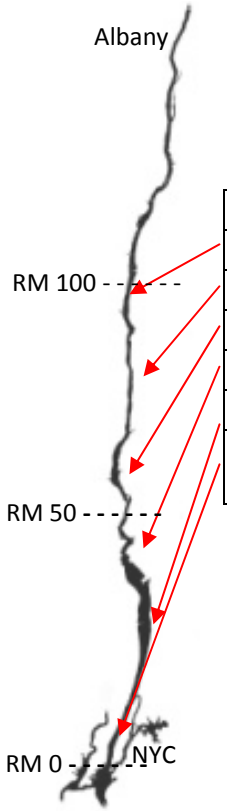
A Day in the Life of the Hudson River 2015: *Salinity*

Your site: _____If measured, your salinity on Oct 20, 2015:_____

2015 was the thirteenth year of A Day in the Life of the Hudson River. Thanks to all of the participants who made this year a success! Let's compare some of the data you collected with data from earlier years.



Salinity Data Table

Salinity can be reported in many different units. Here the units are **parts per million (ppm)** of chloride (Cl^-) to help compare results from sites far apart on the estuary. In saltier areas, like New York City, salinity is usually measured in **parts per thousand (ppt)**. **River miles (RM)** are measured north from the Battery in NYC.

RM	Site	2010	2011	2012	2013	2015
97	Ulster Landing	28 ppm	18 ppm	28 ppm	40 ppm	46 ppm
76	Poughkeepsie	28 ppm	32 ppm	28 ppm	32 ppm	46 ppm
57	Kowawese	29 ppm	26 ppm	96 ppm	447 ppm	196 ppm
41	Verplanck	55 ppm	55 ppm	1,610 ppm	3,212 ppm	2,398 ppm
25	Piermont Pier	488 ppm	1,250 ppm	4,428 ppm	5,136 ppm	4,816 ppm
4	Pier 84 NYC	3,321 ppm	1,383 ppm	8,580 ppm	9,415 ppm	9,964 ppm

Striped bass can live in a wide range of salinities.

Atlantic Silversides live in brackish to marine water.

1. The salt front (the leading edge of dilute sea water entering the Hudson) is located where salinity reaches 100 ppm.

a) In which of the five years shown in Table 1 did the salt front reach up to or past Verplanck?

The salt front reached past Verplanck in 2012, 2013, and 2015.

b) Which sites were considered freshwater in 2015?

Poughkeepsie and Ulster Landing.

c) What might be a reason for the **differences** in salinity at all sites between 2015 and 2011? Hint: How might weather affect salinity?

In October 2011, runoff from tropical storms Irene and Lee was still flowing from the river's watershed. In 2015 there was much less rain prior to Day in the Life, so salty seawater moved further up the river.

2. Where was the salt front on October 20, 2015?

Use a pencil to plot salinity readings for 2015 (found in Table 1) on the graph below.

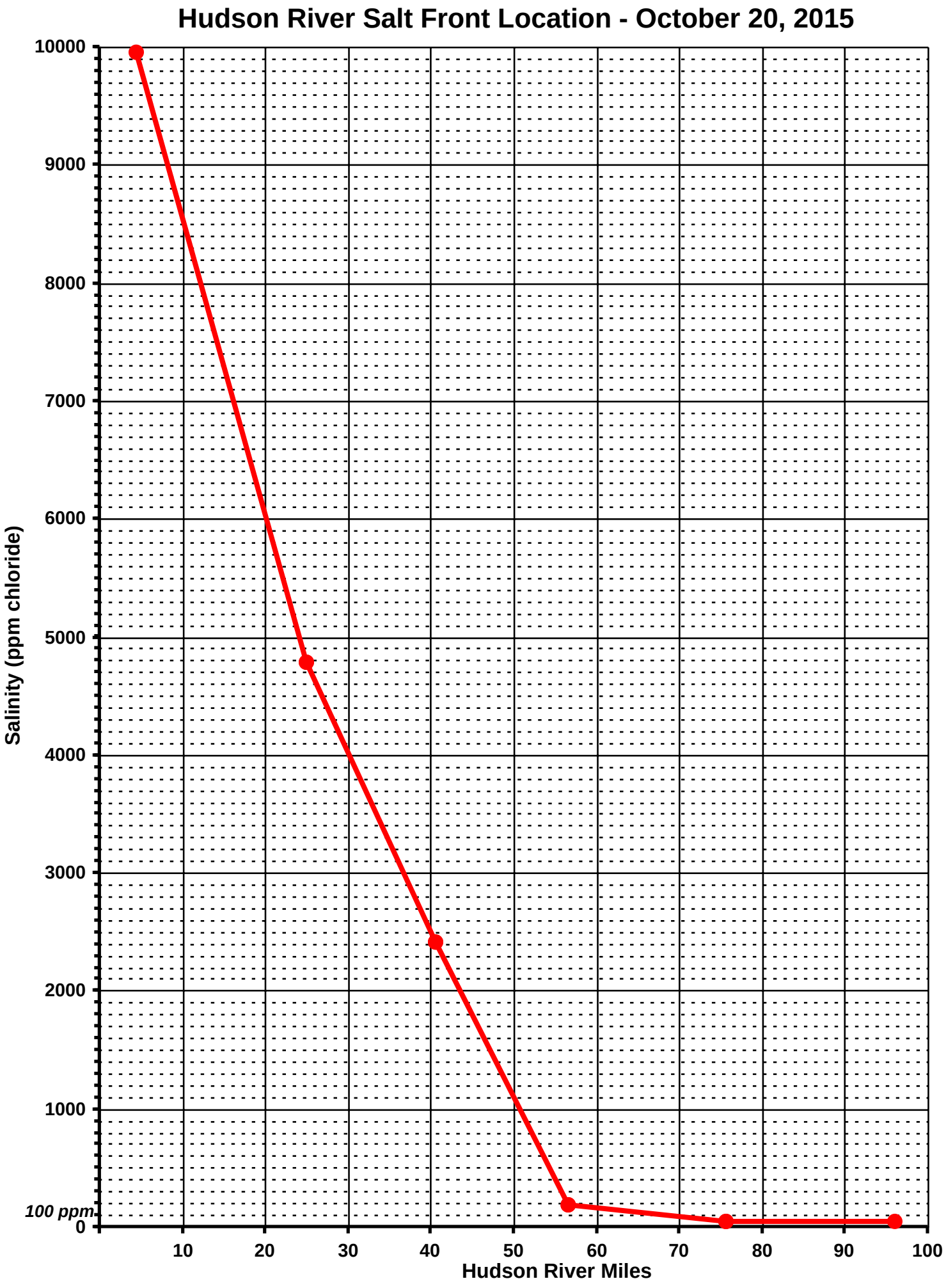
a) Place a point for all salinity readings directly above the listed river mile.

b) Using a ruler, draw a line from one point to the next. Start at the point for the lowest river mile and continue to the highest.

c) The salt front is located where salinity equals 100 ppm of chlorides. Using your graph plot and the horizontal line at 100 ppm, estimate (in river miles) the position of the salt front on October 20.

Your graph should show the salt front at around River Mile 70, which is just south of Poughkeepsie.

River Mile 70


Hudson River Salt Front Location - October 20, 2015
Salinity (ppm chloride)
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
100 ppm
0
10
20
30
40
50
60
70
80
90
100
Hudson River Miles