

York Harbor & River Study

Town of York, Maine

August 7, 2019

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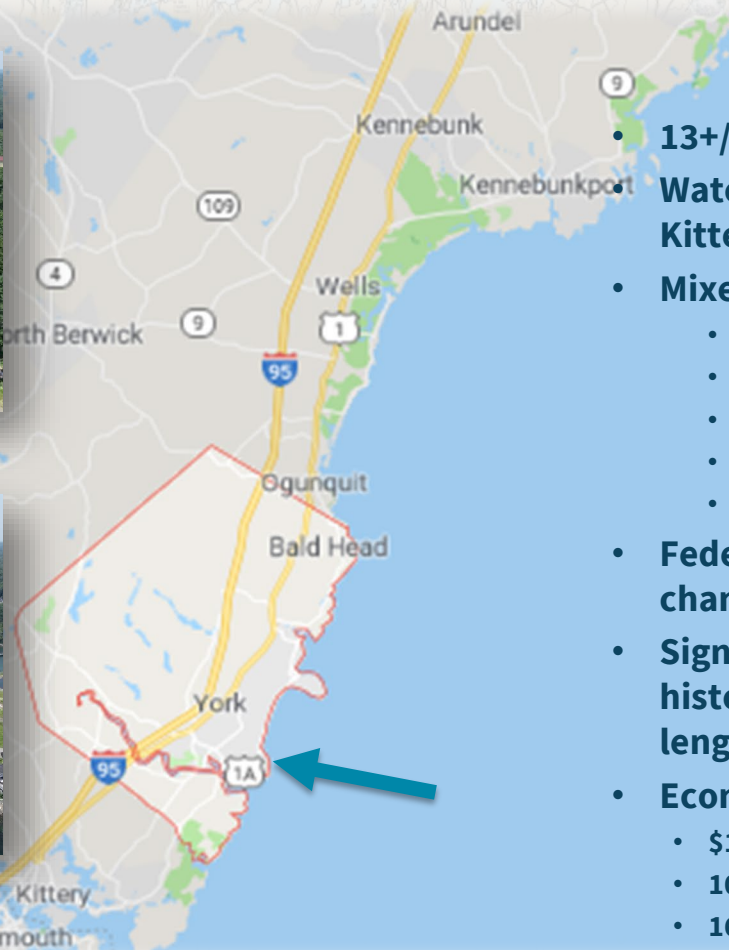


Outline

1. Background
2. Project Focus & Approach
3. York River Inventory & Characterization
4. Boat Demographics
5. Capacity Analysis
6. Map Review and Feedback



York River



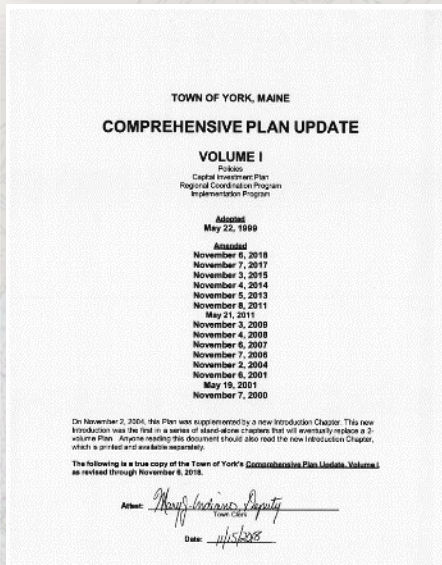
- **13+/- mile tidal River**
- **Watershed includes areas of York, Kittery, Eliot, and South Berwick**
- **Mixed use waterway:**
 - Commercial and Recreational Fishing
 - Waterborne Transportation
 - Water-based recreation
 - Marine related businesses
 - and other water-dependent uses
- **Federally Maintained anchorages and channel in York Harbor**
- **Significant environmental, cultural, historic, and scenic resources along length**
- **Economic significance¹:**
 - \$13,700,000 in estimated economic activity
 - 100 jobs dependent on harbor being navigable
 - 160 plus jobs indirectly dependent



¹Environmental Assessment, York Harbor, Maine. US Army Corps of Engineers, November 2016.

Background

- **Town of York Comprehensive Plan**
Updated in 2018



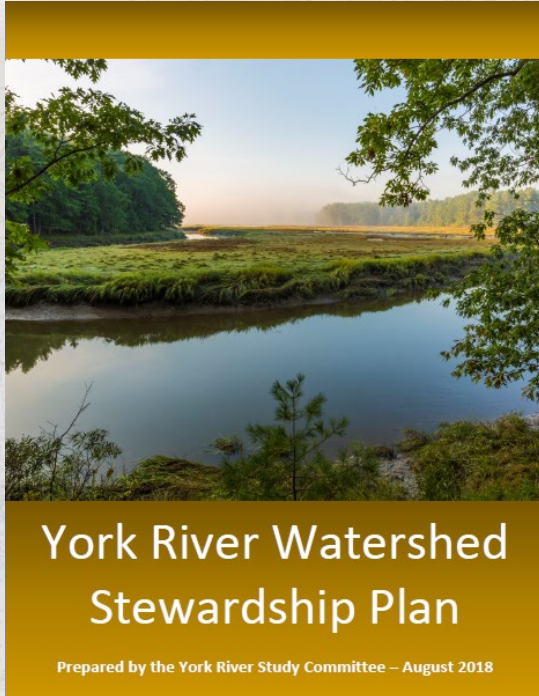
- **Town Goal 7.1:** Manage and maintain existing harbors to provide the greatest possible diversity of use.
- **Town Goal 7.2:** The Town should encourage public access to its coastal resources.
- **Town Goal 7.3:** Provide Opportunities for the existing commercial fishing industry to flourish in York.



Background

- **York River Study**

- Comprehensive study with multiple focused sub-studies:
 - Archeological/Cultural/Historical Resources
 - Natural Resources
 - Fish Species and Habitat
 - Buildout Scenarios
 - Public and Stakeholder Input
- Watershed Stewardship Plan published Fall 2018 and adopted by watershed communities
- Work of York River Study Committee Ongoing
- Legislation put forth to Designate York River and Tributaries as a **Wild & Scenic River Segments**



Focus of this Study

- **Capacity of York Harbor and River**
 - Characterize existing conditions and uses
 - Identify factors that influence capacity
 - Assess current uses and characteristics
 - Identify areas of conflict/concern/opportunity
 - Develop recommendations



Components of Waterway Capacity

- **Spatial Capacity**

- Watersheet: Navigation Areas, Moorings/Berths, Channels

- **Facility Capacity**

- At Shore and Upland: Parking, Access, Services

- **Ecological Capacity**

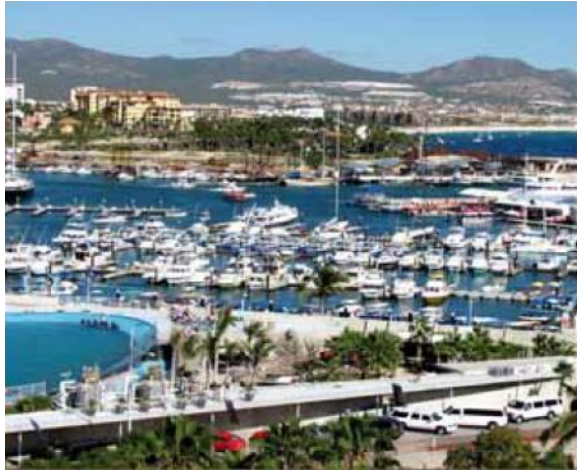
- Ability of waterway to support uses without detrimental effects on the environment, ecology, fisheries, wildlife

- **Social Capacity**

- Conflicts between user groups, perceptions of overuse/crowding, impacts to traditional uses or user's desired experience



Waterway Classes



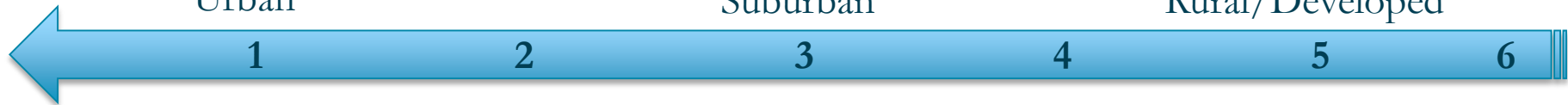
Urban



Suburban



Rural/Developed



Rural/Natural







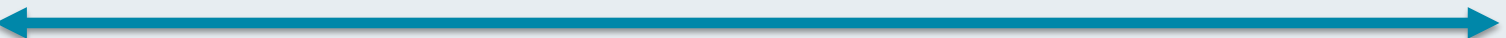
Semi-Primitive



Primitive



Relationship of Waterway Classes to Capacity

											
	Urban		Suburban		Rural/ Developed		Rural/ Natural		Semi- Primitive		Primitive
Spatial	More boats/acre						Fewer boats/acre				
											
	More shoreline development						Less shoreline development				
Facility	More established						More natural				
											
	Marinas, docks						Primitive access				
Ecological	Less Sensitive						More Sensitive				
											
	Less frequent or lower value habitats						More frequent or higher value habitats				
Social	Greater user presence						Less user presence				
											
	Closer to people/businesses Congestion & User Conflicts						More Remote/Peaceful/Tranquil Noise & Visual Impacts				

York Harbor Drone Video

Compilation of drone footage captured by
GEI Consultants on July 5, 2019.

<https://youtu.be/QOggacC8UIo>

Harbor Inventory

Overview

Upstream Series B

Upstream Series A

Map Areas

- Downstream
- Upstream Series A
- Upstream Series B

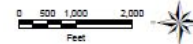
Map Series

- Marine Uses & Infrastructure
- Land Use & Regulatory
- Environmental

Downstream

LEGEND:

- Mooring: + Bow-Stern, * Float, • Single
- Piers/Docks: * Commercial, * Private, * Public
- Boat_Launches: ■
- Detailed study area boundary: [dashed line]
- Town boundary: [solid line]



