

North Fork passes under Blanding Boulevard, and BSF where the South Fork passes under C.R. 238 in Middleburg (Figure 3).

Salinity exceeded 1 ppt at station SJRHBP 35% of the time over the period 1992 – 2016, whereas this salinity level was observed for 5% of the time at station SRB. Salinity never exceeded 1 ppt at either station NBC or BSF. Maximum observed salinity was 0.3 ppt at NBC and 0.07 at BSF.

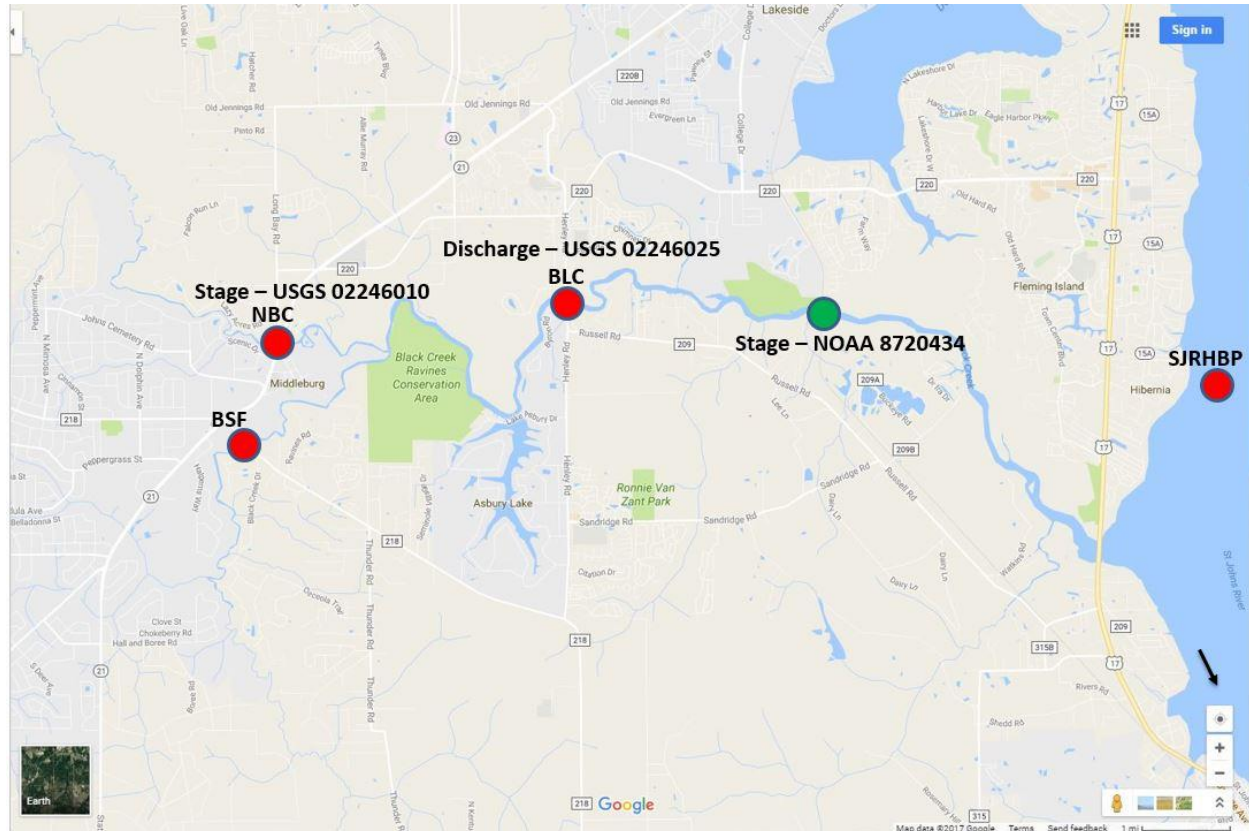


Figure 3. Locations of observed salinity (red circles). Tidal range was measured at NOAA tide station (8720434) located at a railroad bridge. USGS also measured discharge at BLC and stage at NBC. USGS also measures discharge (stations not shown on this figure) farther upstream on both the North and South Forks.

EFDC Salinity Model Set-Up

The Environmental Fluid Dynamics Model (EFDC) was applied to the portions of Black Creek from the confluence of the St. Johns River to stations NBC and BSF on the North and South Forks, respectively. The model was developed as simple, one-cell wide grid with branches at the upper end to represent the North and South Forks. Bathymetry data are available for the lower portion of Black Creek to the railroad bridge (NOAA station 8720434 in Figure 3). Depth of upstream areas was the principle tuning parameter for salinity.

The model was forced with river stage and salinity at the mouth. These time-series were obtained from an existing EFDC model of the Lower St. Johns River for the period 1995 – 2005.