



U.S. Army Corps of Engineers Study of Possible Port and Waterway Modernization Impacts In Response to Increased Size of Marine Vessels

Information Brief

Congressional Interest

International maritime trade volume is expected to increase over the next several decades. The average and maximum sizes of maritime freight-transport vessels have been increasing and are expected to increase further because of cost advantages. Increasing numbers of larger vessels are expected to call at U.S. ports with harbors and facilities large enough to accommodate them. Expected completion of Panama Canal expansion in 2014 will allow passage of vessels over twice as large volumetrically (post-Panamax vessels). These trends are likely to significantly affect the patterns of maritime and waterway freight transport in and out of the United States, depending on which ports and waterways are appropriately modernized. Modernization would have potential environmental impacts. On December 21, 2011, Congress directed the Institute for Water Resources of the U. S. Army Corps of Engineers to submit to the Senate and House Committees on Appropriations “a report on how the Congress should address the critical need for additional port and inland waterway modernization to accommodate post-Panamax vessels.”

Congress also indicated the importance of environmental impact among report considerations: “Factors for consideration should include costs associated with deepening and widening deep-draft harbors; the ability of the waterways and ports to enhance the nation's export initiatives benefitting the agricultural and manufacturing sectors; the current and projected population trends that distinguish regional ports and ports that are immediately adjacent to population centers; the availability of inland intermodal access; and the environmental impacts resulting from the modernization of inland waterways and deep-draft ports.” The report is to be submitted by June 23, 2012. In response to the Congressional directive, the IWR study will survey existing conditions, review factors impacting future demand, evaluate regional environmental impacts and address elements of benefit and cost estimation in order to develop a broad vision and strategy for meeting U.S. port and inland waterway modernization needs to accommodate increasing trade and vessel size.

International Freight Transport Status

Increasingly more international freight is being shipped in intermodal-transport containers that are readily transferred among vessels, railroads and trucks for more efficient transport to final destinations. Most freight originating in western Asia, Africa and Europe moves through eastern ports. Most Pacific Rim trade with the United States now moves through ports on the Pacific coast, where a number of ports are able to accept Post-Panamax vessels and provide intermodal transport needs for much of the U. S. west of the Appalachian Mountains. Fully loaded post-Panamax vessels generally require port access and berth depths up to 50 feet deep and significantly wider channels. A limited number of Atlantic coast ports are post-Panamax ready.

Depending on the extents to which Pacific- and Atlantic-coast intermodal transport systems adapt to Panama Canal expansion, the relative efficiency and competitiveness of Atlantic ports, including ports on the Gulf of Mexico, may increase significantly, redirecting a larger fraction of Pacific Rim freight to the Atlantic coast. An increased demand for more water-borne freight movement through Midwestern and



Eastern waterways also may occur. Adaptation will require modernization investments with potential environmental impacts, both adverse and beneficial, depending on location.

On the Atlantic coast, ports at Hampton Roads, Virginia and Halifax, Nova Scotia are fully capable of receiving post-Panamax vessels and the ports of New York-New Jersey and Baltimore are fast approaching post-Panamax capability. A number of other ports have made initial investments in modernization planning and implementation, but the post-Panamax focus of attention has been on southeastern ports closest to the Panama Canal and on waterways that convey barge shipments to and from inland and coastal ports. In anticipation of increased waterway traffic, the environmental impact of waterway modernization is an additional consideration of the study, as are the effects of traffic redistribution on West Coast ports and intermodal links. Also considered are the possible environmental effects of using freight transfer hubs in Caribbean ports outside the United States.

Study Approach

The approach being used to investigate potential environmental impacts is to broadly evaluate for impacts across the range of possible waterways and ports that may be modernized or used differently in response to past changes and anticipation of future changes in vessel size and trade activity. The approach follows the analytical model for environmental impact analysis defined for implementation of the National Environment Policy Act. The environmental goals of the Act provide a framework for organizing the assessment of impacts on human welfare based on equitable assurance of human health and safety, sustainable beneficial use of the environment, and preservation of important aspects of national heritage.