York Harbor and
River Study

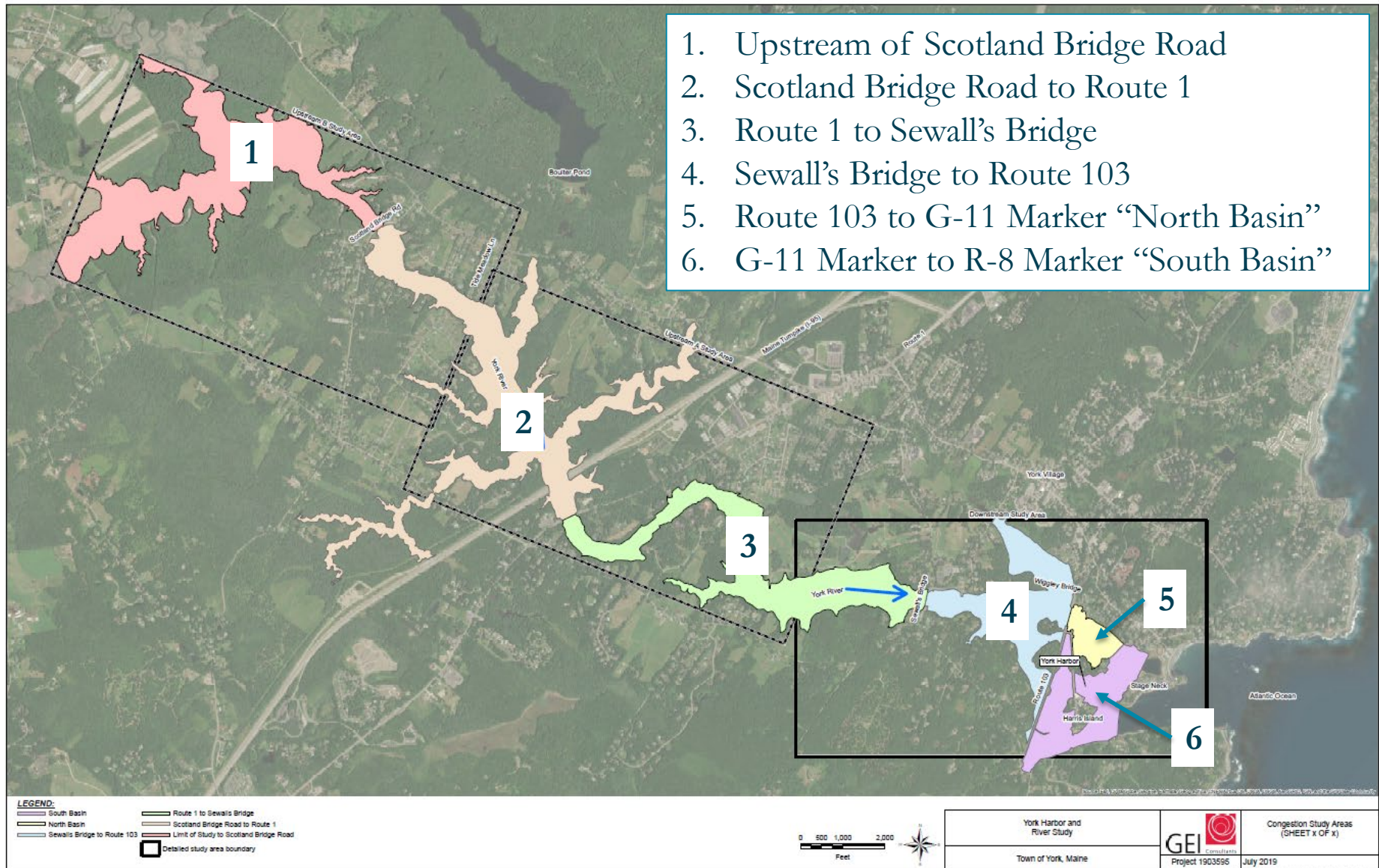
Town of York, Maine



OVERVIEW
MAP
(SHEET 1 OF 10)
July 2019

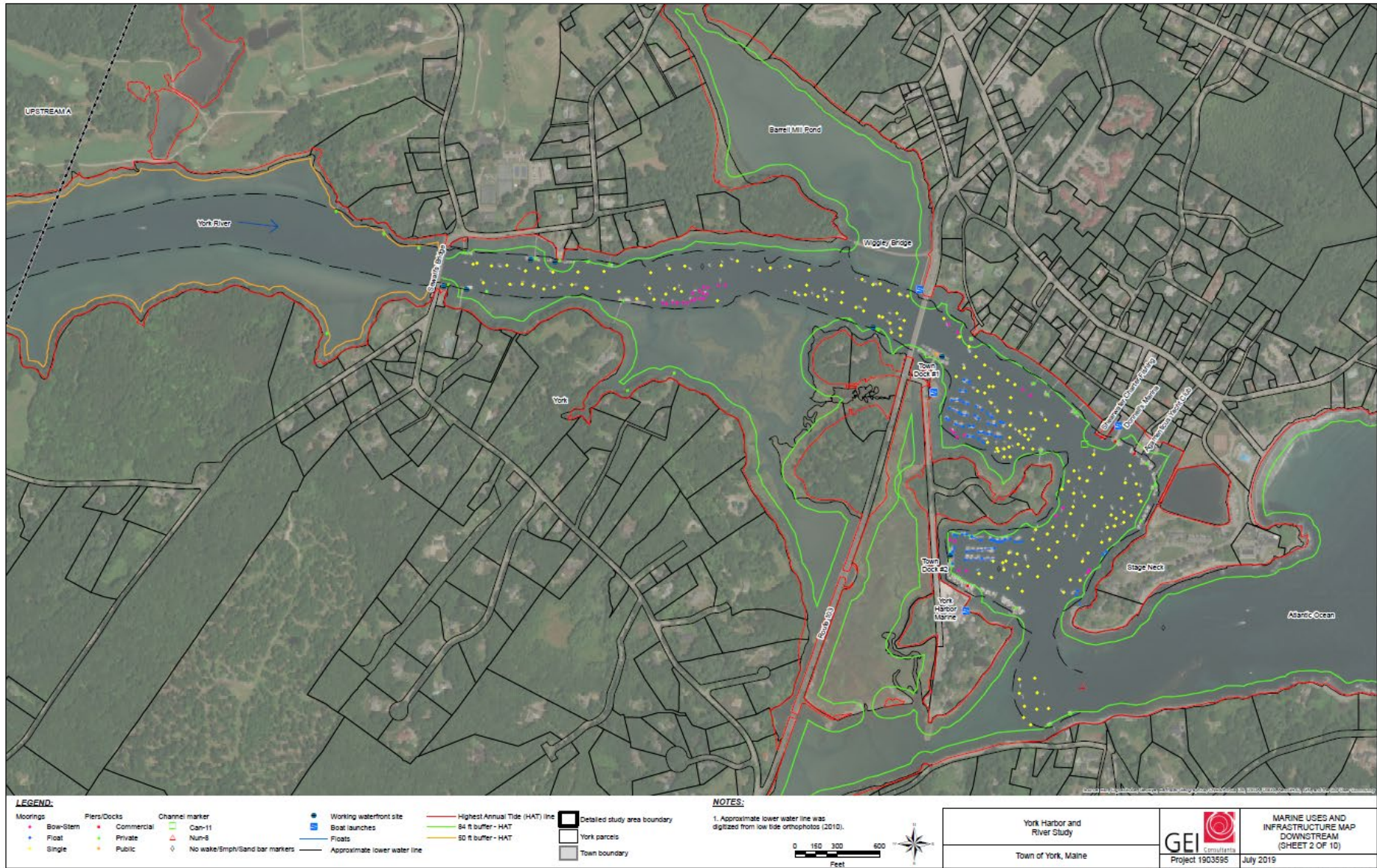
Harbor Inventory

Detailed Study Areas



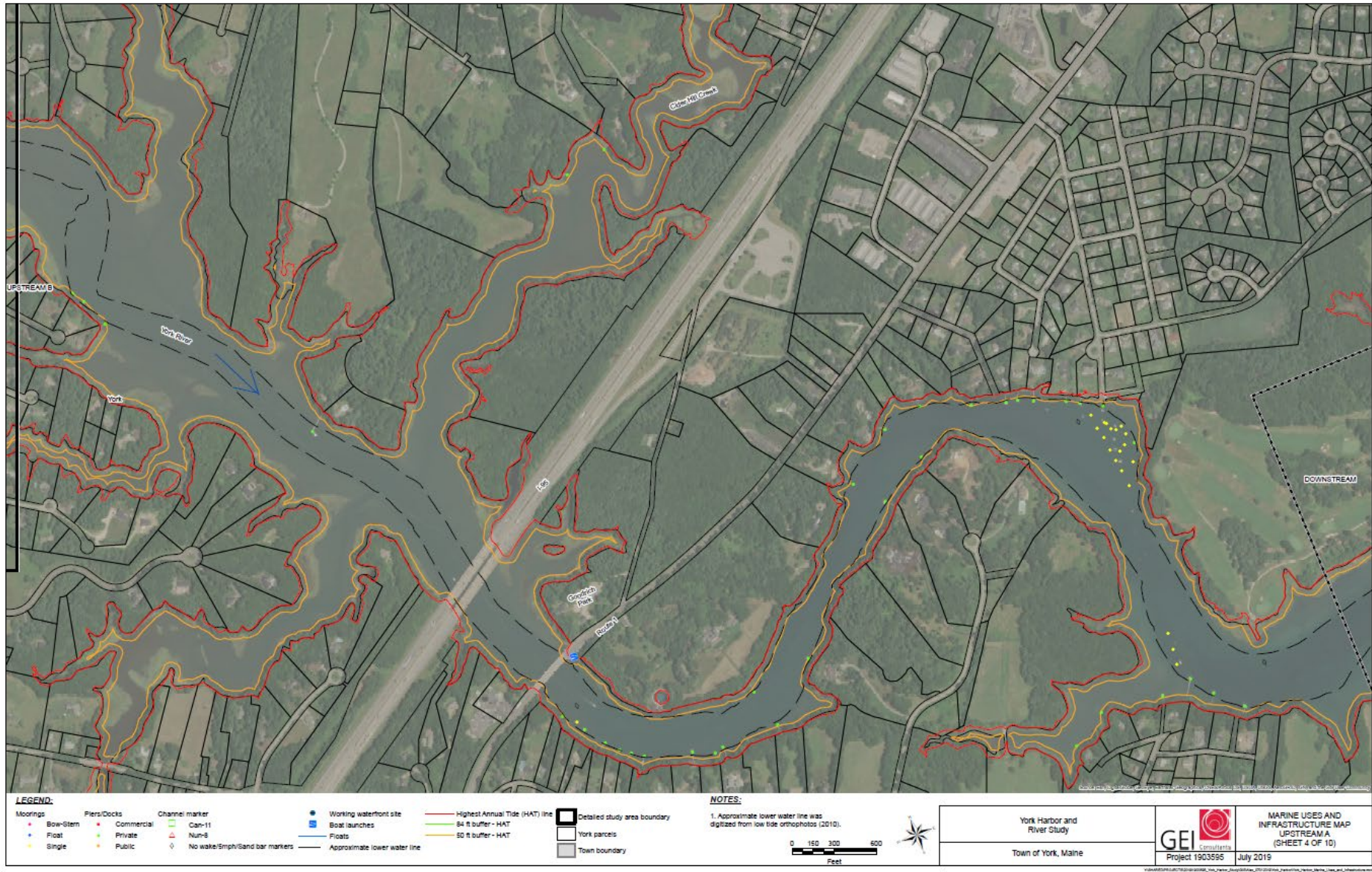
Downstream

Marine Uses & Infrastructure



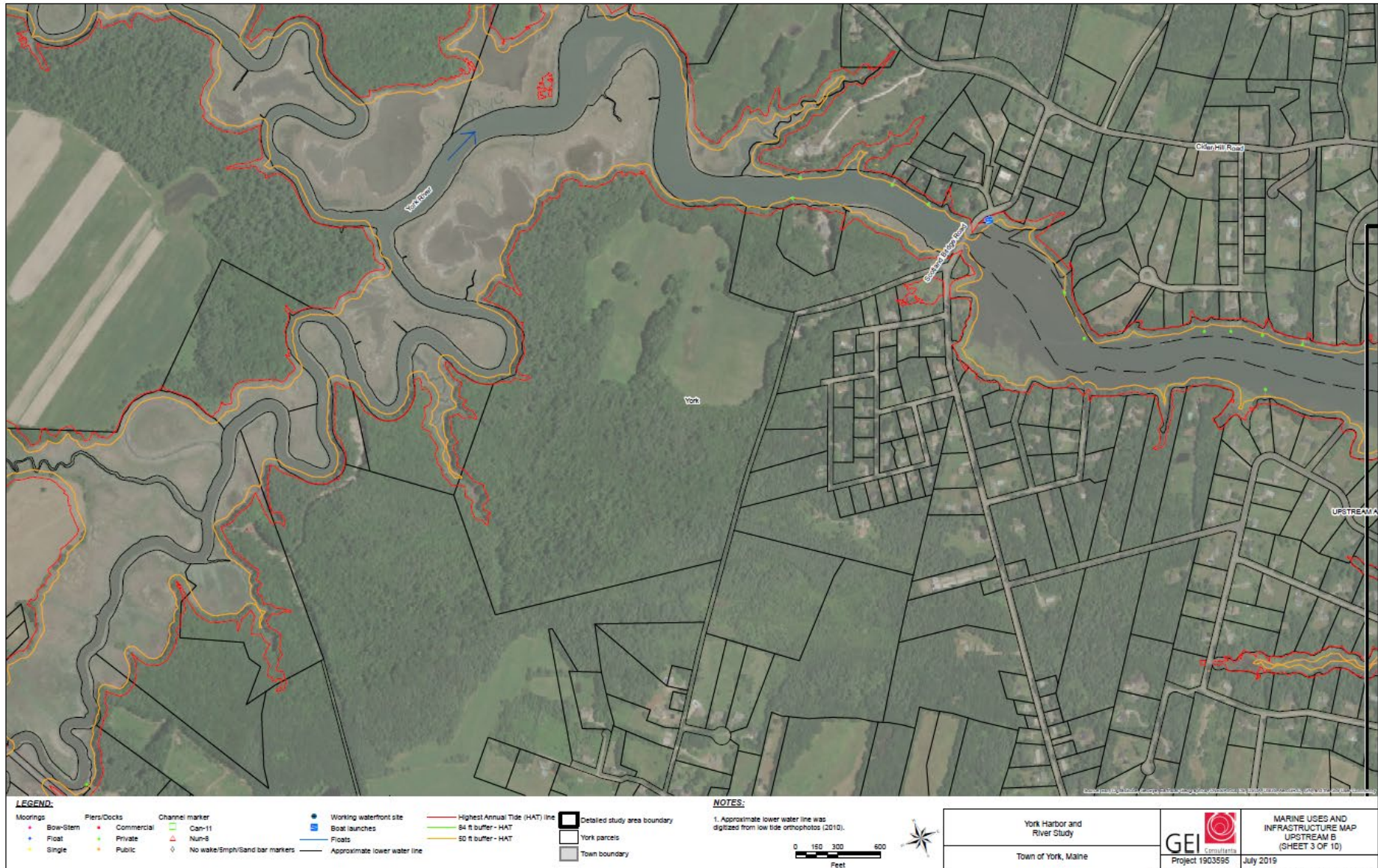
Upstream Series A

Marine Uses & Infrastructure



