

7126

Diag'd. on diag. ch. No. 6154

7126

Form 504	
U. S. COAST AND GEODETIC SURVEY DEPARTMENT OF COMMERCE	
DESCRIPTIVE REPORT	
Type of Survey <u>Hydrographic</u>	
<u>We 05246 &</u>	
Field No. <u>WE-05546</u>	Office No. <u>H-7126</u>
LOCALITY	
State <u>Oregon</u>	
General locality <u>Willamette River</u>	
Locality <u>Ross I. to SP. Rk Bridge at Oswego</u>	
<u>194 6</u>	
CHIEF OF PARTY <u>L. C. Wilder (H. F. Garber, Acting)</u> <u>E. H. Bernstein</u>	
LIBRARY & ARCHIVES	
DATE <u>AUG 29 1947</u>	

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

REG. NO. 77126

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. We 05246 & We 05546

REGISTER NO. H - 7126 (1946)

Oregon

State

General locality Willamette River

Locality Ross I. to SP RR Bridge at Oswego.

Scale 1/5000 Date of survey Feb to May, 1946

Vessel WESTDAHL

Chief of Party E.H. Bernstein L.C. Wilder (H.F. Garber, Acting)

Surveyed by H.F. Garber E.H. Bernstein M.E. Wennermark

Protracted by C.E. Petersen

Soundings penciled by C.E. Petersen

Soundings in ~~XX fathoms~~ ^{YY} feet Feet

Plane of reference Columbia River Datum (MLLW)

Subdivision of wire dragged areas by

Inked by R.E. Elkins

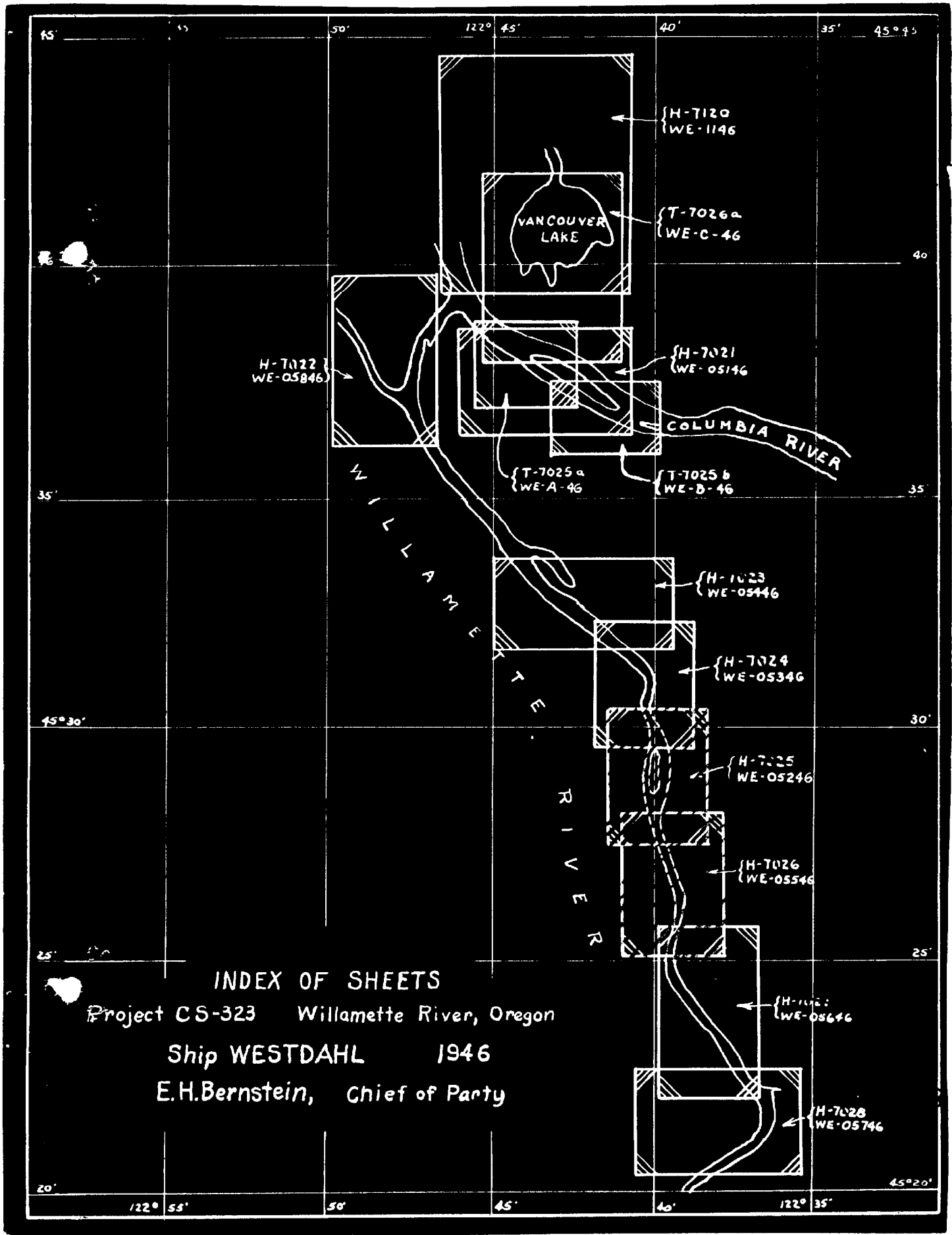
Verified by R.E. Elkins

Instructions dated 28 November 1945, 19...

Sounded with graphic recorder except for "f" day of Sheet We 05246

Remarks: which was with hand lead.

Smooth sheet and plotting by Seattle Processing Office.



INDEX OF SHEETS

Project CS-323 Willamette River, Oregon

Ship WESTDAHL 1946

E.H. Bernstein, Chief of Party

H-7120
WE-1146

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WE-C-46

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WE-05146

H-7022
WE-05846

T-7025a
WE-A-46

T-7025b
WE-D-46

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WE-05646

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WE-05746

VANCOUVER
LAKE

COLUMBIA RIVER

WILLAMETTE
RIVER

122° 45' 40' 35'

35' 40' 35' 30' 25' 20'

122° 55' 50' 45' 40' 122° 35'

The number of this sheet was changed to H 7126.

Descriptive Report to Accompany

Sheet WE-05246
H-70256 71256
Feb. - March, 1946

Scale 1:5,000

Ship WESTDAHL

H. F. Garber,
Acting Commanding Officer

Project:

The hydrographic survey was made in accordance with instructions dated 28 November, 1945, project CS-323.

Survey Limits and Dates:

The Survey covers the Willamette River, vicinity of Portland, Oregon, between the Ross Island & Sellwood bridges.

The entire area is covered by Sheet H-6335, 1938.

The hydrography was done between 25 February and 6 March 1946.

Vessel and Equipment:

All the hydrography was done with/a ^{Launch #141} 36 foot landing barge (LCPR).

Soundings were taken with a 808 Depth Recorder No. 625, and hand lead for cross lines and bottom samples.

The launch operated from the Ship WESTDAHL based in Portland.

Tide Station:

A tide station was maintained ^{near} at the Sellwood bridge, (Sellwood 1938) during the sounding. The datum used is the Columbia River Low Water Datum as determined by the U. S. Engineers.

Control Stations:

The triangulation used for control was established by W. M. Scaife in 1938.

