

December 11, 2015

Mr. Thomas Daley, P.E.
Director of Public Works and Natural Resources
Town of Orleans
139 Main Street
Orleans, MA 02653

tdaley@town.orleans.ma.us

RE: Status Update for the Nauset Estuary Dredging Project

Dear Mr. Daley,

I am writing to provide the Town with a status update on the feasibility study that we are performing for the Nauset Estuary Dredging Project. We have made some significant progress and have now completed all field data collection, which includes a bathymetric survey, eelgrass survey, confirmatory sediment sampling, sediment coring for red tide cyst analysis, and vibracore sampling.

The bathymetric survey was performed on November 23rd and 25th, data were referenced to the vertical datum NAVD88 (Figure 1). Based on the results of the bathymetric survey, and a conversion from NAVD88 to mean lower low water (MLLW), we have designed a navigation channel to the specifications requested by the Town (-5 feet MLLW depth and width of 100 feet at channel base with 3:1 side slopes) that takes advantage of the existing channel depths and orientation (Figure 2). This process also allowed for the design of dredging zones in this dynamic estuary.

The eelgrass survey was performed along with the sediment confirmatory sampling on November 30th. A video camera was mounted to a Van Veen sediment sampler to perform passive drifting transects over 15 sites in the study area (Figure 3). At the end of each video transect, a sediment grab was collected. Sediments were characterized by a geologist to determine the surficial sediment texture at each station. The video transects were performed at a height of approximately 1 foot above the bottom and did not show the presence of any eel grass. This finding supports previous claims that there was no eel grass in the study area.

Sediment vibracores and short cores for red tide cyst analysis were collected on December 10th, 2015 (Figure 4). Vibracores were collected at six locations and at lengths required to characterize the sediment requiring dredging to achieve the navigation channel design. Red tide cyst cores (0.3-1.0 foot in length) were collected at 10 locations historically sampled by Dr. Don Anderson's laboratory at Woods Hole Oceanographic Institute (WHOI). These samples were

submitted to the Anderson lab for analysis on December 11th. Vibracores will be processed and sampled the week of December 14th.

Bathymetric data and the new channel design specifications have been sent to Dr. David Ralston at WHOI to begin the hydrodynamic modelling of the system. Dr. Ralston will update the model's bathymetric grid with the most recent bathymetric information and will run a scenario with the proposed channel design to evaluate the probability of impacts to flow dynamics and sediment transport. That work is expected to begin the week of December 14th.

We have also begun the investigation into past dredging permits for the study area. This work is on-going.

Please let me know if you have any questions of concerns.