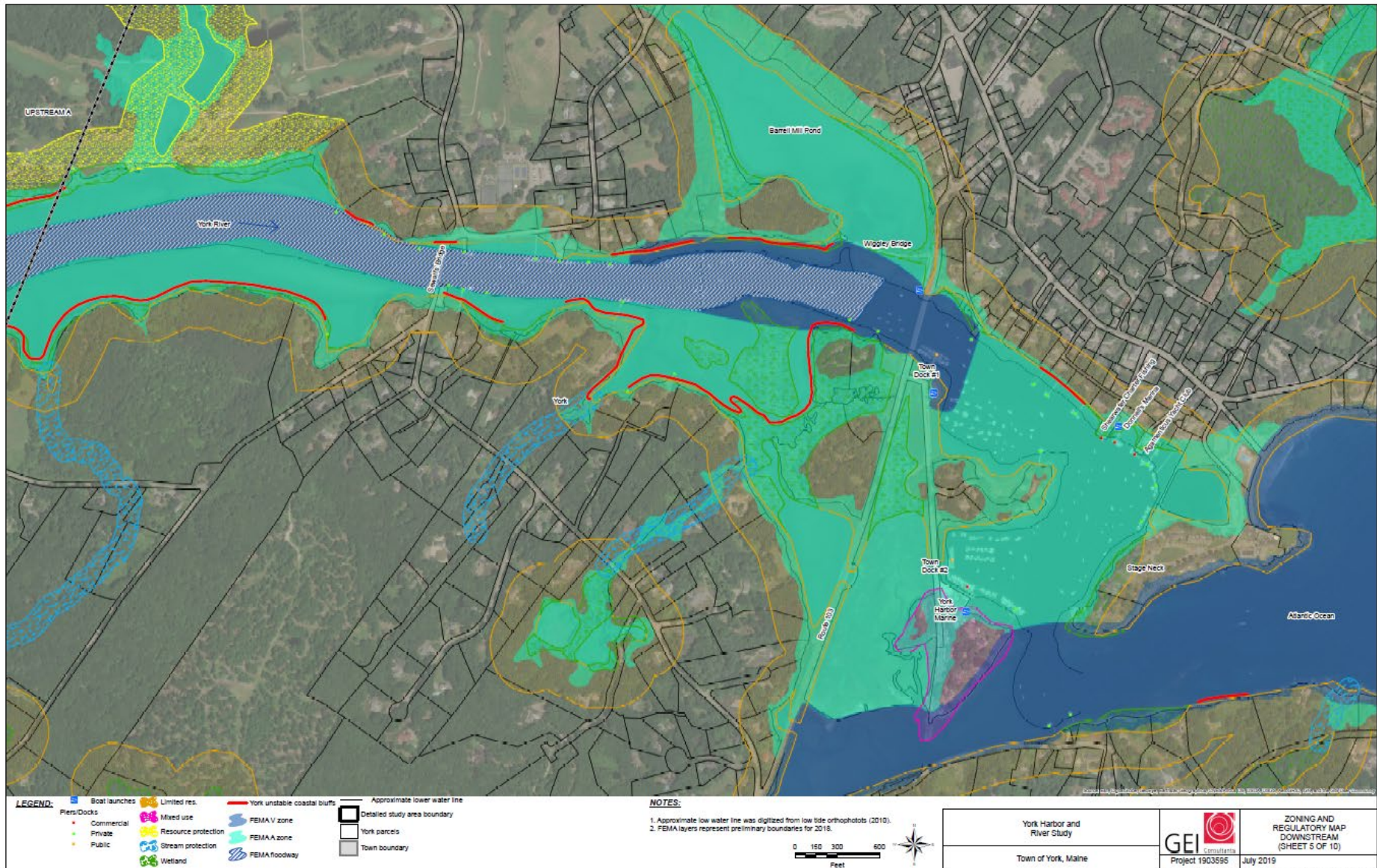
Upstream Series B

Marine Uses & Infrastructure



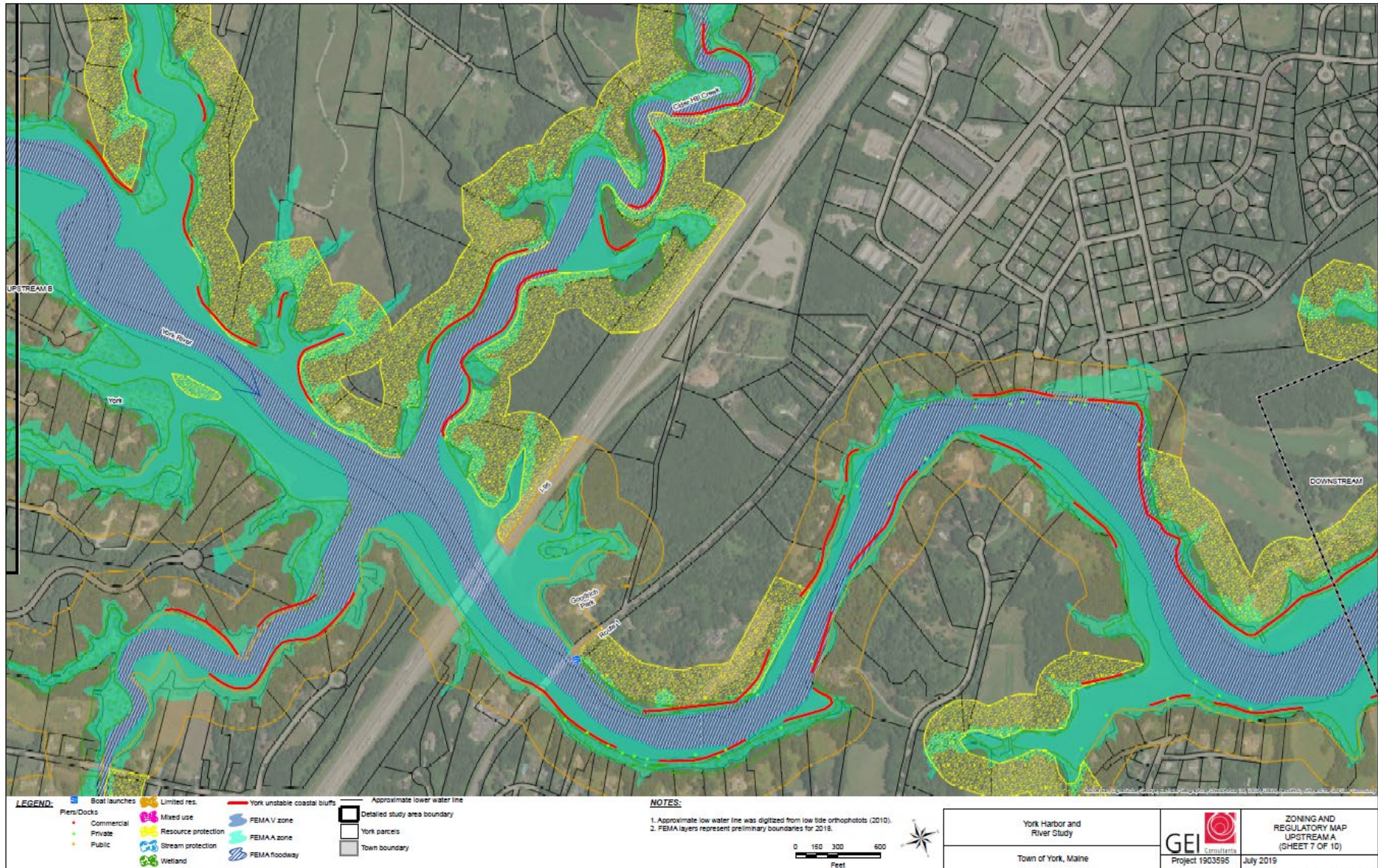
Downstream

Land Use & Regulatory



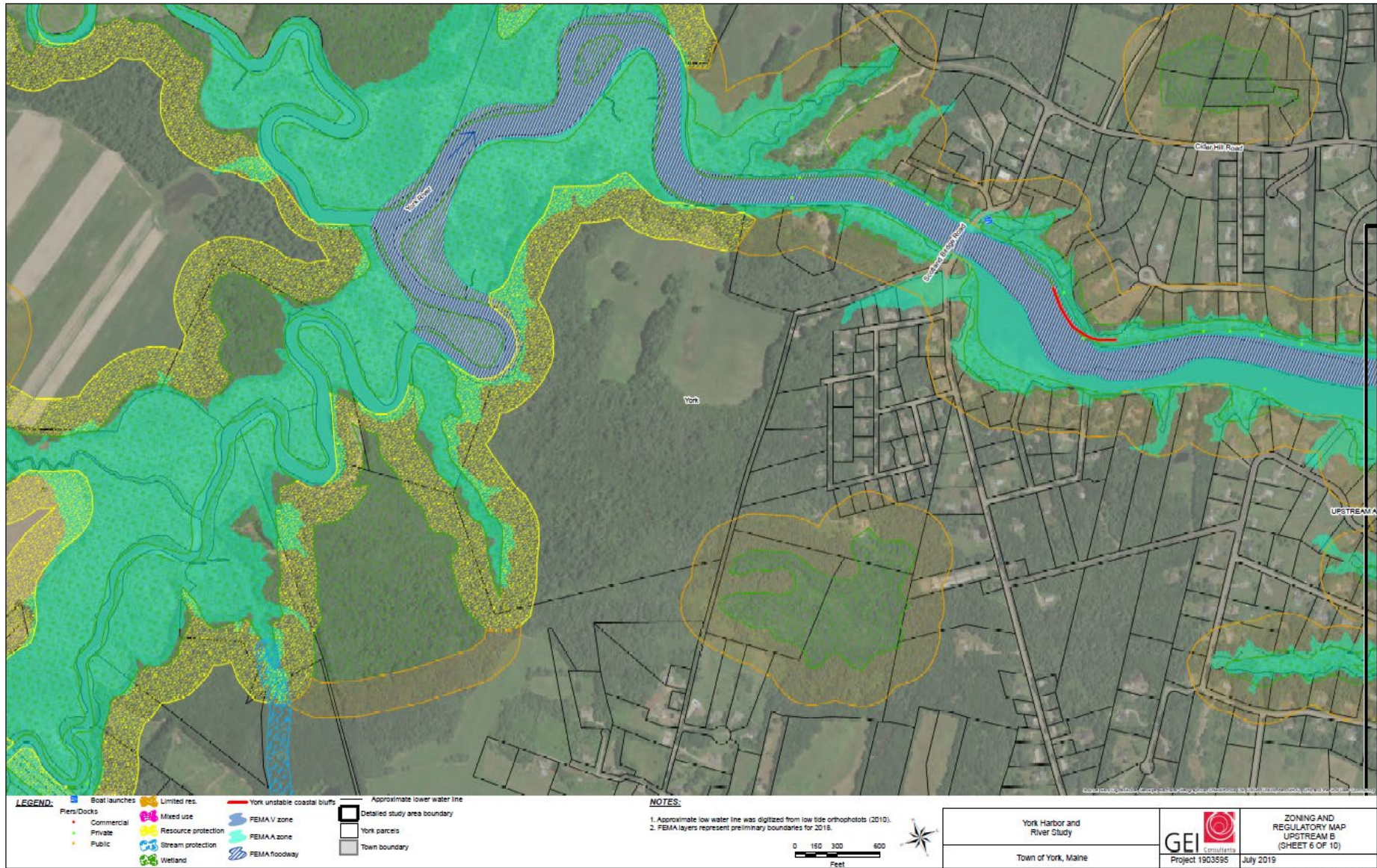
Upstream Series A

Land Use & Regulatory



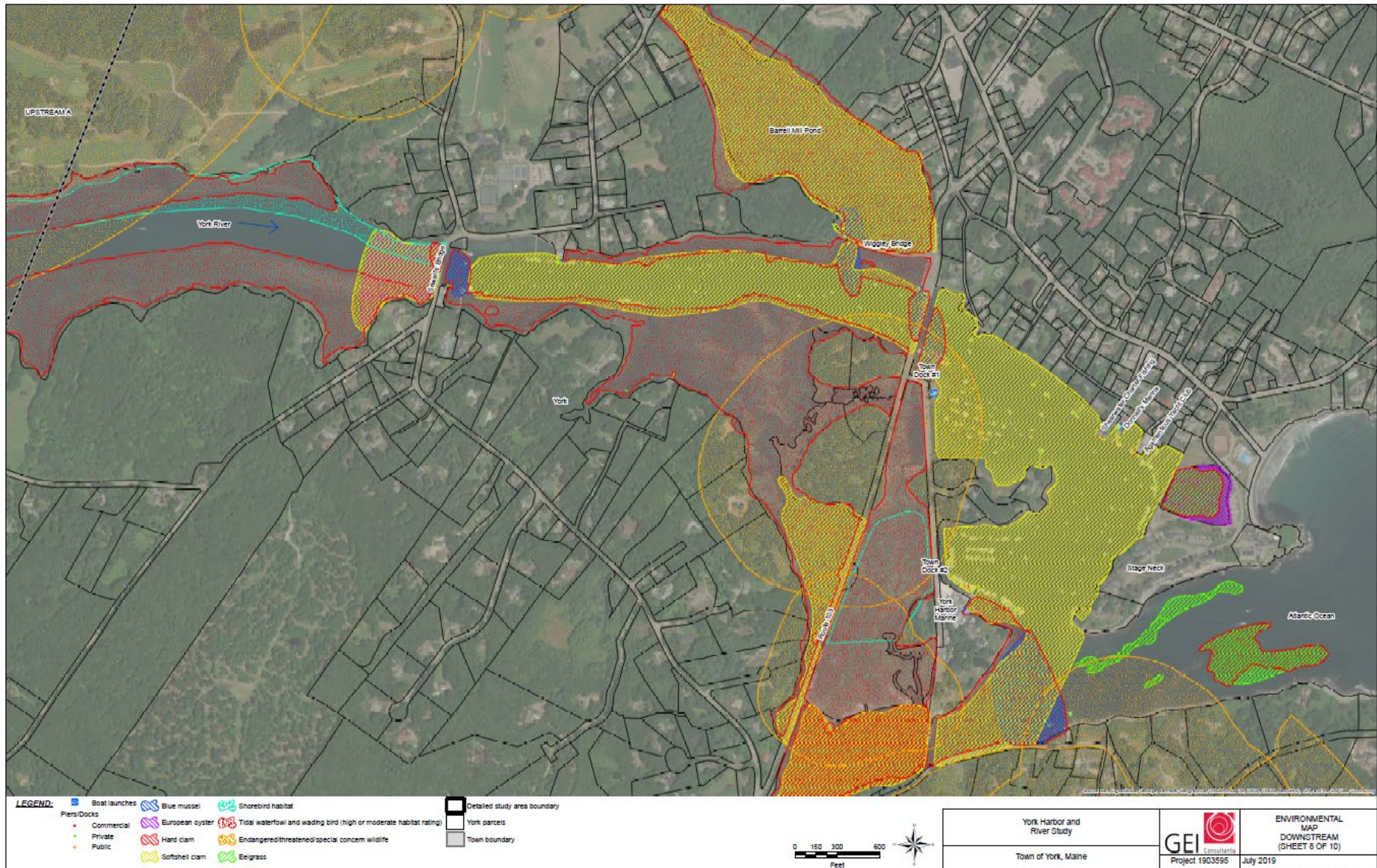
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Land Use & Regulatory