Recoverable topographic stations of Sheet T-6619, 1938, located by planetable methods were plotted by DM's and DP's. This data, a copy of which is attached, is listed in the descriptive report of that sheet.

Topographic stations located by air photographic methods are from Sheet T-8695, 1946, R. A. Earle, Chief of Party.

As additional stations were necessary, three-point fixes with check angles were used to locate hydrographic stations in the main channel. These angles are recorded in Volume 1, of the sounding records.

It was found that there were insufficient stations for three-point fixes in the narrow easterly channel between Ross Island and the mainland. Planetable methods were used on the boat sheet to locate additional stations, tying into all topographic stations. This work was done while the boat sheet was fresh and before any distortion took place. No discrepancies were noted. The DM's and DP's were immediately scaled and verified. These values are attached to this report.

Shoreline and Topography:

The shoreline and topographic details are from a current aerial topographic survey, Sheets Nos. T-8695 (1946) and T-8687 (1946), R. A. Earle, Chief of Party.

No discrepancy was found in the shoreline except in the vicinity of Hardtack Island, where the commercial dredging of sand and gravel is continually changing the shoreline and depths. The slight changes since the time the area was photographed are indicated on the boat sheet, and appear on the smooth sheet, in red.

The low water line was determined wherever possible. Its entire delineation was prevented by steep-to banks, debris and snags accumulated along the edge of river, numerous piling in various stages of dilapidation, log rafts and boom sticks along the river edge, houseboats projecting into the water, and the danger of putting the launch hard aground with a strong river current. The area immediately south of station REEF could not be sounded on account of strong following current.

$\phi 45^{\circ} 28.33'$
 $\lambda 122^{\circ} 40.04'$

Soundings:

The depths were measured with an 808 Depth Recorder with a small

percentage of hand lead soundings.

Fathometer corrections are applied by direct comparison with the bar checks in accordance with paragraph 5617 of the Hydrographic Manual. As the corrections are consistent, a mean of the bar checks for the sheet was used. The abstract of bar checks and corrections are attached.

Control of Hydrography:

All the sounding is controlled by three-point sextant fixes.

Adequacy of Survey:

The survey is adequate for the area covered. Junctures with adjoining surveys have not been made at the time of writing this report. (Review, par. 4)

Comparison with Previous Surveys:

The boat sheet was compared with Sheet No. H-6335, 1938 and the following noted:

1. The point on the north end of Ross Island has built up since the last survey. (extended about 160 m.)

2. The one foot shoal shown on the previous survey at Lat. $45^{\circ} 28' 70''$, Long. $122^{\circ} 40' 04''$ has deepened and falls among ~~6 $\frac{1}{2}$~~ and ~~7~~ foot soundings on the present survey. A close system of lines was run over this area.

3. The 6 foot spot on Sheet No. H-6335, Lat. $45^{\circ} 28' 15''$, Long. $122^{\circ} 39' 38''$ falls on a 9 foot spot on the present survey. (6 carried fwd.)

4. The area between Hardtack and Ross Island and the south end of Ross Island has been deepened through commercial gravel dredgings.

The remaining depths agree very well for a changeable river area. (see Review, par. 5 b.)

Comparison with Chart:

The boat sheet was compared with Chart 6155 and the same discrepancies noted in the preceding paragraph are applicable to chart. No further discrepancies were found.

Dangers and Shoals:

The important danger is the reef on which signal $45^{\circ} 28.33'$
 $122^{\circ} 40.04'$ REEF is located. ✓
Portions of it will bare 12 feet at low river level. The northern ex- ✓
tremity of the reef is marked by a Red Numⁿ Buoy No. 2.

Coast Pilot Information:

There is no pertinent coast pilot information within the limits of ✓
survey.

Aids to Navigation:

There is one floating aid to navigation, a red numⁿ No. 2 buoy, Lat. ✓
 $45^{\circ} 28.50'$, Long. $122^{\circ} 39.9'$. This was located by a sextant fix on 27 Feb. ✓
1946, Position 73c in 40 feet of water. ✓
33' reduced

The bridge clearances are being currently determined by the Portland ✓
Photogrametric Party.

Landmarks for Charts & Geographic Names:

The landmarks for charts and geographic names are being compiled by ✓
the Portland Photogrametric Party for the entire Portland area.

Forwarded:
E. H. Bernstein
Comdr. Ship Hodgson.

Submitted by:
H. F. Garber
H. F. Garber,
Lieut. Comdr., USC&GS
Acting Commanding Officer

Fathometer Corrections

Sheet WE-05246

H-70256 71256

Bar checks were made three times daily from 5 to 40 feet, the results of which are attached. As the bar checks covered 80% of the range sounded, fathometer corrections were obtained by direct comparison with bar checks in accordance with paragraph 5617 of the regulations.

It was noted that the results from day to day were consistent, so the corrections were obtained by a mean of all bar checks. Corrections are taken from a curve to 0.2 of a foot as follows:

DEPTH (Feet)	CORRECTION (Feet)
0 - $12\frac{1}{2}$	+0.2
13 - $23\frac{1}{2}$	0.0
24 - 42	-0.2
over 42	-0.4

ABSTRACTS OF BAR CHECKS

Sheet WE - 05246 (Reg. # H-7025)

Scale 1:5,000

71256

Ship WESTDAHL

H. F. Garber, Acting Commanding Officer

Date	Day Letter	Time	Fath. Reading Feet	Bar Depth Feet	Difference B.D. - F.R. Feet	Mean. Difference Feet			
2-25-46	a	0900	30.0	30.0	0.0				
			20.0	20.0	0.0				
			14.8	15.0	+0.2				
			9.6	10.0	+0.4				
			4.5	5.0	+0.5	+0.5			
			9.6	10.0	+0.4	+0.4			
			14.8	15.0	+0.2	+0.2			
			19.9	20.0	+0.1	+0.05			
			30.0	30.0	0.0	+0.0			
			1130	4.5	5.0	+0.5			
			9.6	10.0	+0.4				
			14.8	15.0	+0.2				
			20.0	20.0	0.0				
			30.2	30.0	-0.2	-0.2			
20.0	20.0	0.0	0.0						
14.9	15.0	+0.1	+0.15						
9.8	10.0	+0.2	+0.3						
4.8	5.0	+0.2	+0.35						
1640	40.0	40.0	0.0	0.0					
2-25-46	a	1130	4.8	5.0	+0.2				
			9.8	10.0	+0.2				
			14.9	15.0	+0.1				
			20.0	20.0	0.0				
			30.0	30.0	0.0				
			40.0	40.0	0.0	0.0			
			30.0	30.0	0.0	0.0			
			19.9	20.0	+0.1	+0.05			
			14.8	15.0	+0.12	+0.15			
			9.7	10.0	+0.3	+0.25			
			4.8	5.0	+0.2	+0.2			
			2-26-46	b	0840	4.8	5.0	+0.2	
						9.9	10.0	+0.1	
						15.0	15.0	0.0	
20.0	20.0	0.0							
30.0	30.0	0.0							
40.1	40.0	-0.1				-0.1			
30.0	30.0	0.0				0.0			
19.9	20.0	+0.1				+0.05			
14.9	15.0	+0.1				+0.05			
9.7	10.0	+0.3				+0.2			
4.7	5.0	+0.3				+0.25			
1150	4.9	5.0				+0.1			
10.0	10.0	0.0							
15.1	15.0	-0.1							
20.1	20.0	-0.1							
30.1	30.0	-0.1							