Sincerely,



David R. Walsh
Coastal Scientist

Cc Leslie Fields

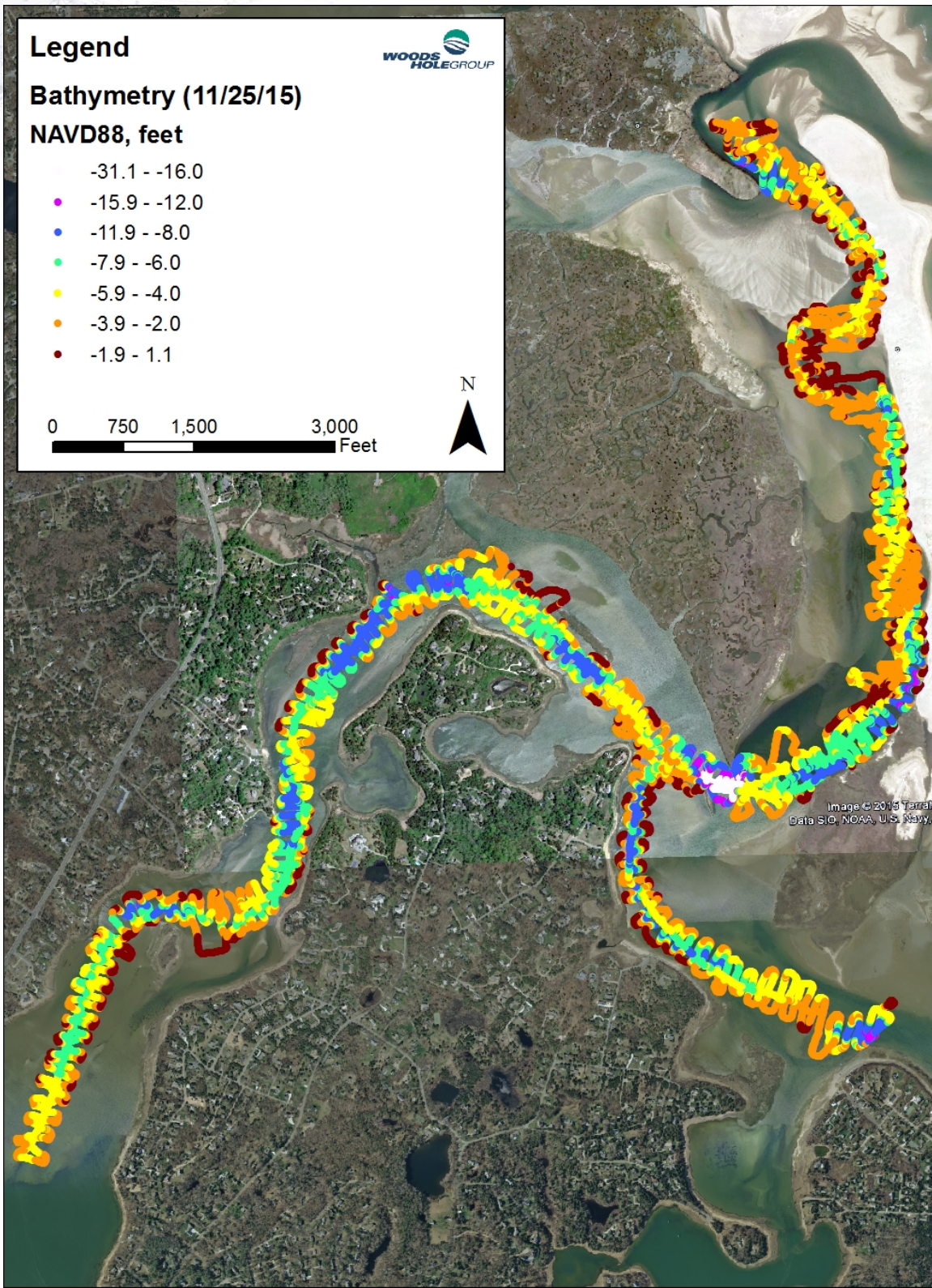


Figure 1. Bathymetric survey results from survey completed November 25, 2015.

