

5104

U. S. COAST & GEODETIC SURVEY
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DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

R. S. Patton *Director*

State: New Jersey

DESCRIPTIVE REPORT

Photo
Topographic } Sheet No. T5104
Hydrographic

LOCALITY

Raritan River

New Brunswick

1934

CHIEF OF PARTY

R. C. Bolstad, Jr. H. & G. Engr.

U. S. GOVERNMENT PRINTING OFFICE: 1928

Applied to new compilation drawing of Chart 375- 8/4/36 - JAW

-1-
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO.

TOPOGRAPHIC TITLE SHEET

The Topographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

Field No. 54

REGISTER NO. T5104

Alia 369-4

State New Jersey

General locality Raritan River

Locality New Brunswick

Scale 1:10,000 Date of photographs May 30, 1934
Date of Compilation July 18, 1934

~~Vessel~~ Air Photo Compilation Party No. 12, New York City

Chief of party Roswell C. Bolstad

Surveyed by See data sheet in Descriptive Report for this sheet.

Inked by W. F. von Buehren

Heights in feet above ----- to ground to tops of trees

Contour, Approximate contour, Form line interval ---- feet

Instructions dated November 15, 1932

Remarks: Compiled on scale of 1:10,000 and printed by

Photo Lithography.

32? see next page

- STATISTICS -

on

SHEET, FIELD NO. 54, REG. NO. T5104

PHOTOS, NO. 66-37-53 TO NO. 66-37-57 DATE TAKEN May 30, 1932
 PHOTOS, NO. 66-37-23 TO NO. 66-37-29 DATE TAKEN May 30, 1932
 PHOTOS, NO. 66-37-60 TO NO. 66-37-64 DATE TAKEN May 30, 1932

	BY	DATE From To
The Scale Factor of this sheet is 1.000		
PROJECTION	<u>R.A. Philleo</u> R.A. Philleo	<u>2/6 - 2/6/34</u>
PROJECTION CHECKED	<u>E.W. Fickenscher</u> E.W. Fickenscher	<u>2/6 - 2/6/34</u>
CONTROL PLOTTED	<u>R.A. Philleo</u> R.A. Philleo	<u>2/8 - 2/8/34</u>
CONTROL CHECKED	<u>E.W. Fickenscher</u> E.W. Fickenscher	<u>2/9 - 2/9/34</u>
SMOOTH RADIAL LINE PLOT	<u>W.E. Hackett</u> W.E. Hackett	<u>2/17 - 2/24/34</u>
RADIAL LINE PLOT CHECKED	<u>R.A. Philleo</u> R.A. Philleo	<u>2/28 - 2/28/34</u>
TOPOGRAPHY TRANSFERRED	None	
DETAIL INKED	<u>W.F. von Buehren</u> W.F. von Buehren	<u>3/21 - 7/13/34 less 8 days</u>
PRELIMINARY REVIEW	<u>W.D. Ayers</u> W.D. Ayers	<u>8/23 - 8/27/34</u>

AREA OF DETAIL INKED 25.3 sq. Statute Miles (Land area)
 AREA OF DETAIL INKED less than 0.1 sq. Statute Miles (Shoals in water area)
 LENGTH OF SHORELINE (more than 200 m. from nearest opposite shore)
0.0 Statute Miles
 LENGTH OF SHORELINE (rivers and sloughs less than 200 m. wide)
44.1 Statute Miles
 LENGTH OF ROADS, STREETS, TRAILS, RAILROADS 298.0 Statute Miles
 GENERAL LOCATION Raritan River
 LOCATION New Brunswick
 DATUM North American 1927

Latitude 40° - 30' - 12.918" (398.5 m.)
 STATION Rutgers 1933 Longitude 74° - 26' - 54.426" (1281.5 m.)

Adj.