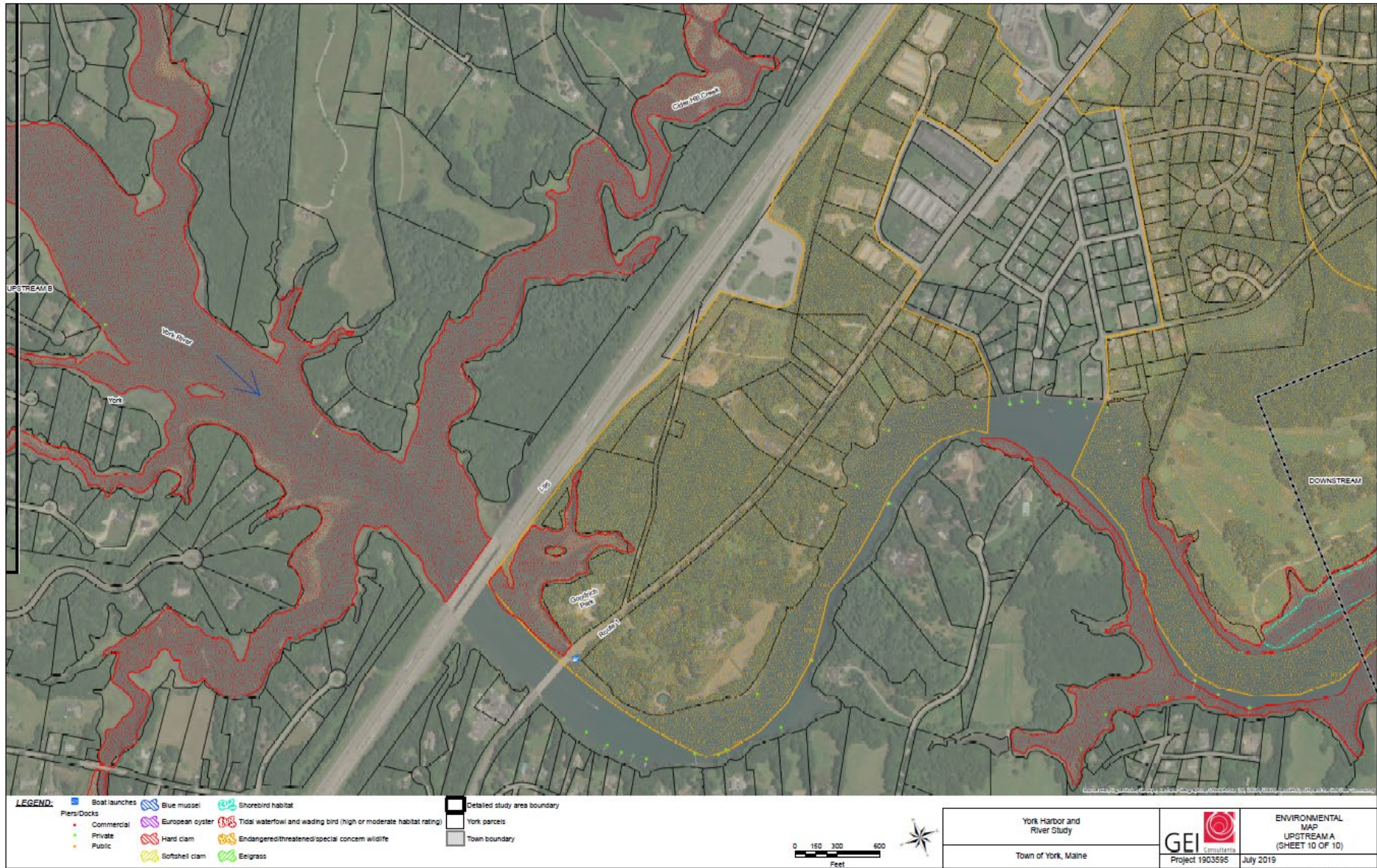
Downstream

Environmental



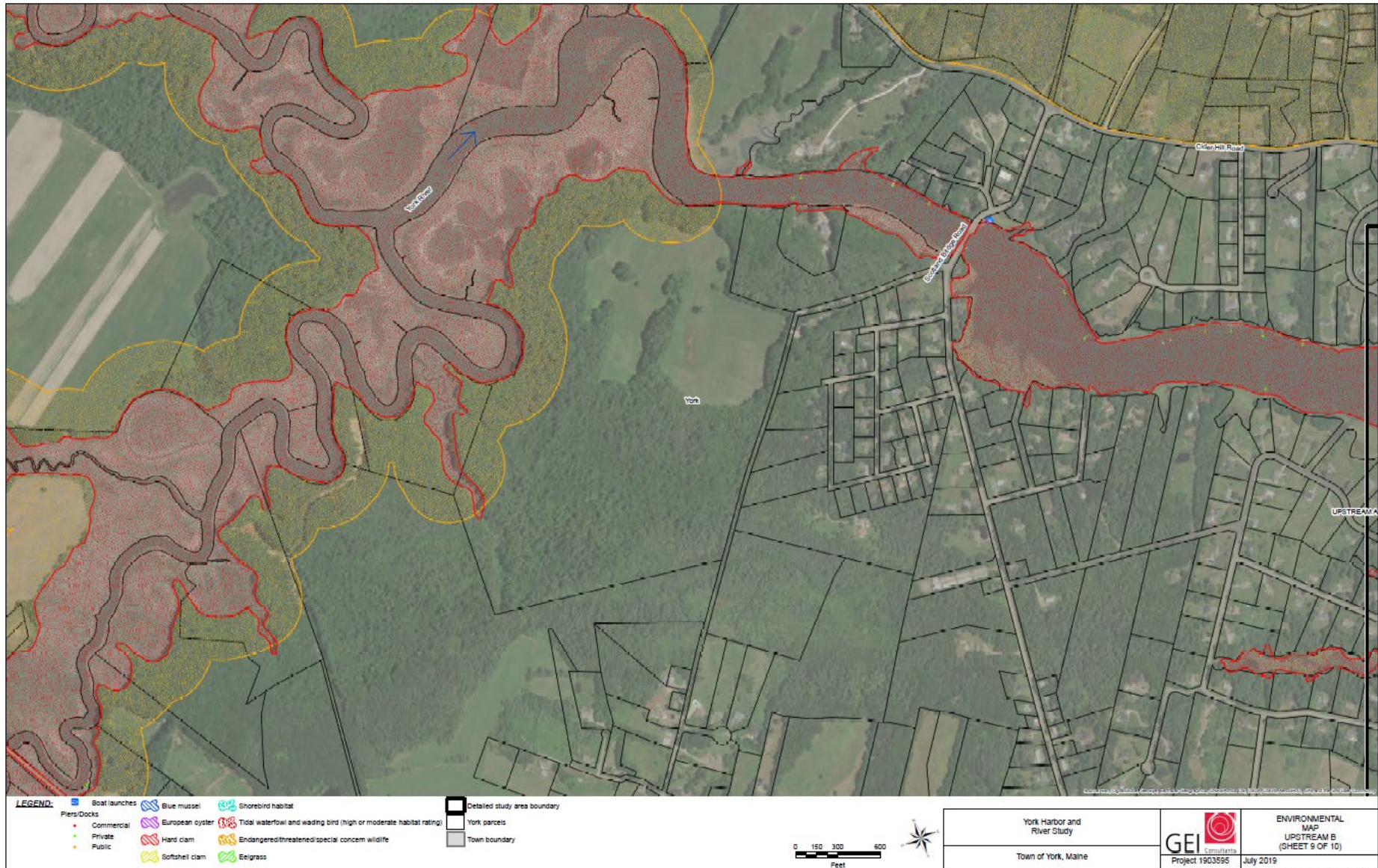
Upstream Series A

Environmental



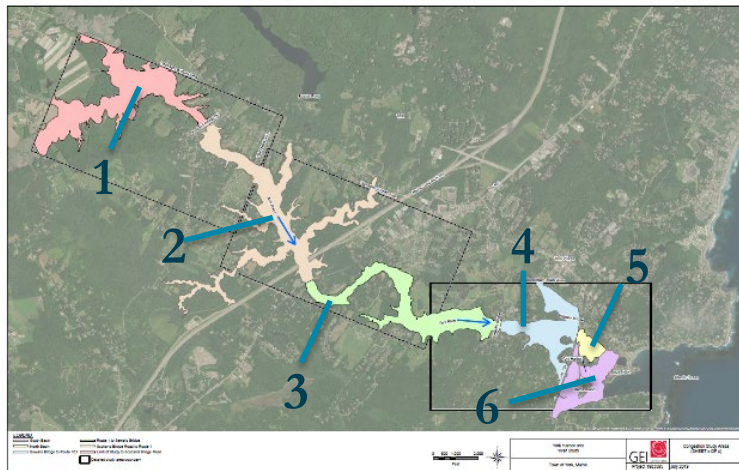
Upstream Series B

Environmental



Watersheet Characteristics

Area	No.	Description	High Water Area ¹ (acre)	Low Water Area ² (acre)	% Intertidal	Length Along Thread ³ (mi)
Upstream	1	Limit of Study to Scotland Bridge Road	245	38.2	84%	4.0
	2	Scotland Bridge Road to Route 1	289	44.2	85%	1.7
	3	Route 1 to Sewall's Bridge	174	82.7	52%	2.1
	Total		707	165	77%	7.8
Downstream	4	Sewall's Bridge to Route 103	120	25.4	79%	0.65
	5	North Basin: Route 103 to "G-11"	24.1	16.0	34%	0.27
	6	South Basin: "G-11" to "R-9"	87.5	29.3	67%	0.37
	Total		231	71	69%	1.3
Total			938	236	75%	9.1

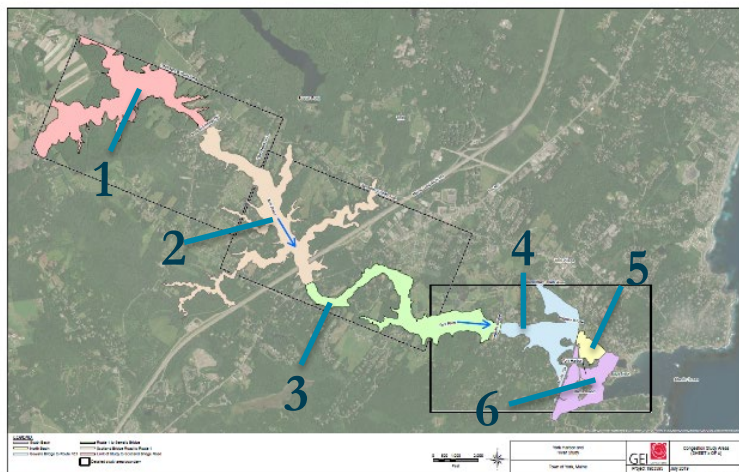


Notes:

1. Based on Highest Annual Tide line as published by MEGIS
2. Low water line digitized from low-tide aerial imagery
3. Measured along approximate centerline of low-water channel of York River. Tributaries are not included.

