

83
STA
3378

3378

Department of Commerce and Labor
COAST AND GEODETIC SURVEY

Superintendent.

State: Pa. + N.J.

DESCRIPTIVE REPORT.

Top Sheet No. 3378

LOCALITY:

Delaware River - Bristol
to Trenton

1912

CHIEF OF PARTY:

Stetman Forney

11-4645

3378

3378

DEPARTMENT OF COMMERCE AND LABOR

COAST AND GEODETIC SURVEY.

O. H. TITTMANN - SUPERINTENDENT.

DESCRIPTIVE REPORT

TO ACCOMPANY

TOPOGRAPHIC SHEET. 3378

RESURVEY OF SHORELINE

FROM

BRISTOL

TO

TRENTON.

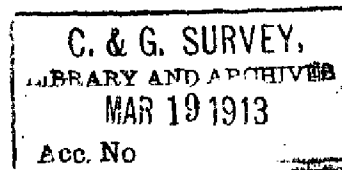
DELAWARE RIVER.

1912.

SCALE 1/20,000.

(a) GENERAL DESCRIPTION.

PENNSYLVANIA SHORE. Within the limits of this sheet the Pennsylvania shore is comparatively low and flat, the land rising gradually up from the shore. The land gets gradually higher as Morrisville is approached, but is comparatively low even there. Marsh fronts the high-water line in several places, notably: opposite Florence, back of Money Island, opposite Roebling, near Penn Manor Light, opposite Fieldsboro, just below Biles Island, and the lower part of Moon Island. The land is low and marshy above high-water mark in several places; one a little south of Biles Island, one west of Biles Island, one opposite Newbold Island, and one back of Money Island. Money Is. is low and flat and covered by a wooded marsh, while Biles and Moon Islands are higher and more open. Opposite Bordentown and extending to Biles Creek is a large island that has been now Permanently connectedly to the mainland to



the west by a dike, across which a road runs, just south of Biles Creek. This island is low and open. There are no extensive areas of foliage, the largest being: north of the lower end of Money Is., opposite Roebling, and opposite Bordentown. The land outside of the marshes is mostly used for farming, the main exception being the village of Morrisville which is mostly a residential village. Stone has been deposited near the lower end of Biles Island, and sand has been deposited opposite the sand dike near Bordentown, these constituting the only artificially developed shoreline of any extent. There are a number of wharves scattered along the shore, and there are several creeks flowing into the Delaware River.

NEW JERSEY SHORE. The New Jersey shore is fairly high and steep from the beginning of this sheet up to Bordentown, and also in the city of Trenton. Between Bordentown and Trenton the steep bank follows the eastern side of Crosswicks Creek and the marshes north of this creek. From Roebling to Trenton the topography is very irregular, with many low valleys and creeks at right-angles to the river, and having high and steep banks. The highest hills are near Fieldsboro, south of Newbold Island, in Florence, and east of the central part of Duck Island, the highest point being over a hundred (100) feet high. The shore is fronted by a marsh for over a mile north of Burlington Island, over a half-mile facing Roebling, and around the small islands below Fieldsboro. Newbold Island is partly surrounded by marsh, and the southern end is covered by marsh and foliage, and the small islands between Newbold Is. and the main shore are low and covered by trees. Duck Island is partly open and partly covered by foliage, and by stone deposited by suction dredges. There are several marshes above high-water a very large one north and west of Crosswicks Creek, this being partly covered at extreme high water and during freshets, and consists partly of wooded marsh; and small ones near Kinkora Ch'y., and just above Burlington Is. . Most of the creeks are also surrounded by marsh. The principal areas

of foliage were near Windmill No. 4, which is east of Roebling, just below Roebling, east of Kinkora Ch'y., on the high ground north of Bordentown, and the low valleys especially the one near Fieldsboro are also wooded. The land from the beginning of the sheet near Burlington Is. to Bordentown, outside of marsh and foliage areas, is occupied by the villages of Florence, Roebling, Fieldsboro, and Bordentown, and farm lands in between. Florence and Fieldsboro are residential villages. Roebling is a manufacturing village, the chief manufacture being wire and wire goods. Bordentown is a residential village, and is also noted for its schools, and its worsted mills. The high ground between Bordentown and Trenton is used for farm land, but constitutes but a small part of the area, which is mostly marshy. The city of Trenton is at the north end of the work, and is a large city, and is noted for its pottery, its iron and steel works and foundries, and the factories of the American Bridge Co., and it is the capital of New Jersey. The shoreline has been artificially developed by a dike with sand deposited back of it just north of Bordentown, and by filling in stone in several low places along Duck Is. . There are a number of wharves along the shore, and several creeks flowing into the river. The Delaware and Raritan Canal starts at Bordentown and passes through Trenton to New Brunswick. The Pennsylvania Railroad, Amboy Division, and the Public Service Street Car Line follow along parallel to the river, connecting the villages and cities along its bank..

