

APPLIED COASTAL

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Project: ADCP Survey of Rudee Inlet, VA

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Measurements of ocean currents were collected in the Rudee Inlet region of southeastern Virginia. These observations were performed by Applied Coastal to assist efforts focused on analyzing sediment transport processes and inlet stability.

The measurements were collected using an Acoustic Doppler Current Profiler (ADCP) mounted aboard a 21-ft survey vessel. The boat navigated repeatedly a pre-defined set of transect lines through the inlet area, approximately every 30 minutes, with the ADCP collecting current profiles continuously. This pattern was repeated for an approximate 12.6-hour duration to ensure measurements over the entire tidal cycle. The results of the data collection effort were high-resolution observations of the spatial and temporal variations in tidal current patterns throughout the survey area. The measurements were used to compute the tidal prism of the inlet system.

Tidal currents through the inlet reached maximum speeds of approximately 3 ft/sec. During periods of maximum currents these inlet tidal flows were vertically coherent, with negligible stratification. During slack-water periods, there was indication of mildly stratified flows, evidenced by an abrupt change in horizontal current direction within the water column. During the ebb portion of the tide on the survey day, a run of an offshore transect showed how the ebb jet is sheared by longshore directed currents as it exits the jetties from the inlet. Currents in the upper 6 feet of the water column showed a northerly flow, while the lowest 4 feet showed a strong (~1.5 ft/sec) easterly flow.