Waterfront Facilities

			Boat Launches (trailer or hand-carry)	Working Waterfront Sites	Docks & Piers ¹	Dock Density ² (docks / mile)
Area	No.	Description				
Upstream	1	Limit of Study to Scotland Bridge Road	0	0	5	1.3
	2	Scotland Bridge Road to Route 1	1	0	13	7.6
	3	Route 1 to Sewall's Bridge	1	0	35	17
	Total		2	0	53	6.8
Downstream	4	Sewall's Bridge to Route 103	1	5	13	20
	5	North Basin: Route 103 to "G-11"	1	1	6	22
	6	South Basin: "G-11" to "R-9"	2	1	11	30
	Total		4	7	30	23
Total			6	7	83	9.1

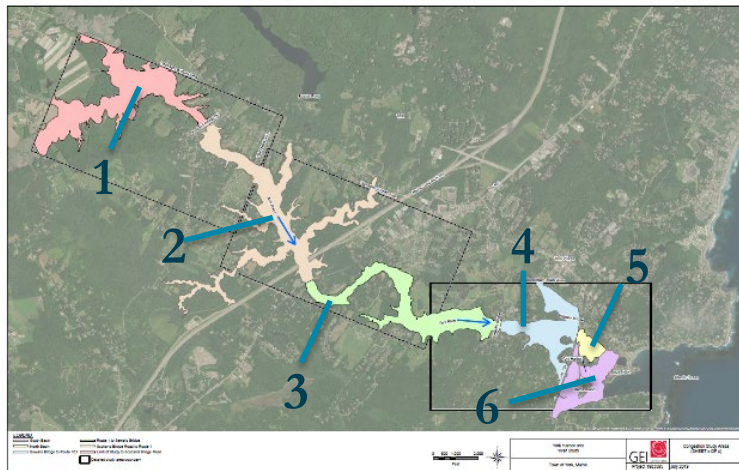


Notes:

1. Dock locations digitized from aerial imagery
2. Calculated as number of docks / thread length of segment

Local Boat Usage

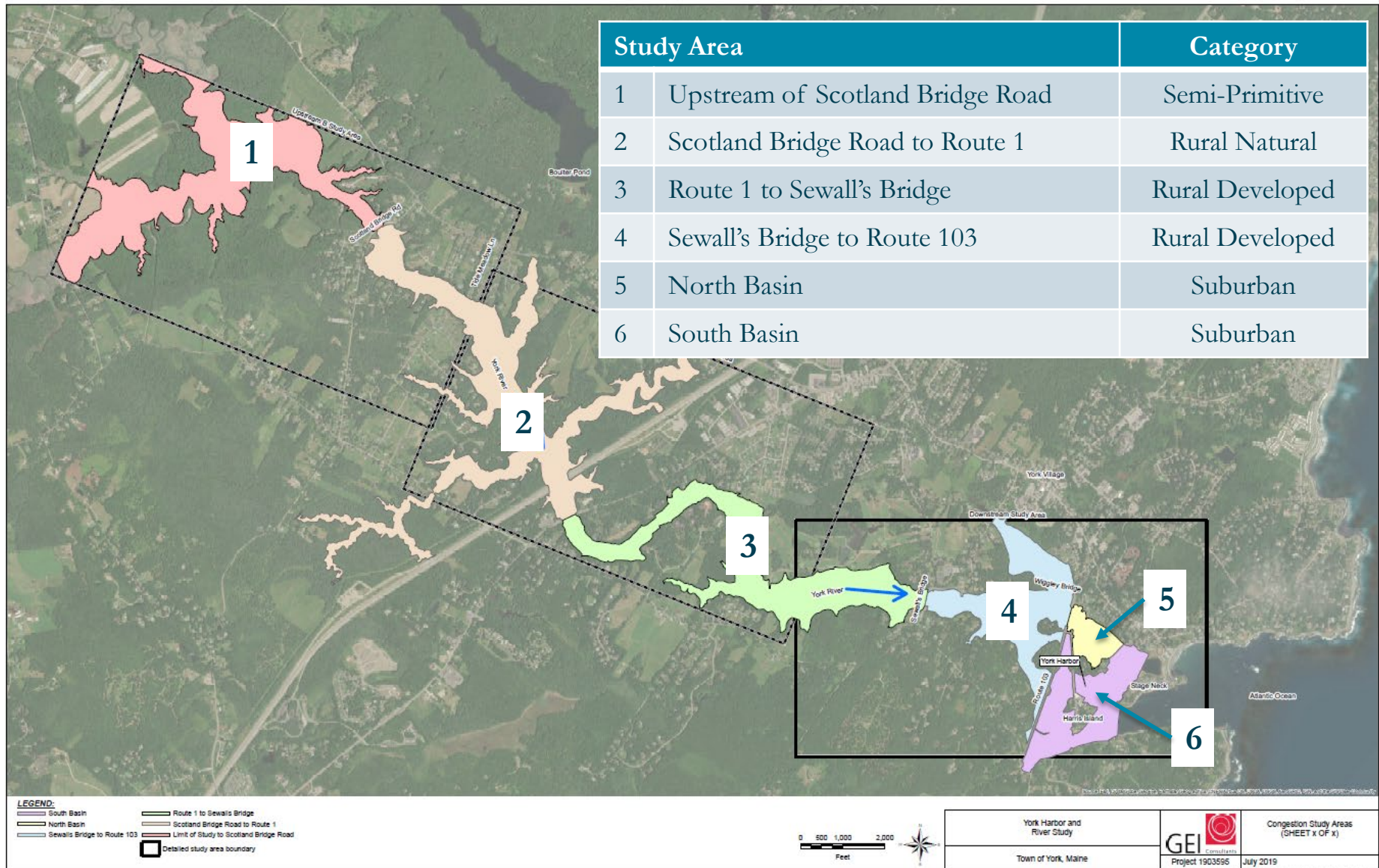
			Boats on Docks/Slips/ Dry Storage ¹	Boats on Moorings ²	Total Local Boats ³	Local Boat Density ⁴ (boats / acre)
Area	No.	Description				
Upstream	1	Limit of Study to Scotland Bridge Road	3	0	3	0.08
	2	Scotland Bridge Road to Route 1	5	0	5	0.11
	3	Route 1 to Sewall's Bridge	12	20	32	0.39
	Total		20	20	40	0.24
Downstream	4	Sewall's Bridge to Route 103	18	69	87	3.4
	5	North Basin: Route 103 to "G-11"	4	98	102	6.4
	6	South Basin: "G-11" to "R-9"	116	128	244	8.3
	Total		138	295	433	6.1
Total			158	315	473	2.0



Notes:

1. Based on 2019 Harbor Use Fee inventory
2. Based on 2019 Mooring Holders inventory
3. Includes only those boats registered with the Harbormaster in the Town's Harbors or using Town facilities more than 14 days per annum. Day launches, canoes/kayaks, and other non-local vessels are not included.
4. Boat density calculated as total boats / low water area

River Regions & Classes



Boat Demographics

	Total Quantity	Boat Length Category			Average Length
		< 18 ft	18 - 25 ft	> 25 ft	
Mooring Holders	282	51	150	81	24
Tender/Skiff	161	161	0	0	11
Wait List for Moorings	270	61	106	103	---
Docks/Slips/Dry Storage/Trailerred	196	69	88	39	21
Transients (Yearly Average for last 5 years)	205	0	6	199	36
Paddlecraft (Peak Season Weekend Day Range 2018)	43-120	---	---	---	---

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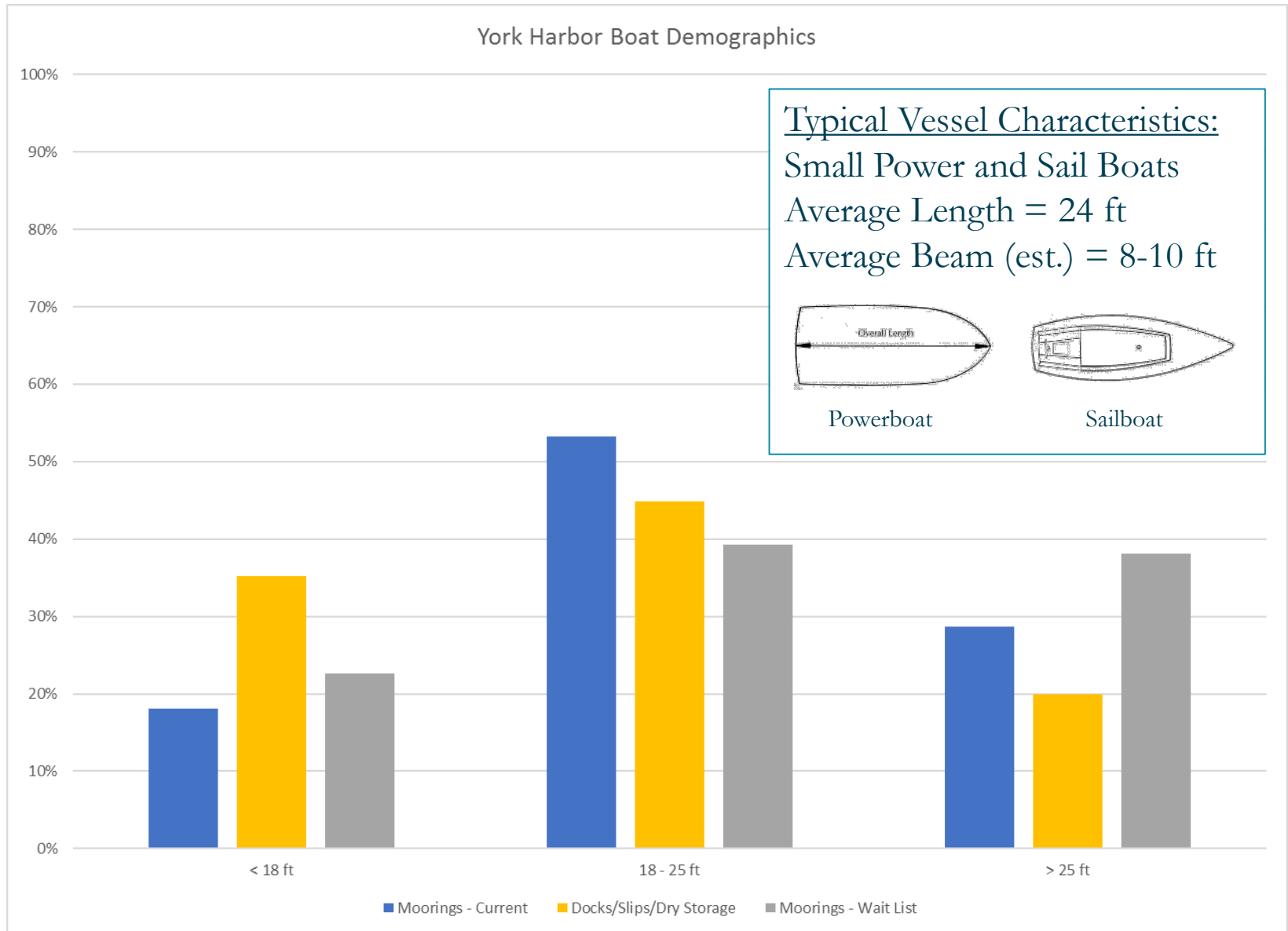
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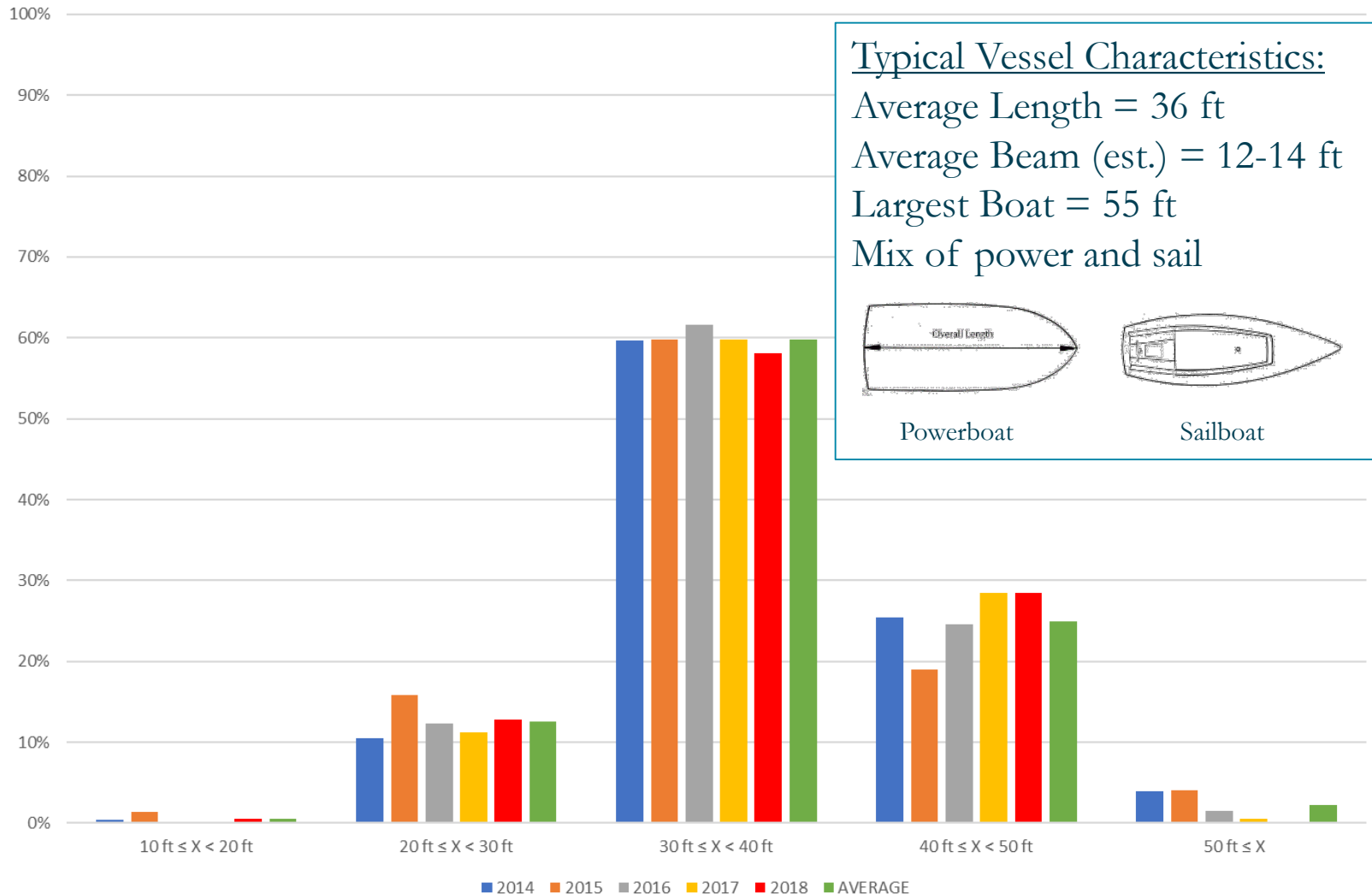
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Boat Demographics