Date	Day Letter	Time	Fath. Reading Feet	Bar Depth Feet	Difference B.D.-F.R. Feet	Mean Difference Feet
			40.3	40.0	-0.3	-0.3
			30.1	30.0	-0.1	-0.1
			20.1	20.0	-0.1	-0.1
			15.1	15.0	-0.1	-0.1
			10.0	10.0	0.0	0.0
			5.0	5.0	0.0	+0.05
2-27-46	c	0820	4.7	5.0	+0.3	
			9.9	10.0	+0.1	
			15.1	15.0	-0.1	
			20.2	20.0	-0.2	
			30.4	30.0	-0.4	
			40.5	40.0	-0.5	-0.5
			30.4	30.0	-0.4	-0.4
			20.1	20.0	-0.1	-0.15
			15.0	15.0	0.0	-0.05
			10.0	10.0	0.0	+0.05
			4.8	5.0	+0.2	+0.25
		1315	4.8	5.0	+0.2	
			9.9	10.0	+0.1	
			15.1	15.0	-0.1	
			20.1	20.0	-0.1	
			30.3	30.0	-0.3	
			40.5	40.0	-0.5	-0.5
			30.2	30.0	-0.2	-0.25
			20.0	20.0	0.0	-0.05
			15.1	15.0	-0.1	-0.1
			9.9	10.0	+0.1	+0.1
			4.8	5.0	+0.2	+0.2
		1535	30.5	30.0	-0.5	-0.5
			20.0	20.0	0.0	0.0
			15.0	15.0	0.0	0.0
			9.8	10.0	+0.2	+0.2
			4.8	5.0	+0.2	+0.2
2-28-46	d	0830	4.6	5.0	+0.4	
			9.9	10.0	+0.1	
			15.0	15.0	0.0	
			20.0	20.0	0.0	
			30.1	30.0	-0.1	
			40.3	40.0	-0.3	-0.3
			30.2	30.0	-0.2	-0.15
			20.0	20.0	0.0	0.0
			15.0	15.0	0.0	0.0
			9.8	10.0	+0.2	+0.15
			4.7	5.0	+0.3	+0.35
		1145	40.5	40.0	-0.5	
			30.0	30.0	0.0	
			20.0	20.0	0.0	
			15.0	15.0	0.0	
			9.7	10.0	+0.3	
			4.6	5.0	+0.4	
		1635	5.2	5.0	-0.2	
			10.0	10.0	0.0	
			15.0	15.0	0.0	
			20.3	20.0	-0.3	

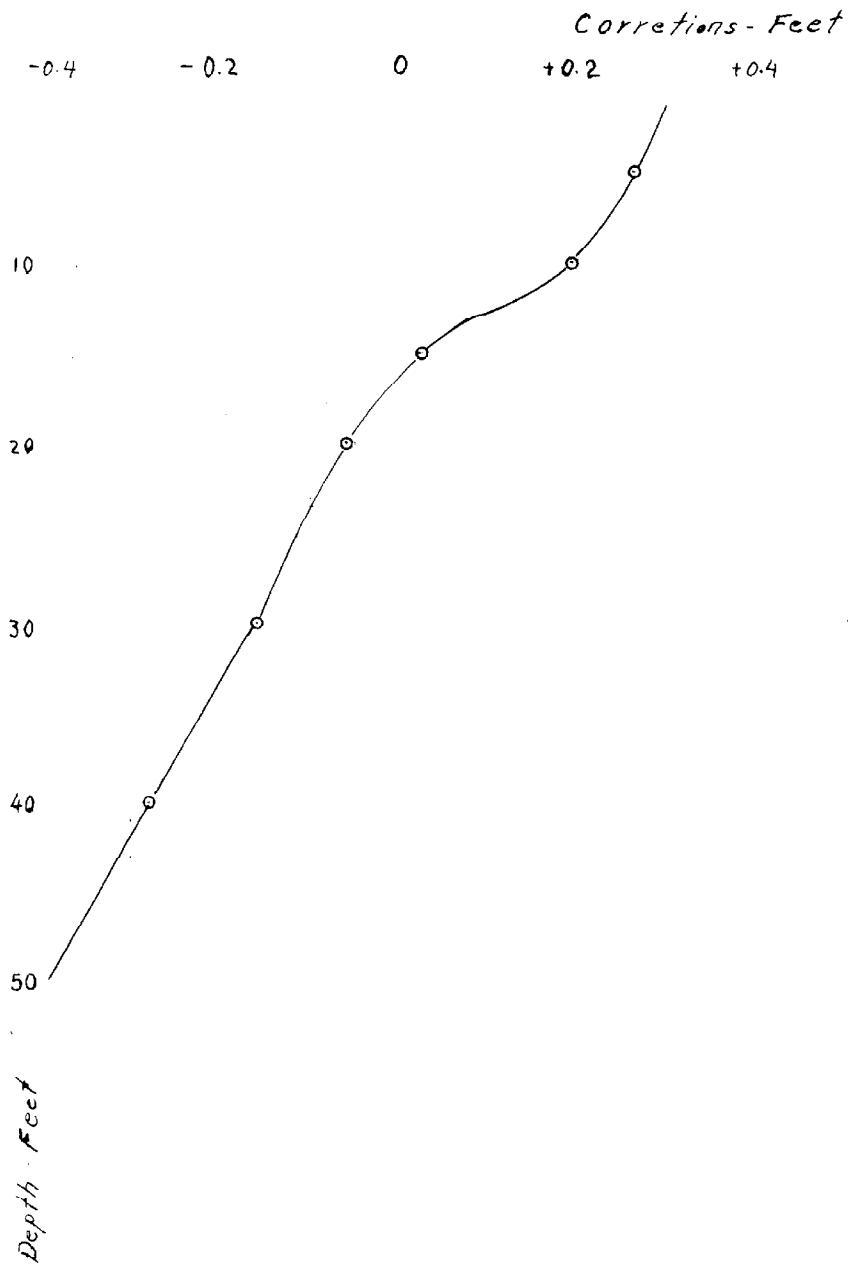
Date	Day Letter	Time	Fath. Reading Feet	Bar Depth Feet	Difference E.R. - B.D. Feet	Mean Difference Feet
			30.0	too much current	30 ft.	
			40.0	too much current	40 ft.	
			30.0	30.0	0.0	0.0
			20.0	20.0	0.0	-0.15
			14.8	15.0	+0.2	+0.1
			9.4	10.0	+0.6	+0.3
			4.2	5.0	+0.8	+0.3
3-5-46	e	1335	4.9	5.0	+0.1	
			10.0	10.0	0.0	
			15.0	15.0	0.0	
			20.1	20.0	-0.1	
			30.3	30.0	-0.3	-0.3
			20.0	20.0	0.0	-0.05
			15.0	15.0	0.0	0.0
			10.0	10.0	0.0	0.0
			5.0	5.0	0.0	+0.05
		1640	couldn't get	5 ft.		
			10.0	10.0	0.0	
			15.1	15.0	-0.1	
Not used for cor-			20.3	20.0	-0.3	
rections. Fathometer			30.8	30.0	-0.8	-0.8
signal weak.			20.4	20.0	-0.4	-0.35
			15.1	15.0	-0.1	-0.1
			10.0	10.0	0.0	0.0
			couldn't get	5 ft.		