(b) CURRENTS.

The current on the part of the Delaware River shown on this sheet is tidal up to the upper end of Biles Is., and above that the current always runs downstream, the current due to the drop in the river itself being stronger than the current due to the tide. The tide rises and falls however up beyond the limits of our main scheme triangulation, which ends at the second bridge in Trenton. The ebb and flood tides follow each other very

quickly, still water lasting but for a very few minutes. The current is very strong above the Trenton triangulation station, especially at ebb tide. The average rise and fall of the tide is five (5) feet at Bordentown and four and a half (4.5) feet at Trenton. The duration of the flood tide is five (5) hours and eleven (11) minutes at Whitehill (Fieldsboro), and four (4) hours and twenty-two (22) min. at Trenton; and of the ebb tide is seven (7) hrs. and fourteen (14) min. at Whitehill (Fieldsboro) and eight (8) hours and three (03) min. at Trenton.

(c) HARBORS.

The best harbor is at Bordentown, but this is not a very good ice-harbor.

(d) WEATHER.

The prevailing wind is southwesterly in summer and northerly in winter. The river is usually frozen during the months of January and February. Fogs and a smoky atmosphere are very frequent, especially in calm weather, being more frequent in late summer and autumn. Freshets occur in autumn after heavy storms near the headquarters of the river, and in spring due to the ice-jams and the melting snow. The summer and autumn of 1912 were fine except for a smoky atmosphere. The winter of 1912-1913 was mild for this latitude, and fine except at intervals when fogs and cold hindered the field work.

(e) DESCRIPTION OF THE SHORE.

On the Pennsylvania side of the river the shore is mostly low and flat from Bristol nearly to Biles Island, with numerous marshes and creeks. The shore is higher and steeper from a point opposite the mouth of Duck Creek to Morrisville but seldom reaches a height of fifteen (15) feet. A fringe of trees follows the shore for most of the distance. There are several dikes on or near the shore line, the most important being one back of Money Island, one opposite Fieldsboro, and a new one at the upper end of Biles

Island extending nearly across Biles Creek , its object being to confine the most of the current to the main arm of the river. Stone and sand have been deposited in low places along the shore, principally opposite the sand dike near Bordentown, and near the lower end of Biles Is. . There are several creeks flowing into the river. The shore is fairly regular the main points being; Betty's point across from Fieldsboro, which is low and open and is used as farm land, and is said to be the scene of the treaty between William Penn and the Indian Queen Betty; Echo Pt. across from Duck Is. which is mostly open and is used as farm land; Sucker Pt. also used for farm land is at the mouth of Biles Creek; Biles Pt. which is stony and partly covered by bushes is on Biles Is. at the bend in the river just above Perriwig Bar. There are several shoals off this shore notably: opposite Roebling, opposite Bordentown, Perriwig Bar along the lower end of Biles Is., and one at the upper end of Moon Is.. The low water mark was taken from the charts of the U. S. Army Eng. from the middle of Biles Is. to, ^{opposite} Trenton, and on the New Jersey side from Fieldsboro to Trenton, as we got the topography during the winter when it was impossible to get the low water mark. The New Jersey shore gets gradually higher from the beginning of the sheet till it reaches a height of eighty-five (85) feet at Florence, the hill being often called Florence Heights, and a high bank goes all the way from there to Trenton, but this high bank leaves the river at Bordentown and is at some distance from the river till it reaches Trenton where it bends back to the river once more. There are numerous valleys and creeks among these high hills , and an occasional marsh facing them, notably from Bordentown to Trenton. The most important points are: one in Florence used as factory grounds; one opposite the upper end of Biles Is. which is covered with stone and bushes; and an artificial one formed by the sand dike just above Bordentown. The artificial shoreline consists of this dike near Bordentown, back of which sand has been filled in , and of several

places along Duck Is. where stone has been deposited by a suction dredge. There are several shoals or bars on this side of the river; off the lower end of Newbold Is., at Bordentown between the main channel and the channel to the entrance to the Delaware and Raritan Canal, opposite the mouth of Biles Creek, and around the small island in Trenton. The chief islands are Money, Newbold and the three small islands back of it, Starveout, Duck, Biles, and Moon Islands, and the large one across from Bordentown which extends up to Biles Creek, and one in Morrisville and one in Trenton on which Trenton triangulation station is located. Money Is. is low and covered by a wooded marsh. Starveout Is. which is just north of the mouth of Indian Creek is also low and covered by a wooded marsh. It is now connected to the shore by a dike. Newbold Is. is mostly higher and used for farm purposes but the southern end is covered by marsh and foliage. The three islands back of Newbold Is. are low and covered by foliage. The large island across from Bordentown is now connected to the main shore to the west by a dike having a road across it, near Biles Creek. This island is mostly low and used as farm land, but has some marsh, sand and foliage near the southern end. Duck Is. is covered with stones, sand, and foliage along the southern end, and the western shore, and is used for farming elsewhere. It is now connected permanently to the main shore at the north end by a broad stone dike with a road across it. Biles Is. has a small swamp, and some deposited stone (from a suction dredge) near the eastern end, and a small park near the upper end, and the rest of the island is used for farm purposes. Moon Is. is higher with fairly steep banks and is used for farm purposes. The small island in Trenton is covered with bushes and is submerged at extreme high water. A small island just north of Moon Is. is covered by a wooded marsh. The large island in Morrisville is fairly high in the center and is partly covered by residences. There are several islands- chiefly just sand bars- in Crosswicks Creek.