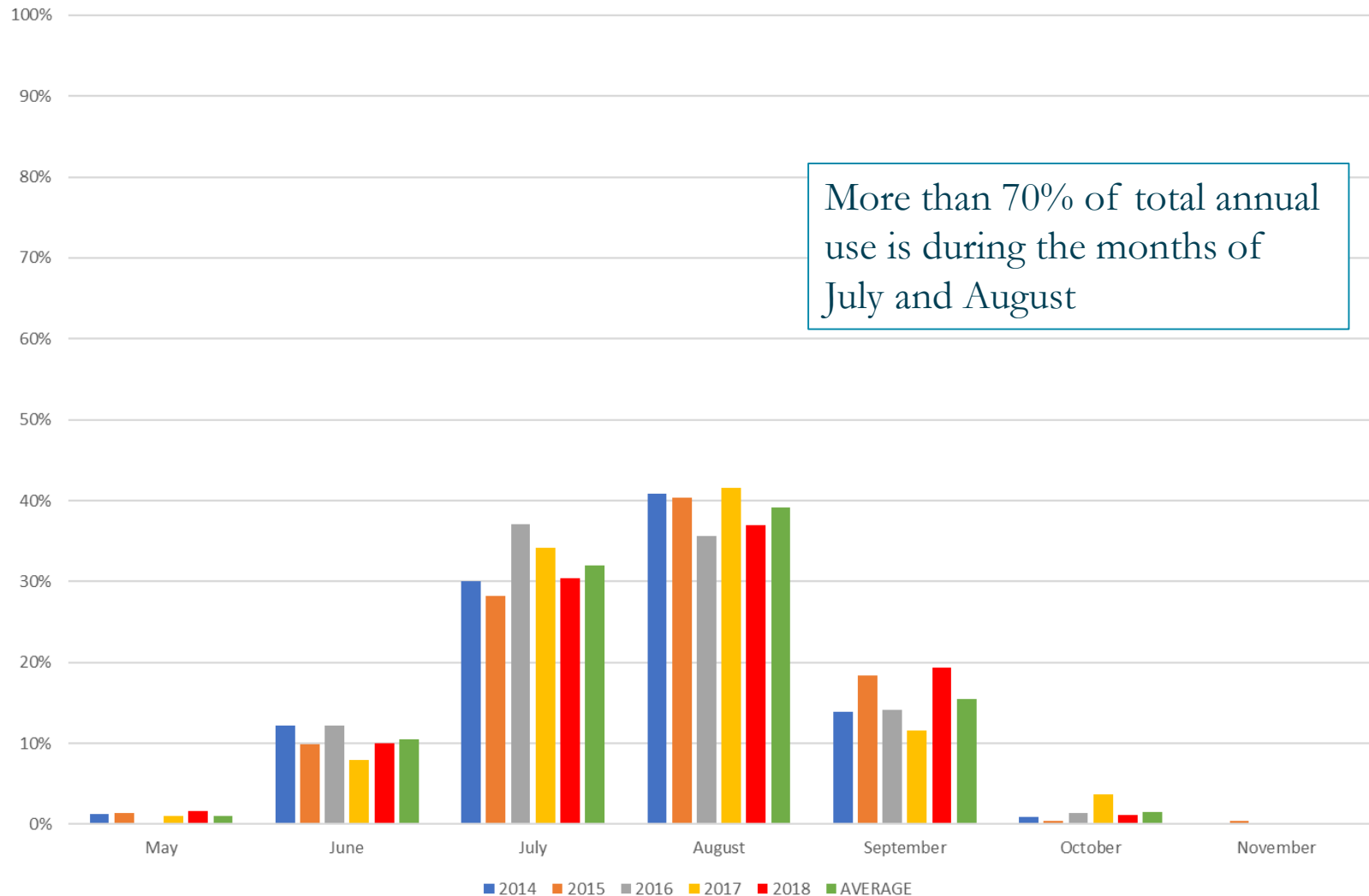
Boat Demographics

York Harbor Transient Boat Demographics
Transient Boat Size Distribution



Boat Demographics

York Harbor Transient Boat Demographics
Transient Use By Month



Components of Waterway Capacity

- **Spatial Capacity**
- **Facility Capacity**
- **Ecological Capacity**
- **Social Capacity**



Spatial Capacity

- Primary issues considered:
 - Area Use: Anchorage vs. Navigation
 - Channel widths
 - Existing conditions at selected locations
 - Recommended Widths
 - Army Corps Navigation Channels
 - Boat density
 - Existing boat density
 - Recommended density at moorings/berths
 - Recommended density in use



Spatial Capacity

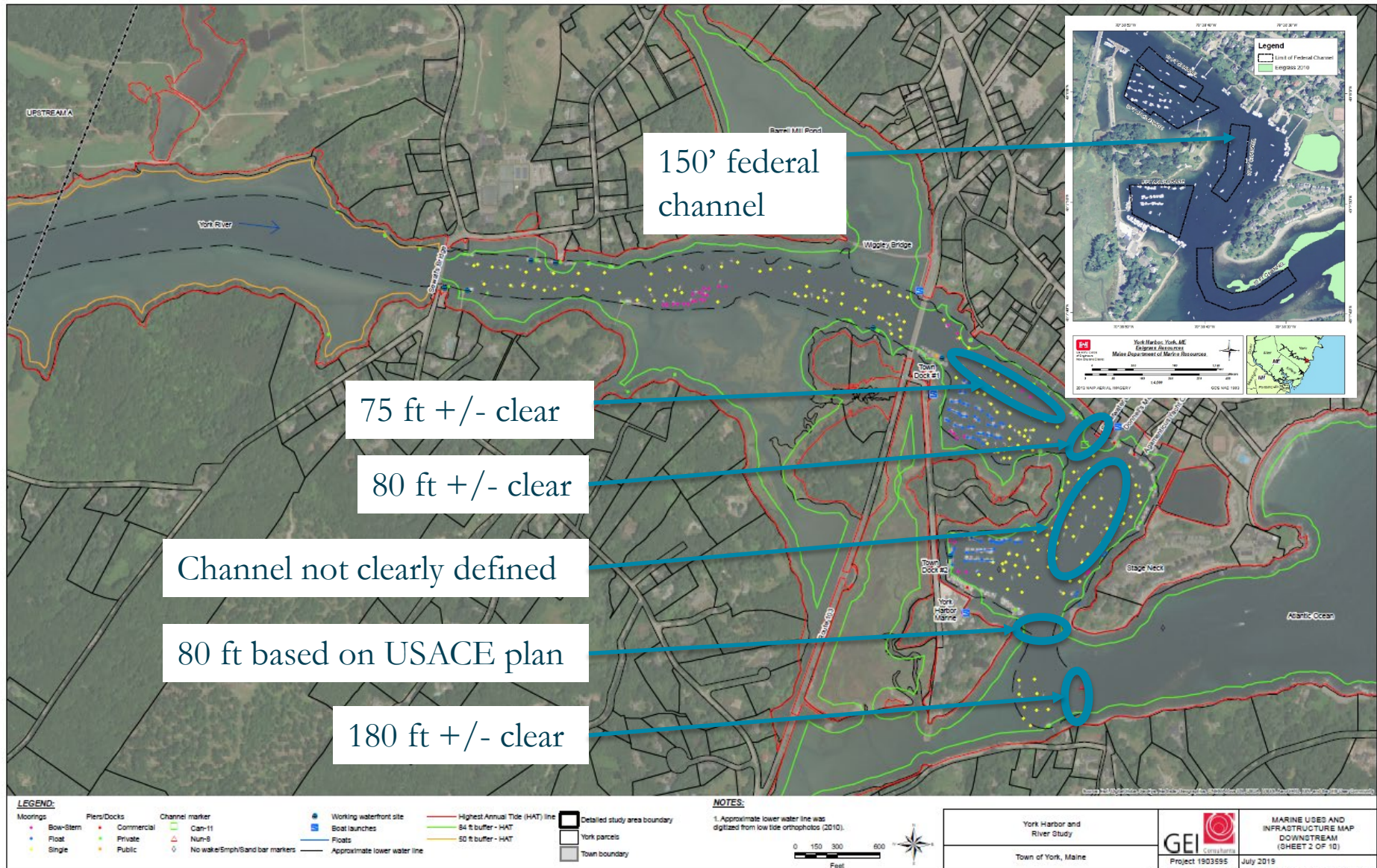
Channel Width

- Based on ASCE 50
 - Minimum Clear Channel Width (feet)
 - = $5 \times \text{average beam} + 0.10 \times \text{number of boats served}$
 - Increased channel width recommended at changes of direction, in exposed locations, and high current locations.
- For York Harbor, Downstream:
 - A channel serving approximately 500 boats
 - Average beam = 8 ft - 10 ft
 - Min clear channel width = 90 ft – 100 ft
 - Increased width is warranted due to currents, shallows, complex navigation patterns



Spatial Capacity

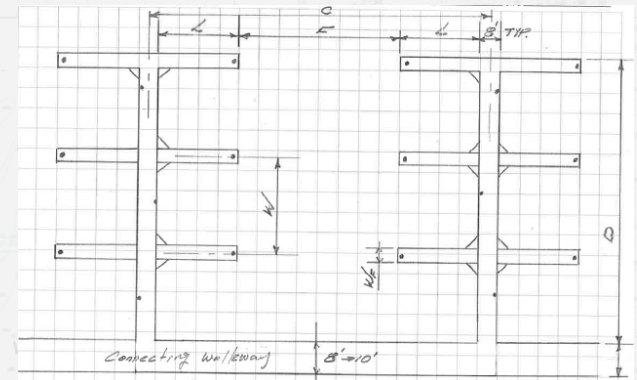
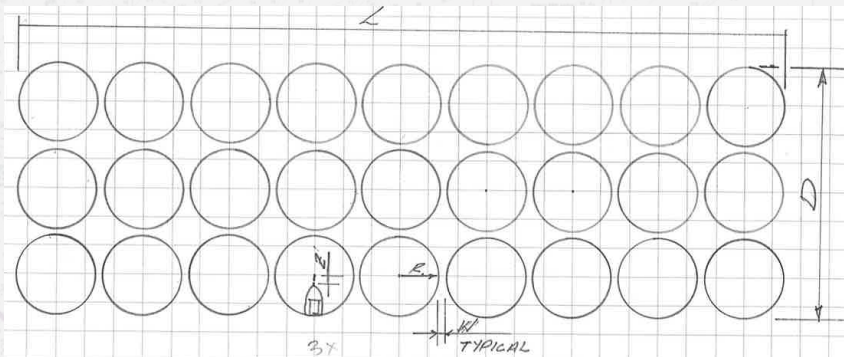
Channel Conditions



