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# TIDAL CURRENT CHARTS NEW YORK HARBOR

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# National Oceanic and Atmospheric Administration

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## TIDAL CURRENT CHARTS, NEW YORK HARBOR

These current charts show the direction and velocity of the tidal current for each hour of the tide at Governors Island, New York. Besides furnishing a means of readily determining the direction and velocity of the current at various localities throughout the harbor, these charts also present a comprehensive view of the tidal current movement for the harbor as a whole.

The charts which may be used for any year are referred to the times of high and low water at New York (Governors Island), daily predictions for which are included in the Atlantic Coast Tide Tables published annually by the U. S. Coast and Geodetic Survey. The chart to be used for any given time is determined by obtaining the difference in time between the time desired and the preceding high or low water as the case may be.

The directions of the streams are indicated by red arrows, and the velocities by red figures. The velocities are expressed in knots and are for the current at spring tides, i. e., near the time of new and full moon.

The tidal current varies from day to day principally in accordance with the phase, parallax, and declination of the moon, but for practical purposes it may be taken that at the time of average tides the velocities are about 20 per cent less, and at the time of neap tides (moon at quadrature) about 40 per cent less than those given on the charts.

More precise results for any given date may be obtained by modifying the velocities indicated on the charts by a range factor as follows:

The average range of the tide at Governors Island for the date desired is obtained from the tide tables by subtracting the mean of the two low waters from the mean of the two high waters. With this range the following table is entered. The velocities of the current for this date are then determined by multiplying the velocities indicated on the charts by the factor corresponding to the range in the table.

Range of tide for day, feet	Factor to apply to velocities on chart
2.5 to 2.9, multiply by.....	0.5
3.0 to 3.4, multiply by.....	0.6
3.5 to 3.9, multiply by.....	0.7
4.0 to 4.4, multiply by.....	0.8
4.5 to 4.9, multiply by.....	0.9
5.0 to 5.4, multiply by.....	1.0
5.5 to 5.9, multiply by.....	1.1
6.0 to 6.4, multiply by.....	1.2

*Example.*—Suppose that the direction and velocity of the current in the channel off Fort Hamilton is desired for 1 p. m. on August 20, 1929. Referring to the tide tables, it is found that on this date the predicted tides for New York (Governors Island) are:

High Water			Low Water		
h.	m.	Height ft.	h.	m.	Height ft.
8	10 a. m.	4.1	2	18 a. m.	0.0
8	16 p. m.	4.8	2	21 p. m.	0.3

The given time of 1 p. m. is about 5 hours later than the nearest preceding tide which is the high water at 8.10 a. m. The data desired will therefore be found on the chart designated "FIVE HOURS AFTER HIGH WATER AT NEW YORK (Governors Island)." This chart indicates that the current at Fort Hamilton is ebbing (setting southward). The number (2.2) opposite Fort Hamilton gives the velocity of the current at the time indicated at the bottom of the chart but is for the current at spring tides.

To determine the velocity of this current for the particular day, the indicated spring velocity of 2.2 knots is modified for the range of the tide on August 20 as previously explained. From the tide tables the range of the tide on August 20 is found to be 4.2 feet (mean of two high waters = 4.4, mean of two low waters = 0.2; 4.4 - 0.2 = 4.2). Referring to the table given above it is seen that the factor for a range of 4.2 feet is 0.8. The velocity is therefore determined by multiplying the indicated velocity of 2.2 knots by 0.8. The velocity of the current in the channel off Fort Hamilton at 1 p. m. on August 20, 1929, is thus found to be 1.8 knots.

If the given time comes about half way between the times indicated on two successive charts, an average of the data on the chart preceding and following the given time will furnish the approximate information desired. As an example, the current chart for "ONE HOUR AFTER HIGH WATER AT NEW YORK (Governors Island)" shows that the current in the channel off Fort Hamilton is flooding (setting northward) with a velocity of 0.4 knot. The following chart, "TWO HOURS AFTER HIGH WATER AT NEW YORK (Governors Island)," shows that the current at the same place is ebbing (setting southward) with a velocity of 0.4 knot. Half way between the times given by these two charts, i. e., 1½ hours after high water at New York, the current is therefore about slack.

