8095

Diag. Cht. No. 1206-2

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. ECFP-1153 *Office No.* H-8095

LOCALITY

State Massachusetts

General locality Plum Island

Locality Plum Island Sound and Outer Coast

1953

CHIEF OF PARTY

Clarence R. Reed

LIBRARY & ARCHIVES

DATE August 24, 1955

B-1870-1 (1)

8095

Form 537
(Ed. June 1946)

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.

REGISTER NO. H-8095

Field No. ECFP-1153

State Massachusetts

General locality Plum Island ~~Sound Entrance~~

Locality Plum Island Sound and Outer Coast, ~~S. End Plum Island~~

Scale 1:10,000 Date of survey 7/14 - 10/15/53

Instructions dated 6 March 1953

Vessel East Coast Field Party

Chief of party Clarence R. Reed

Surveyed by L.D. Kelley

Soundings taken by ~~Fathometer~~, graphic recorder, hand lead, ~~xxxxx~~ sounding pole

Fathograms scaled by Party personnel

Fathograms checked by L.D. Kelley & C.E. Horne Norfolk Processing Office

Protracted by Richard D. Lynn

Soundings penciled by Richard D. Lynn

Soundings in ~~xxxxxxxx~~ feet at MLW ~~XXXXX~~

REMARKS: Additional hydrography is to be executed on this sheet in the summer of 1954.

See supplemental descriptive report covering 1954 season

U. S. GOVERNMENT PRINTING OFFICE 16—66520-1

JPR

NOTES FOR DESCRIPTIVE REPORT TO ACCOMPANY

Hydrographic Sheet H-8095, (FIELD NO. ECFP 1153)

Plum Island Sound and Outer Coast, S.End Plum Island

EAST COAST FIELD PARTY — CLARENCE R. REED, CHIEF OF PARTY

PROJECT CS-355 — 1953 — Scale 1:10,000

* *

PROJECT This survey was accomplished under instructions dated 6 March, 1953 calling for a modern hydrographic survey of the coastal regions of New Hampshire and Northern Massachusetts.

SURVEY LIMITS The survey on Sheet H-8095 (1953-54), (FIELD NO. 1153) covers an area in Plum Island Sound south of Latitude 42°-45' and its tributary rivers and a band approximately 1 mile wide along the outer coast of Plum Island from Latitude 42°45' south to Castle Neck at approximate Latitude 42°41'. Junctions were made with contemporary surveys on the north on Sheet H-8096 (1953-54), (FIELD NO. ECFP 1253) and prior survey No. H-7140 (1947) on the outer coast. Work commenced on 14 July and stopped on 15 October, 1953. Bad weather at the end of the field season prohibited completion of this survey.

VESSELS & EQUIPMENT Aluminum Launch No. 168 was used for the survey. The launch operated from moorings at Newburyport and the Ipswich Bay Yacht Club in Plum Island Sound.

All echo soundings were obtained with Graphic Recorders No. 138SPX and No. 67. The transducers were mounted inboard.

TIDES & CURRENTS The tidal note is attached to this report. One current station was occupied by the USC&GSS GILBERT using a Roberts radio current buoy. Current data is to be furnished the Division of Tides and Currents by the Ship GILBERT.

SMOOTH SHEET The smooth sheet is to be plotted by the Norfolk Processing Office. It will require a skewed projection on paper 36" wide in order to plot triangulation stations on Castle Neck.

CONTROL STATIONS The control consisted mainly of triangulation stations and photogrammetric stations. The latter were transferred from Air Photo Compilation Sheets T-11153 (1953-54), T-11154 (1953-54), and T-11155 (1953-54). Where hydrographic stations were necessary, their positions were determined by sextant fixes using cuts.

SHORELINE AND TOPOGRAPHY The shoreline and topographic detail were transferred from Air Photo Compilation Sheets T-11153, T-11154 and T-11155. Any inaccuracies were resolved in the field and sketched directly on the boat sheet. Shoreline on eastern Castle Neck has been sketched approximately because Air Photo shoreline was not available at the time. It has since been completed.

SOUNDINGS The depths were measured with graphic recorders, sounding pole and hand lead. Bottom Samples were obtained with armed hand leads.

CONTROL OF HYDROGRAPHY The sounding lines of this survey were controlled by the three-point-sextant-fix method. There were no unusual jumps when changing control stations except when using hydrographic signals. This is due probably to control on a dog - ear used to establish their locations. The smooth sheet positions should be accurate.

Fixes were taken at 1 to 1½ minute intervals. In the Ipswich River where control was lacking, positions of sounding lines were referred to private channel markers located by hydrographic methods. Appropiate remarks were entered in the sounding volumes.

ADEQUACY OF SURVEY This survey is considered adequate to supersede prior surveys except for a portion along Castle Neck Shore, the Eagle Hill and Rowley Rivers, entrance to Ipswich River and Plum Island Sound north of Latitude 42°-42.8', The junction with contemporary and prior surveys on the outer coast is satisfactory as depth curves can be drawn and there are no holidays. supersedes prior surveys see 7c Review

CROSSLINES Sufficient crosslines in the completed areas were run as prescribed.

COMPARISON WITH PRIOR SURVEYS A comparison of Sheets H-3356, (1911-12) H-3312 (1911-12) and H-594 (1857) showed some discrepancies. These are in sandy bottom areas and discrepancies are due to shifting sand. Those items mentioned in the Preliminary Review prepared by the Division of Charts were investigated and are listed below with discrepancies in the chart.

COMPARISON WITH CHART CHARTS 1206 & 243

LATITUDE	LONGITUDE	CHART	1953 SURVEY	REMARKS
42°-42.0	70°-45.58	Rocks awash	2 ~~3~~ (3)	This area was investigated at low water. No rocks are present but kelp was lying on the sand indicating that rocks may be lying underneath. Item 2 of Prelim Review. It is recommended that the 2 (3) ft. sounding supersede the rocks awash.
42°-41'	70°44'	---	---	Item 1 of Prelim Review. This area is sandy bottom and although some soundings disagree with charted soundings, it is believed to be due to shifting sands. No dark spots were observed to indicate rocks. Bad weather prohibited hand lead investigation. The comparison is below. It is recommended that this survey soundings supersede prior soundings.
42°-41.11	70°-44.37	3	11	Item 1 Prelim. Review Chart 243
42 -41.07	70 -44.29	5	9 5	" " " " " "

LATITUDE	LONGITUDE	CHART	1953 SURVEY	REMARKS
42°-~~41.07~~ 40.93	70°-44.20	5	10	Item 1 Prelim Review, Chart 243
42°-41.03	70°-~~43.85~~	12	12-13	" " " " " "
42°-41.09	70°-43.75	14	14	" " " " " "
42°-41.15	70°-43.58	17	17	" " " " " "
42°-42.3	70°-46.17	5	~~+2~~ -1	These locations are points of small rocks. Detached positions of the outermost rocks of these points are recorded in the sounding volumes.
42°-42.6	70°-46.1	1	~~+7~~ -7	
42°-42.0	70°-47.5	---	4 foul rocks awash	Point of rocks. Sounding lines were run over these rocks. Bad weather prohibited return to the area for hand lead investigation.
42°-41.65	70°-47.3	---	---	Entrance to Ipswich River should be entered only on high water and with local knowledge. A point of rocks lies to the north and a breakwater to the south with a sand bar in between. The rocks and breakwater cover at 3/4 tide. A strong current flows in this river. Further development at this entrance should be made.