ABSTRACT OF BAR DEPTHS

SHEET WE - 05246 ⁶
 keg. # H-7025 7125

Date	Day Letter	Time	Bar Depths (feet)					
			5	10	15	20	30	40
			Corrections					
2-25-46	a	0900	+0.50	+0.40	+0.20	+0.05	0.00	--
		1130	+0.35	+0.30	+0.15	0.00	-0.20	0.00
		1640	+0.20	+0.25	+0.15	+0.05	0.00	0.00
2-26-46	b	0840	+0.25	+0.20	+0.05	+0.05	0.00	-0.10
		1150	+0.05	0.00	-0.10	-0.10	-0.10	-0.30
2-27-46	c	0820	+0.25	+0.05	-0.05	-0.15	-0.40	-0.50
		1315	+0.20	+0.10	-0.10	-0.05	-0.25	-0.50
		1535	+0.20	+0.20	0.00	0.00	-0.50	--
2-28-46	d	0830	+0.35	+0.15	0.00	0.00	-0.15	-0.30
		1145	+0.40	+0.30	0.00	0.00	0.00	-0.50
		1635	+0.30	+0.30	+0.10	-0.15	0.00	--
3-5-46	e	1335	+0.05	0.00	0.00	-0.05	-0.30	--
			(12)	(12)	(12)	(12)	(12)	(8)
SUM			+3.10	+2.25	+0.30	-0.35	-1.90	-2.20
MEAN			+0.26	+0.19	+0.02	-0.06	-0.16	-0.28

V J.M.L.



Fathometer Corrections
Sheet - WE - 05246

Depth Ft.	Corrections Ft.
0-12 1/2	+0.2
13-23 1/2	0.0
24-42	-0.2
over 42	-0.4

Scaled Positions ^{for} ~~from~~ Descriptive Report

From Topo Sheet 6619, 1938

<u>NAME</u>	<u>DESCRIPTION</u>	<u>LATS.</u>	<u>LONG.</u>
<u>LINE</u>	Power line tower (1)	45°29' 1702 ✓	122°39' 1297 ✓
* <u>TOE</u>	Power line tower (3)	29' 1574 ✓	39' 987 ✓
<u>POW</u>	Power line tower (2)	29' 1453 ✓	39' 693 ✓
<u>B</u>	Burner (not on smooth sheet)	29' 1050 ✓	40' 126 ✓
<u>BUR</u>	Burner	28' 1759 ✓	40' 337 ✓
<u>REEF</u>	Iron rod stuck in top of rock (4)	28' 612 ✓	40' 49 ✓
<u>TOWER</u>	Power line tower (5)	28' 262 ✓	39' 977 ✓
<u>TOW</u>	Center of round low tower, brick base	27' 1419 ✓	40' 8 ✓

use position
as on T-8695
(1946)

✓ H 78.

Located on smooth sheet by Triangulation

- (1) shown on T-8695 as TOWER (W. of 3 towers) ^(E.P.) 1945 (d) 175 ft. high
- (2) " " " " TOWER (E. of 3 towers) 1945 (d) 107 ft.
- (3) Located by triangulation, PORTLAND, ROSS ISLAND, APEX OF POWERLINE TOWER, 1938
175 ft. high (T-8695)
- (4) shown on T-8695 as BOLT 1945 (d)
- (5) " " " " EAST TOWER (transmission) 1946 (d)

712⁶₈

List of DM's and DP's of stations scaled from boat sheet WE 05246. (H-702⁶)
 Stations located by planetable on boat sheet while sheet was fresh
 and before any distortion took place.

NAME	LAT.			Meters	LONG.			Meters
	°	'	"		°	'	"	
Cut	45	29	30	884.3 883	122	39	30	126
Ale	45	29	30	713	122	39	30	82
Gal	45	29	30	327	122	39	30	209
Box	45	29	30	262	122	39	30	02
Few	45	29	30	108	122	39	30	123
Eel	45	29	00	847	122	39	00	647
Cat	45	29	00	738	122	39	00	350
Sis	45	29	00	699	122	39	00	424
Tap	45	29	00	663	122	39	00	647
Dip	45	29	00	558	122	39	30	133
Sig	45	29	00	229	122	39	00	437
Vex	45	29	00	161	122	39	00	618
War	45	29	00	105	122	39	30	28
Bag	45	29	00	207	122	39	30	310
Rio	45	29	00	555	122	39	00	275
Day	45	29	00	493	122	39	00	165
Pix	45	29	00	403	122	39	00	264
Egg	45	29	00	312	122	39	00	165
Oak	45	29	00	194	122	39	00	300
Ned	45	29	00	43	122	39	00	356
Gus	45	29	00	2	122	39	00	222
Yes	45	28	30	890	122	39	30	115
Ant	45	28	30	850	122	39	30	406
Zig	45	28	30	752	122	39	30	168
Fat	45	28	30	601	122	39	00	354

Scaled by HFB
 ✓ by N.E.T.
 ✓ by A.M.L.
 Copy

NAME	LAT.			Meters	LONG.			Meters
	°	'	"		°	'	"	
✓ Mug	45	28	30	493	122	39	00	504
✓ Gas	45	28	30	405	122	39	00	419
✓ Leg	45	28	30	352	122	39	30	00
✓ Kidd	45	28	30	377	122	39	30	257
✓ Hut	45	28	30	196	122	39	00	589
✓ Ida	45	28	30	75	122	39	30	97

Copy ✓ by G.M.L. ✓ by R.E.J.
 sealed by H.F.B.

Approval Sheet

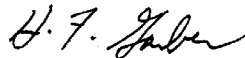
6

Hydrographic Sheet No. WE-05246 (Reg. # H-702X)

Ship WESTDAHL

The boat sheet, sounding record, and fathograms have been examined and approved by me.

The smooth sheet has not been plotted at the time of writing this report.



H. F. Garber,
Lieut. Comdr., USC&GS
Acting Commanding Officer

DESCRIPTIVE REPORT

to accompany

HYDROGRAPHIC SURVEY H-7126 (WE-05546)

WILLAMETTE RIVER (SOUTH OF SELLWOOD BRIDGE), OREGON, APRIL-MAY, 1946

SHIP WESTDAHL

E. H. BERNSTEIN, CHIEF OF PARTY

PROJECT:

This survey was made in accordance with Instructions dated 28 November 1945, Project CS-323.

SURVEY LIMITS AND DATES:

It constitutes a new basic hydrographic survey of that portion of Willamette River from Sellwood Bridge at Latitude $45^{\circ} 27.9'$ southward to Oswego Railroad Bridge at Latitude $45^{\circ} 25.5'$. The limits are indicated on the accompanying Index of Sheets. The work was begun on April 15 and continued at various times through May 31st.

The sheet is joined on the north by ^{north half H-7126 half H-7126} ~~Survey No. H-7126~~ and on the south by Survey No. H-7127.

8 (1946)

VESSELS AND EQUIPMENT:

The sounding was done with Launch No. 141, a 36 foot landing barge (LCPR), operating from the Ship WESTDAHL basing in Portland. The 808 Depth Recorder No. 77 was used except where moored logs prevented coverage with the launch. These areas were covered with the handlead by "log walking". Handlead soundings were also distributed throughout the area for the purpose of obtaining fathometer comparisons and bottom samples.

