Great Lakes Deep Draft Navigational Dredging from an Operator’s Perspective

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Miles 1 ton of cargo carried per gallon of fuel\(^1\)

- 59 miles for 1 ton of cargo
- 202 miles for 1 ton of cargo
- 514 miles for 1 ton of cargo
- 607 miles for 1 ton of cargo

Tons of CO\(_2\) produced to move 1,000 tons of cargo 1,000 miles\(^2\)

- 22 tons of CO\(_2\) for 1,000 tons of cargo
- 19 tons of CO\(_2\) for 1,000 tons of cargo
- 55 tons of CO\(_2\) for 1,000 tons of cargo
- 190 tons of CO\(_2\) for 1,000 tons of cargo

1. Source: USDOT Maritime Administration and Minnesota Department of Transportation
2. Assumes US DOE Fuel and Energy Emission Coefficient of 22.38 lbs of CO\(_2\) per gallon (No.1,2,4 Fuel Oils and Diesel) for Great Lakes Carrier
## Impact of Dredging on Per-Trip Carrying Capacity
Major Great Lakes Vessel Classes

<table>
<thead>
<tr>
<th>Major Great Lakes Vessel Classes</th>
<th>Vessel Length (feet)</th>
<th>Per-Trip Carrying Capacity</th>
<th>Capacity Per Inch Of Draft*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,000</td>
<td>69,664</td>
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<tr>
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<td>806</td>
<td>34,720</td>
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<td>767</td>
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<td>501</td>
<td>13,776</td>
<td>71</td>
</tr>
</tbody>
</table>

*Capacity per inch of draft reflects the incremental tonnage carried at normal loaded draft.
Ship Squat in Rock Cut
@ 31'-0" Draft, 0" Trim and +48" Water Gauge

*Water Current in Rock Cut varies with discharge Rate

Typical water speeds are estimated to be between 0.5 mph and 1.5 mph

Vessel Speed Through Water (mph)

Ship Squat (inches)
Lake profile showing wind set-up