COAST PILOT NOTES A separate report was submitted to the Coast Pilot Section on 23 October, 1953.

AIDS TO NAVIGATION Aids to Navigation were located as follows:

LATITUDE	LONGITUDE	BUOY & NO.	DEPTH	DATE
42°-41.57	70°-43.94	Nun "2" Ref	23 ft.	9/28/53
42°-41.19	70°-44.33	Can "3"	8	9/28/53
42°-41.17	70°-44.80	Nun "4"	10	9/28/53
42°-41.48	70°-46.08	Nun "6"	10	9/28/53
42°-41.67	70°-47.13	Can "7"	8	10/13/53
42°-41.58	70°-47.41	Can "1"	5	10/13/53
42°-41.58	70°-47.54	Nun "2"	3	10/13/53
42°-41.57	70°-47.67	Can "3"	9	10/13/53
42°-41.87	70°-47.06	Red Daybeacon	+2.5	9/1/53

Private channel markers in the Ipswich River were located for purposes of controlling hydrography only. The ice takes them out in winter and they are replaced by local fishermen in the Spring.

LANDMARKS Hydro signal "HOG" a Fire Observation Tower on Hog Island is recommended for charting as a landmark. Its position is Latitude 42°-39' 1699 m, Longitude 70°45' ~~914~~ 920 m, as scaled from the ~~coat~~ smooth sheet. charted

GEOGRAPHIC NAMES No changes or additions to geographic names were found.

MISCELLANEOUS Extreme Caution should be used when entering Plum Island Sound from any point west of Red Nun "2" Ref. The sandbar in this area is continually changing and the sea is usually breaking over most parts of the shoal except during calm weather or exceptionally high tides.

It is recommended that the "changing bar channel" note be continued even after soundings of this survey have been charted.

Respectfully submitted

Lionel D. Kelley

Lionel D. Kelley
ENS. USC&GS

Approved & forwarded

Clarence R. Reed

Clarence R. Reed, CDR, USC&GS
Chief of Party

TIDAL NOTE TO ACCOMPANY

Hydrographic Sheet H- 8095, (FIELD NO. ECFP 1153)

Observations were obtained at one tide station where a portable automatic tide gage was maintained. This gage at the remains of Bluff Wharf, Plum Island was used to reduce all soundings on the sheet. Plane of reference was computed from the elevations of previous tidal bench marks.

STATION	LATITUDE	LONGITUDE	MLW ON STAFF
Bluff Wharf	42 -42.59	70 -47.37	+1.5

FATHOMETER CORRECTIONS

PROJECT CS-355

Hydrographic Survey Sheet H-8095, (FIELD NO. ECFP 1153)

The corrections tabulated below are based on an initial set at zero on the fathogram. Where the initial varies from zero on the fathogram INDEX CORRECTIONS must be entered in the sounding volumes.

FATHOMETER NO. 67

14 August - 14 October 1953

Launch No. 168

Correction	Depth	
A Range	From	To
+0.2	0.0	10.0
0.0	10.1	23.5
-0.2	23.6	32.0
-0.4	32.1	37.5
-0.6	37.6	42.5
-0.8	42.6	48.5
B Range	[illegible]	[illegible]
-0.6	35.0	36.5
-0.8	36.6	41.0
-1.0	41.1	46.0
-1.2	46.1	51.0
-1.4	51.1	56.0

Fathometer 138 SPK

See Note on velocity curve for corrections for Aug. 12 & 13, 1954 -
H.L.P.

STATISTICS TO ACCOMPANY

Hydrographic Sheet H- 8095 , (FIELD NO. 1153)

DATE 1953	DAY LTR.	VOL. NO.	LEAD LINES	NO. OF POSITIONS	STAT. MI. SDG. LINES
12 Aug.	a	1	0	122	20.9
13 "	b	1&2	0	231	37.7
17 "	c	2&3	0	142	22.8
24 "	d	3	5	177	25.5
1 Sept.	e	3&4	0	134	24.2
2 "	f	4	0	24	3.0
28 "	g	4	4	4	0.0
29 "	h	4&5	0	48	6.6
30 "	j	5	43	86	11.3
2 Oct.	k	5	5	17	1.9
9 "	l	5&6	0	154	18.2
12 "	m	6	0	7	1.3
13 "	n	6&7	0	110	11.6
14 "	p	7	6	141	19.7
15 "	q	7	2	2	0.0
		TOTALS	65	1399	204.7

Total Area sq. stat. mi. --- 7.6 sq. mi.

PROCESSING OFFICE LIST OF SIGNALS
H-8095

TRIANGULATION STATIONS

ALE	IPSWICH L.H. (CASTLE NECK L.H.), 1941
DOME	CASTLE DOME, 1941
NECK	CASTLE NECK, 1953
POLA	PLUM ISLAND, COAST GUARD CUPOLA, 1943
PLUM	SOUTH PLUM, 1943
	CASTLE HILL 137, 1941-43

MARKED TOPOGRAPHIC STATIONS

CAS (Castle Hill 137, 1941-43, Reference mark 2)

TOPOGRAPHIC STATIONS T-11153

Abe	Bar	Cor	Cut	Dan	Edd	Fix	Him	Hud	Log	Low
Mad	Mut	Nor	Nut	Pat	Pie	Pig	Rid	Sac	Sid	Sin
Sit	Sox	Wag	Yel							