Spatial Capacity

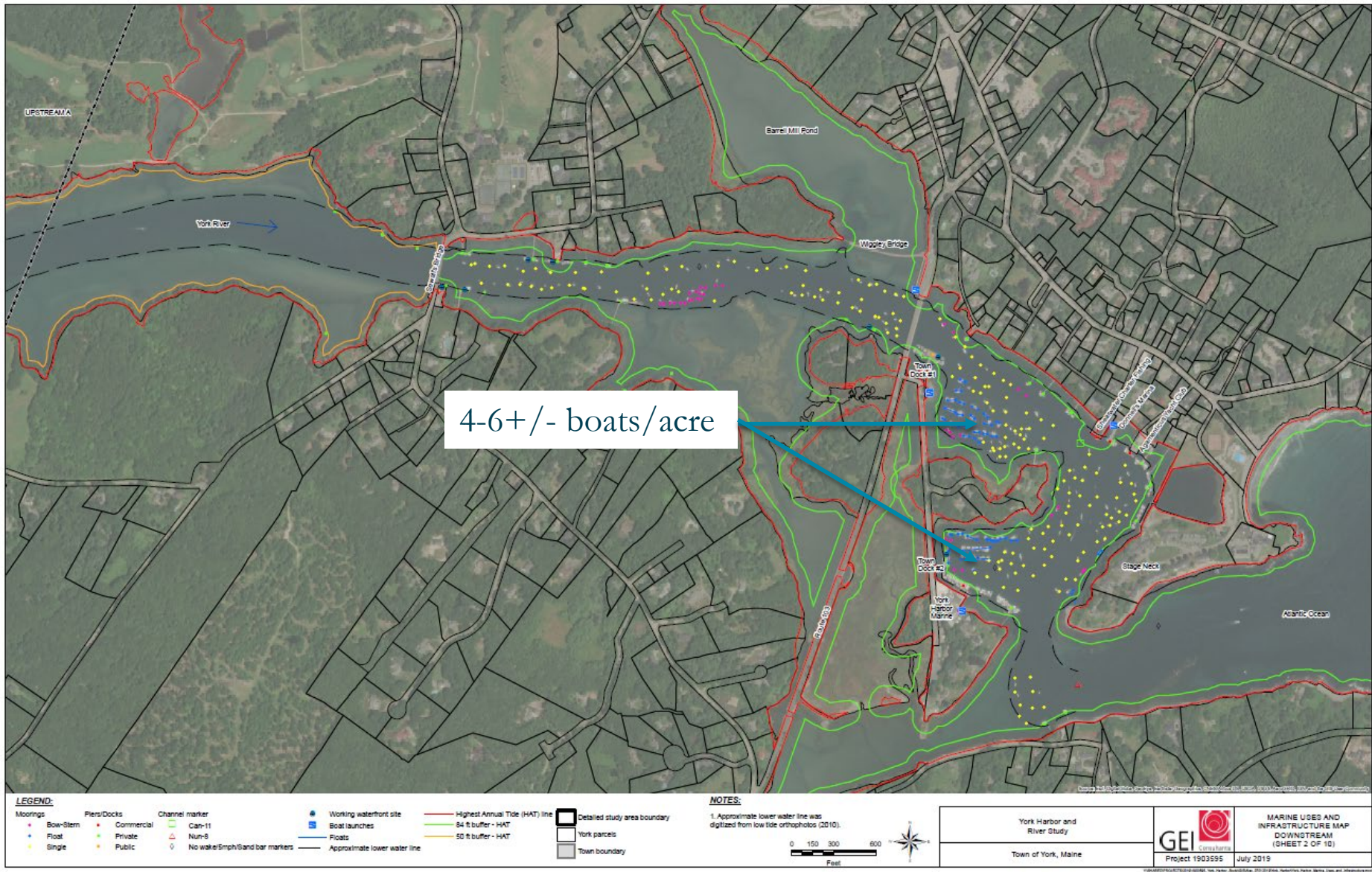
Boat Density – Berths & Moorings

- Maximum density varies greatly by type of use and berth/mooring conditions
- Based on typical vessels in York Harbor:
 - Single Point Moorings: ~10-15 boats / acre
 - Slips ~30+ boats/ acre
- Assumes an efficient, well designed, orderly layout
- Currently 4-6 boats per acre in water in most densely used areas



Spatial Capacity

Boat Density



Spatial Capacity

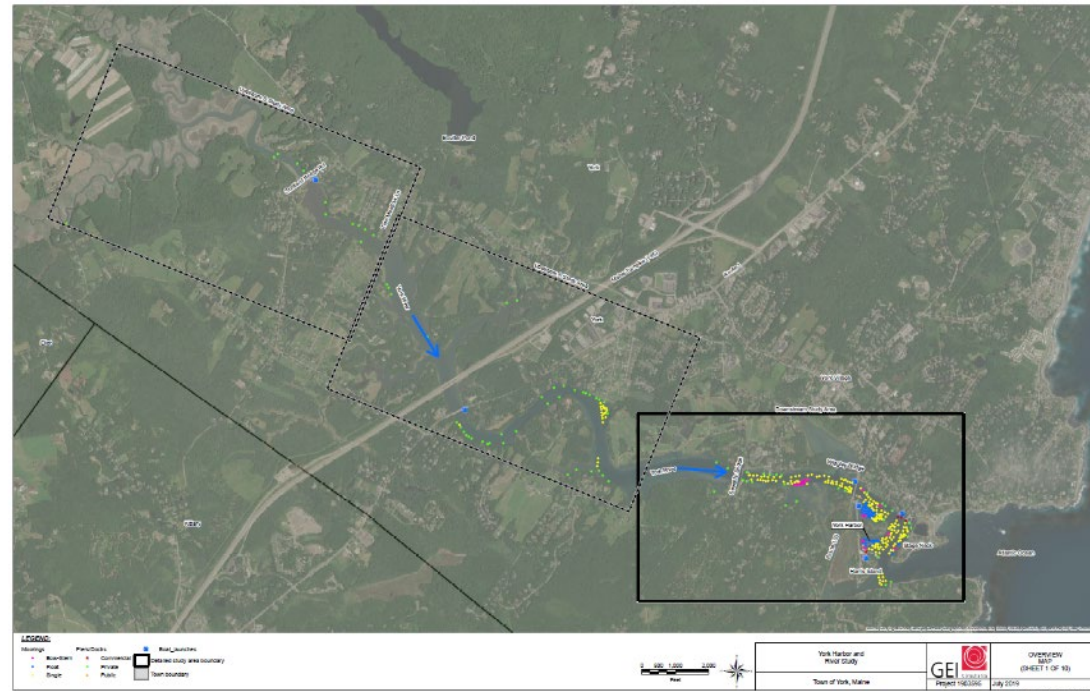
Boat Density – In Use

- Maximum density varies by Character and Type of Vessels
- Case-by-case evaluation required that is specific to the waterway
- Examples of recommended ranges:
- Florida DEP
 - Limited power (10 HP or less) boating: 5 to 10 acres per boat
 - Unlimited power boating: 10 to 20 acres per boat
 - Sailing: 20 to 50 acres per boat
 - No power, still water: 5 to 10 acres per boat
- New York State Office of Parks & Recreation
 - Sailboat: 6 to 8 acres per boat
 - Powerboats: 6 to 8 acres per boat
 - Fishing anchored: 0.3 to 0.5 acre per boat
 - Rowboats: 1 acre per boat
 - Fishing trolling: 1 acre per boat
 - Canoes and kayaks: 1 acre per boat



Facility Capacity

- Where are facilities located?
- Are existing facilities sufficient?
- What improvements should/can be made at existing facilities?
- Are additional/new facilities needed?



LEGEND:

Moorings

- Bow-Stern
- Float
- Single

Piers/Docks

- Commercial
- Private
- Public

Boat Launches

- Boat Launches

Detailed study area boundary

Town boundary

0 500 1,000 2,000 Feet

York Harbor and River Study

Town of York, Maine

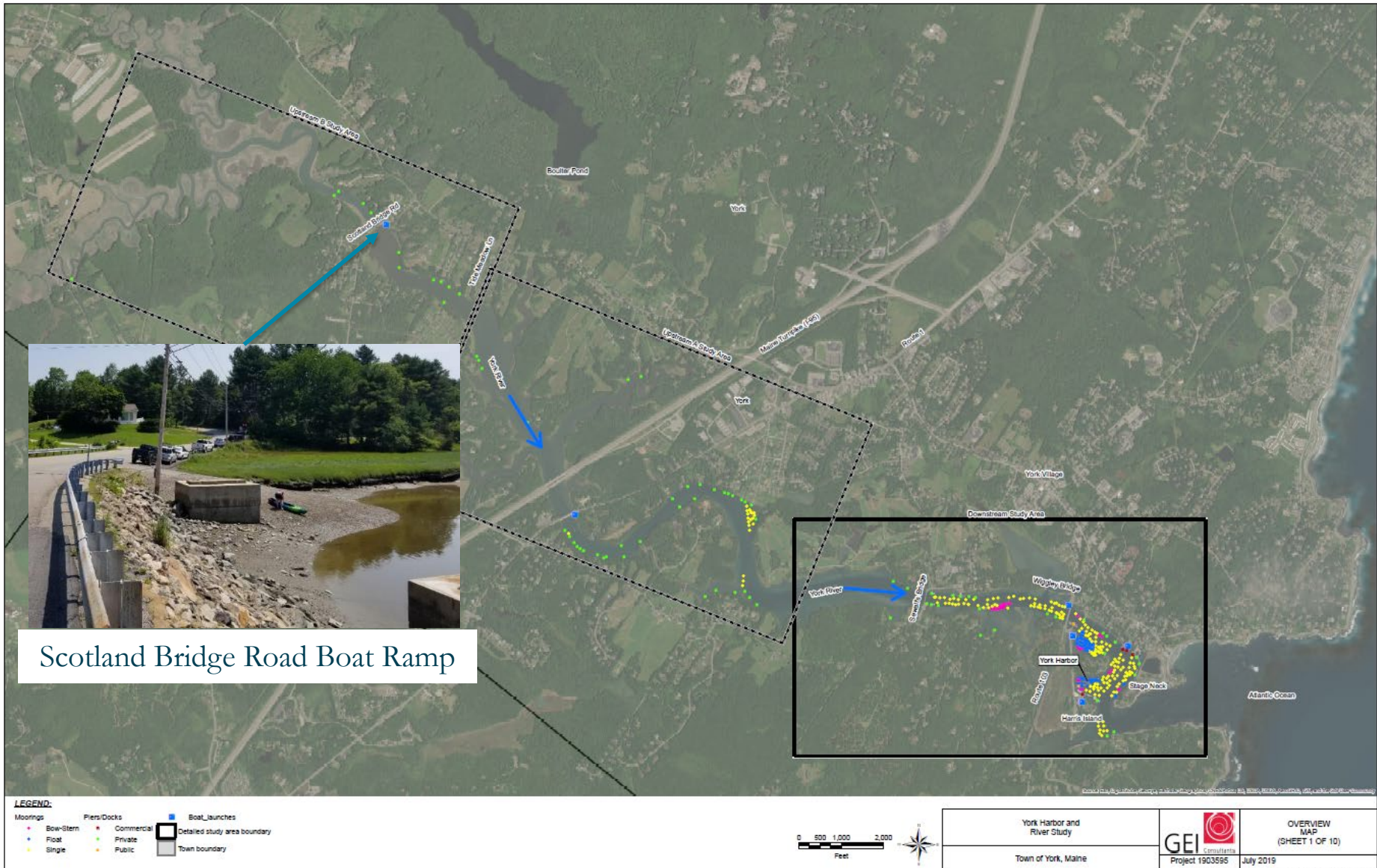
GEI Consultants

Project 1903595

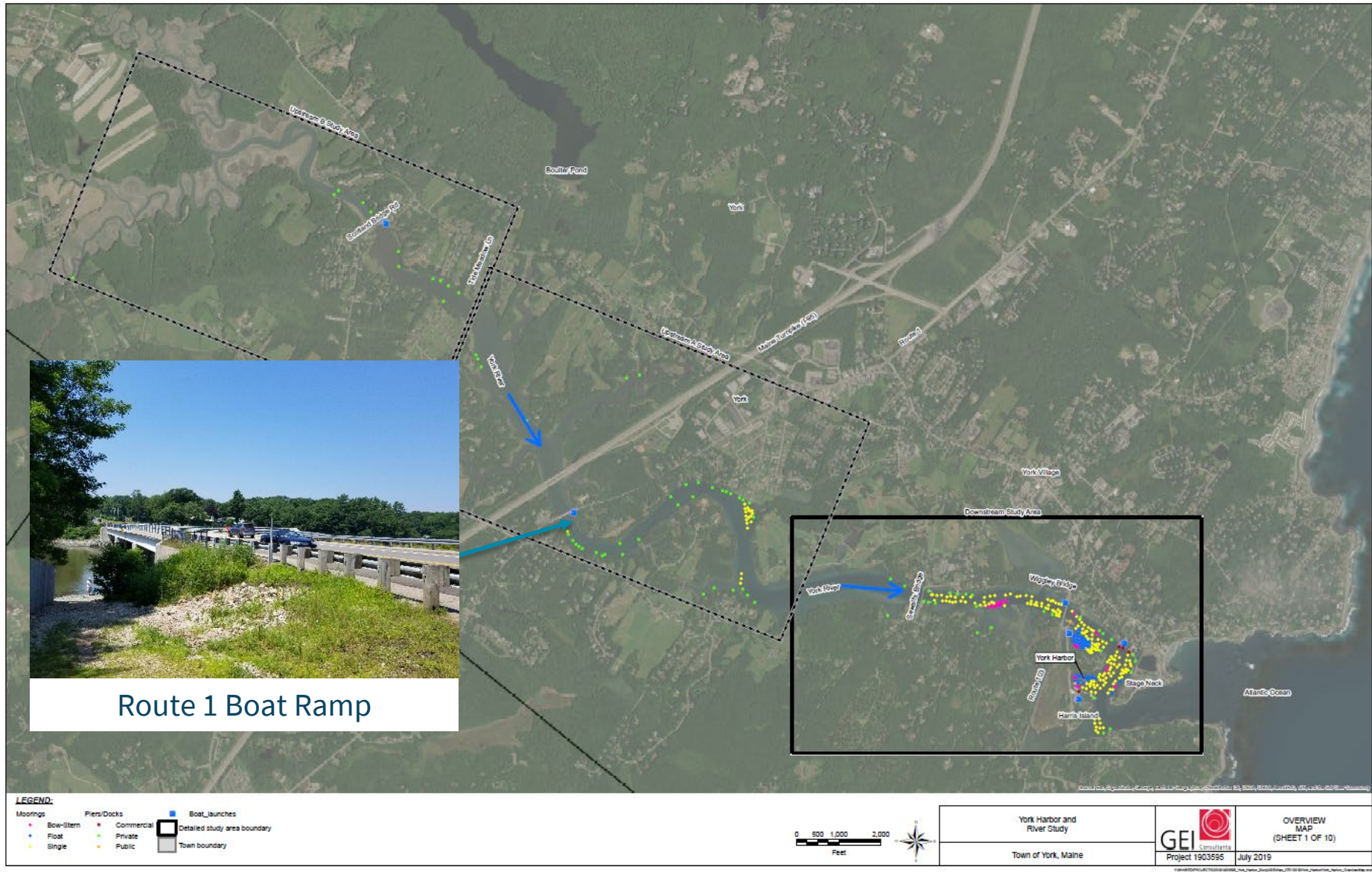
July 2019

OVERVIEW MAP (SHEET 1 OF 10)

