

Oil Spill Impacts to Commercial Shipping in Delaware

Project Overview

The commercial shipping industry relies heavily on traffic lanes passing through Delaware waters to reach busy Mid-Atlantic port areas such as Philadelphia, Wilmington, and Camden. Whether passing through the mouth of Delaware Bay from the Atlantic Ocean or using the Chesapeake and Delaware (C&D) Canal to reach ports at Baltimore, Washington, DC, and Norfolk, Delaware waters support the movement of tankers, container ships, and bulk carriers delivering important products slated for national distribution. Ports in the Delaware Bay received roughly 2,170 inbound commercial vessels in 2018, of which 470 traveled specifically to Delaware ports in Wilmington, New Castle, and southern Delaware.

In the event of an oil spill, commercial vessels could be prevented from entering or exiting the Delaware Bay due to the potential for spilled oil to adhere to vessels, which may result in damage to the vessels and to port facilities where they dock. An oil spill off the Delaware coast would likely divert many vessels from their original course through Delaware Bay and instead travel through the C&D Canal, adding time and cost to their voyage. Vessels deemed too large to traverse the C&D Canal would likely delay their trip by remaining in place and waiting for the oil to clear, all the while incurring additional costs.

To better understand potential oil spill impacts for commercial vessels traveling specifically to Delaware ports, DNREC examined the potential shipping-related costs associated with several hypothetical surface spills occurring off Delaware's coast.

Results for these five spill scenarios provide key insights into the findings of the analysis:

Scenario 1: 200,000-barrel spill in the summer, without mitigation measures

Scenario 2: 200,000-barrel spill in the summer, with mitigation measures

Scenario 3: 126-barrel spill in the summer, without mitigation measures

Scenario 4: 200,000-barrel spill in the winter, without mitigation measures

Scenario 5: 2,240-barrel spill in the summer, without mitigation measures

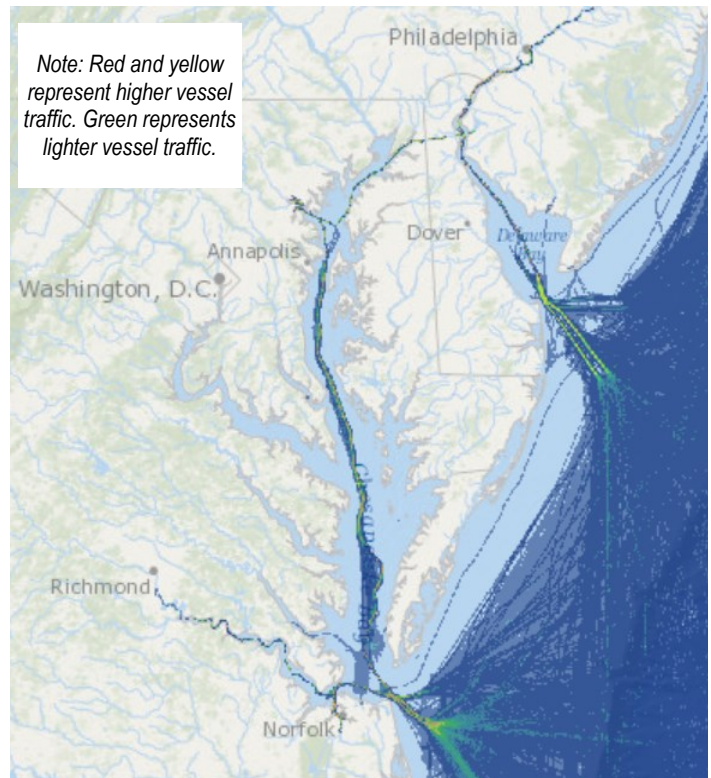


Exhibit 1. Shipping Traffic Near Delaware

Approach for Assessing Oil Spill Impacts

The shipping-related costs of an oil spill off the coast of Delaware depend in large part on how long spilled oil blocks the entrance to Delaware Bay. For each spill identified above, lower and upper bound estimates of blockage duration were specified based on past spill events. These duration estimates directly influence the number of vessels that are expected to be delayed or diverted, as well as the amount of time the delayed vessels remain in place. Two of the above scenarios (3 and 4) are not expected to result in blockage of the Delaware Bay due to low spill volume and favorable currents, respectively.

For vessels diverted from their original course, an average cost per vessel was calculated based on the difference between the original route (via Delaware Bay) and the diverted route (via C&D Canal). The estimated cost differential is primarily a function of fuel, operating, and pilotage costs for each route; the average cost per vessel was then multiplied by the estimated number of vessels diverted. For vessels that remain in place rather than divert to an alternative route, the costs of delay are a function of the blockage duration.