COMPILER'S REPORT

for

AIR PHOTO TOPOGRAPHIC SHEET FIELD NO 54

GENERAL INFORMATION

The AIR PHOTO FIELD INSPECTION REPORT, 1934, for the Raritan River District of New Jersey, attached to the Descriptive Report for air photo topographic sheet Reg. No. T5103, furnished the necessary field data for the compilation of this sheet. Additional information was obtained from the U.S. Army Engineer's single lens photos which were taken on May 17, 1933, 1:10,000 scale, Nos. M1161-M1118 (870-8); M1191-M1192 (870-8); M1210-M1211 (870-8) and C.G.S. 1-13 except No. 8, all inclusive.

Before completing the detailing a final field inspection was made to clear up all questionable areas.

The accompanying statistics sheet details all data used in the compilation of this sheet.

Photographs, used in the compilation of this sheet, were taken by the Aero Service Corporation, Philadelphia, Pa., using a single lens camera with focal length of 8" and equipped with an Orthomesser lens. These photographs, 66-37 -(23-29, 53-57 and 60-64), all inclusive, were taken at approximately 1:22,000 scale and enlarged to 1:10,000 scale by photographic methods. The time of day at which the photographs were taken was not available, consequently tidal conditions could not be determined.

CONTROL

(A) Sources

The following sources of control were used in the compilation of this sheet:

- (a) Triangulation by Lieut. R.W. Woodworth in 1932.
- (b) Triangulation by Lieut. H.C. Warwick in 1933.
- (c) U.S. Engineers Stations.

All control was placed on the North American 1927 Datum before beginning the compilation. The adjustment was approximate, however any final office adjustments would be unplotable at this scale 1:10,000. *(Position of Datum Note Station is the adjusted position)*

There were no topographic signals used on this sheet.

(B) Errors

There are no apparent discrepancies in the control positions for this sheet. The control is, in general, strong and the radial plot gave good intersections.

(C) Discrepancies

No discrepancies in the control stations established by other organizations and used in this compilation were found.

ADDITIONAL NOTE (INTERPRETATION)

There are four tracks on the main line of the Pennsylvania Railroad which crosses this sheet. All four of these tracks have not been shown; at intervals the four tracks are shown with the two outer tracks drawn continuous. They have been shown in this manner so as to avoid closing up when photographed for the lithographic process.

Bridges:-

Clearances over the Delaware and Raritan Canal are not shown on the sheet as the canal has been closed to navigation since 1933. (See page 3, Coast Pilot Suppl. Section C, Signal #470-5 June 27, 1935.)

A.G.E. 11/20/35

COMPILATION

(A) Method

The usual radial line method of plotting was used in the compilation of this sheet.

(B) Adjustments of Plot

The photographs of this area appear to have very little scale fluctuation or distortion due to airplane tilt with the exception of the area lying between latitude 40°- 30' and 40°- 31'- 30" and longitude 74°- 22' and 74°- 23'- 30". In this area there are fewer control stations and the photos were somewhat distorted. This required careful proportioning and adjusting, but by holding to all available control excessive variation, to the extent of causing any appreciable error, was avoided.

(C) Interpretation

Only the usual graphic symbols were used as approved by the Board of Surveys and Maps, 1932 and no great difficulty was experienced in interpreting the photographic detail.

The double full line was used to indicate first order roads, the double broken line for private driveways and roads of lesser importance. An exceedingly poor road or trail was shown by a single dashed line. In most cases, unless labeled on the field prints, the classification of the roads had to be determined under the stereoscope.

All buildings are shown, excepting those in the center of the City of New Brunswick and its suburb Highland Park directly across the Raritan River, which are indicated by a note on the cover sheet, "numerous buildings in this area".

Bridges:

Crossing the Raritan River are three highway bridges, one railroad bridge and a high tension transmission line. The information pertaining to the concrete spandrel arch bridge crossing the River east of New Brunswick, carrying highway Route No. 25 over the Raritan, is contained on page 246, in the section pertaining to the Raritan River, of the U.S. Coast Pilot, Section C, Sandy Hook to Cape Henry. *See opposite page.*

About a half mile downstream from the above site is a river crossing of a high tension line at Martins Dock. This line has a clearance in the center of the channel of 130 ft. and spans the full channel width.

