NEW YORK METROPOLITAN TRANSPORTATION COUNCIL

Ferry Parking and Landside Access Study

Final Report

Prepared for:
New York Metropolitan Transportation Council

Prepared by:
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Disclaimer

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Executive Summary

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I. INTRODUCTION

The goal of the Ferry Parking and Landside Access Study (FPLAS) was to assist the New York Metropolitan Transportation Council (NYMTC) in the assessment and evaluation of both current and future potential sites suitable for the development of facilities to support waterborne transportation. Specifically, the study focused on the development of assessment criteria to optimize underutilized waterborne transportation resources and services through the following:

- Reviewed previous research about waterborne transportation needs of the region;
- Developed criteria to assess the viability of existing and potential sites that can be used for the development of facilities and infrastructure to support waterborne transportation; and
- Evaluated and prioritized sites for development

The project activities were guided and shaped by a Steering Committee established for this purpose. Committee members represent the NYMTC member agencies and the nine county NYMTC region.

II. SUMMARY OF TASKS 1 THROUGH 4

Task 1

The first task consisted of a comprehensive review of literature about the subject area, focusing on studies and reports conducted in the region. The review provided a first look at the factors (criteria) that were likely to be used in the evaluation of individual landing sites. Our findings are discussed extensively in the Task 1 report.

Task 2 and Task 2 B

First, the consultant team conducted 24 expert interviews with a wide range of stakeholders including a private ferry operator, representatives from the PANYNJ, the departments of transportation from New York City, Westchester, Rockland, Nassau and Suffolk counties, NYSDOT, MTA, the Regional Plan Association, and the Metropolitan Waterfront Alliance. The interviews were used to identify existing and potential sites as well as additional criteria for site evaluation.

In Task 2, the consultant team compiled a “long list” of 85 sites that included 25 existing sites and 60 potential sites. The list was created using field observations and information gathered from the literature review and the expert interviews. In Task 2 and Task 2B, the word “site” has been used to indicate a generic location, rather than referring to a particular land parcel.

In Task 2B, the consultant team developed an interactive GIS based site-comparison tool and data repository to evaluate the 85 sites using readily available population, land use, and transportation data. The tool was used to create a preliminary ranked list of sites for further investigation. The ranking was based on criteria that were weighted in accordance to discussions held with the steering committee. The criteria, the weightings and the analysis approach are discussed in detail in the Task 2B report.

There are two significant benefits to using the site comparison tool. First, NYMTC staff can adjust the weighting of the criteria redo the analyses with relative ease. Second,

NYMTC staff can add new potential sites to the list and compare how the new sites perform in comparison with the 85 sites on the long list. Finally, in Task 2 B, the consultant team created a short list of thirteen sites that would be investigated in greater detail in Task 3.

The short non-ranked list appears below:

1. Fordham Landing, Bronx
2. Marina Del Ray, Bronx
3. Trump City (Riverside South), Manhattan
4. East River Landing, Manhattan
5. East 63rd Street, Manhattan
6. Pier 40/Hudson Yards, Manhattan
7. Beechhurst Residential Park, Queens
8. Port Richmond, Staten Island
9. Freeport, Nassau County
10. Port Chester, Westchester County
11. Tarrytown, Westchester County
12. Peekskill, Westchester County
13. Fort Slocum Road, Westchester County

Task 3

In Task 3, the consultant team created detailed and exhaustive site evaluations for the twelve sites other than Freeport, Nassau County, which was not analyzed in this study because the city declined to be involved at this time. Each site was first researched focusing on available data about the adjacent major attractions, accessibility of the sites, available transit, traffic conditions within the proximity of the site, demographics and future development. These data were obtained through the GIS database developed under Task 2B and Internet search. Interviews were then conducted to obtain updated information about demographics within the site's area, future development and general information that was potentially overlooked during the initial research. Another goal of the interview was to obtain a first-hand opinion on the availability of alternative sites and the development of potential waterborne services. Each site was then physically visited and photographed to visually record any existing differences from the aerial images that were being analyzed during the initial research. An additional purpose of the site visits was to gain the commuters' perspective of the area around the site. The consultant team walked from potential ferry landing sites to local transit hubs, parking decks and local attractions. Each site report contains some background information on the area surrounding the site along with photographic material to give the reader a better perspective on the site and its characteristics. Then, the current conditions on each site, focusing on land use, demographics and commute patterns, vehicular accessibility, transit accessibility, pedestrian and bicycle accessibility, and parking are discussed. An assessment framework is presented next, which ranks each potential site based on a set of criteria, reflecting the categories discussed under the previous section on current conditions. The criteria used in the assessment framework deal primarily with the land side access and parking availability, which are the focal points of this study. Waterside access and suitability criteria fall beyond the detailed scope of the project. Nevertheless,

these criteria are discussed in the section dealing with additional considerations. In this task, the word "site" refers to the specific land parcel/s that were analyzed at each location. In some instances, more than one site was analyzed, for instance, three separate sites were analyzed in the City of Peekskill, Westchester County.