Estimated Costs to Delaware's Commercial Shipping Industry

Exhibit 2 presents the combined estimates of additional fuel, operating, and pilotage costs for both delayed and diverted vessels by spill scenario. For each scenario, additional costs are presented as a range bounded by the estimated closure durations specified for each scenario. Closure duration impacts both the number of vessels affected and the duration of delay for vessels too large to traverse the C&D Canal. Of the spill scenarios defined above, the unmitigated 200,000-barrel summer spill is projected to result in the highest costs, ranging from \$206,000 to \$566,000. This scenario would likely result in the blockage of the Delaware Bay for four to seven days and impact eight to 15 vessels.

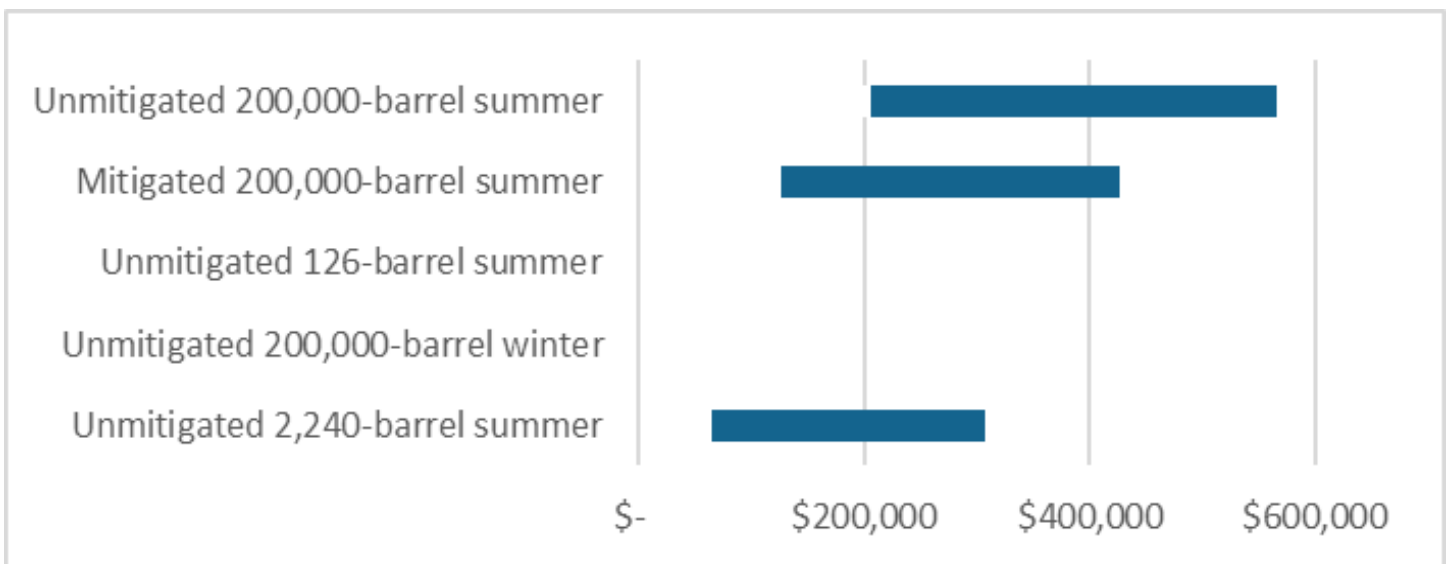
Mitigation efforts during a 200,000-barrel summer spill would be expected to reduce the blockage duration by one day relative to the corresponding unmitigated spill event. This reduction translates to a cost range of roughly \$125,000 to \$426,000, impacting seven to 13 vessels.

Similar to mitigation measures, a reduction in spill size would also reduce estimated costs to the shipping industry. Under the unmitigated 2,240-barrel summer spill event, the blockage of the Delaware Bay would persist for approximately two to five days (two days less than the unmitigated 200,000-barrel summer spill), affecting four to 11 vessels and resulting in increased costs ranging from \$64,000 to \$307,000.

Oil spills limited to 126 barrels are not expected to result in surface oil sheens significant enough to block the entrance to the Delaware Bay. Therefore, no costs are estimated for this scenario. It is possible, however, that some minor costs associated with speed restrictions or vessel cleaning may be incurred to prevent contamination of ports or sensitive areas. Likewise, large 200,000-barrel spill events taking place in the winter season are not expected to prevent passage through the Delaware Bay due to modeled oceanographic and atmospheric conditions directing spilled oil away from the shoreline.

Additional details on DNREC's analysis of spill impacts to Delaware's commercial shipping industry, including results for additional oil spill scenarios, are available in the [full oil spill risk assessment report](#).

Exhibit 2. Oil Spill Costs for Commercial Shipping



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