New Jersey Department of Transportation
Bureau of Research

Technical Brief

Channel Usage Research and Analysis – Phase 3

This study developed recommendations for how NJDOT can use various methodologies for collecting channel and waterway vessel counts and classification data. By undergoing a third phase of vessel counts through those methodologies identified from Phase 1 and 2 of this project, the research team developed recommendations for how NJDOT can establish their own formal marine transportation system and waterway data collection program.

Background

The NJDOT Office of Maritime Resources (OMR) is continuing steps towards the development of an asset management system to more effectively manage New Jersey's Marine Transportation System. After a first and second round of vessel count data collection in 2015 and 2016, a third round occurred during the summer of 2017 to better understand the different methodologies for analyzing waterway usage. Insight from all three rounds of data collection were then utilized to establish a framework for a vessel count and classification data on state-maintained waterways, as well as a four-phase data collection and analysis plan.

Research Objectives and Approach

The objective of this research was to develop and implement a reliable, repeatable, and verifiable method or SOP (Standard Operating Procedure) to collect vessel count and classification information by time of day. The research involved field tests of several approaches that could be applicable to a broader statewide effort to collect vessel count information utilizing the selected method on approximately 214 state waterways within the state's Marine Transportation System. Once data was collected, the project team developed recommendations on variables to consider and a formalized procedure, including relevant methodologies, for conducting vessel counts. The research team next moved to establish a classification system based on waterway width.

Findings

In the third round of data collection, the research team collected waterway usage data from nine different locations. Whereas the previous two phases of counts focused on determining best methods of data collection, the third phase aggregated all data collection focused on the effects of multiple variables and conditions on waterway usage.

The research team has the following recommendations for NJDOT:

- Implement a formalized procedure for collecting vessel count and classification data on state-maintained waterways, that includes identifying which waterways need to be counted, proper site surveying, methodology selection, logistical arrangements, surveyor training, and post-count tabulation;

- Conduct additional vessel counts to further determine (a) which variables affect the accuracy and precision of each count methodology, and to what extent, and (b) which variables affect the use waterways by vessel type;

- Conduct vessel counts in other portions of New Jersey, including along the Delaware River to determine how waterway usage varies across different areas, including those away from the coast.

- Develop a set of factors to correct for variables that affect vessel counts and classifications so that count and classification data can be normalized depending on when, where and under what weather conditions the count was conducted, based on additional data collection efforts;

- Develop a Marine Transportation System data collection program that establishes approved methodologies, procedures, collection techniques, a proposed collection schedule, and considers a waterway classification system;

- To support post-processing, NJDOT should coordinate with the New Jersey State Motor Vehicle Commission to match vessel registration data collected in the field to attributes associated with that registration number, including vessel classification, age, and place of registry;

- NJDOT should determine what information, in addition to vessel count and classification data, are needed to support asset management-related decision making on New Jersey's Marine Transportation System.

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A final report is available online at: http://www.state.nj.us/transportation/refdata/research/. If you would like a copy of the full report, send an e-mail to: Research.Bureau@dot.state.nj.us.

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