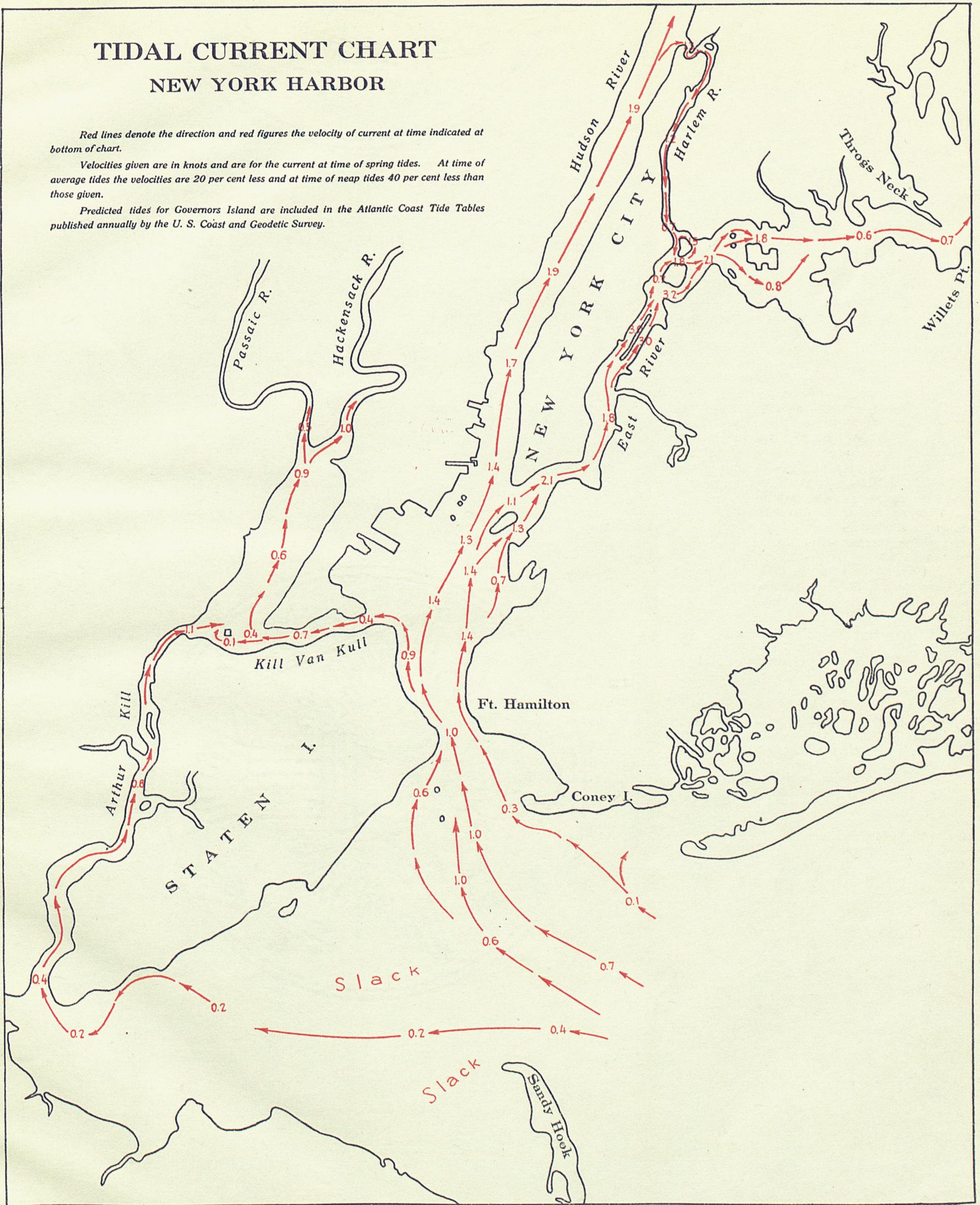
# TIDAL CURRENT CHART

## NEW YORK HARBOR

Red lines denote the direction and red figures the velocity of current at time indicated at bottom of chart.

Velocities given are in knots and are for the current at time of spring tides. At time of average tides the velocities are 20 per cent less and at time of neap tides 40 per cent less than those given.

Predicted tides for Governors Island are included in the Atlantic Coast Tide Tables published annually by the U. S. Coast and Geodetic Survey.



HIGH WATER AT NEW YORK (Governors Island)