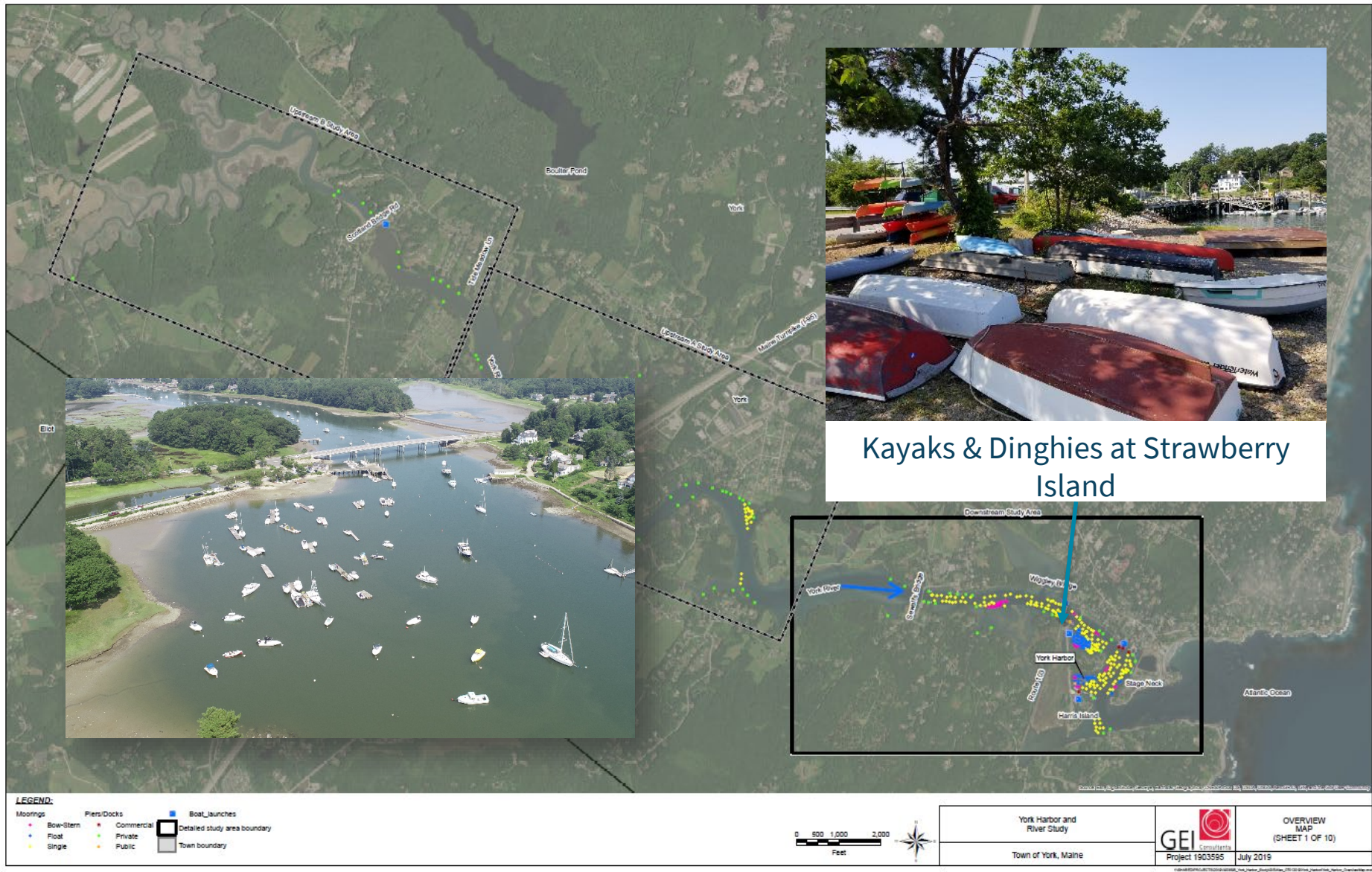
Facility Capacity



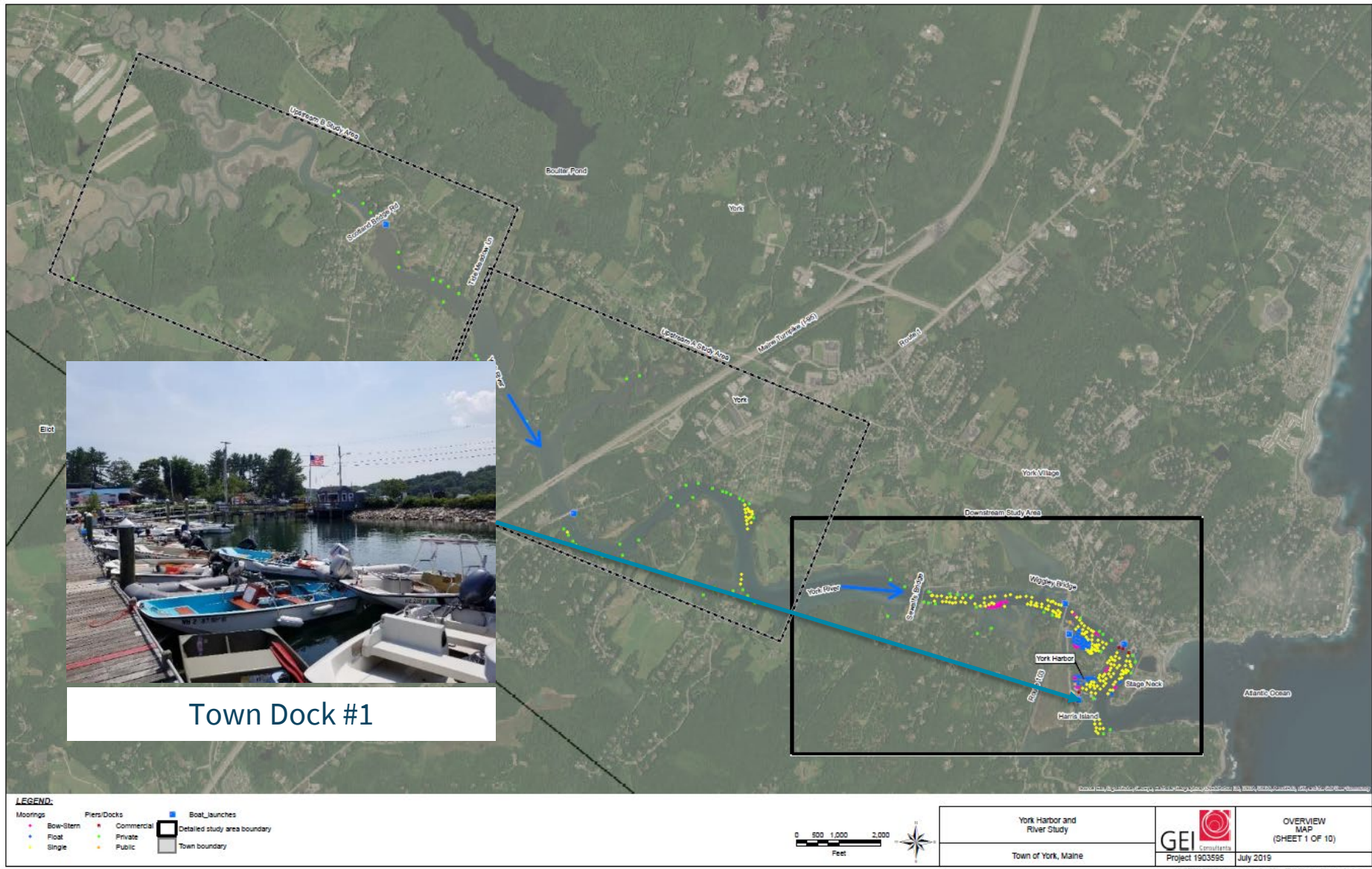
Facility Capacity



Facility Capacity

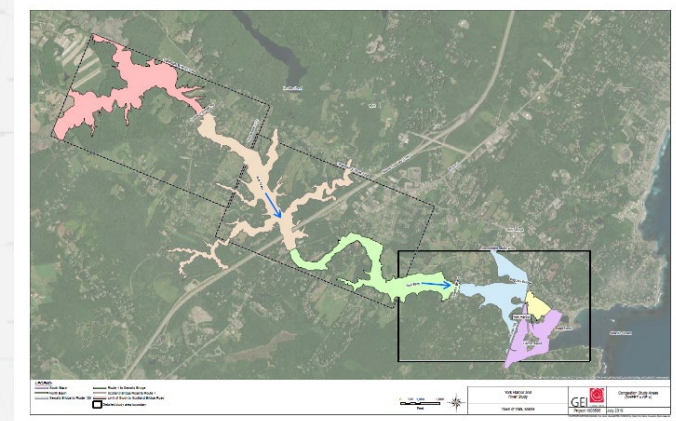


Facility Capacity



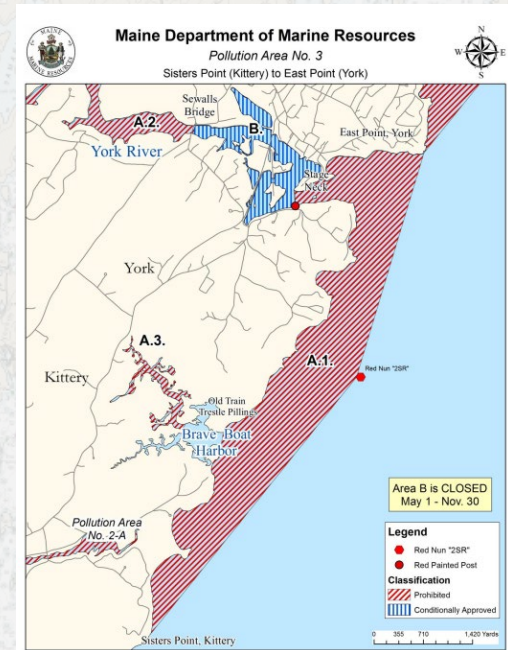
Ecological Capacity

- Water based activities both depend on, and have the potential to impact, the marine ecosystem
- What amount and type of use increases risk to River environment?
- Capacity will vary by area:
 - Shallow/narrow areas more sensitive
 - High Value Habitat more sensitive
 - Areas with other natural or cultural resources are more sensitive



Ecological Capacity

- Potential issues
 - Reduction in water quality
 - Pollution
 - Spills
 - Discharge of oil, bilge water
 - Wastewater from holding tanks
 - Litter, debris
 - Impacts to fisheries
 - Closures
 - Impacts to or depletion of fish stocks
 - Impacts to marsh and submerged aquatic vegetation
 - Impacts to birds and other wildlife
 - Shoreline erosion



Social Capacity

- Management of mixed uses
 - Recreational and Commercial
 - Sailboats, Power Boats, Paddle Craft
 - Swimming and other recreation
- Changing demographics – increased recreational uses and impacts to traditional uses
- Perceptions of overuse



Social Capacity

- Observance of rules and regulations
 - Headway Speed
 - Paddlecraft Safety
 - “Rules of the Road”
 - Local regulations on facility use, swimming areas, etc.
- Attitude toward stewardship



Summary

- Waterway capacity is a complex equation that must consider Physical Characteristics, Environmental Qualities, Types of Uses, User Behaviors, and many other complex and interrelated factors – as well as the Values and Goals of those responsible for managing the waterway
- Effective management requires a combination of:
 - Management resources
 - Stakeholder input
 - Education
 - Regulation
 - Enforcement
- This is an ongoing process that requires adjustment and accommodation as conditions change.



Next Steps

- Gather feedback
- Continue harbor analysis
- Detailed analysis of specific issues/problem areas
- Additional field observations and stakeholder meetings
- Formalize recommended capacity criteria
- Develop recommendations
- Next Presentation in September or October TBD



Map Review & Feedback

- Printed maps
 - Use color coded dots to point out areas on maps:
 - Red – negative
 - Green – positive
 - Comments are encouraged
 - Use sticky notes or write on maps for comments



THANK YOU!

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GEI



Consultants

Consulting
Engineers and
Scientists