Task 4

The objective of this task was to produce a ranking and comparison of the sites. For this purpose, the consultant team assigned numerical values to the individual site assessments that were included at the end of each site evaluation in Task 3 Report. The criteria used in these assessments included the following:

Vehicular Accessibility

1. Highway connectivity of the site with areas within the driveshed
2. Availability and condition of access roads

Transit/Intermodal connectivity

1 Proximity to existing bus routes
2 Proximity to existing rail service
3 Availability of intermodal transfer stations
4 Frequency/Level of proximate transit service

Pedestrian and Bicycle Access

1 Directness of pedestrian/bike routes
2 Quality of pedestrian/bike environment

Parking

1. Proximity to Parking
2. Availability of Adequate Parking Spaces

Land Use

1 Proximity to housing
2 Proximity to jobs
3 Proximity to retail/entertainment
4 Proximity to parks/open spaces

Demographics and Commute Patterns

1. Potential of the site to attract demand

A score of Poor, Fair, Good and Excellent was assigned to each of the above criteria. A numerical score is used, with values of 1, 2, 3 and 4 corresponding to Poor, Fair, Good, and Excellent. Based on this scoring system and the number of criteria, there is a maximum of 60 possible points that can be scored for each site. The ranked/prioritized list of sites, applying the parking and landside access criteria are provided in the next section.

III. PRIORITIZED LIST OF SITES

Site Name	Site Code	Total	Average	Median
East 63rd Street, Manhattan	5	57	3.8	4
East River Landing, Manhattan	4	56	3.7	4
Pier 40, Manhattan	6	55	3.7	4
Trump City (Riverside South), Manhattan	3	52	3.5	4
Beechhurst Residential Park, Queens	7	45	3.0	3
Marina Del Ray, Bronx	2	44	2.9	3
Port Chester, Westchester County (Site 1)	9a	43	2.9	3
Tarrytown, Westchester County	12	38	2.5	2
Fort Slocum Road, Westchester County	10	36	2.4	2
Fordham Landing, Bronx	1	35	2.3	2
Peekskill, Westchester County (Site 1)	11a	35	2.3	2
Peekskill, Westchester County (Site 2)	11b	35	2.3	2
Peekskill, Westchester County (Site 3)	11c	32	2.1	2
Port Richmond, Staten Island	8	31	2.1	2
Port Chester, Westchester County (Site 2)	9b	18	1.2	1

The top scoring sites according to this ranking, with an overall score above 50 points and median of 4 points, are the four Manhattan sites (East 63rd Street, East River Landing, Pier 40, Trump City). Beechhurst Residential Park, Queens; Marina Del Ray, Bronx; and Port Chester-Site 1, Westchester County have an overall score between 40 and 50, and a median of 3. All other sites besides Port Chester-Site 2, Westchester County have an overall score between 30 and 40 with a median of 2. Port Chester-Site 2 has a low overall score of 18 points with a median of 1. It should be noted again, that the ranking is based on criteria that relate directly to the overall goals of the study that emphasized parking and landside access. Additional considerations about each site are discussed in the Task 3 and Task 4 reports.

IV. RECOMMENDED PUBLIC OUTREACH STRATEGY

One of the main goals of the Ferry Parking and Landside Access Study is to evaluate and prioritize sites for development. In Tasks 1 through 4, the consultant team has developed and applied objective and measurable criteria to evaluate first the long list of 85 sites and subsequently the short list of 12 sites. However, the team proposes that any decisions related to the development adopt a structured public involvement process using a three-step process that engages a broad and representative group of stakeholders in making development decisions.