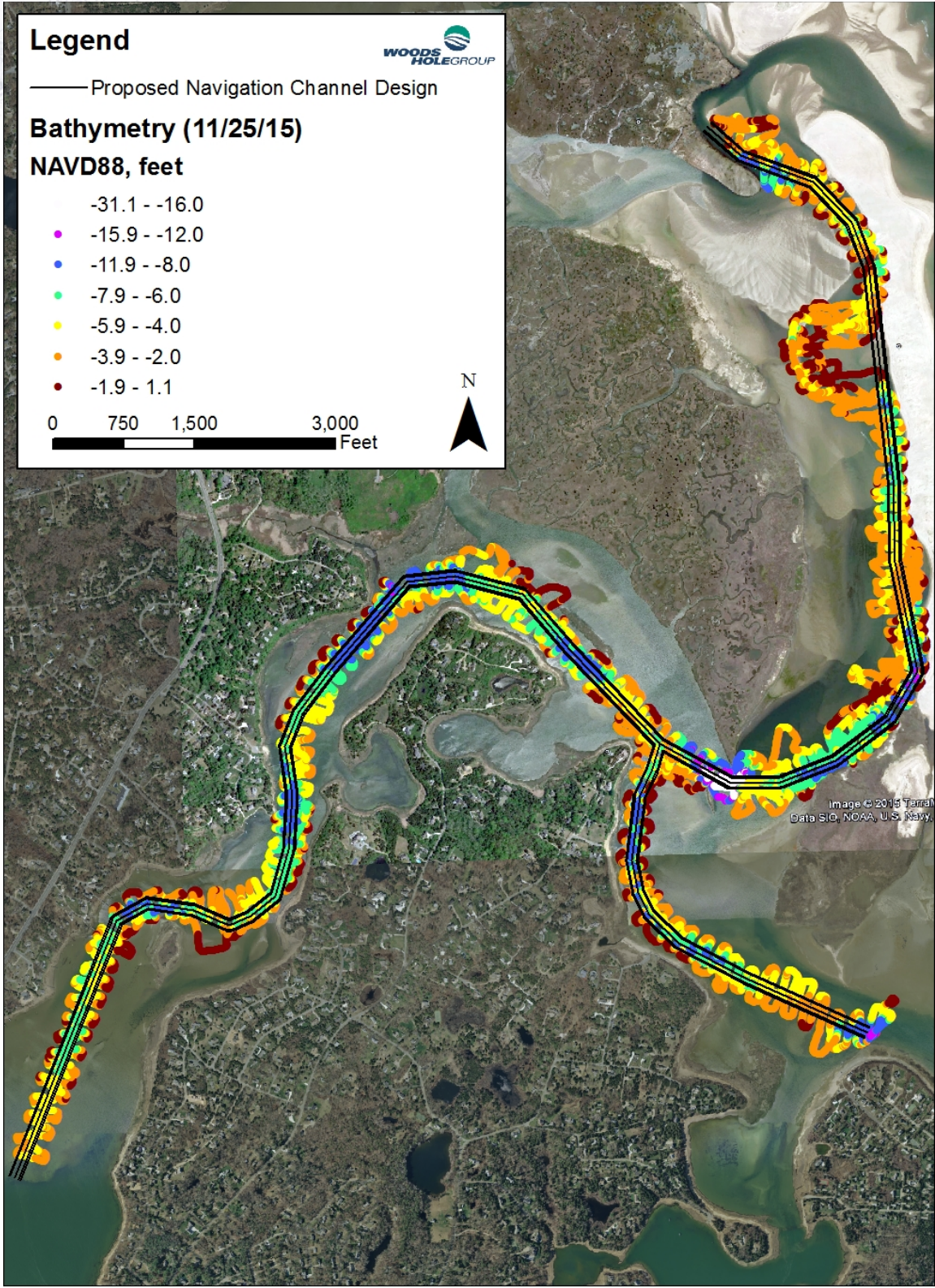


Figure 2. Proposed navigation channel aligned with existing bathymetry.

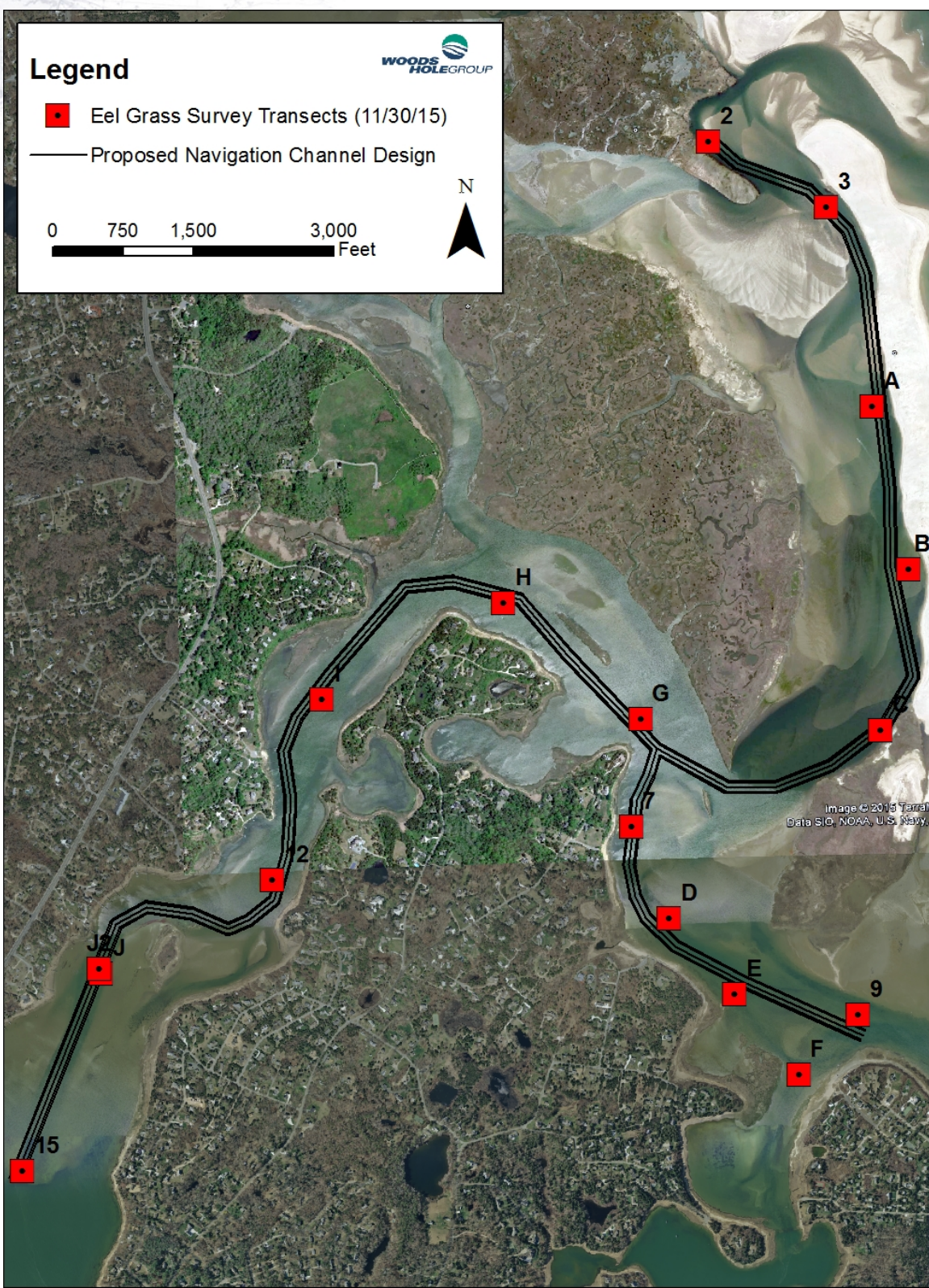


Figure 3. Locations of sediment conformation samples and eel grass survey transects performed November 30, 2015.