T-11154

Toy

HYDROGRAPHIC STATIONS

Boy	Vol. 9, pg. 31
Bye	Vol. 8, pg. 41
Cap	Vol. 3, pg. 60
Con	Vol. 10, pg. 61
Gal	Vol. 9, pg. 30 & 31
Gus	Vol. 3, Pg. 60
	Vol. 4, pg. 35,36 & 37
Hog	Vol. 3, pg 57
Hot	Vol. 10, pg. 61
Kid	H-8096
Les	H-8096
Mop	H-8096
Pil	Vol. 4, pg. 5,35,36 & 37
Rad	Vol. 3, pg. 58
Red	Vol. 10, pg. 62
Six	Vol. 9, pg. 30 &31
The	Vol. 10, pg. 61
Wig	Vol. 5, pg. 51

FLOATING AIDS TO NAVIGATION
H-8095

NAME	LAT.	LONG.	DEPTH	POS. NO.	DATE
Plum I. Sound Entrance Buoy 2	42-41.57	70-43.95	23'	3g	9-28-53
Plum I. Sound Entrance Buoy 3	42-41.19	70-44.33	8'	2g	"
Plum I. Sound Entrance Buoy 4	42-41.17	70-44.80	10'	1g	"
Plum I. Sound Channel Buoy 6	42-41.48	70-46.08	10'	4g	"
Plum I. Sound Channel Buoy 7	42-41.67	70-47.13	8'	1n	10-13-53
Plum I. Sound Shoal Buoy	42-41.65	70-47.21	4	59f	6-14-54
Ipswich River Bouy 1	42-41.58	70-47.41	5	2n	10-13-53
" " " 2	42-41.58	70-47.54	3	3n	"
" " " 3	42-41.57	70-47.67	9	4n	"
Plum I. Sd. Buoy 1	42-43.37	70-48.79	17	6d	6-10-54
Plum I. Sd. Buoy 2	42-42.70	70-48.60	20	59e	6- 8-54
Plum I. Sd. Buoy 3	42-43.75	70-48.13	11	124a	6- 1-54
Plum I. Sd. Buoy 4	42-42.83	70-48.83	12	58e	6- 8-54
Plum I. Sd. Buoy 5	42-44.08	70-48.19	11	2a	6- 1-54
Plum I. Sd. Buoy 6	42-43.54	70-48.59	9	123a	"
Plum I. Sd. Buoy 7	42-44.15	70-48.29	11	1a	"

ADDENDUM
To Accompany

HYDROGRAPHIC SURVEY H-8095 (Field No. ECFP-1153)

GENERAL

Plum Island Sound and Approaches has an extremely irregular bottom. There are numerous shoals and sloughs and much of the area contains sandwaves. Most of the soundings in the sandwave areas were rescaled with a reducing template in order to obtain a better representation of the bottom, and to pick up shoal spots missed on the original scanning. All soundings scaled with reducing templates are recorded in the "office" column in red pencil.

DISCREPANCIES

Lat. 42-41.5, Long. 70-45.0 The soundings on positions 8 thru 36h (purple) (1954) were not smooth plotted. They are in disagreement with surrounding hydrography by from 1 to 4 feet. The reason for this discrepancy is not apparent

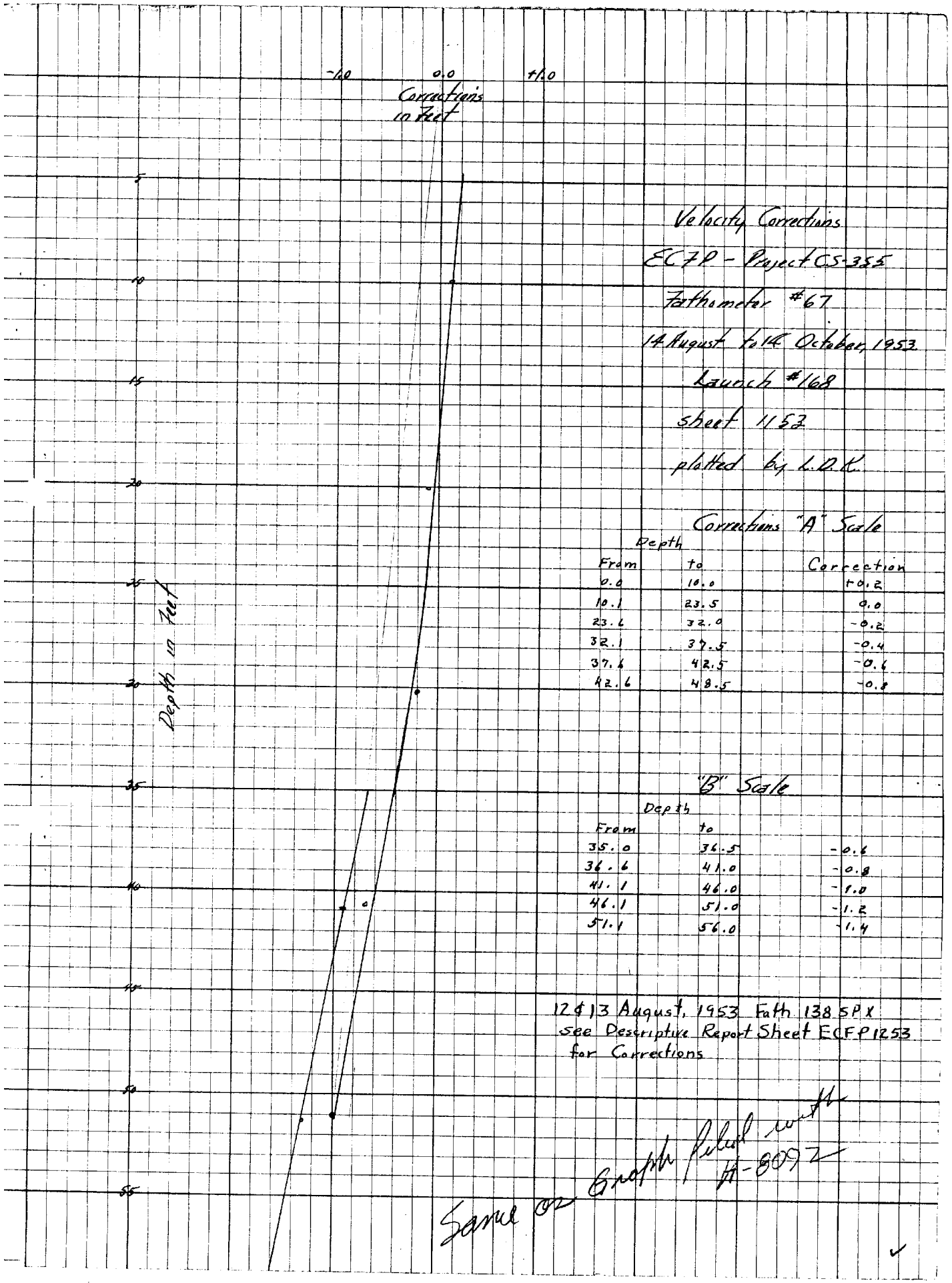
1953 & 1954 work disagree because of changing bottom

Respectfully submitted,

Hugh L. Proffitt

Hugh L. Proffitt
Cartographer.