Step 1: Organize a Preliminary Planning Meeting

At each of the twelve locations, a preliminary planning meeting should be conducted with municipal and county government agencies, elected officials and local experts. It is anticipated that NYMTC will take the lead in organizing and scheduling this preliminary meeting. NYMTC staff should facilitate a broad-ranging discussion about ferry transportation, with special emphasis on the landside access criteria in that location. Gathering credible, localized information is essential to understand the needs and expectations of the local community. To support NYMTC's work, the consultant team has developed a highly visual PowerPoint presentation for each of the twelve sites, describing the scope of the study, methodology used, and a detailed site assessment. A sample PowerPoint is included in the Appendix. The PowerPoint presentation can be used to orient stakeholders, provide some information about the benefits and constraints associated with particular locations and lay the ground work for discussion.

Step 2: Information Dissemination Using Dedicated Website

Effective public outreach begins and ends with good information dissemination. Information must be shared at the detail and clarity that is appropriate to the discussions. The consultant team encourages NYMTC to develop a project website that manages all the public outreach related to the different ferry transportation plans so that the public can understand both the regional context of the waterborne transportation planning and the specific sites that are slated for development.

Step 3: Public Meeting/Forums

Once the stakeholders at the preliminary meeting have come to an understanding about the particular land parcels that are being considered for development, a larger public meeting can be convened to create a dialogue between the community residents and the agency representatives about the pros and cons of developing a specific ferry landing site. It is recommended that the public meeting begin by asking the public about their views and opinions about ferry parking and landside access in their community. Interactive two-way communication can be fostered through the use of audience response systems (keypad polling) to enable participation and bring a focus to the discussion and decision-making. The consultant team recommends a minimum of four public meetings, i.e., two meetings focused on NYC sites and two meetings focused on the Westchester County sites.

V. CONCLUDING COMMENTS

The Ferry Parking and Landside Access study was intended to lay the groundwork for improving landside accessibility to waterborne services and included the following four major tasks – literature review, inventory of facilities and services, site assessment, and prioritization of sites. Four individual Task Reports have been prepared and submitted. In addition, the GIS-based interactive tool, essentially a query interface to run within ESRI's ArcGIS program has been developed for the purposes of the project and has been delivered to NYMTC technical staff along with all the data assembled for this project. It is hoped that the results of the Ferry Parking and Landside Access Study can be used effectively to facilitate a broader set of conversations about water-borne transportation in the NYMTC region.

Task 1

Literature Review

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1 INTRODUCTION

The goal of the Ferry Parking and Landside Access Study (FPLAS) is to assist the New York Metropolitan Transportation Council (NYMTC) in the assessment and evaluation of both current and future potential sites suitable for the development of facilities to support waterborne transportation of people and freight. Specifically, the study will focus on the development of assessment criteria to optimize underutilized marine transportation resources and services through the following:

- Review previous research about waterborne transportation needs of the region;
- Develop criteria to assess the viability of existing and potential sites that can be used for the development of facilities and infrastructure to support waterborne transportation; and
- Evaluate and prioritize sites for development.

The FPLAS region encompasses all ten NYMTC counties but concentrates on filling the current gaps in existing knowledge and studies. Therefore, areas previously studied, specifically the Long Island Sound will not be revisited beyond incorporating the salient findings of such previous work, including potential sites that were not examined in the previous study.

The study effort will be guided by a Steering Committee drawn from members of NYMTC's PFAC members. This Steering Committee will review the work of the consultant team, determine priorities and direction for the study and help shape project deliverables.

Background Research and Literature Review

The FPLAS is by no means the first to focus on waterborne transportation needs of the New York metropolitan region. Therefore, as the first task in this study, the consultant team has conducted a rigorous review of literature related to the development of waterborne transportation infrastructure including previous reports and studies conducted in the region, such as the Long Island Sound Waterborne Transportation Plan project, the Hunt's Point Waterborne Freight Assessment and the New York Department of City Planning Landside Access to Ferry Landings, in order to provide a thorough understanding of the complex nature of the current endeavor.

The deliverable for this task is a comprehensive research report that summarizes previous research in this area, including a detailed discussion of the major factors and components of growth that can be used in guiding the research team and NYMTC in the selection of alternative sites for development. Of particular note are factors likely to influence decision-making criteria.

A total of seventeen studies are summarized in this document. Of the seventeen studies, eleven focus on the New York metropolitan area. The introduction and findings

of these eleven studies are presented in Section 2. The remaining six studies focus on other geographic areas, both national and international. The introduction and findings of these six studies are presented in Section 3. These studies were reviewed because the research team determined to take a systematic comprehensive approach. Although the New York metropolitan area studies are most pertinent in providing information to guide in the selection of alternative sites in the NYMTC region, additional research from other geographic areas attributes to a larger holistic portrayal of waterborne transportation criteria and issues. Therefore, these six additional studies are also summarized in this document to support the studies in the New York metropolitan region.

