1929

Section of Field Records

Report on Hyd. Sheet No. 4910

Cooper River, Vicinity of Charleston, S. C.

Surveyed in 1928.

Original instructions dated Dec. 17, 1927 (Lieut. R. F. A. Studds)
Supplemental instructions dated June 20, 1928 " " "

Chief of Party - R. F. A. Studds
Surveyed by - R. F. A. Studds
Protracted and plotted by - R. A. Earle
Verified and inked by - J. G. Ladd

1. The records conform to the requirements except that the beginnings and endings of lines were not described.

2. The plan and character of development conform to the requirements of the General Instructions.

3. The plan and extent of the survey satisfy the specific instructions.

4. Some places were noted where the soundings do not agree closely, but in general the sounding line crossings are satisfactory.

5. The information is sufficient for completely drawing the usual depth curves, except in a few places where the work was not carried quite up to the river bank.

6. The junctions with the two contemporary sheets, H. 4909 and H. 4911, are satisfactory.

7. The usual amount of field plotting was carefully and accurately done by the field party.

8. Character and scope of surveying – good.
With the exception of the single line of soundings in the slough connecting the Cooper River with the East Branch, all the hydrography on this sheet is controlled by three point fixes. The ground is well covered and shoal development is sufficient.

9. No additional work is necessary.

Reviewed by R.L. Johnston Oct. 31, 1929.
Approved A.M. Sobieralski

Form 537

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

REG. NO. 4910

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. 8

REGISTER NO. 4910

State South Carolina

General locality Vicinity of Charleston

Locality Cooper River, Moreland to Seaboard A.L.R.R.

Scale 1:10,000 Date of survey Nov.7 to Dec. 28, 1928

Vessel Launch ELSIE

Chief of Party R. F. A. Studds

Surveyed by R. F. A. Studds

Protracted by Robert A. Earle

Soundings penciled by Robert A. Earle

Soundings in ~~fathoms~~ feet

Plane of reference Mean Low Water

Subdivision of wire dragged areas by --

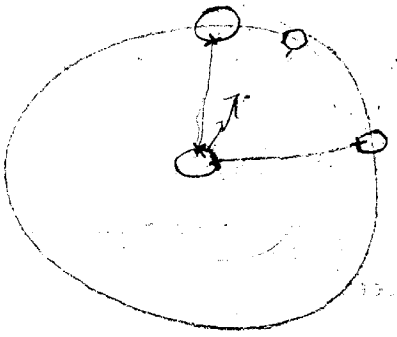
Inked by John G. Ladd

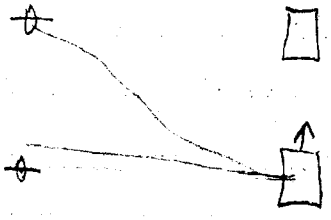
Verified by John G. Ladd

Instructions dated Dec. 17,1927; June 20, 1928

Remarks: Sheet 2 of 3 sheets of Cooper River

U. S. GOVERNMENT PRINTING OFFICE





Field Records Section (Charts)

HYDROGRAPHIC SHEET No. 4910

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

Number of positions on sheet 1642

Number of positions checked 391

Number of positions revised .. 2

Number of soundings recorded 4403

Number of soundings revised .. 19

Number of signals erroneously plotted or transferred .. none

Date: Oct. 23, 1929

Cartographer: John S Ladd