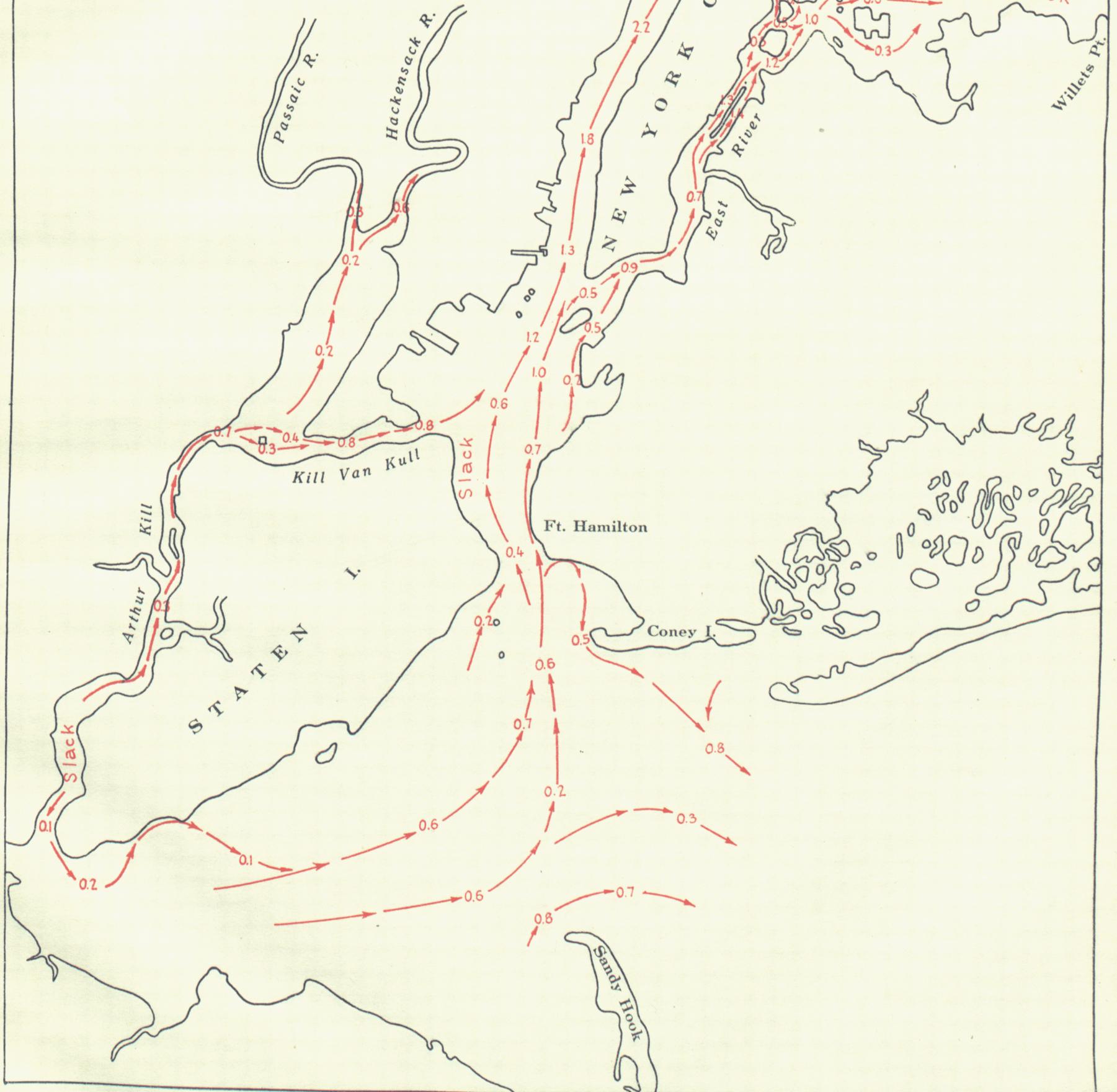
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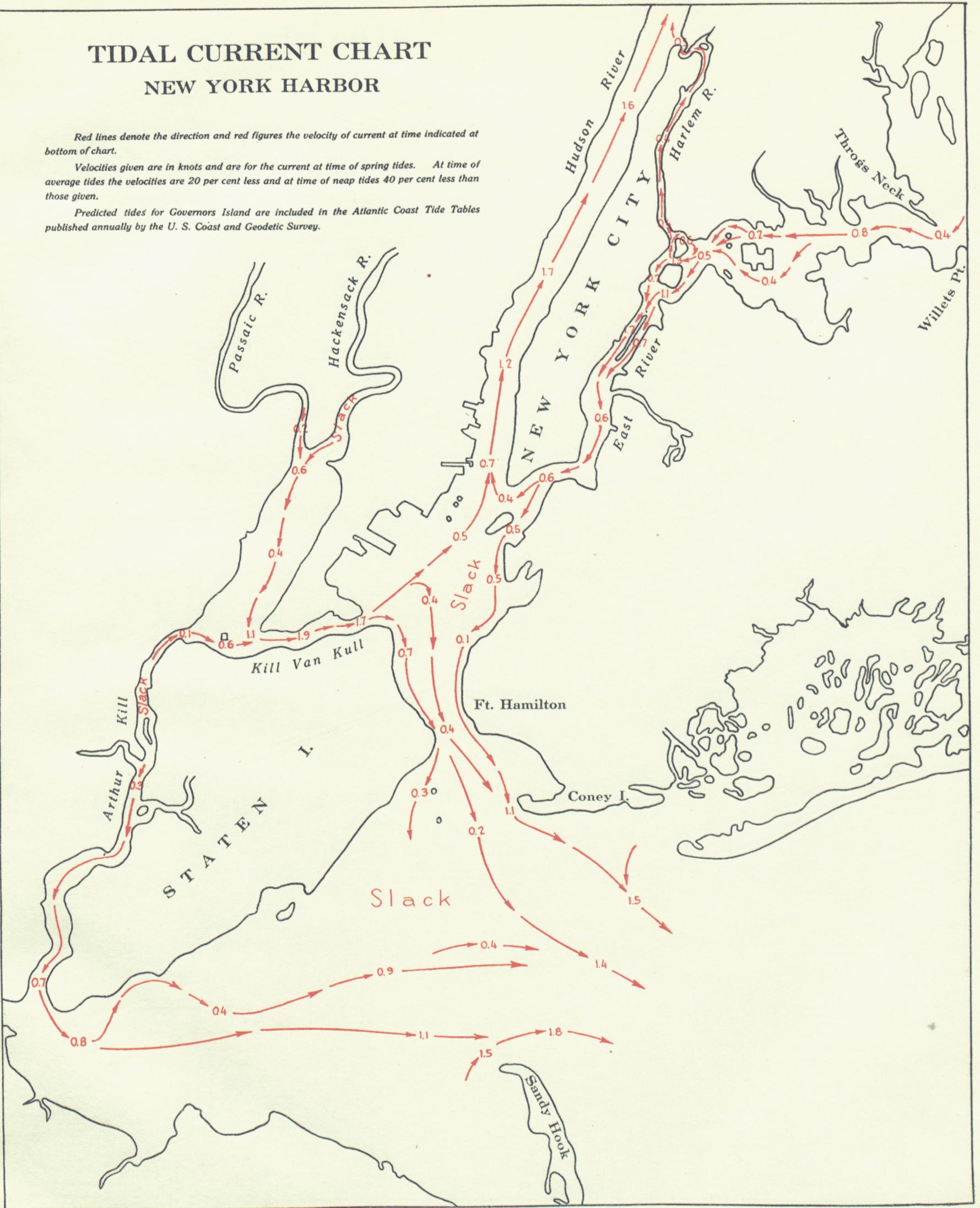