Section 4 provides conclusions based on the literature review about ferry services in the NYMTC region and how these summaries transcend into Step 2 of the Ferry Parking and Landside Access Study. Section 5 includes two criteria matrices – one for ferry service criteria based on the New York metropolitan area studies and another for ferry service criteria based on the studies from other geographical areas. Finally, Section 6 includes the references and studies included in the Task 1 – Literature Review.

2 NEW YORK METRO AREA LITERATURE REVIEW

1 Waterborne Freight Transportation Study – New York City Department of City Planning (May 1990)

DOCUMENT:	**Waterborne Freight Transportation Study**
DATE:	**May 1990**
PREPARER:	**Department of City Planning,**
CLIENT:	**City of New York**

Introduction

The goal of the New York City Department of City Planning (DCP) Waterborne Freight Transportation Study was to evaluate the feasibility of a citywide waterborne freight transportation network serving waterfront air and rail terminals, as well as waterfront industrial areas to reduce congestion and pollution problems in the metropolitan area. Specific study objectives were identified as follows:

- Assess the feasibility of a waterborne mode of transport for goods and freight by determining the extent of market interest;
- Determine the typical goods movement pattern; and
- Identify piers and terminals for potential routes.

In addition, the study identified several factors critical to the success of a waterborne freight service as follows:

- Ferry demand and interest;
- Travel time and travel cost;
- Availability and condition of ferry landing facilities;
- Government incentives;
- Incentives that would encourage trucking companies and carriers to use the system; and
- Effective coordination and cooperation of state and local agencies.

Findings

A preliminary list of piers and ports was assembled for the purpose of identifying locations that could be part of a waterborne freight system. From this preliminary list, sites were selected using the following criteria:

- Operational and function sites;
- Condition of piers and terminals;
- Access to highways and airports;
- Space for secured parking and warehouse facilities;
- M-1, M-2 or M-3 zoning; and
- Under public agency ownership or jurisdiction.

Based on the identified criteria, a preliminary list of piers and ports was identified. Sites determined to match the criteria were marked with an asterisk as follows:

Preliminary List of Piers and Ports

Manhattan	Brooklyn	Bronx	Queens	Staten Island	New Jersey
Pier II (Wall Street Ferry Terminal) *	Brooklyn Navy Yard *	Hunts Point/Produce Terminal Market *	LaGuardia Airport *	Howland Hook Container Terminal *	Port Newark/Port Elizabeth Marine Terminal *
W. 23rd Street Pier (behind World Yacht Services) *	Kent Terminal *	Oak Point Railyard *	John F. Kennedy Airport *	Port Richmond	Global Marine Terminal/Greenville Yard *
Pier 36 (East River) *	Red Hook Container Terminal *		Inwood Terminal *	Port Ivory	Newark International Airport *
Pier 40 (at W. Houston Street, Hudson River) *	Brooklyn-Port Authority Marine Terminal				
Pier 42 (East River) *	Pier 1-5				
Pier 76 (at W. 34th Street, Hudson River) *	Erie Basin				
	South Brooklyn Marine Terminal – 39th Street				
	South Brooklyn Marie Terminal *				
	Bush Terminal – 51st Street Pier				
	Atlantic Avenue (P.A. Pier 6 and 7)				
	Brooklyn Army Terminal				
	65th Street – Bay Ridge *				

The selected sites were screened and paired based on the three geographic connections across the Hudson and East Rivers as follows:

- Northern Corridor;
- Central Corridor (mid-town tunnels); and
- Southern Corridor.

Based on the site screening, the pairs with the greatest potential were identified as follows:

- **LaGuardia Airport (Queens) to Pier 42 (Manhattan)** – Travel time between the airport and the southeastern tip of Manhattan at Pier 11 would be 30 to 35 minutes. To piers 36 to 42, the travel time would be somewhat less. This short travel time would be potentially attractive to the goods movement industry. Pier 42 is large, and would be therefore a good candidate for containerized cargo or bulk cargo on a regular schedule.
- **Port Newark (NJ) to Kennedy Airport (Queens)** – This route would be an essential connection between New Jersey and New York in terms of air cargo

transport. It would require approximately one and ½ hour to travel the 25-mile distance by vessels operating at 20-knots.