TIDE STATIONS:

Two tide stations were maintained during the survey, one at Sellwood Bridge at Latitude $45^{\circ} 27.9'$, Longitude $122^{\circ} 40.0'$, and the other at Oswego at Latitude $45^{\circ} 25.0'$, Longitude $122^{\circ} 39.4'$. The Sellwood Bridge tide gage was used for the reduction of soundings for the north portion of the sheet and the Oswego tide gage for the south portion. The point of change was at Elk Rock Light at Latitude $45^{\circ} 26.2'$, which is approximately midway between the two tide stations. This point is also at a sharp bend in the river where the currents are considerable.

SMOOTH SHEET:

The smooth sheet had not been made at the time of submission of this report to the Processing Office. This is to be done at that office.

CONTROL STATIONS:

The triangulation stations were established in 1938 by party of W. M. Scaife, Chief of Party.

Topographic stations are from Sheets T-8695, T-8701 and T-8702, 1945-46, established by air photographic methods by the Portland Photogrammetric Party of R. A. Earle, Chief of Party.

Hydrographic stations were established by the hydrographic party by means of sextant angles.

SHORELINE AND TOPOGRAPHY:

The shoreline and topographic detail are from Sheets T-8695, T-8701, and T-8702, R. A. Earle, Chief of Party. (1945-46)

SOUNDINGS:

Soundings were measured in feet and recorded to the nearest half foot.

Bar Checks were taken three times daily. Fathometer corrections are applied by direct comparison with the bar checks in accordance with Paragraph 5617 of the Hydrographic Manual. An abstract of bar checks and fathometer corrections is attached. (See note below)

CONTROL OF HYDROGRAPHY:

All the sounding was controlled by three-point sextant fixes.

ADEQUACY OF SURVEY:

The survey is adequate and should supersede any prior surveys for charting.

CROSSLINES:

Approximately ten percent of crosslines were run and no discrepancies noted.

COMPARISON WITH PRIOR SURVEYS:

There have been no prior hydrographic surveys made by the Coast and Geodetic Survey in this area. A comparison was made with U. S. Engineer's Survey of 1939 and the two were found to be in reasonably good agreement. In several areas the present survey shows considerably greater depths, which is probably due in part to sand and gravel dredges which operate in parts of the river.

The Engineer's survey was more of a reconnaissance, consisting of 100 to 200 meter cross channel lines, and a detailed comparison could not be made.

COMPARISON WITH CHART:

There are no existing navigational charts of this portion of the Willamette River with which to compare this survey.

DANGERS AND SHOALS:

There are no important dangers or shoals except as clearly shown on the sheet. The rocky shoal bordering the west bank of the river opposite Milwaukie at Latitude 45° 26'38", Longitude 122° 38'78", and which bares 1 foot at MLLW,

is well marked by buoys. The shoal area along the east bank at Latitude $45^{\circ} 25'.68$, Longitude $122^{\circ} 39'.00$ and covered $\frac{1}{3}$ foot at MLLW, is somewhat east of midchannel and is easily avoided.

COAST PILOT INFORMATION:

This portion of Willamette River should be navigated by steering generally a midchannel course taking care to avoid the two shoals mentioned in the preceding paragraph. At some stages of the river strong currents are encountered especially in the bends and narrows.

AIDS TO NAVIGATION:

The positions of the floating aids to navigation are as follows:

Red Spar, at Latitude $45^{\circ} 26'.47$, Longitude $122^{\circ} 38'.69$, in 12 feet.

Red Spar, at Latitude $45^{\circ} 26'.37$, Longitude $122^{\circ} 38'.75$, in ~~13~~¹⁰ feet.

Milwaukie Light (Station name IDA) has been moved since the area was photographed. Present location at Latitude $45^{\circ} 26'$ - 886 meters, Longitude $122^{\circ} 38'$ - 687 meters. (Shown at this position on smooth sheet, use for charting)

Reports on fixed aids to navigation have been prepared and are being reported on Form 567.

MISCELLANEOUS:

Reports on "Landmarks for Charts", "Geographic Names", and "Recoverable Topographic Stations" have been prepared and submitted by the Portland Photogrammetric Office.

Respectfully submitted,

M. E. Wennermark
M. E. Wennermark,
Lt. Comdr., USC&GS
17 February 1947

Approved and forwarded:

I. H. Bernstein
I. H. Bernstein,
Lt. Comdr., USC&GS
Chief of Party.

NOTE: Corrections to fathometers were made on "a" day in accordance with the values found that day from the two bar checks.
Corrections to "b" to "h" days were obtained from averages of the values found by the comparisons on those days.
Corrections to "j" day were obtained from bar checks recorded on pages 3 and 10 of Vol. 2, Sheet 05746.

ABSTRACT OF BAR CHECKS
AND FATHOMETER CORRECTIONS
SHEET H-7126 (1446)

DATE	BAR	FATHOMETER	CORRECTION D-M
April 15, 1946	30.0	30.0	0.0
a - day	40.0	40.1	-0.1
Time - 0825	30.0	30.0	0.0
	20.0	19.7	+0.3
	15.0	14.5	+0.5
	10.0	9.2	+0.8
	5.0	4.2	+0.8
	20.0	19.7	+0.3
April 15, 1946	5.0	4.0	+1.0
a - day	10.0	9.2	+0.8
Time - 1655	15.0	14.7	+0.3
	20.0	19.9	+0.1
	30.0	30.0	0.0
	40.0	40.2 A scale	-0.2
	40.0	39.5 B scale	+0.5
	30.0	30.0	0.0
	20.0	19.7	+0.3
	15.0	14.6	+0.4
	10.0	9.2	+0.8
	5.0	4.0	+1.0
April 16, 1946	5.0	4.3	+0.7
b - day	10.0	9.4	+0.6
Time - 0945	15.0	14.7	+0.3
	20.0	20.0	0.0
	30.0	30.2	-0.2
	40.0	40.5 A scale	-0.5
	40.0	39.2 B scale	+0.8
	30.0	30.1	-0.1
	20.0	20.0	0.0
	15.0	14.7	+0.3
	10.0	9.5	+0.5
	5.0	4.3	+0.7
April 16, 1946	20.0	20.0	0.0
b - day	30.0	30.5	-0.5
Time - 1300			
April 16, 1946	5.0	4.6	+0.4
b - day	10.0	9.7	+0.3
Time - 1535	15.0	15.0	0.0
	40.0	40.7 A scale	-0.7
	30.0	30.4	-0.4
	20.0	20.0	0.0
	15.0	14.8	+0.2
	10.0	9.5	+0.5
	5.0	4.5	+0.5
April 19, 1946	5.0	4.6	+0.4
c - day	10.0	9.7	+0.3
Time - 0825	15.0	15.0	0.0
	20.0	20.3	-0.3
	30.0	30.3	-0.3
	40.0	40.6 A scale	-0.6
	40.0	40.0 B scale	0.0
	30.0	30.5	-0.5
	20.0	20.0	0.0