Norfolk, Va.
18 Aug. 1955



Velocity Corrections

ECFP - Project CS-355

Fathometer #67

14 August to 14 October, 1953

Launch #168

Sheet 1153

plotted by L.D.K.

Corrections "A" Scale

Depth From	Depth to	Correction
0.0	10.0	+0.2
10.1	23.5	0.0
23.6	32.0	-0.2
32.1	37.5	-0.4
37.6	42.5	-0.6
42.6	48.5	-0.8

"B" Scale

Depth From	Depth to	
35.0	36.5	-0.6
36.6	41.0	-0.8
41.1	46.0	-1.0
46.1	51.0	-1.2
51.1	56.0	-1.4

12 & 13 August, 1953 Fath 1385 PX
see Descriptive Report Sheet ECFP1253
for Corrections

Graph Plotted with H-8092

Same as

APPROVAL SHEET

HYDROGRAPHIC SURVEY H-8095

The records and boat sheets for Hydrographic Survey H-8095 have been inspected by me and are approved.

Clarence R. Reed

Clarence R. Reed
CDR, USC&GS
OinC, East Coast Field Party

Form 537
(Ed. June 1946)

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.

REGISTER No. H-8095

Field No. ECFP-1153

State MASSACHUSETTS

General locality PLUM ISLAND ~~SOUND~~

Locality PLUM ISLAND SOUND & OUTER COAST

Scale 1:10,000 Date of survey 6/1/54 to 7/2/54

Instructions dated 6 March 1953, 29 Jan. 1954 & 2 April 1954

Vessel EAST COAST FIELD PARTY

Chief of party CLARENCE R. REED

Surveyed by L.D. KELLEY & C.E. HORNE

Soundings taken by ~~XXXXXXXX~~ graphic recorder, hand lead, ~~XXXX~~ SOUNDING POLE

Fathograms scaled by L.D. KELLEY, C.E. HORNE & R.B. NOBLE

Fathograms checked by L.D. KELLEY, C.E. HORNE, R.B. NOBLE & NORFOLK PROCESSING OFFICE

Protracted by RICHARD D. LYNN

Soundings penciled by RICHARD D. LYNN

Soundings in ~~XXXXXX~~ feet at MLW ~~XXXX~~W

REMARKS: This report covers field work done during the 1954 season.

U. S. GOVERNMENT PRINTING OFFICE 777082

ADDITIONAL NOTES FOR DESCRIPTIVE REPORT TO ACCOMPANY

Hydrographic Sheet H-8095 (Field No. ECFP 1153)

Plum Island Sound and Outer Coast, Massachusetts

EAST COAST FIELD PARTY — CLARENCE R. REED, CHIEF OF PARTY

PROJECT CS-355 — 1954 — Scale 1/10,000

* * * * * * * * * * * * *

PROJECT The additional work of this survey was accomplished under instructions dated 6 March 1953, supplemental instructions dated 29 January 1954, and letter dated 2 April 1954. (Subject - Additional Field Work in Areas Surveyed in 1953)

VESSELS & EQUIPMENT The additional work of this survey was accomplished with Launch 82 and a 16' skiff. Launch 82 operated from a mooring in the Parker River at the Old Town Country Club.

All echo soundings were obtained with Graphic Recorder No. 1198. Transducers were mounted inboard.

Soundings from the skiff in the Ipswich River were obtained with sounding pole and leadline.

TIDES & CURRENTS The tidal note is attached to this report. No additional current stations were occupied.

CONTROL STATIONS The 1953 control was recovered and used to complete the survey. Where additional hydrographic stations were necessary, their positions were determined by sextant fixes and cuts from sextant fixes.

CONTROL OF HYDROGRAPHY Where control was lacking in some small rivers tributary to Plum Island Sound, fixes were referred to prominent topographical features, and appropriate remarks were entered in the sounding volumes.

ADEQUACY OF SURVEY This survey is now considered adequate to supersede prior surveys.

COMPARISON WITH CHART Chart 1206

The area covered by this boat sheet is one of constantly changing sand bars and shoals. In Plum Island Sound, the channel is clearly marked with buoys. The unmarked 9' channel shown on Chart 1206 at Lat. 42° 43.84' Long. 70° 48.40' is no longer there. It is blocked by a 2' shoal on the north end. At the present time there is a channel, not shown on Chart 1206, through the shoals at the entrance to Plum Island Sound, with a controlling depth of 8'. (1953) It is located at approx. Lat. 42° 41.5' Long. 70° 45.0' and runs in a N E direction from Ipswich Beach (locally known as Cranes Beach). This channel is subject to frequent change, as noted on Chart 1206. BP 5240

A copy of the survey of Plum Island Sound by Mr. D.C. Bailey (Item 3 of Preliminary Review) is forwarded with the records for this survey.

HORIZONTAL POSITIONING

Although all inshore lines on H-7140 are controlled by shoran without sextant verification, and with one shoran measurement closely paralleling the shoreline, the agreement between the shoran controlled lines of 1947 and the sextant controlled lines of 1953-54 in crossing the numerous sharply defined shoals in the area of Hampton Shoal Ledges indicates that individual shoran fixes are in error by no more than 20 meters. This is the maximum possible movement of the shoran controlled lines without causing unreasonable conflicts in depths.

CONCLUSION

Inasmuch as some shoran lines would be required to shift as much as 200 meters to be in agreement with the sextant controlled lines on the inshore surveys, and as several lines on H-7140 can be traced from areas of agreement to areas of disagreement it is concluded that the differences are in part due to the shifting of the bottom material.

R. E. Elkins
12 January 1956

SUPPLEMENT STATISTICS TO ACCOMPANY

Hydrographic Sheet H-8095, (Field No. 1153)

DATE 1954	DAY LTR.	VOL. NO.	LEAD LINES	NO. OF POSITIONS	STAT. MI. SDG. LINES
1 June	a	1	17	131	18.0
2 "	b	1&2	0	124	17.4
8 "	c	2	2	70	8.0
10 "	d	2	1	11	0.6
11 "	e	2	2	76	7.7
14 "	f	2	1	59	6.9
16 "	g	3	0	110	11.9
17 "	h	3	0	82	9.0
1 July	j	3&4	4	63	5.4
2 "	k	4	0	43	3.7
		TOTALS	27	769	88.6

Total Area sq. stat. mi. --- 3.0

DANGERS AND SHOALS A group of rocks were found at Lat. 42° 43.03' Long. 70° 47.60' consisting of boulders of approximately 4' diameter. They were not in a pile, but spaced rather irregularly over a small area. These rocks are inside the low water line and therefore bare completely to a height of approx. 4.5' at mean low water. It is recommended that these rocks be shown on the charts.