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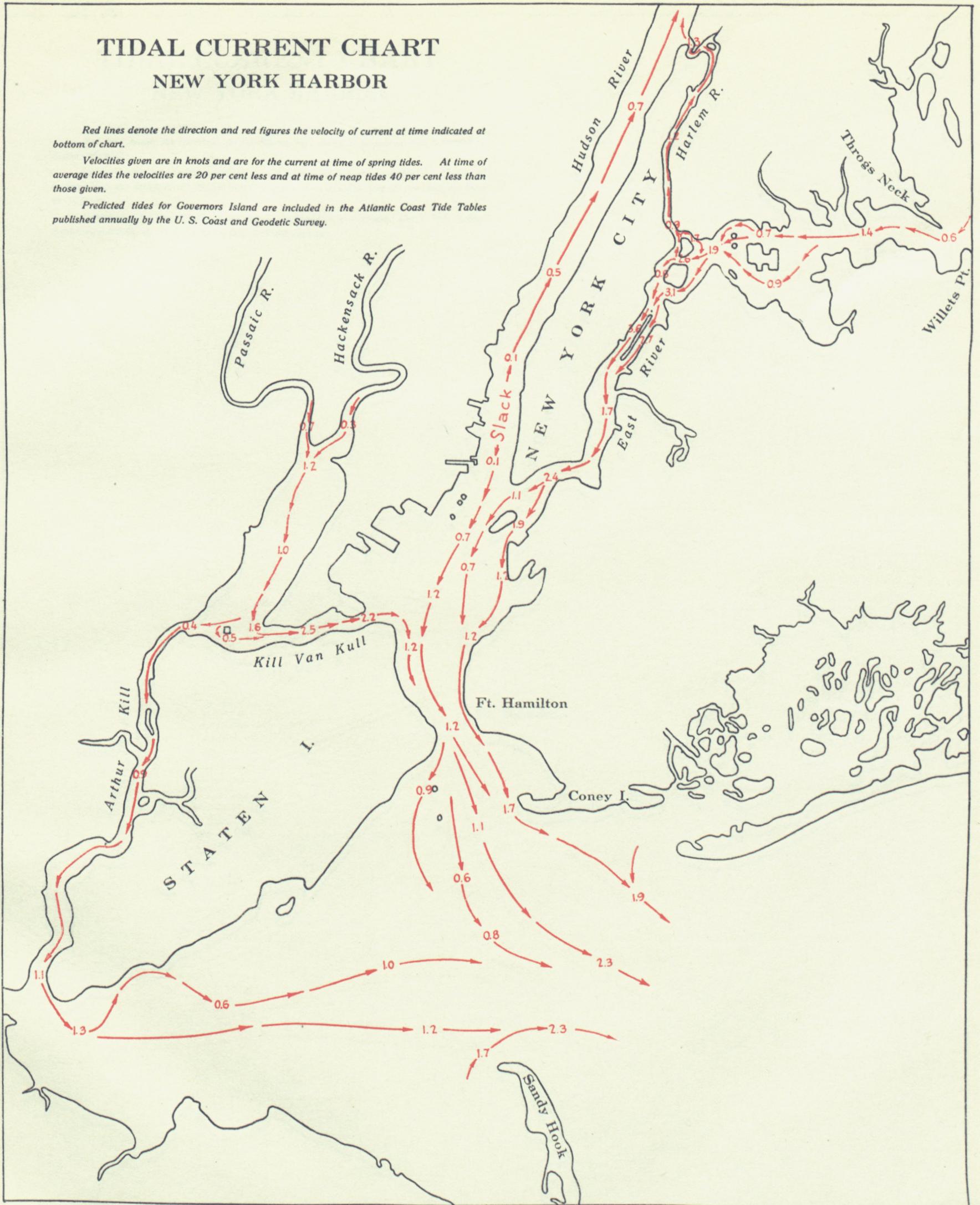
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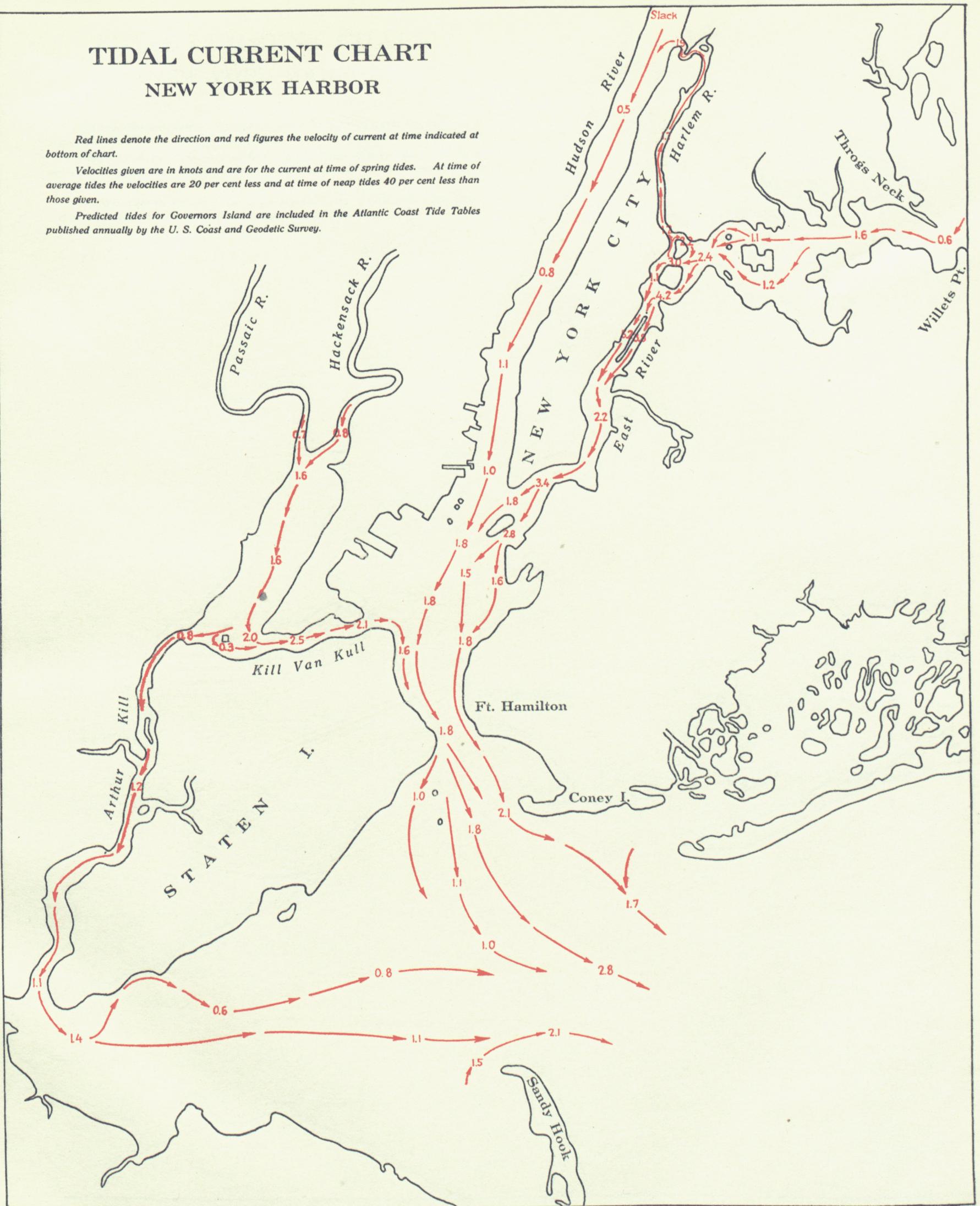