The approach will include a description of the environmental “footprint” of the existing maritime transportation system in the United States in enough detail to broadly characterize past types and intensities of impact. It will also include forecasts of potential impacts of possible transportation modernization scenarios that may materialize over the next several decades as U. S. ports and waterways respond to Panama Canal enlargement. These include 1) major redistribution of freight traffic in larger vessels from Pacific to Atlantic ports, 2) major redistribution of freight traffic to Atlantic ports in smaller “feeder vessels” transferred from larger vessels in post-Panamax ready Caribbean ports, 3) minor redistribution from west to east as a consequence of competitive Pacific port and intermodal transportation modernization, and 4) significantly increased inland waterway barge traffic.

Possible environmental effects will be tracked from potential impact sources in air, water, land, and ecosystems to potential human service and welfare changes. The national scope and time frame require a broad approach to the analysis. Because of the short time frame of the study, the analysis must rely on existing information reported in the scientific literature, past navigation project feasibility studies, and other government assessments. The quality of the information is likely to vary among sites depending on the extent of site-specific study that has been done.

The study will address impacts to human welfare, including human health and safety, resource uses of economic value, and resources of importance for their cultural and natural heritage. Human health and safety may be placed at risk via altered water quality, air quality, urban congestion, noise, and accidents originating with port, vessel, and intermodal land-transport systems. The sustainable uses of the environment include recreational use of fish, wildlife, water, and landscapes; commercial use of fish, lumber, and agricultural products; floodplain and coastal use for housing, agriculture, and other land uses; power production; and water supply, and other resource uses. Heritage considerations include



nationally scarce species, ecosystems, landscapes and culturally and historically important sites important enough to the Nation to assure their future continuity. Green-house gas generation from fossil fuels will be considered.

General indicators of potential environmental impact will be used at port and waterway locations where significant modernization may occur. Example indicators include: 1) scarce species and ecosystem heritage in the vicinity of ports and waterways; 2) important recreational, commodity and other use in port and waterway vicinity, 3) distance of port facilities to deep water; 4) existing width, depth, and number of dredged channels, turnaround basins and berth basins; 5) port sediment contamination; 6) availability of and distance to acceptable dredge material disposal or use locations; 7) human population size and density in the port or waterway vicinity; 8) age of existing port, waterway, and intermodal transport facilities; 9) existing capacity of intermodal roads, railroads, and pipelines; and 10) size, age, and ownership of vessels using ports and waterways. In addition to the indicators, any specific information available in the public literature and data files will be included in the assessments.

In general, we expect more environmental impact may occur where port and waterway modernization takes place near habitats supporting scarce species and ecosystems in decline. In general, ports and waterways are more likely to experience more environmental impact when more excavation of channels, turnaround basins, and berths, and more dredge material disposal are required. Mitigation of environmental impact is particularly challenging where port or waterway sediments are badly contaminated with toxic metals and other toxic materials or where acceptable dredge material disposal sites or uses are limited. The size, density, and demography of human populations in the vicinity of ports and waterways is an indicator of potential health and safety issues and possible environmental justice issues. The existing capacity of intermodal transport systems is an indicator of potential congestion and increased emission per ton of freight transported. Increased age of existing transport facilities indicates greater potential for accidents, performance problems, and other threats to human health, property, and environment. The emissions and spills from vessels vary with vessel size, age and ownership.

Desired Outcomes of the Webinar Listening Session

The main purpose of the Webinar is to listen to public concerns about environmental impacts of possible port and waterway modernization. After a brief summary of the study context, we wish to spend most of the webinar time on March 13 listening to participant concerns. Our primary interest is in determining specific as well as generic environmental concerns that we might otherwise overlook. These will be used to develop study findings and conclusions. We do not solicit or expect participants in the Webinar meeting to collectively make recommendations or to establish priority rankings for port and waterway modernization. Participants will have the opportunity to provide additional comments via e-mail for about four weeks following the webinar.