(f) RIVERS AND CREEKS.

COMMON CREEK is tidal to the limits of the topography and is a mere brook at low water.

SCOTT'S CREEK is tidal to the concrete dam across it (shown on the sheet) which is arranged to hold the water from passing in or out at will. It is practically a low marsh above this dam, except when the tide is allowed to flow past the dam.

INDIAN CREEK is tidal for over a mile, and was originally tidal much farther, but the outlet through the dike at the mouth is so small that the water can pass in but slowly and hence the tide doesn't rise very high in the creek. It is a small creek at low water.

BLACK CREEK just below Bordentown, is tidal for some distance beyond the limits of the topography. It is a small creek at low water.

CROSSWICKS CREEK, which is just north of Bordentown, is tidal to the limit of the topography, a distance of over four miles, and for several miles farther. There are several bars in it but if the channel is known, a boat of three (3) feet draft can go up it nearly four (4) miles. The current is quite strong due to the fall in the river partly and partly to the tide. The channel is fairly permanent. The water is Eleven (11) feet deep at the mouth by the railroad bridge.

DUCK CREEK, back of Duck Is., is tidal to its source and is filling up with sand at its mouth. On high water A boat of three (3) feet draft can go up beyond the upper end of Duck Is.-over two miles- but the bar at its mouth is very shallow at low water. Its connection with the Delaware River at the upper end of Duck I s. has been severed by a broad stone dike.

BILES CREEK is really a fork of the Delaware River which passes back of Biles Is./ Boats of three (3) feet draft can pass down this creek on low water. The current is altogether tidal, and the depth at the mouth is seven (7) feet.

CARLYLE CREEK is also a fork of the main river passing back of Moon Is. and is very shallow at low water. The current is tidal.

There is another creek just north of Indian Creek which looks as though it was one outlet of Biles Creek making the area to the east (facing Bordentown) an island, but it is now headed by a dike just south of Biles Creek. It is tidal practically to the head, and is a mere brook at low water.

There is another small creek just east of Roebling which is tidal beyond the limit of the topography and is quite broad at high water, and is used as an ice-pond in winter.

There is a creek just below the Kinkora Ch'y., which has a dam across it near the mouth to hold the water back to form a pond at will. It is used as an ice pond in winter.

There is an ice- and pleasure pond just below Trenton, formed by dikes.

(g) BEACONS AND BUOYS.

There are seven beacons and twenty- four bouys within the limits of this sheet. The TULLYTOWN LIGHT is a white beacon showing a white light and is located on the shore end of the Tullytown wharf. The KINKORA LIGHT is a white beacon showing a white light, and is located on the south shore of the river near our Tull triangulation station. PENN MANOR LIGHT is a white beacon showing a white light, and is located on the north shore of the river across from Newbold Is. . FIELDSBORO LIGHT is a white beacon showing a white light, and is located about halfway up the bluff just north of Graham's brick kiln. BORDENTOWN LIGHT is a white beacon showing a white light, and is located just south of Bordentown, and marks the channel to the entrance to the Delaware and Raritan Canal. DUCK ISLAND LIGHT is a white beacon showing a white light, and is located at the upper end of Duck Is. on the northwesterly prolongation of the axis of the lower section of the dredged channel past Biles Is., which is called the Perriwig dredged