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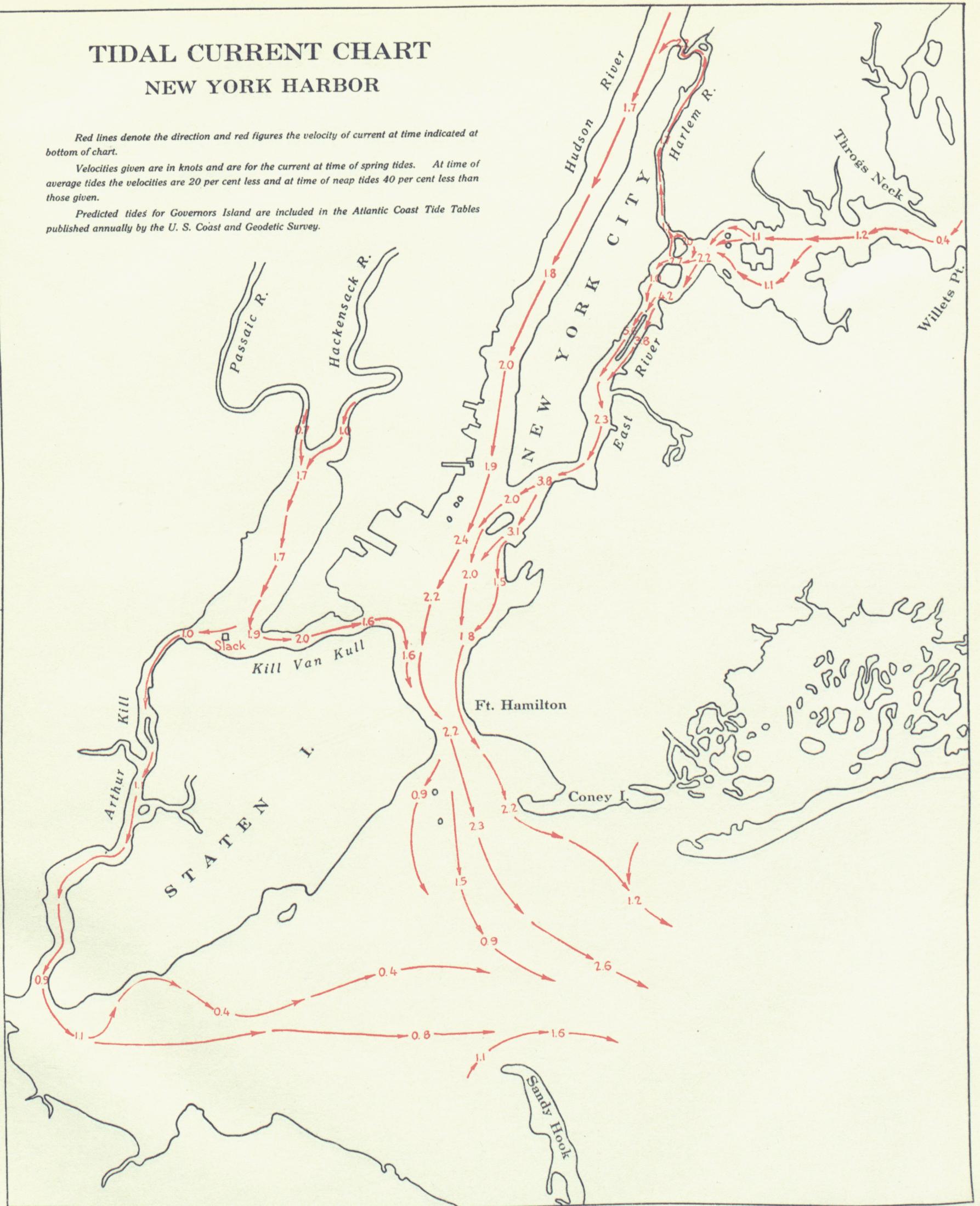
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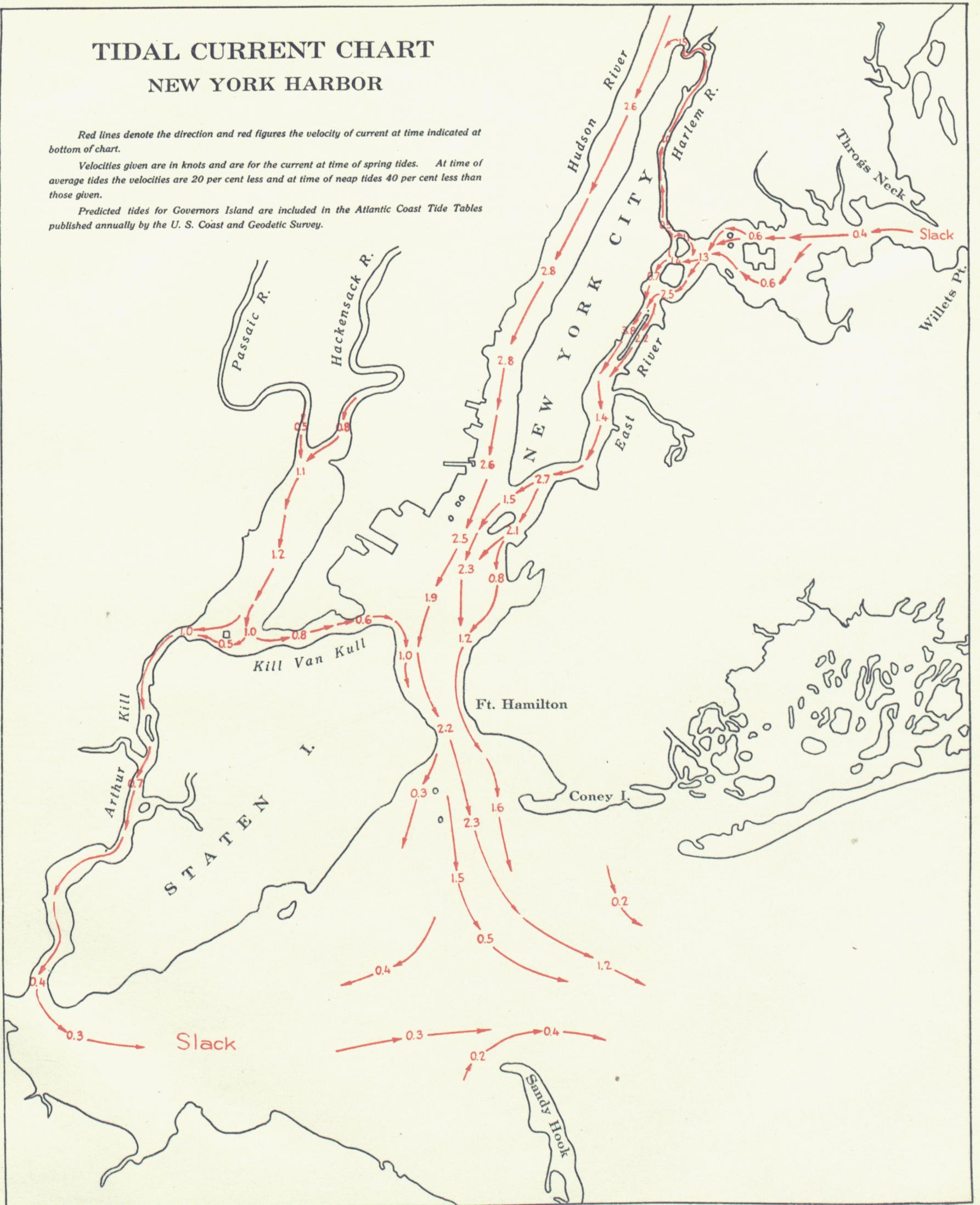