DATE	BAR	FATHOMETER	CORRECTION D-M
April 19, 1946	15.0	14.9	+0.1
c - day (continued)	10.0	9.7	+0.3
Time - 0825	5.0	4.7	+0.3
April 19, 1946	5.0	4.5	+0.5
c - day	10.0	9.6	+0.4
Time - 1540	15.0	15.0	0.0
	20.0	20.3	-0.3
	30.0	30.3	-0.3
	40.0	40.6 A scale	-0.6
	40.0	39.5 B scale	+0.5
	30.0	30.3	-0.3
	20.0	20.0	0.0
	15.0	14.8	+0.2
	10.0	9.4	+0.6
	5.0	4.5	+0.5
April 22, 1946	5.0	4.5	+0.5
d - day	10.0	9.6	+0.4
Time - 0835	15.0	14.8	+0.2
	20.0	20.0	0.0
	30.0	30.4	-0.4
	40.0	40.9 A scale	-0.9
	40.0	40.0 B scale	0.0
	30.0	30.2	-0.2
	20.0	20.0	0.0
	15.0	15.0	0.0
	10.0	9.7	+0.3
	5.0	4.7	+0.3
April 22, 1946	5.0	4.7	+0.3
d - day	10.0	10.0	0.0
Time - 1635	15.0	15.0	0.0
	20.0	20.5	-0.5
	30.0	31.0	-1.0
	40.0	41.2 A scale	-1.2
	40.0	40.0 B scale	0.0
	30.0	30.6	-0.6
	20.0	20.1	-0.1
	15.0	15.0	0.0
	10.0	10.0	0.0
	5.0	4.9	+0.1
April 23, 1946	5.0	4.5	+0.5
e - day	10.0	9.7	+0.3
Time - 1025	15.0	14.9	+0.1
	20.0	20.4	-0.4
	30.0	30.9	-0.9
	40.0	41.0 A scale	-1.0
	40.0	40.0 B scale	0.0
	30.0	30.5	-0.5
	20.0	20.1	-0.1
	15.0	15.0	0.0
	10.0	9.7	+0.3
	5.0	4.7	+0.3

DATE	BAR	FATHOMETER	CORRECTION	D-M
April 23, 1946	5.0	4.5	+0.5	
e - day	10.0	9.6	+0.4	
Time - 1620	15.0	14.9	+0.1	
	20.0	20.4	-0.4	
	40.0	41.5 B scale	-1.5	
	40.0	41.0 A scale	-1.0	
	20.0	20.3	-0.3	
	15.0	15.0	0.0	
	10.0	9.8	+0.2	
	5.0	4.8	+0.2	
April 24, 1946	5.0	4.6	+0.4	
f - day	10.0	9.8	+0.2	
Time - 0925	15.0	14.9	+0.1	
	20.0	19.9	+0.1	
	30.0	30.2	-0.2	
	40.0	40.4 A scale	-0.4	
	40.0	39.9 B scale	+0.1	
	30.0	30.1	-0.1	
	20.0	19.8	+0.2	
	15.0	14.7	+0.3	
	10.0	9.5	+0.5	
	5.0	4.5	+0.5	
April 24, 1946	5.0	5.0	0.0	
f - day	10.0	10.0	0.0	
Time - 1530	15.0	15.2	-0.2	
	20.0	20.2	-0.2	
	30.0	30.5	-0.5	
	40.0	40.9 A scale	-0.9	
	40.0	40.0 B scale	0.0	
	30.0	30.5	-0.5	
	20.0	20.1	-0.1	
	15.0	15.0	0.0	
	10.0	10.0	0.0	
	5.0	4.9	+0.1	
May 10, 1946	5.0	4.7	+0.3	
g - day	10.0	9.8	+0.2	
Time - 0849	15.0	15.0	0.0	
	20.0	20.5	-0.5	
	30.0	30.8	-0.8	
	40.0	41.2 A scale	-1.2	
	40.0	40.0 B scale	0.0	
	30.0	30.8	-0.8	
	20.0	20.2	-0.2	
	15.0	15.1	-0.1	
	10.0	9.9	+0.1	
	5.0	4.8	+0.2	
May 11, 1946	5.0	4.6	+0.4	
h - day	10.0	9.9	+0.1	
Time - 0820	15.0	15.0	0.0	
	20.0	20.4	-0.4	
	30.0	31.0	-1.0	
	40.0	41.1 A scale	-1.1	
	40.0	40.0 B scale	0.0	
	50.0	50.3 B scale	-0.3	
	50.0	51.8 A scale	-1.8	
	40.0	41.2 A scale	-1.2	
	40.0	40.0 B scale	0.0	
	30.0	30.9 A scale	-0.9	
	20.0	20.2	-0.2	

Comparison
H.L. Fath.
40.0 41.5 A scale
40.0 41.0 B scale

DATE	BAR	FATHOMETER	CORRECTION
			D-M
May 11, 1946	15.0	15.0	0.0
h - day (continued)	10.0	9.9	+0.1
Time - 0820	5.0	4.8	+0.2

FATHOMETER CORRECTIONS

"a" day

0	-	4 $\frac{1}{2}$	=	+1.0
5	-	9	=	+0.8
9 $\frac{1}{2}$	-	13 $\frac{1}{2}$	=	+0.6
14	-	18	=	+0.4
18 $\frac{1}{2}$	-	23	=	+0.2
23 $\frac{1}{2}$	=	55	=	0.0

B Scale

All depths + 0.5

"b-h" days (inclusive)

0	-	4	=	+0.4
4 $\frac{1}{2}$	-	14 $\frac{1}{2}$	=	+0.2
15	-	20	=	0.0
20 $\frac{1}{2}$	-	24	=	-0.2
24 $\frac{1}{2}$	-	28	=	-0.4
28 $\frac{1}{2}$	-	34	=	-0.6
34 $\frac{1}{2}$	-	40 $\frac{1}{2}$	=	-0.8
41	-	47	=	-1.0
47 $\frac{1}{2}$	-		=	-1.2

B, C & D Scales

All Depths - 0.0

"j" day (same as "e" day Sheet H-7128)

34	-	41 $\frac{1}{2}$	=	-0.8
42	-	52	=	-1.0

B Scale

40	-	51 $\frac{1}{2}$	=	0.0
52	-		=	-0.2

C Scale

All Depths - 0.0

TIDAL NOTE

to accompany

Hydrographic Survey H-7126 (1946)

For the north portion of the sheet from Sellwood Bridge to Elk Rock Light at Latitude $45^{\circ} 26'.2$ tide reducers were obtained from the Sellwood Bridge tide station, Latitude $45^{\circ} 27'.9$, Longitude $122^{\circ} 40'.0$ and applied by zones at mile intervals up-stream. Plane of reference was the Columbia River Datum as determined by the U. S. Engineers and the Coast and Geodetic Survey and which was 1.1 feet above the zero of the tide staff. For the south portion of the sheet from Elk Rock Light to Oswego Railroad Bridge tide reducers were obtained from the Oswego tide station, Latitude $45^{\circ} 25'.0$, Longitude $122^{\circ} 39'.4$ and applied by one mile zones downstream from that station in intervals of 2/10 foot. The same plane of reference as determined by the U. S. Engineers and which was 2.2 feet below the zero of the tide staff was used.