- **Greenville Yard to LaGuardia Airport (Queens) and Kennedy Airport (Queens) –** The New York Cross Harbor railroad terminal at Greenville Yard in New Jersey transports large bulk cargo, such as rail cars, automobiles, trailers and some commodities. If the terminal develops adjacent land at Greenville Yard, a greater variety of goods could be handled. The trip to LaGuardia Airport would be 13 miles and would require approximately one hour to complete. To JFK Airport, the distance would be 24 miles and would require approximately one and ½ hours.
- **Greenville Yard (NJ) to South Brooklyn Terminal (Brooklyn)** – This route would provide a good connection between New Jersey warehouses and transfer facilities to Long Island with the Long Island Railroad. This route would be a quick trip – only two or three miles by water. A truck ferry between these two points would greatly reduce the number of trucks in the Lincoln and Holland Tunnels.
- **Port Newark (NJ) to Pier 40 (Manhattan)** – This route would bring International and domestic freight directly to the downtown area because of the strategic location of the pier. The pier would allow for abundant space to maneuver and warehouse goods. It would take approximately one hour to travel the 13-mile distance.

Conclusion

Waterborne freight transportation systems provide the potential to significantly improve goods movement operations on certain critical links while reducing traffic congestion and air pollution. However, for these systems to achieve their potential there must be significant improvements in the types of services and vessels available. In particular, the findings of the study can be summarized as follows:

- Data on goods movement into and through the region is not readily available. Current efforts to coordinate and expand the collection of goods movement data should consider the potential for waterborne freight movement.

- The demand data reviewed in this study does not support the implementation of an extensive waterborne ferry system. However, there appears to be a small market today for some services, particularly for the movement of small packages. It is expected that the need for more services would increase in the future, as traffic congestion increases. Ferry linkage to railroads and airports could potentially remove some of the roadway traffic congestion.

- The low speeds of the vessels and the costs of implementing and operating a service would be discouraging factors to potential operators and customers.

- The availability of waterborne vessels specifically designed for inner-harbor transport of goods would be limited.

- Unless designed for the specific operations of a particular carrier or providing time or cost advantage over the current transport strategies of carriers, conventional vessels would not be competitive.

- Public agencies should coordinate efforts to encourage existing and potential private ferry operators. Agencies should also work toward a comprehensive set of incentives, attractive to ferry operators and the trucking industry.

2 Landside Opportunities for Expanded Ferry Services – New York City Department of City Planning (June 1990)

DOCUMENT:	**Landside Opportunities for Expanded Ferry Services**
DATE:	**June 1990**
PREPARER:	**New York City Department of City Planning**
CLIENT:	**City of New York**

Introduction

The goal of the Landside Opportunities for Expanded Ferry Services was to develop a framework to establish new privately operated ferry services in the five boroughs of New York City, Westchester and Nassau Counties. Ports of origin outside Manhattan with significant market areas for ferry service were identified based on proximity to existing transit services, potential park-n-ride locations and existing or proposed large-scale developments. Additional destination sites in Manhattan were also evaluated. The results of this study were intended to be used by ferry operators and regulating agencies. This study also identified the types of pier amenities desirable for all new docking facilities including shelters, restrooms, lighting and ticket vending.

Site visits were performed and data collected from 85 waterfront sites and approximately 55 additional sites. Following the field surveys and data analysis, the main issues and opportunities were highlighted for each site. The general findings of the field surveys were identified as follows:

- Many new waterfront developments are located in close proximity to each other. Having a ferry stop at each location would not be feasible because of the time required in stopping to load passengers. However, these developments could have a centrally located pier and passengers from adjacent developments or neighborhoods could walk or be taken to the pier by van.

- In many instances there is inadequate parking near these developments.

- Several developments have public promenades, but most do not have piers. It would have been easiest to incorporate a pier into these developments during the planning stages; however, many developers do not construct piers because of the uncertainty and long duration of the permit review process.

- Some new developments would not allow non-residents to enter their property for security reasons. This policy would result in impractical limited patronage ferry service from these developments.

- Several property owners expressed interest in providing a ferry landing pier on their site, but were concerned about the issues of liability, insurance, security and parking for outside commuters.

- Marinas would be ideal for starting ferry services because of the existence of pier, amenities, parking and the presence of dock masters. However, the drawback to using marinas would be overcrowding at certain facilities making it difficult for a ferry to quickly enter and exit the marina.