channel. BILES ISLAND LIGHT is a white beacon showing a white light, and is located at the upper end of Biles Is. on the northwesterly prolongation of the axis of the Perriwig dredged channel-upper section-which extends past the upper part of Biles Is. . FLORENCE HEIGHTS BUOY; No. 47A is a black spar marking the northerly side of the channel opposite Florence. KINKORA FLATS BUOY, 3rd class black spar no. 47b, marks the northwesterly side of the channel over Kinkora bar, which is across from Roebling. KINKORA BUOY, red spar No. 56, marks the point of the shoal off the lower end of Newbold Is. . The BORDENTOWN BAR BUOY, a 2nd-class can buoy with red and black horizontal stripes, marks the point of the bar between the main channel and the channel to the entrance to the Delaware and Raritan Canal. Black Spar No. 1 marks the westerly side of the channel to the entrance to the D. & R. Canal. BORDENTOWN LOWER BUOY, black spar No. 49, marks the lower end and westerly edge of the dredged channel past Bordentown. BORDENTOWN BUOY; red spar No. 58, is on the easterly side of the dredged channel. The BORDENTOWN MIDDLE BUOY, black spar No. 51, marks the westerly side of the dredged channel at the elbow. The BORDENTOWN ELBOW BUOY, red spar No. 60, marks the easterly edge of the dredged channel at the elbow. The BORDENTOWN UPPER BUOY, red spar No. 62, is on the easterly edge of the dredged channel. The BORDENTOWN UPPER BUOY, black spar No. 53, is on the westerly edge of the dredged channel. DUCK CREEK BUOY, black spar No. 55, marks the westerly edge of the channel opposite the mouth of Duck Creek. Black Spar No. 55A is on the westerly edge of the dredged channel. Red Spar No. 62A is on the easterly edge of the dredged channel. PERRIWIG LOWER BUOY, black spar No. 57, marks the lower end and westerly edge of the dredged channel past Biles Is., known as Perriwig dredged channel. PERRIWIG LOWER BUOY, red spar No. 64, is on the easterly edge of the dredged channel. PERRIWIG LOWER MIDDLE BUOY, black spar No. 59, marks the westerly edge of the dredged channel at the first elbow. TURN BUOY, red spar No. 66, is on the

easterly edge of the dredged channel. PERRIWIG UPPER MIDDLE BUOY, black spar No. 61, marks the westerly edge of the dredged channel at the second elbow. PERRIWIG UPPER BUOY, red spar No. 68, is on the northeasterly side of the dredged channel. PERRIWIG UPPER BUOY, black spar No. 63, is on the westerly edge of the dredged channel. COCHRAN ISLAND BUOY, black spar No. 65 is on the westerly edge of the channel, off the upper end of Biles Is.. SEWER BUOY, red spar No. 70, marks the submerged end of the Trenton sewer. Red Spars No.s 72 and 74 are on the easterly edge of the dredged channel above the Trenton sewer.

(h) CHANGES IN THE SHORELINE, AND THE DEPTHS.

The only important change in the shoreline is the sand dike near Bordertown, where there was originally a sandbar. There are several small changes in the shoreline along Duck and Biles Islands, due to the deposition of stone by suction dredges. A new dike has been built nearly across the head of Biles Creek to keep the current in the main channel of the river, and one connecting Duck Island at its north extremity to the mainland for the same purpose. A new concrete dock on which Penn triangulation station is located, and several new buildings at Roebling are the main changes. The depth of the water has been changed in two places: one facing Roebling by a 12-foot channel being dredged, and one by a 12-foot channel being dredged from Bordertown to Trenton. The proposed 12-foot channel from the upper end of the dredged channel to the first bridge in Trenton is shown on the sheet in pencil. All data on soundings and dredged channels was obtained from the U. S. Army Engineers.

(i) SURVEY METHODS.

The shoreline was developed by the plane-table set up on triangulation stations of the main scheme. The topography was developed by the plane-table, starting at triangulation stations of the main scheme, and continued by traverse lines, checking in on triangulation stations and on intersection

stations determined by triangulation. None of the old stations of the main scheme were recovered. Due to difficulties in crossing Duck Creek, the Delaware & Raritan Canal, and Crosswicks Creek and the marshes north of it, it was necessary to get the topography from Bordentown to Trenton in three parts, one by a traverse line along the street-car line, one by a traverse line along the railroad track, checking in whenever possible on triangulation and intersection stations, and the shoreline and Duck Is. were obtained from the main scheme triangulation stations and short traverse lines run from these stations. In the villages a traverse line was run parallel to the river, and one at right angles to it, to get the contours and part of the street intersections. The streets not obtained by these two traverse lines were transferred from the charts made by the U. S. Army Engineers in 1909 in the cases of Florence and Roebling, and from the respective city maps in the cases of Bordentown, Trenton, and Morrisville.

The traverse line in Morrisville was run out Bridge Street, and one along Pennsylvania Avenue. In Florence one line was run along Front Street, following the streetcar line, and one beginning at Florence triangulation station and running up the street leading to the river near this station. In Roebling, one line was run along Main Street, and one through Second St.. In Bordentown, one line was run up Burlington Street, down Farnsworth Ave., and out Park St., thus following the streetcar line through the village, and one line out Farnsworth Ave. to the village limits. In Trenton, one line was run up Bridge Street to Second St., and down Second Street to Cass St., and up Cass Street to Adeline St., and out Adeline Street; and the other line out Lalor Street to the street car line, and southward along that line.

Stephan Hory
Assistant, C. & G. Survey

CHIEF OF PARTY.