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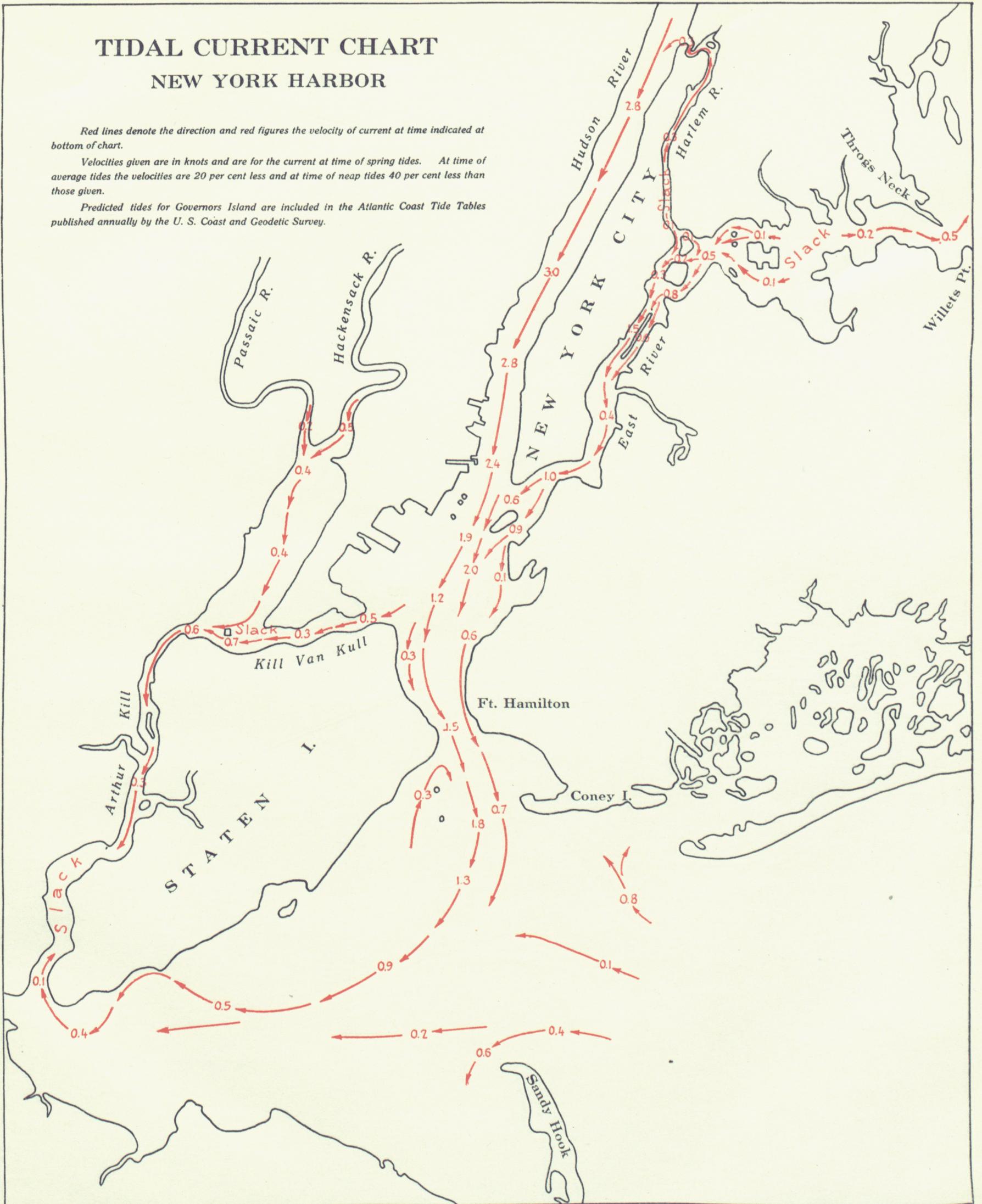
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