- In several cases, sites located near a park could institute a combined commuter and recreational ferry service.

- Providing a free bus or van service from the ferry pier to nearby transit routes or residential/office concentrations would attract significantly more passengers.

- Many hospitals in Manhattan are located very close to the East River, and therefore, specialized laboratories serving hospitals could be located along the waterfront.

The criteria used to analyze these sites and select the most promising sites was developed in a previous City Planning study entitled, "Improving Landside Access for Ferry Services." These sites were aggregated into three categories: immediate service potential, short term service potential and long term service potential. Immediate service potential indicated the critical elements necessary for ferry service in place – piers, transportation, links and parking. Short term potential indicated an existing market or good access, but not a pier; and long term potential indicated more components necessary to develop a ferry service. The following is a listing by classification of the study sites selected for analysis:

Immediate Service Potential	Short Term Service Potential	Long Term Service Potential
Canarsie Pier, Brooklyn	Co-op City, Bronx	College Point Sites, Queens
39th Street, Brooklyn	Ferry Point Park, Bronx	Beechhurst Residents' Park, Queens
Flushing Bay Marina, Queens	East 63rd Street, Manhattan	New Rochelle, Westchester
Port Regalle, Staten Island	Toys 'R' Us, Brooklyn	Rye Playland, Westchester
Yonkers, Westchester	Marina Del Ray, Bronx	
Peekskill, Westchester	44 Street Pier, Queens	
Tappan Beach, Glenwood Landing, Long Island	Tarrytown, Westchester	

New developments in the planning stages, or under construction, were placed in a separate category, as additional studies were necessary to determine their feasibility. The following is a listing of new developments:

New Developments	New Developments (continued)
Fordham Landing, Bronx	Point Little Bay, Queens
Shorehaven, Bronx	Hunters Point, Queens
Castle Hill, Bronx	Shore Towers, Queens
Sheepshead Bay, Brooklyn	Arverne, Queens
Trump City, Manhattan	Watersedge Estates, Staten Island
East River Landing, Manhattan	Captain Quarters, Staten Island
East End Point, Queens	Snug Harbor, Staten Island
Cresthaven, Queens	West Shore Road, Port Washington, Long Island

3 Shoreham-New Haven Ferry Feasibility Study – Port Authority of New York and New Jersey (March 1991)

DOCUMENT:	**Shoreham-New Haven Ferry Feasibility Study**
DATE:	**March 1991**
PREPARER:	**Port Authority of New York and New Jersey, Office of Ferry Transportation**
CLIENT:	**City of New York**

Introduction

The purpose of the Shoreham-New Haven Ferry Feasibility Study was to determine the feasibility of establishing an efficient and cost effective link between Suffolk County and Connecticut, through the following:

- Examination of the potential market for ferry service;
- Availability of terminal sites in Shoreham and New Haven;
- Infrastructure improvements necessary to establish the service;
- Cost for instituting the service; and
- Required regulatory and legislative actions.

This study indicated that the two existing cross Sound ferry services – Bridgeport and Port Jefferson Steamboat Company and the Cross Sound Ferry Services Inc. have successfully provided reliable year round service for vehicles and passengers for over fifty years. Ridership has doubled in the last decade – 800,000 passengers and 350,000 vehicles per year. However, despite growth in ridership, the number of trucks using ferry service was estimated to be low – 10,000 annually. Constraints to sites and inconvenient terminal locations were indicated as the primary cause for the low truck usage. As a result, an alternative cross Sound route was studied and considered.

Findings

The two potential ferry sites, Shoreham and New Haven, are located at opposite sides of the Sound – separated by 20 nautical miles or 23.6 statute miles. The Shoreham site is occupied by the Shoreham Nuclear Power Plant and is jointly owned by the Long Island Power Authority and Long Island Lighting Company. Approximately eleven acres out of 500 total occupied by the nuclear plant would be formally transferred to Long Island Power Company upon decommissioning and the remaining would be retained by Long Island Lighting Company.

The proposed Shoreham terminal, near the northern terminus of the William Floyd Parkway would be easily accessible from the Parkway routes 25A, 25 495 and 27. A new road to the terminal would be necessary to accommodate traffic. The 100 feet wide existing inlet would require further dredging and widening to allow truck carrying vessel service.

