Impacts of New York City’s Waterways
Background

- NYCEDC initiated a study in Oct 2015 to better understand the value of New York City’s Borough waterways and identify opportunities to grow waterborne commerce (via barge)

- The study included significant outreach to the maritime community:
  - Tug and barge businesses (operators)
  - Water-dependent businesses (shippers/receivers)
  - NYS Dept of Environmental Conservation (regulatory)
  - US Army Corps of Engineers (regulatory)

- As outlined in Mayor deBlasio’s OneNYC, freight transportation by water is encouraged where possible, with ambitious growth goals

- Water freight provides significant public benefits by
  - Limiting truck use, which
    - Improves air quality, lowers carbon footprint (Mayor’s 80% reduction by 2050 aka 80X50)
    - Reduces roadway congestion
  - Providing good-paying, middle class jobs
NYC’s Borough Waterways

12 borough waterways have maritime industrial businesses across New York City.

These waterways are connected to the maritime economy by approximately 6 primary channels.
Yesterday: A Brief History of NYC’s Borough Waterways

- In the early 1800’s, many of NYC’s secondary waterways were once tidal estuaries and creeks that were later excavated or filled for commercial use.

- They became home to NYC’s industrial base (e.g. smelting plants, tanneries, shipyards, coal yards, paint and ink factories)

- The maritime infrastructure (canals with bulkheads) created in the 1800s and 1900s continues to support NYC’s overall economy.
Today: Snapshot of Water Freight in NYC’s Borough Waterways

- **4.4M tons** of cargo were handled in 2014\(^1\)
- These volumes equate to 4% of all cargo handled in the Port of NY and NJ
- These secondary waterways together would rank as the 81\(^{st}\) largest port in the US, larger than Bridgeport, CT (#89)
- There are approximately **35 active businesses** using the waterways
- Approximately **700 jobs**\(^2\) are supported, with average salaries between **$90K to $120K/yr**
- Inland water freight contributed to **economic output of $300M** for 2014

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1. USACE 2014 Waterborne Commerce Data
2. Inland water freight transportation industry and associated support services (direct, indirect, induced)

Overall, marine support services employs **7,100 direct jobs** (including main channels) and contributes to **$2B** in economic impact\(^3\)
Environmental Benefits

- Each year, about 440,000 truck trips are eliminated\(^1\), which is equivalent to about 30 days\(^2\) worth of traffic on the George Washington Bridge, world’s busiest bridge.

- Up to 6.6 million truck miles travelled are saved\(^3\)
  - = $2.65M saved in infrastructure (roadway maintenance) costs\(^4\)

- 11,220 tons of CO\(_2\) are saved per year\(^5\)

- Inland barging emits 90% and 95% less CO and NO than trucks per mile\(^6\)

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1. Based on 20 tons per truck (220,000 one way trips)
2. Based on 14,000 trucks cross eastbound GWB
3. Based on 15 mile truck distance
4. 6.6Mmiles*$.40/miles
5. Source: EDF Green Freight Handbook
6. (6,600,000X1,700g/mile)/1,000,000g/metric ton)
7. Source: Port of Victoria
8. Source: Port of Pittsburgh

Overall, marine support services eliminates 3.1M trucks from NYC roads each year\(^8\)
Major Commodities by Weight

#1 Aggregate
- Fluctuates based on business cycle
- Customers include building construction companies, NYCDOT (salt)
- Ex: Crushed stone, sand, gravel

#2 Fuel
- Due to increase in fuel efficiency, fuel demand has decreased
- Customers include distributors of home heating oil
- Ex: Gasoline, alcohol

#3 Recyclables & Scrap Metal
- An export industry that continues to transform as recycling increases
- Customers include Sims Municipal Recycling
- Ex: Glass, paper, plastic, metal

Volumes

Data source: USACE, 2014
Other = Timber
Commodities: Aggregates

Source/Origin
• Quarries north of NYC, which are typically adjacent to the Hudson e.g. Clinton Point, Haverstraw
• Tilcon is the primary supplier of aggregate to NYC

Industry Trends
• Tugs move multiple barges to mooring buoys in NY Harbor
• Individual barges then distributed from mooring buoys to aggregate plants in NYC
• Increased recycling is impacting the volumes of virgin material

Major Locations
• Flushing Bay, Jamaica Bay, Gowanus

Companies Interviewed
• Tilcon, Peckham, RCA Asphalt, NYCDOT, Inwood Material Terminal, Seville Ready Mix, Empire Transit Mix
• NYCDOT terminal in Flushing is being renovated to receive waterborne aggregates

Aggregates Volume for Secondary Channels

Data source: USACE

Photo Credit: Center for Urban Land Use Interpretation
Commodities: Fuel

Source/Origin
- Fuel originates from terminals in New Jersey and Staten Island via pipeline or rail

Industry Trends
- Fuel users transitioning to other fuels (natural gas, renewables)
- Fuel efficiency increasing (boilers and engines)
- Barges continue to supplement pipeline transportation for redundancy (e.g. JFK airport via Buckeye Pipeline)
- Oil companies selling facilities (e.g. BP selling property on Newtown Creek)
- Some facilities owned by regional/national companies: Motiva, Sprague
- Other facilities owned by local companies: Bayside Fuel, Schildwachter, Skaggs

Major Locations
- Newtown Creek, Gowanus, Jamaica Bay

Companies Interviewed
- Bayside Fuel, Sprague, Schildwachter, Skaggs

Fuel Volume for Secondary Channels

- Data source: USACE

Tug and fuel barge on Newtown Creek
Photo Credit: Mitch Waxman
Commodities: Scrap Metal & Waste

Source/Origin
• Scrap metal and waste collected in NYC for export

Industry Trends
• Transition to (residential) recycling
• Increased use of barges and rail
• DSNY to have four MTS by 2019: Flushing Bay (QN), Hamilton Ave (BK), E 91st Street (MN), Southwest Brooklyn
  • Once complete, additional 1.3M tons expected on secondary waterways
• Visy Paper on Staten Island processes City paper, move toward single stream possible
• Sims under contract to DSNY for recyclables

Major locations
• Newton Creek, Bronx River

Companies Interviewed
• Sims Municipal Recycling, Inwood Material Terminal

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2. City Limits. DSNY.
Why do businesses choose to use water transportation?