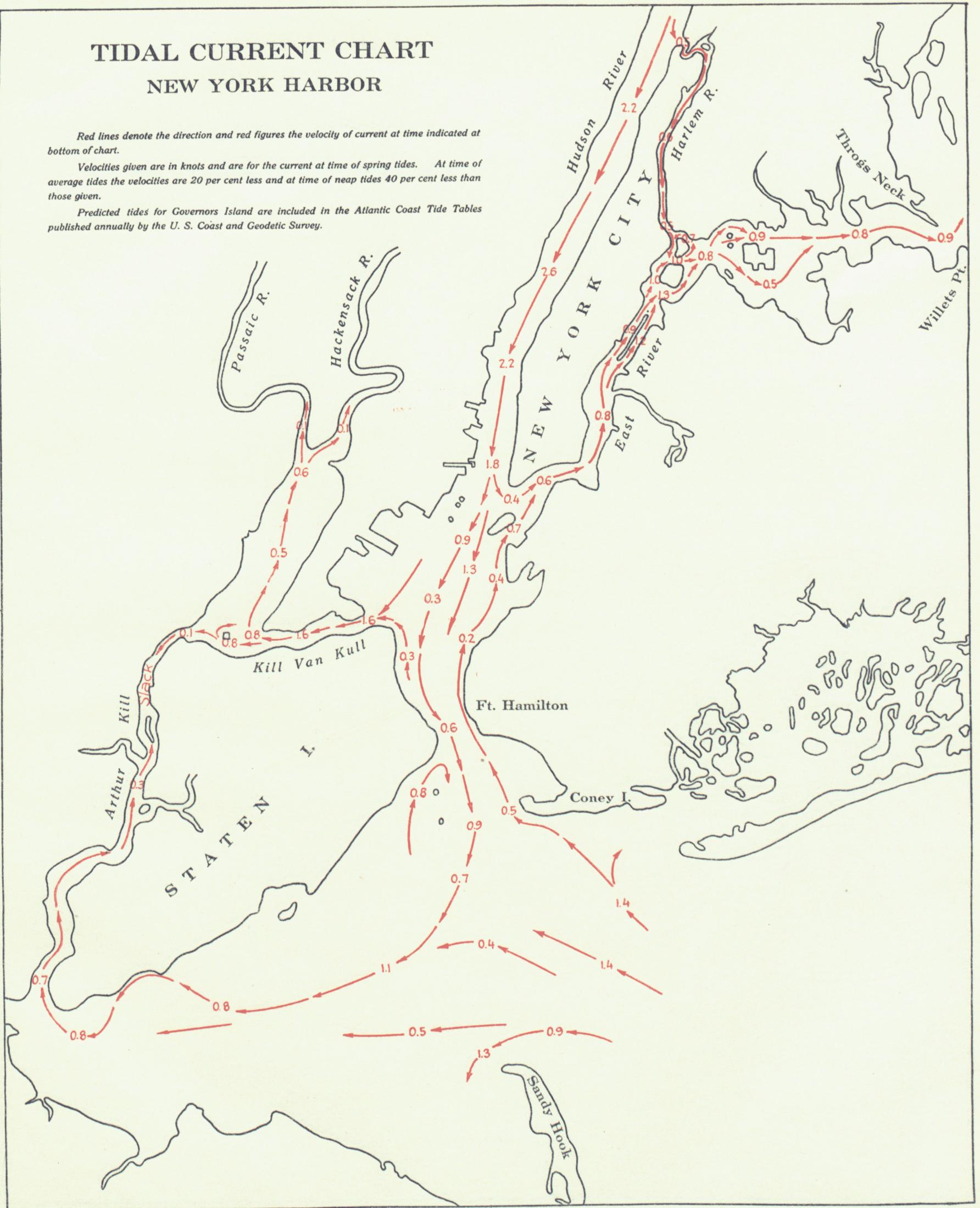
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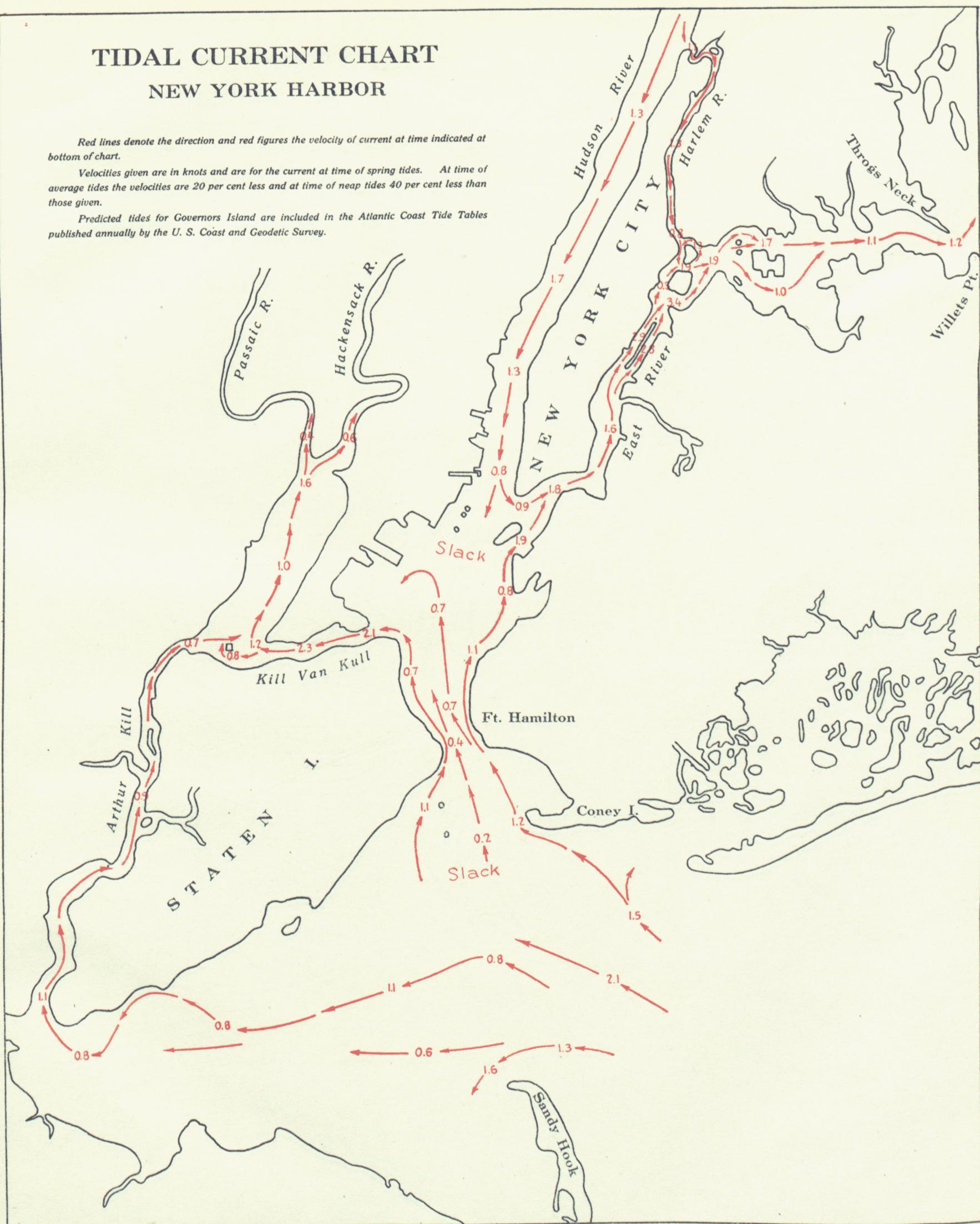