At New Brunswick, a concrete arch highway bridge crosses the river with spans of 71 ft. and clearance of 17.5 ft. above high water. This bridge crosses the Delaware and Raritan Canal with a Bascule bridge, clearance 14 ft. and span 31 ft. *Bridge book clearance of 16.5' is shown on sheet.*

Also at New Brunswick the river and canal are crossed by a stone arch bridge of the Pennsylvania Railroad, clearance 52 ft., span 50 ft. The clearance over the canal is described on page 247 of the U.S. Coast Pilot above referred to. *Reference plane unknown F.G.E.*

About a mile west of New Brunswick the river and canal are again crossed by a bridge at Raritan Landing. This

* The dashed lines were changed to solid lines as they are near the shore and are probably approximate low water lines.

bridge is made up of three steel truss spans, each 108 ft. long with 11 ft. clearance. The canal crossing is a draw span of 28 ft. span and $2\frac{1}{4}$ ft. clearance.

Several shoal areas are shown along the Raritan River. These areas are submerged at low tide and the limits are indicated by a single ~~dotted~~ line. In some localities low marsh occurs, which at high tide is submerged, but at low tide is exposed or partly exposed. This is shown by marsh symbols. ~~confined within a single dashed line indicating the limits of such areas.~~

*Reference please
Inducement
F.G.S.*

**
See
opposite
page*

(D) Information from Other Sources

The high water line was taken directly from the photographs since no aluminum control sheets had been completed in this area at the time of this compilation. The location of the high water line was marked on the photos by the field inspection party.

A blue print of a map of this area, as compiled by the U.S. Army Engineers, was used for reference only. *(Not transmitted to the office.)*

(E) Conflicting Names

The new names shown on this sheet were obtained from the U.S. Geological Maps of this area.

The name "Martins Landing", shown on U.S.C. & G.S. Chart No. 375, has been shown on this sheet as Martins Dock, which name was verified by the field inspection party after inquiry of the local inhabitants.

COMPARISON WITH OTHER SURVEYS

This sheet is the limit of the aerial survey to the west in this area and joins only with Air Photo Topographic Sheet Reg. No. T5103 on the east. Junction with Sheet Reg. No. T5103 has been compared and found satisfactory.

The U.S. Army Engineer's map of this area could only be used as a reference for checking the detail because of general discrepancies in the map and a difference in scale.

LANDMARKS

The list of landmarks for the area covered by this sheet was submitted, Feb. 10, 1938, by Lieut. R.W. Woodworth. *Chart letter 172 (1933) 3, also chart letter 208 (1935) - E.R. McCarthy.*

RECOMMENDATIONS FOR FURTHER SURVEYS

The compilation of this sheet is believed to have a probable error of not over 2 meters in well defined detail of importance for charting and of 4 meters for other data. It is understood that the widths of roads and similar objects may be slightly expanded in order to keep the detail clear and to keep it from photographing as a solid area in the photo-lithographic process.

*See
Review*

To the best of my knowledge this sheet is complete in all detail of importance for charting purposes, within the accuracy stated above, and no additional surveys are required.

Submitted by

W. F. von Buehren
W.F. von Buehren
Draftsman

Assisted by

W.D. Ayers
W.D. Ayers

and

A.K. Spalding
A.K. Spalding

Surveyor

Surveyor

LIST OF RECOVERABLE TOPOGRAPHIC STATIONS

CLASS (C) LANDMARKS

(Includes all recoverable objects, sufficiently prominent for use as hydrographic "fixes", shown as topographic stations with small black circle on this sheet and not described on Form 524 by this party.)