- Cost effective compared to trucking for most bulk commodities that are heavy and inexpensive (price per unit)

- Businesses can locate closer to customers/end users in urban areas (e.g. Sprague Energy) and reduce transportation costs
  - Savings of $10.67/ton when shipped via barge compared to trucking¹
  - That saves approximately $44,000,000 for NYC businesses

- Best for transporting goods that are not time sensitive (construction material, aggregates)
  - Not subject to roadway congestion

¹ Source: Port of Victoria, Texas
**Water Freight Tonnages 2014, by location**

- **Newtown Creek is #1**
  - borough waterway in NYC by tonnage, **Gowanus Creek and Channel #2**
  - Both designated as Superfund Sites in 2010, now managed by US EPA

- Once a waterway transports over 1M tons/year, it is considered “high use” by the Army Corps, however this in an informal guideline, among other criteria

- Hitting 1M tons/yr does not ensure waterway is guaranteed to be dredged, but increases likelihood

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Gowanus Creek Channel and Canal volumes combined, though USACE classifies as two different waterways

Data source: USACE

Other = timber
Newtown Creek – 8 businesses using the waterway

Channel Characteristics
- Superfund site
- Authorized depth: 12’ to 23’
- Current depth: 3’ to 16’
- Last dredged: 1951, 80,000 CY

Maritime Industrial Users
- 9 active users
  - 4 scrap: Sims Municipal Recycling, TNT, Charles King, Allocco Recycling
  - 4 fuel: Motiva, Metro Fuel, Amaco / BP, Bayside
  - 1 public facility: NYCDEP
- 3 possible users
  - 2 aggregates: Empire Transit Mix, Nycon Supply Corp (concrete)
  - 1 fuel: Getty

Maritime Activity
- Tons/year: 1M+
- Vessel calls/year: 1,001
Eastchester Creek – 3 businesses using the waterway, 1 of which is in NYC

Channel Characteristics
• Authorized depth: 10’
• Current depth: 2’ to 7’
• Last dredged: 1989, 2010, 25,000 CY for $3M ($120/CY)

Maritime Industrial Activity
• 3 Active Users
  • 1 scrap: Pascap
  • 1 fuel: Sprague Oil
  • 1 aggregate: RCA Asphalt

• 4 Possible Users
  • 1 fuel: Getty
  • 3 aggregate: Canal Asphalt, Peckham Industries, TBC

Maritime Activity
• Tons/year: 360,000
• Vessel calls/year: 332
Westchester Creek & Bronx River - 3 businesses using the waterways

Channel Characteristics
- WC: Authorized depth: 12'
- WC: Current depth: 12'
- WC: Last dredged: 1991104,000 CY for $1,092,661 ($10.45/CY)
- BR: Authorized depth: 10'
- BR: Current depth: 10'
- BR: Last dredged: 1991, 64,158 CY for $770,629 ($12.01CY)

Maritime Industrial Users
- 3 Active Users
  - 1 scrap: Sims Metal Management
  - 1 fuel: Schildwachter Oil
  - 1 aggregate: Casa Ready Mix
- 1 possible user
  - 1 waste/scrap: Castle Hill Recycling

Maritime Activity
- WC Tonnage/year: 49,000
- WC Vessel calls/year: 44
- BR Tonnage/year: 293,000
- BR Vessel calls/year: 510
Waterway infrastructure

Physical components of borough waterways that require maintaining

- **Federal Channel**
  - Navigation channel that receives federal authorization for US Army Corps of Engineers to construct and maintain (usually via dredging)

- **Berth**
  - Where barges moor to load/unload
  - Requires sufficient water depth to place a barge adjacent to a bulkhead
  - Responsibility for dredging rests with berth owner/user

- **Connector**
  - Links berth with channel
  - Responsibility for dredging rests with berth owner/user

- **Bulkhead**
  - Wood or steel retaining wall
  - Needs to be maintained
  - Supports equipment to load/unload barges
Dredging & Downward Spiral of Waterborne Commerce

1. Due to regulatory or financial constraints, many maritime-dependent businesses do not dredge berth or connector.

2. Therefore, overall tonnage decreases along a particular waterway.

3. Once tonnage falls below a critical threshold (1M tons/yr), Army Corps less inclined to dredge federal channels.

4. If the Army Corps does not dredge federal channel, fewer business are unable to use channels for commerce.
Why does this matter?

With fully operable waterways…

**Truck traffic decreases**
- An estimated 60,000 to 90,000 truck trips could be eliminated if potential sites are dredged
  - Environmental savings of 11K tons CO2/yr
  - Infrastructure savings of $2M+

**Private sector businesses supported**
- 35 businesses actively receiving product supported

**City priorities are aligned**
- **80 X 50** (emissions reductions)
- **Vision Zero** (fewer trucks = fewer fatalities)
- **OneNYC** (increase in water freight)
- **SMIA** (Significant Maritime Industrial Areas) and **PMAZ** (Priority Marine Activity Zones)

**Resiliency and redundancy promoted**
- **RRAP** (Regional Resiliency Assessment Program)