AIDS TO NAVIGATION Floating aids to navigation were located and are noted in the sounding volumes.

LANDMARKS The flagstaff charted at Lat. 42° 41.42' Long. 70° 46.63' was blown down several years ago, and according to the district game warden, it is not going to be replaced. It is recommended that this flagstaff be deleted from the charts. not charted

GEOGRAPHIC NAMES Ipswich Beach on Castle Neck is locally known as Cranes Beach. Several additional names are shown on the survey by Mr. D.C. Bailey and it is possible that some of them may be desirable for charting.

MISCELLANEOUS Although the channel markers in the Ipswich River are of a temporary nature, it was noted that for the most part they were located in 1954 exactly as they had been in 1953. The exceptions to this were PCM# 15 & PCM #5 (See Vol. 2 pgs 50 & 51). PCM #15 had been moved approx. 30m SE, and PCM #5 was not plotted on the boat sheet in 1953. These markers were located by reference to prominent topographic features.

Respectfully submitted

Charles E. Horne

Charles E. Horne
ENS. USC&GS

Approved & forwarded

Clarence R. Reed

Clarence R. Reed, CDR, USC&GS
Chief of Party

SUPPLEMENT TIDAL NOTE TO ACCOMPANY

Hydrographic Sheet H-8095, (Field No. ECFP 1153)

A portable automatic tide gage was maintained at the Old Town Country Club on the Parker River. This gage was used to reduce all 1954 soundings on this sheet. The plane of reference was computed in Washington.

STATION	LATITUDE	LONGITUDE	MLW on Staff
Parker River	42° 45.7'	70° 50.5'	+1.8'

SUPPLEMENT FATHOMETER CORRECTIONS

PROJECT CS-355

Hydrographic Survey Sheet H-8095, (Field No. ECFP 1153)

The corrections tabulated below are based on an initial set a zero on the fathogram. Where the initial varies from zero on the fathogram Index Corrections must be entered in the sounding volumes.

FATHOMETER NO. 119S

1 June - 8 June 1954

LAUNCH CS#82

CORRECTION	DEPTH	
A Range	From	To
+0.4	0.0	5.8
+0.2	5.9	7.8
+0.0	7.9	18.0
+0.2	18.1	31.4
+0.4	31.5	43.6

FATHOMETER 119S

10 June - 2 July 1954

LAUNCH CS-82

CORRECTION	DEPTH	
A Range	From	To
0.0	0.0	30.0
-0.2	30.2	37.0
-0.4	37.2	43.0
-0.6	43.2	49.0
-0.8	49.2	Limit of A range

APPROVAL SHEET

HYDROGRAPHIC SURVEY H-8095

The 1954 records and boat sheet for Hydrographic Survey H-8095 (ECFP-1153) have also been inspected by me and are approved.

Clarence R. Reed

Clarence R. Reed
CDR, USC&GS
OinC, East Coast Field Party

RHC

Form 712
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Rev. Apr. 1950

TIDE NOTE FOR HYDROGRAPHIC SHEET

Division of Coastal Surveys 20 September 1955

Division of Charts: R. H. Carstens

Plane of reference approved in
11 volumes of sounding records for

HYDROGRAPHIC SHEET 8095

Locality Plum Island Sound, Mass.

Chief of Party: C. R. Reed
Plane of reference is mean low water, reading
1.5 ft. on tide staff at Plum Island, (South End)
21.7 ft. below B. M. 1 (1911)

1.8 ft. on tide staff at Newbury Old Town
10.2 ft. below B. M. 1 (1954)

Height of mean high water above plane of reference:

Plum Island (South End)	:	8.7 ft.
Newbury Old Town	:	8.8 ft.

Condition of records satisfactory except as noted below:

William Shafner

Acting Chief, Division of Tides and Currents
Branch

U. S. GOVERNMENT PRINTING OFFICE 877033

GEOGRAPHIC NAMES

Survey No. H-8095

Name on Survey	A On Chart No.	B On previous survey No.	C On U. S. quadrangle Maps	D From local information	E On local Maps	F P. O. Guide or Map	G Rand McNally Atlas	H U. S. Light List	K	
Massachusetts		(For title)							BGN	1
Plum Island Sound										2
Plum Island										3
Rowley River										4
Eaglehill River										5
Paine Creek										6
Stacy Creek										7
Great Neck										8
Ipswich River										9
Castle Neck										10
										11
				Names approved 9-8-55						12
						L. Beck L. H.				13
										14
										15
										16
										17
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										27

M 234

VERIFIER'S REPORT OF HYDROGRAPHIC SURVEY NO. H- 8095(1953-54)

The verifier should deal with the present hydrographic survey only, as the reviewer considers its relation to previous surveys and published charts. He should be thoroughly familiar with Chapters 3, 7 and 9 of the Hydrographic Manual.

1. The descriptive report was consulted and appropriate notes were made in soft pencil regarding action taken.

2. Soundings originating with the survey and mentioned in the descriptive report have been verified, including latitude and longitude.

3. All reference to survey sheets mentioned in the descriptive report include the registry number and year.

4. Geographic names of hydrographic features if on sheet are in slanting lettering and of topographic features in vertical lettering.

5. All items affecting the plotting of the survey which are entered in the remarks columns of the sounding records were noted and check marked. In all cases appropriate action was taken.

6. All positions verified instrumentally were check marked in the sounding records.

7. All critical soundings are clear and legible and are a little larger than the adjacent soundings.

8. The metal protractor has been checked within the last three months.

9. The protracting and plotting of all bad crossings were verified.

10. All detached positions locating critical soundings, rocks or buoys were verified.

11. The boat sheet was compared with the smooth sheet.

12. The spacing of soundings as recorded in the records was closely followed.

13. The bottom characteristics were shown on outstanding shoals.

14. The reduction and plotting of doubtful soundings were checked.

15. The transfer of contemporary topographic information was carefully examined. With reviewed manuscript T-11153(1954) and negatives after review of T-11154(1954), T-11155(1954). Manuscripts T11154 and T-11155 are in Norfolk office at this date Feb 9, 1956

16. All junctions were transferred and overlapping curves made identical.
See "Junctional Conflicts" back of this report.