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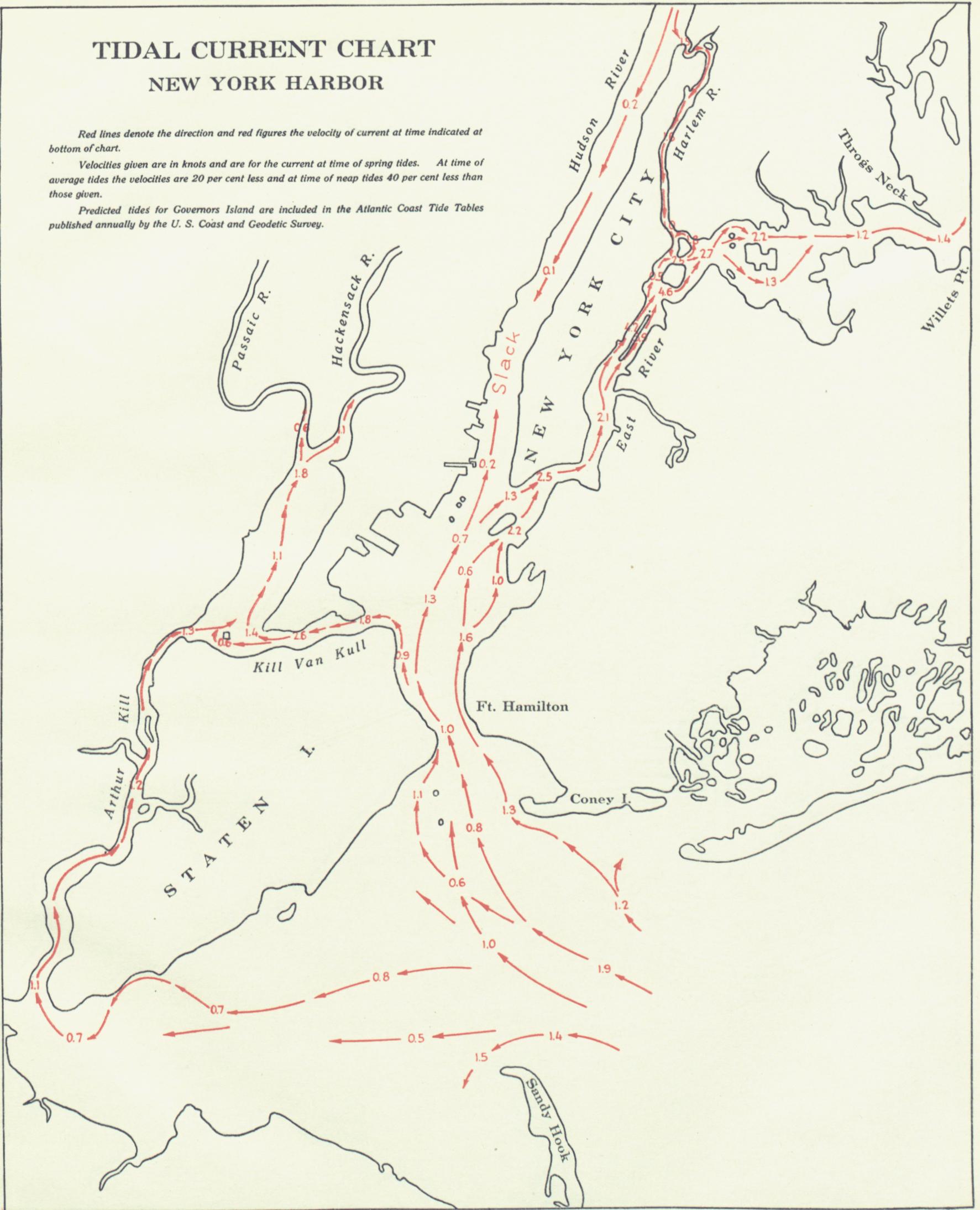


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