STATISTICS

for

HYDROGRAPHIC SURVEY H-7126 (1946) We 05546

PROJECT CS-323

SHIP WESTDAHL

VOL.	DAY LETTER	DATE	NO. OF POSITIONS	NO. OF SDGS. HANDLEAD	STAT. MILES OF SDG.
1	a	4/15/46	118		10.1
1	b	4/16/46	123		9.8
1	c	4/19/46	94		5.3
1&2	d	4/22/46	107		6.6
2	e	4/23/46	124		7.3
2	f	4/24/46	121		9.5
2	g	5/10/46	46	85	0.8)H.L. 1.0)Fath.
2	h	5/11/46	5		0.3
2	j	5/31/46	9	9	--
TOTALS - - - -			747	94	49.9 Fath. 0.8 H.L.

Area in square statute miles - - - - -0.75

APPROVAL SHEET
HYDROGRAPHIC SURVEY H-7126

The boatsheet, fathograms and sounding records have been examined and approved by me, and the survey is considered to be complete and adequate. Daily supervision of the work and inspection of the records was made during the progress of the survey.

The smooth sheet had not been plotted at the time of the submission of this report to the Processing Office.



E. H. Bernstein,
Lt. Comdr., USC&GS
Chief of Party

H 7126(1946)(We 05246 & We 05546)

Willamette River, Oregon
Ross I. to Oswego.

Processing Office Notes.

Sheet We 05246 was originally registered as H 7125 but that number was cancelled to allow We 05246 and We 05546 to be plotted on one smooth sheet. Separate reports for these sheets were prepared by the field party. Both are bound with this report.

Smooth Sheet. Two projections were made by hand on one Whatman sheet. The topographic signals were scaled from 1/8000 prints from the original acetates of the photogrammetric sheets and plotted on the 1/5000 smooth sheet. Difficulty was experienced in plotting the hydrographic signals from topographic signals. It was dealt with in the same manner as explained in the report for H 7128, essentially by plotting all cuts observed at each signal on a templet and laying the templets as for aerial photographs, and adjusting as seemed best. Shoreline was transferred by pantograph. (Plot of hydro. signals verified and found adequate)

The hand lead was used in sounding the area between Ross I. and Harttack I. and there is no way to check these soundings. The bottom shows several lumps. It is explained elsewhere that gravel is taken here for commercial use. It seems that this area would be more satisfactorily surveyed if sounded with the fathometer.

The position of the tide gage just north of Sellwood Bridge was transferred from the boat sheet. Presumably it is on a pile or dolphin. (Concur; see review, par. 7b.)

Edgar Schultz
Cartographic Engineer
Seattle Processing Office

H 7125 and H 7126 were combined under the number H 7126.
 The statistics are separately given on these two pages.

STATISTICS

Sheet WE - 05246 (11-7025) ⁶ 7125

Ship WESTDAHL H.F.Garber, Acting Commanding Officer

Willamette River,
 Oregon

Vol. No.	Day Letter	Date 1946	No. of H.L.Sdg.	No. of Pos.	Stat. Miles Sdg. Lines
1	a	2-25	----	167	13.8
1	b	2-26	-----	119	9.6
1	c	2-27	----	95	8.3
2	d	2-27	----	13	0.4
2	e	2-28	----	198	14.0
2	e	3-5	15	63	4.2
2	f	3-6	260	79 H.L.	5.2 H.L.
TOTAL			275	79 H.L.	5.2 H.L.
				655 Fath.	50.3 Fath.

Area, sq. stat. miles - - - -0.8

H-7125 and H 7126 were combined under the number H 7126.
The tidal information for each are given on these two pages.

Tidal Sheet to Accompany

Sheet WE - 05246

H-70236

71256

Tide reducers were obtained from Sellwood Bridge, Willamette
River, Portland, Oregon, Lat. $45^{\circ} 27' 19.0''$, Long. $122^{\circ} 39' 98.0''$. ✓

Plane of reference was the Columbia Low River Datum as deter-
mined by the U. S. Engineers and C. G. Boyce. ✓
PHB

*Tide reducers were obtained from
readings directly at the tide gage and by
interpolation (for slope of the plane of
reference) in areas removed $1\frac{1}{2}$ and 3
miles from the tide gage.*

E. H. Bernstein

H- 7126 (We 05246 & We 05546)

Willamette River, Oregon.

Geographic Names pencilled on the smooth sheet.

PORTLAND, OREGON

WILLAMETTE RIVER

ROSS ISLAND

HARDTACK ISLAND

ELK ROCK ISLAND

DIVISION OF CHARTS

REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. H-7126

WE-05246

FIELD NO. WE-05546

Oregon, Willamette River, Ross Is., Bridge to S.P.R.R. Bridge
at Oswego
Surveyed in February - May 1946 Scale 1:5,000
Project No. CS-323

Soundings:

Control:

808 Depth Recorder
Hand lead

Sextant fixes on shore signals

Chief of Party - E. H. Bernstein, L. C. Wilder (H. F. Garber,
acting)
Surveyed by - E. H. Bernstein, M. E. Wennermark, H. F. Garber
Protracted by - C. E. Peterson
Soundings plotted by - C. E. Peterson
Verified and inked by - R. E. Elkins
Reviewed by - T. A. Dinsmore, February 6, 1948
Inspected by - H. W. Murray

1. Shoreline and Signals

The source of the shoreline and signals is given in the Descriptive Report. The shoreline is subject to change in the vicinity of Hardtack Island where sand and gravel are dredged for commercial use.

2. Sounding Line Crossings

Depths at crossings are in good agreement.

3. Depths Curves and Bottom Configuration

The usual depth curves are adequately delineated. Anchored log rafts, barges and other obstructions prevented the surveying of many inshore areas.

The bottom, for the most part, is very irregular. In areas where dredging has taken place, the bottom is lumpy. Depths along the axis of the river channel vary from 14 feet at lat. $45^{\circ} 28.71'$, long. $122^{\circ} 39.94'$, to 112 feet at lat. $45^{\circ} 26.22'$, long. $122^{\circ} 38.98'$.

4. Junctions with Contemporary Surveys

Adequate junctions were effected with H-7124 (1946) on the north and H-7128 (1946) on the south.

5. Comparison with Prior Surveys

a. H-1672 (1885) 1:10,000

This prior survey covers only a small area on the present survey in the vicinity of Ross Island Bridge. A comparison of this prior survey with H-6335 (1938) has been made in the review of the latter survey.

b. H-6335 (1938) 1:10,000

This prior survey covers that part of the present survey which lies between Ross Island Bridge and Sellwood Bridge.

A comparison with the prior survey reveals considerable change in bottom and in shore detail. A shoreline accretion since 1938 of about 160 meters has occurred at the north tip of Ross Island. Improvement of mooring facilities is noted by the increased number of dolphins and piling appearing on the present survey. Commercial dredging of sand and gravel is noted at several locations. Between Ross Island and Hardtack Island, and in the area immediately south of Ross Island, dredging has created bottom and shoreline changes too extensive to enumerate in detail. Shoaling has occurred east of Ross Island in lat. $45^{\circ} 29.88'$, long. $122^{\circ} 39.60'$, where prior mid-channel depths of 24 feet are now superseded by maximum depths of 17 feet. Conversely, in the main channel west of Ross Island at lat. $45^{\circ} 29.90'$, long. $122^{\circ} 39.88'$, prior depths of 31 feet have now deepened to 41 feet.