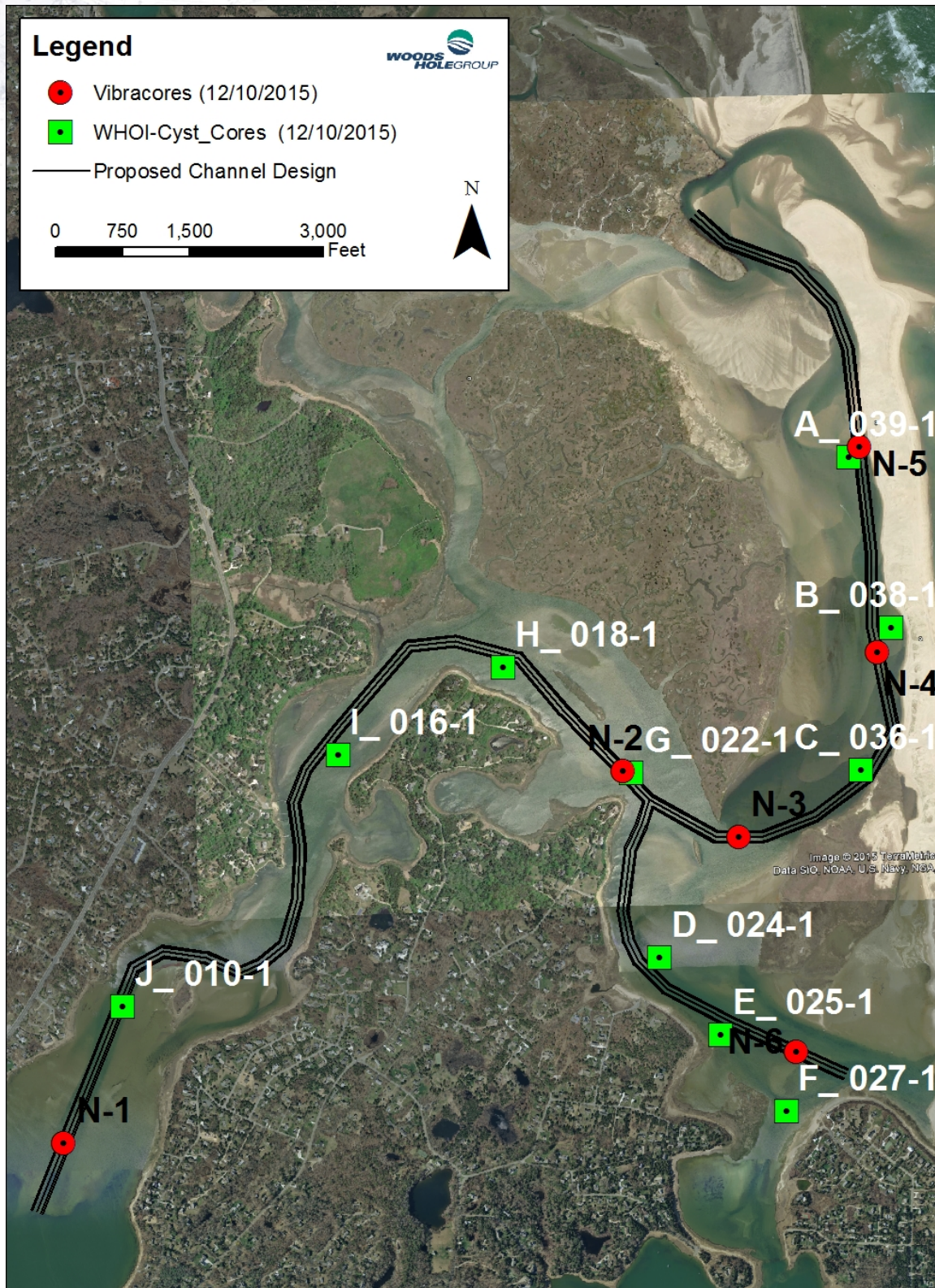


Figure 4. Locations of sediment vibracores and red tide cyst cores collected December 10, 2015.