Description	Latitude			Longitude			Height	Method of Determination
	°	'	D.M. Meters	°	'	D.P. Meters		
* Radio Mast	40	30	(1061) 790	74	30	(1263) 150	Approx. 250 ft.	A.P.T. 1934 Reg. No. T5104
* Radio Mast	40	30	(991) 860	74	30	(1204) 209	Approx. 250 ft.	A.P.T. 1934
* Radio Mast	40	30	(919) 932	74	30	(1146) 267	Approx. 250 ft.	A.P.T. 1934
* Radio Mast	40	30	(729) 1122	74	29 30	(1377) 36	Approx. 250 ft.	A.P.T. 1934
Radio Mast	40	30	(872) 979	74	30 29	(79) 1334	Approx. 250 ft.	A.P.T. 1934
Radio Mast	40	30	(681) 1170	74	29	(307) 1106	Approx. 250 ft.	A.P.T. 1934
Radio Mast	40	30	(541) 1310	74	29	(189) 1224	Approx. 250 ft.	A.P.T. 1934
Radio Mast	40	30	(489) 1361	74	29	(536) 877	Approx. 250 ft.	A.P.T. 1934
Radio Mast	40	30	(284) 1567	74	29	(751) 662	Approx. 250 ft.	A.P.T. 1934
Radio Mast	40	30	(176) 1674	74	29	(666) 747	Approx. 250 ft.	A.P.T. 1934
Radio Mast	40	30	(84) 1766	74	29	(976) 437	Approx. 250 ft.	A.P.T. 1934
Radio Mast	40	31	(1847) 4	74	29	(902) 511	Approx. 250 ft.	A.P.T. 1934

Note: A.P.T. denotes air photo topography.
For classification of Class (C) landmarks
see Descriptive Report for Topographic
Sheet Reg. No. T5059, paragraphs LANDMARKS
and REPORT ON REVIEW OF SHEET.

** These four stations fall beyond the limit of detail on the compilation and are not shown.*

Date. 1/28/35
11/18/35

GEOGRAPHIC NAMES

Survey No. T-5104

Chart No. 375

Diagram No. _____

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

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

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

Status	Name on Survey	Name on Chart	New Names in local use	Names assigned by Field	Location
	<u>Raritan River</u>			✓	
	<u>Lawrence Creek</u>			✓	
	<u>Martins Dock</u>	<u>Martins Landing</u>	✓	✓	
	<u>Delaware and Raritan Canal</u>			✓	
	<u>New Brunswick</u>			✓	
	<u>Highland Park</u>			✓	
	<u>Raritan Landing</u>				
	<u>Stelton</u>				
	<u>Buccleuch Park</u>				
	<u>Piscataway</u>				
	<u>Lehigh Valley Railroad</u>				
	<u>Lindenau</u>				
	<u>U.S. Highway No. 1 New Jersey State Highway No. 25</u>			✓	
	<u>Weston Mills</u>				
	<u>Pennsylvania R.R.</u>				
	<u>Rutgers University</u>				
	<u>New Jersey State College for Women</u>			✓	
	<u>RARITAN AVE. BRIDGE</u>	<u>to be charted</u>		✓	
		Names approved. with additional note in chart 375. Dec. 3, 1935			
				<u>B. E. Gould</u>	

REVIEW OF AIR PHOTO COMPILATION T-5104

Scale 1:10,000

A description of this area is given in descriptive report T-6219a & b (1934).

Comparison with T-11 (1836) Scale 1:10,000.

A comparison of the compilation with T-11, nearly one hundred years old, indicates that the natural topographic features in this area are not susceptible to much change. As would be expected there are numerous detailed changes.

The compilation is adequate to supersede T-11.

Comparison with T-1354a (1873) Scale 1:5000.

The general agreement between T-1354a and the compilation is good. There are several changes in details which would be natural to expect due to the difference in age of the two surveys.

The road at Latitude $40^{\circ} 29\frac{1}{2}'$, Longitude $74^{\circ} 25\frac{1}{2}'$, and the canal (or road) at Latitude $40^{\circ} 29\frac{1}{2}'$, Longitude $74^{\circ} 23\frac{3}{4}'$ are no longer in existence. These two features are prominent on T-1354a.