Other differences noted are as follows:

The 1-and 2-ft. soundings (charted) in lat $45^{\circ} 28.70'$, long. $122^{\circ} 40.04'$, and lat. $45^{\circ} 28.64'$, long. $122^{\circ} 40.00'$, respectively, should be disregarded. Close development on the present survey shows a general deepening over this shoal area. The prior depths are adequately disproved and are now superseded by 6-ft. depths.

The line of piling (charted) in lat. $45^{\circ} 28.83'$, long. $122^{\circ} 39.29'$, and the stiff boom (charted) in lat. $45^{\circ} 28.70'$, long. $122^{\circ} 39.35'$, should be disregarded. Although these two features appear (as charted) on a preliminary edition (ozalid print) of T-8695 (1945), they are marked for deletion on field inspection photos of 1946.

Except for the 6-ft. sounding in lat. $45^{\circ} 28.16'$, long. $122^{\circ} 39.88'$, and the inshore rocks and soundings in the vicinity of lat. $45^{\circ} 28.15'$, long. $122^{\circ} 40.06'$, which have been carried forward from H-6335 (1938), the present survey is adequate to supersede the prior survey within the common area.

c. There are no prior surveys, by this Bureau, south of Sellwood bridge.

6. Comparison with Chart 6155 (Latest print of 11/24/47)

a. Hydrography

Charted hydrography originates principally with the previously discussed surveys, supplemented by advance chartings from the present survey prior to verification and review.

No navigational chart has been published covering that part of the present survey south of Sellwood bridge. A new chart, however, is now being compiled for this area. South of Sellwood bridge, a comparison was made with the Corps of Engineers Survey of 1928, as revised to 1939 (blueprint 40292). No appreciable differences were noted in the relative position of the channel. The deeper channel depths appearing on the present survey are probably the result of sand and gravel dredging. As the Engineer survey is of a reconnaissance nature, consisting of cross-channel lines spaced 100 and 200 meters apart, it is not considered to be of any present charting value.

b. Aids to Navigation

The buoy at lat. $45^{\circ} 28.49'$, long. $122^{\circ} 39.94'$, is the only aid to navigation falling within the presently charted area of the present survey (chart 6155). The survey and charted positions of the buoy are in substantial agreement. The buoy adequately marks the feature intended.

Fixed and floating aids to navigation, falling within the uncharted area of the present survey are shown on the smooth sheet. The aids adequately mark the features intended.

7. Condition of Survey

- a. The sounding records were complete except that it was found necessary to rescan the fathograms in this office because many bottom irregularities, occurring at uneven intervals, were found to have been omitted.
- b. The Descriptive Report covers all matters of importance except that no description is furnished for the tide gage near Sellwood bridge. Inasmuch as the sounding records and air photos show a boat float and house boats moored in that locality, it is presumed that the tide gage is on a pile and has been so noted on the smooth sheet.
- c. The smooth plotting was carefully done.

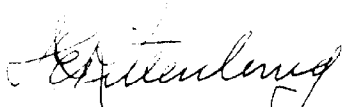
8. Compliance with Project Instructions

The survey adequately complies with the Project Instructions.

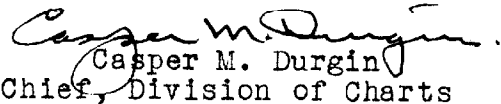
9. Additional Field Work

This is an excellent survey of a difficult area. Some inshore areas remain unsurveyed because of reasons previously stated. Inasmuch as surveys are made in this area by the Corps of Engineers, no additional field work by this Bureau is considered necessary.

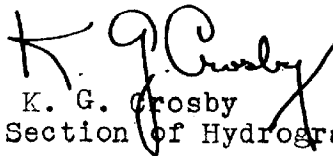
Examined and approved:



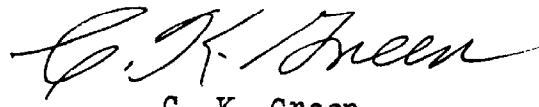
I. E. Rittenburg
Chief, Nautical Chart Branch



Casper M. Durgin
Chief, Division of Charts



K. G. Crosby
Chief, Section of Hydrography



C. K. Green
Chief, Division of Coastal Surveys

GEOGRAPHIC NAMES

Survey No.

97126

Name on Survey

	A	B	C	D	E	F	G	H	K	
	On Chart No.	On previous survey No.	On U. S. Quadrangle Maps	From local information	On local Maps	P. O. Guide or Map	Rand McNally Atlas	U. S. Light List		
<u>Oregon</u>									USGB	1
<u>Willamette River</u>									"	2
<u>Portland</u>									"	3
<u>Ross Island Bridge</u>										4
<u>Ross Island</u>									USGB	5
<u>Hardtack Island</u>									"	6
<u>Sellwood Bridge</u>				(location of one tide staff)						7
<u>Elk Rock Island</u>										8
<u>Southern Pacific R.R. Bridge</u>										9
										10
				Names underlined in red are approved. 3/10/48 L.Heck						11
										12
										13
<u>Oswego</u>				(location of one tide staff)						14
										15
										16
										17
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										24
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										26
										27

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. **7126**

Records accompanying survey:

Boat sheets ²....; sounding vols. ⁴....; wire drag vols. ⁰....;
 bomb vols. ⁰....; graphic recorder rolls ⁹....;
 special reports, etc. ⁰.....

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

Number of positions on sheet	.....	1575
Number of positions checked	.....	103
Number of positions revised	.....	9
Number of soundings revised (refers to depth only)	.....	485 ✓
Number of soundings erroneously spaced	.....	—
Number of signals erroneously plotted or transferred	.....	—
Topographic details	Time	30
Junctions	Time	20
Verification of soundings from graphic record	Time	35

Verification by *Roy E. Elkins*..... Total time *278 hrs.* Date *1-12-48*

Reviewed by *J.A. Dismore*..... Time *48 hrs* Date *2/9/48*

RHC

TIDE NOTE FOR HYDROGRAPHIC SHEET

~~Division of Hydrography and Topography:~~

30 October 1947

Division of Charts: H. W. MURRAY

Plane of reference approved in
4 volumes of sounding records for

HYDROGRAPHIC SHEET 7126

Locality - Ross Island, Willamette River, Oregon

Chief of Party: H. F. Garber in 1946
Plane of reference is Columbia River Datum, reading
1.8 ft. on tide staff at Sellwood Bridge
6.5 ft. below B. M. SELLWOOD 1 (1938) at Sellwood Bridge
- 2.2 ft. on tide staff at Oswego
17.9 ft. below B. M. 1 (1946) at Oswego

*See DR H-7128
and tidal notes by field party
in this report.
AFS 3-20-58*

Condition of records satisfactory except as noted below:

E. C. McKay
Section
Chief, ~~Division of Tides and Currents~~

NAUTICAL CHARTS BRANCH

SURVEY NO. H7126

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
9/3/47	6154 6155-	J.F.R.	Before After Verification and Review <i>partially applied</i>
16 Feb 48	617		
16 Feb 48	6171	Nichols	Before <u>After</u> Verification and Review <i>Complete</i>
28 Jan 50	6155	Nichols	Before After Verification and Review <i>Completely applied</i>
12 June 50	6154	Nichols	Before After Verification and Review <i>applied thru 6155 - complete</i>
			Before After Verification and Review
			Before After Verification and Review
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			Before After Verification and Review
			Before After Verification and Review

M-2168-1

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

Partial Appl. to 615446155 - QFR 9/3/47