17. The notation "JOINS H- (19--)" was added in ink for all contemporary adjoining or overlapping sheets now registered. Those not verified are shown in pencil.
see back side for south junctions
JOINS H-8096(1953-54) to the North
JOINS H-7140(1947) to the East

18. The depth curves have been inspected before inking.

19. All triangulation stations and transfer of topographic and hydrographic signals were checked. Location of Hydro signal (Gal was weak. N 42°41.02' E 70°45.24' — Located by using arc of the left angle pos 7d pp 20, vol 9 and one cut pos 9d, vol 9. Hydro not affected adversely by use of signal (Gal.

20. Heights of rocks were checked against range of tide.

21. Rocks transferred from topographic surveys have a dotted curve where shown thereon. Rocks located accurately by hydrographer are encircled by dotted red curve.

22. Unnecessary pencil notes have been removed.

23. Objects on which signals are located and which fall outside of the low water line have been described on the sheet.

24. The low water line and delineation of shoal areas have been properly shown.

25. Degree and minutes values and symbols have been checked.

26. Questionable soundings have been checked on the fathograms.

16. The south edge of this survey is the south limit of the project. There are no recent hydrographic surveys to be joined.

H-8095(1953-54)

27. Source of shoreline and signals (when not given in report).

28. All notes on sheet are in accordance with figure 171 in the Hydrographic Manual.

29. All aids located, with those on contemporary topographic sheets, have been shown on survey.

30. Depth curves were satisfactory except as follows:

see back side

31. Sounding line crossings were satisfactory except as follows:
See Vol 2 p. 38 Note for tide gage.

32. Junctions with contemporary surveys were satisfactory except as follows:
H-8095 See Verification Problems Nov 16 1955 filed with H-8096 verification Report also - see Memo "Junctional conflicts dated 1-12-56.

33. Condition of sounding records was satisfactory except as follows:
Incorrect entries abreviation bottom samples
Numerous course changes, mostly not recorded in the sndg vol's.

34. The protracting was satisfactory except as follows:

35. The field plotting of soundings was satisfactory except as follows:

36. Notes to reviewer: An overlay for hydrography for pos. 1h thru 66h dated June 17, 1954 has been added to the Descriptive Report. 1 – 5 ft. differences in depths appear between the 1954 hydro and 1953 hydro.
1953 hydrography has been retained on smooth sheet.

Verified by Chester R. Kupiec Date February 9, 1956

30. Portions of the low-water line that were not developed by the hydrography were sketched by the surveyor with the aid of the photographs.

The low water lines shown on the photogrammetric manuscript are not acceptable and were not used.

Photos used DPP-9K-77, 78, 79, 80
" " 107, 108, 109, 110, 111
" " 137, 138, 139, 140

J-275, J-276, J-277, J-278

Junctional Conflicts

The conflicts amounting to as much as 4-ft. between the inshore surveys of 1953-54 (H-8095, H-8096, H-8097, and H-8091) and the offshore survey of 1947 (H-7140) are attributed in part to equipmental differences and in part to minor bottom changes.

The beach slope between Hampton Shoal Ledge and Cape Ann reached maturity long before the first hydrographic surveys of the area. This however, does not preclude minor bottom changes caused by the wave forces transporting bottom debris. Although minor changes in depths may be expected, the general gradient will be maintained over a long period of time.

A comparison of prior and present topographic surveys reveals that the shoreline has not changed in the last 100 years, except at inlets. The general shoreline alignment and position on the old surveys differs by no more than 30 meters with that shown on the recent surveys.

Differences between the prior and present hydrographic surveys are comparable to the differences between the 1953-54 and the adjoining 1947 surveys, except that the prior depths are less than present depths, whereas, the 1947 depths are generally greater than those of 1953-54.

EQUIPMENTAL DIFFERENCES

The differences between the inshore and the offshore surveys in depths of 40 to 90 ft., cannot be traced to any particular equipmental cause; however, proof of reliability of the soundings in these depths is not conclusive on either of these surveys.

On the inshore surveys, bar checks were obtained at 3 or 4 day intervals to about 40-ft. depths; and time appears to be controlled by the fathometer.

On the offshore survey only one calibration of the fathometer is recorded in the sounding volumes, and inasmuch as several types of fathometer mal-functioning were encountered in deeper depths, it may be expected that operational inconsistencies also occurred in lesser depths.

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. 8095 (1953-54)

Records accompanying survey:

Boat sheets .1...; sounding vols. ..11..; wire drag vols. .....;

bomb vols. .....; graphic recorder rolls 12 Envelopes

special reports, etc. 1-Smooth sheet; and 1-Descriptive report.....

.....

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

Number of positions on sheet		2168
Number of positions checked		60
Number of positions revised		6
Number of soundings revised (refers to depth only)		110
Number of soundings erroneously spaced		300
Number of signals erroneously plotted or transferred		—
Topographic details	Time	32
Junctions	Time	20
Verification of soundings from graphic record	Time	24
OVERLAY 66 pos.	Time	8

Verification by. Chester R. Lupia. Total time .2.64. Date Feb 9, 1956

Reviewed by..... A. R. STIRNI ..... Time .6.7.. Date Feb 29, 1956

M-2232-1

DIVISION OF CHARTS

REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO . H-8095 FIELD NO. ECFP-1153

Massachusetts, Plum Island, Plum Island Sound and Outer Coast

Project No. CS-355

Surveyed - July-October, 1953
June, 1954

Scale 1:10,000

Soundings:

808 Fathometer
Leadline

Control:

Sextant fixes on
shore signals

Chief of Party - C. R. Reed
Surveyed by - L. D. Kelley
Protracted by - R. D. Lynn
Soundings plotted by - R. D. Lynn
Verified and inked by - C. F. Kupiec
Reviewed by - A. R. Stirni 2/29/56
Inspected by - R. H. Carstens

1. Shoreline and Control

The shoreline originates with the manuscripts of reviewed air-photographic surveys T-11153 (1952-54), T-11154 (1952-54, and T-11155 (1953-54).

The source of the control is given in the Descriptive Report.

2. Sounding Line Crossings

The sounding line crossings are in adequate agreement.

3. Depth Curves and Bottom Configuration

The usual depth curves are adequately delineated. The 3-ft. curve was added to accentuate the many shoal sand ridges which characterize portions of the bottom, and the 24-ft. curve was added to more completely delineate the channel deeps and the coastal slope. Delineation of the low-water was facilitated by correlating the low-water line on aerial photographs with the zero and minus soundings on the hydrographic survey.