The bluffs are very prominent on T-1354a. They do not appear nearly as severe in the photographs. The approximate top of the bluff on each side of the river is shown ^{in part} on the compilation by a dashed line. This line was determined by examining the photographs under the stereoscope. The bluff line, since it could not be satisfactorily followed in the photographs, is not shown in as many places on the compilation as it is indicated on T-1354a.

The compilation is adequate to supersede T-1354a, except in the delineation of the bluffs.

Comparison with T-6219b (1934) Scale 1:10,000 Graphic Control Sheet.

No shoreline was rodded in on T-6219b.

Seventeen described recoverable topographic stations (within the limits of the compilation) were submitted on form 524. These stations were plotted on T-5104 by *F.G.E.* and checked by *T.G.* . From their descriptions they were spotted on the photographs and checked. The maximum difference between the control sheet location and the photograph location was about 4 meters (0.4 m.m.) The positions were accepted as ~~submitted~~ ^{located} and are filed under T-6219b. *on T-6219b*

All data on T-6219b are shown on T-5104 except:

1. Magnetic declination.
2. Temporary topographic stations.
3. Bridge data for Albany Street bridge.

The compilation gives a $17\frac{1}{2}$ foot clearance for the section of the bridge over the Raritan River and a 14 foot clearance for the section of the bridge over the canal. T-6219b makes no distinction, giving a clearance of 14 feet.

4. Engineers coordinate system.

The grid is shown on T-6219b in pencil.

5. Stations Rn R 21 (U.S.E.), Rn R 23 (USE), Rn R 26 (USE), Rn R 27(USE) which are shown on T-6219b by the triangulation symbol without dates. Positions for these stations are not on file in the Division of Geodesy. (See Review T-6219b).

Comparison with H-5647 (1934) Scale 1:10,000.

No conflicts between the hydrography and shoreline were found.

Comparison with Chart 375. Scale 1:20,000.

No landmarks appear on the present Chart 375 within the limits of the compilation. Lists of landmarks were submitted by R. W. Woodworth in 1933 and E. R. McCarthy in 1935, chart letters 172 (1933), and 208 (1935). These landmarks are shown on the compilation.

All lights and beacons on Chart 375, within the area of this compilation are shown on the compilation.

The comparison of topography between the compilation and Chart 375 is covered in the discussions of T-11, and T-1354a.

Accuracy.

The area covered by this compilation is very hilly but enough radial intersections were taken to give a good plot. The estimate of accuracy, however, as given in the descriptive report of 2 and 4 meters is considered too high. A better estimate would be 5 meters (0.5 m.m.) for intersected points and 10 meters (1.0 m.m.) for other detail.

5/2/35

Frank G. Enline

REVIEW OF AIR PHOTO COMPILATION NO. T5104

Chief of Party: Roswell C. Bolstad

Compiled by: (See page 2,
Des. Report)

Project: New York Air Photo Compilation Instructions dated: Nov. 15, 1934
Party No. 12

1. The charts of this area have been examined and topographic information necessary to bring the charts up to date is shown on this compilation. (Par. 16a, b,c,d,e,g and i; 26; and 64)
2. Change in position, or non-existence of wharfs, lights, and other topographic detail of particular importance to navigation which affect the chart, is discussed in the descriptive report. (Par. 26; and 66 g,n)
See paragraph (C) Interpretation, page 4.
3. Ground surveys by plane table, sextant, or theodolite have been used to supplement the photographic plot where necessary to obtain complete information, and all such surveys are discussed in the descriptive report. (Par. 65; and 66 d,e)
See paragraph CONTROL (A), page 3.
4. Blue-prints and maps from other sources which were transmitted by the field party contain sufficient control for their application to the charts. (Par. 28)
See paragraph CONTROL (A), page 3.
5. Differences between this compilation and contemporary plane table and hydrographic surveys have been examined and rectified in the field before forwarding the compilations to the office and are discussed in the descriptive report.
There are no differences on this sheet.
6. The control and adjustment of the photo plot are discussed in the descriptive report. Unusual or large adjustments are discussed in detail and limits of the area affected are stated. (Par. 12b; 44; and 66 c,h,i)
See paragraph CONTROL (A), page 3 and paragraph COMPILATION (B), page 4.
7. High water line on marshy ~~and mangrove~~ coast is clear and adequate for chart compilation. (Par. 16a, 43, and 44)