4. Junctions with Contrmporary Surveys

On the north an adequate junction was effected with survey H-8096 (1953-54), and on the east, a butt junction was effected with survey H-7140 made in 1947. Differences in depth of as much as three feet in the junction with H-7140 could not be reconciled during verification. The larger-scale present survey supersedes H-7140 in the junction area. At the project limit on the south the present survey soundings are in satisfactory agreement with charted soundings.

5. Comparison with Prior Surveys

H-346 (1852), 1:10,000
H-574 (1856), 1:20,000
H-594 (1857), 1:20,000
H-3312 (1911-12), 1:20,000, 1:10,000
H-3356 (1911-12), 1:10,000

The prior surveys taken together reveal changes in the large bar lying in the entrance to Plum Island Sound in the vicinity of lat. 42°41.8', long. 70°46.0'. The north side of the bar has accreted irregularly northward as much as 400 meters and the south side has erroded northward in some places as much as 200 meters. The channel which enters Plum Island Sound along the south side of the entrance bar has been gradually filling as exemplified at lat. 42°41.35', long. 70°45.80' where present depths of 5-6 feet fall in prior depths of 18-21 feet. On H-594, made in 1857 a bar approximately 100 meters wide, rising 3 to 5 feet above the bottom, paralleled the shoreline at a position 200 meters seaward and extended northward from the vicinity of lat. 42°43.0'. The seaward slope along the outer beach is now generally uniform and no evidence of this former bar remains.

The rocks awash charted at lat. 42°42.0', long. 70°45.6' from survey H-574 (1856) do not appear on survey H-3312 (1911), although the notation "rocky" is shown. The present survey investigation at low tide determined a least depth of 2-ft. at this location. No rocks awash were revealed, but kelp was found on the sand bottom indicating the presence of rocks underneath. The rocks apparently have been covered by sand and should be disregarded.

The present survey is adequate to supersede the prior surveys in the common area.

6. Comparison with Chart 243 (print date 4/4/55)
Chart 1206 (print date 8/1/55)

A. Hydrography

The charted hydrography on both charts 243 and 1206 originates with the previously discussed prior surveys supplemented by a few critical soundings from the boat

sheet of the present survey (Bp. 51186). Excepting the deeper offshore soundings numerous charted soundings are in general disagreement with present survey soundings in this changeable area.

In the vicinity of lat. 42°41.5', long. 70°45.0' the soundings of 1954, plotted on an overlay in the Descriptive Report reveal marked changes in the channel and supersedes the soundings obtained in 1953.

The present survey is adequate to supersede the charted information.

B. Aids to Navigation

The aids to navigation located on the present survey are in substantial agreement with the charted aids and adequately mark the features intended, with the exception of Red Nun Buoy "6" in the entrance to Plum Island Sound and Red Nun Buoy "4" in Plum Island Sound. The present survey position of Red Nun "6" at lat. 42°41.47', long. 70° 46.05' is 140 meters southeast of the charted position. Either location adequately marks the channel. Red Nun "4" at lat. 42°42.83', long. 70°48.83' is located on the present survey approximately 640 meters south of its charted position. Notice of this inconsistency was given to the Coast Guard on February 27, 1956.

7. Condition of Survey

(a) The sounding records and Descriptive Report are complete and comprehensive

(b) The smooth plotting was accurately done.

8. Compliance with Project Instructions

The survey adequately complies with the Project Instructions.

9. Additional Field Work

This is a good basic survey and no additional field work is recommended.

Examined and Approved:

Examined and Approved:

H. R. Edmonston
Chief, Nautical Chart Branch

E. R. McCarthy
Chief, Chart Division

J. O. Bull
Chief, Hydrography Branch

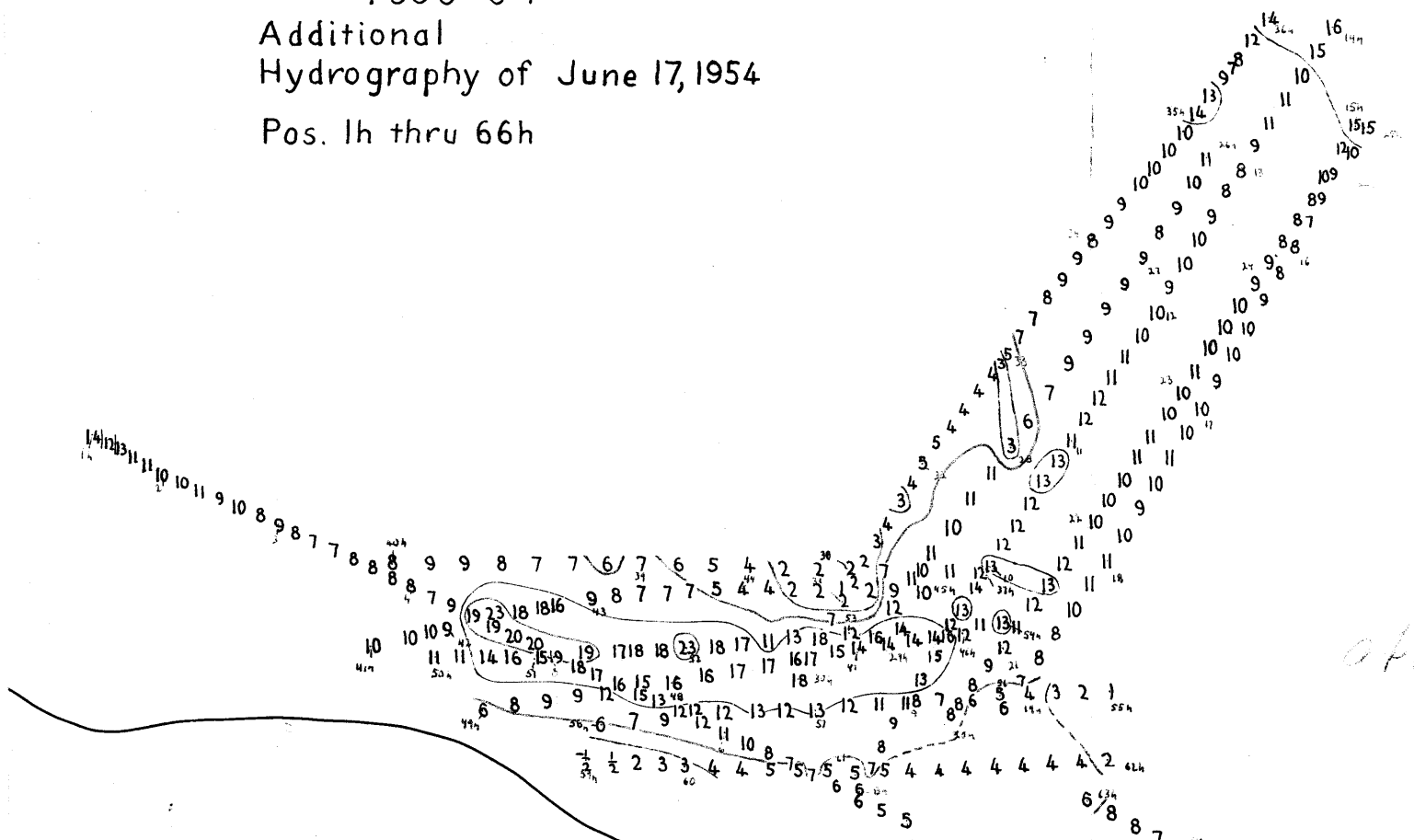
Earl O. Heaton
Chief, Division of Coastal Surveys

OVERLAY
TO ACCOMPANY H-8095
1953-54

Additional
Hydrography of June 17, 1954

Pos. 1h thru 66h

42°42'00



△ (IPSWITCH L.H(CASTLE NECK L.H)1941)
ALE

Cut 8 Pil

42°41'00"

70°46'00"

Six ⊙

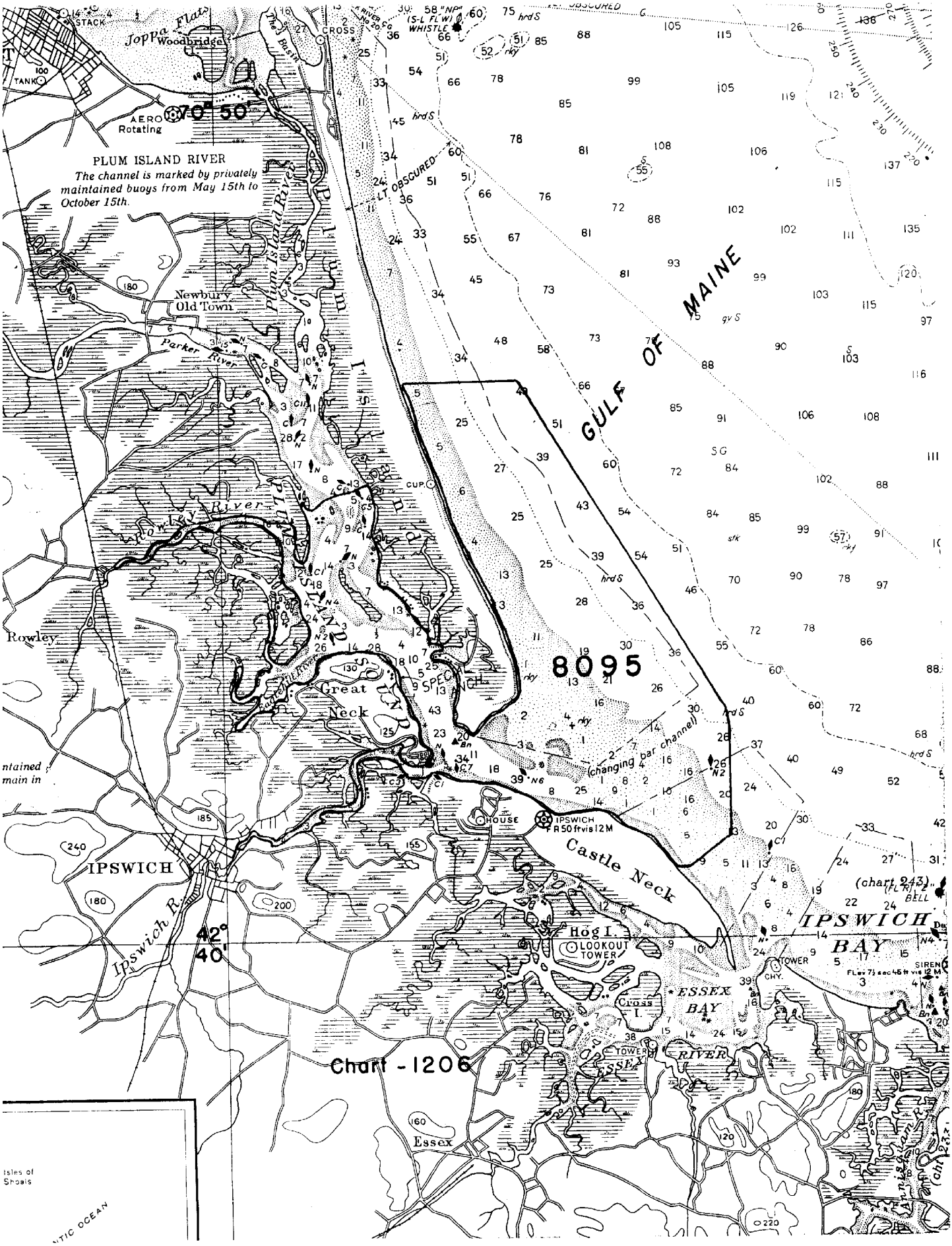
70°45'00"

Applied to cht 243

21 July 1958 HSM

(ON ORIGINAL DOCUMENT)

C.F. Kupiec


PLUM ISLAND RIVER
The channel is marked by privately maintained buoys from May 15th to October 15th.
Joppa Flats
Woodbridge
AERO
Rotating
70° 50'
Newbury
Old Town
Parker River
Plum Island River
Rowley River
Rowley
Great Neck
IPSWICH
Ipswich R.
42° 40'
GULF OF MAINE
8095
(changing bar channell)
IPSWICH
FR 50 ftvis 12M
Castle Neck
Hog I.
LOOKOUT TOWER
IPSWICH BAY
ESSEX BAY
Cross I.
ESSEX RIVER
Essex
Chart - 1206
(chart 243)
Isles of Shoals

NAUTICAL CHARTS BRANCH

SURVEY NO. H-8095

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
6/8/56	213	L.F. Stegman	~~Before~~ After Verification and Review Completely
7/23/57	1206	HEM- jfw	~~Before~~ After Verification and Review Completely applied from Ch 213
8/13/57	243	McAlinden	~~Before~~ After Verification and Review Partial application
7/21/58	243	MacEwen	~~Before~~ After Verification and Review fully applied
11-8-62	1106	G.R. Johnson	~~Before~~ After Verification and Review Fully Applied through cht 1206
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			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.