NOTE: Strike out paragraphs, words or phrases not applicable and modify those requiring it. Paragraph numbers refer to those in the Topographic Manual. Refer also to the pamphlet "Notes on the Compilation of Planimetric Line Maps from Five Lens Air Photographs."

8. ✓ The representation of low water lines, ~~reefs, coral reefs and rocks~~, and legends pertaining to them is satisfactory. (Par. 36, 37, 38, 39, 40, 41)

9. ✓ Recoverable objects have been located and described on Form 524 in accordance with circular 30, 1933, circular letter of March 3, 1933, and circular 31, 1934. (Par. 29, 30, and 57)
See report of Control Party, ~~Lieut. R.W. Woodworth in 1932.~~
E. R. McCarthy 1934

10. ✓ A list of landmarks was furnished on Form 567 and instructions in the Director's letter of July 16, 1934, Landmarks for Charts, complied with. (Par. 16d, e; and 60)
Previously submitted by 1932 Field Party under Lieut. R.W. Woodworth. *Chart letters 172(1933) and 208(1935) - (E. R. McCarthy)*

11. ✓ All bridges shown on the compilation are accompanied by a note stating whether fixed or draw, clearance, and width of draw if a draw bridge. Additional information of importance to navigation is given in the descriptive report. (Par. 16c)
See paragraph COMPILATION (C), Interpretation, page 4.

12. ✓ Geographic names are shown on the overlay tracing. The accepted local usage of new names has been determined and they are listed in the report, together with a general statement as to source of information and a specific statement when advisable. Complete discussion of place names differing from the charts and from the U. S. G. S. Quadrangles is given in the descriptive report, together with reasons for recommendations made. (Par. 64, and 66k)
See paragraph (E) page 5.

13. ✓ The geographic datum of the compilation is North American and the reference station is correctly noted. 1927
See page 2.

14. ✓ Junctions with adjoining compilations have been examined and are in agreement. (Par. 66j)

15. ✓ The drafting is satisfactory ^{large} ~~and particular attention has been given the following:~~ *but the buildings should not have been inked solidly.*
 1. Standard symbols authorized by the Board of Surveys and Maps have been used throughout except as noted in the report.
 2. The degrees and minutes of Latitude and Longitude are correctly marked.

3. All station points are exactly marked by fine black dots.
4. Closely spaced lines are drawn sharp and clear for printing.
5. Topographic symbols for similar features are of uniform weight. *Drafting poor.*
6. All drawing has been retouched where partially rubbed off.
7. Buildings are drawn with clear straight lines and square corners where such is the case on the ground.

(Par. 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48)

16. No additional surveying is recommended at this time.

17. Remarks: Any additional notes and requirements affecting this area are referred to Lieut. R.W. Woodworth's Reports covering the topography executed in 1932 under his charge, also E.R. McCarthy 1934-35.

18. Examined and approved;

Preliminary Review:

W.D. Ayers
W. D. Ayers

Surveyor

Roswell C. Bolstad
Roswell C. Bolstad

Chief of Party

19. Remarks after review in office:

Reviewed in office by:

Frank G. Embury 5/21/35

Examined and approved:

E. K. Green
Chief, Section of Field Records

L. O. Lobnitz
Chief, Division of Charts

J. B. Borden
Chief, Section of Field Work

G. H. Hilde
Chief, Division of Hydrography and Topography.