The New Haven site is a natural deep-water port serving both domestic and international markets. The port has a number of potential terminal sites – privately and publicly owned. The New Haven Terminals Inc. and Wyatt Oil Terminal would be the

most desirable and would require minimal waterside improvements. However, both of these sites were identified as privately owned and would require negotiations for access rights.

New Haven would be conveniently to existing road networks, particularly Interstate Routes 95 and 91. Therefore, the study indicated vehicles would utilize the New Haven Terminal to avoid the overburdened bridge network to the west. However, the potential to capture the truck market would be dependent on the time and cost savings compared to the road network. Based on this study, ferry service would provide marginal benefits during peak travel periods and no savings during periods when the road network would not be congested.

Conclusion

This study suggested that freight only service would not be feasible, and therefore determined two configurations for an automobile, truck and passenger ferry service. It was determined that a four- or two-vessel fleet would be adequate.

The operating, maintenance and capital costs were determined for each service and were projected to be $13.31 million for a two-vessel fleet and $20.52 for a four-vessel fleet. The two terminals were estimated to cost $12 million each and would be designed to permit the rapid loading and unloading of vehicles and passengers. Each terminal would include one slip and fender, hydraulic ramp for access, ticket offices, crew locker rooms, waiting area, parking areas, queuing lane, lighting and fencing.

The anticipated revenues were derived from projected ridership and figures from the 1981 Long Island Sound Ferry Improvement Study. For the two-boat systems this study identified a projected $9.04 million, which would result in an annual deficit of $4.27 million - $13.31 annual expense less revenue. A four-boat system would generate $13.56 million in revenue, which would result in an annual deficit of $6.96 - $20.52 annual expense less revenue. The potential deficits would create the need for subsidy, either operating or capital.

The proposed system would likely impact the existing Cross Sound Ferry services in that it would reduce ridership and revenue. Estimates from the 1981 study, indicated that the reductions would be in the range of 25 percent to 44 percent primarily for automobiles and passengers.

This study identified the next steps to involve the investigation of the acquisition of the proposed terminal sites. The Shoreham site would be complicated, by the decommissioning of the nuclear facility, which could a minimum of two years. The New Haven sites, which are privately owned, would require acquisition negotiations and an appraisal process.

The proposed Shoreham to New Haven ferry service would have the potential to draw significant ridership due to its ease of access and central location. However, the

costs associated with the establishment of the service and its operations could exceed the projected revenue.

4 Staten Island & Middlesex County to Manhattan Ferry Service Assessment – Port Authority of New York and New Jersey (August 1996)

DOCUMENT:	**Staten Island & Middlesex County to Manhattan Ferry Service Assessment**
DATE:	**August 1996**
PREPARER:	**Port Authority of New York and New Jersey**
CLIENT:	**Edison, Perth, Amboy, Middlesex County and Staten Island**

Introduction

The Staten Island & Middlesex County to Manhattan Ferry Service Assessment studied the factors necessary for initiating passenger ferry service from various points along the Raritan River, Raritan Bay and the Arthur Kill. Initially the study began as a review of a single site and route, but quickly expanded into an assessment of eight different sites. The sites were grouped when it became clear during initial assessment that more than one location, in a geographic area stretching from South Amboy, New Jersey to Port Ivory in Staten Island, could have potential as a terminal site for high-speed ferry service to Manhattan. Each of these proposed sites exhibited at least some of the characteristics necessary for a successful park-and-ride ferry service including the following:

- Available land parking;
- Ease of access for automobiles, public transit and pedestrians;
- Redundancy of service or existing transit modes in close proximity;
- Adequate depth of water and clear unencumbered channels;
- Supportive demographics in terms of income and employment for the primary market area; and
- Competitive travel time dock to dock.

The objective of this study was to compile the information necessary so that public officials and private ferry operators could come to an objective determination regarding the initiation of new ferry operations. A number of tasks were undertaken to accomplish the study objectives, including the following:

- Research on prior ferry service in the study area;
- Identification of a primary market area for each site;
- Time and cost analysis of competing modes relative to the proposed ferry service;
- "Break-even" analysis;
- Summation of the likely combination of sites that provide a timely trip and expanded commuter market.

The sites investigated were Edison; Perth; Amboy; South Amboy; and Carteret in Middlesex County and Tottenville; Huguenot Avenue; Great Kills Harbor; and Port Ivory in Staten Island.

The research did not disclose any historical precedent for direct passenger ferry service linking any of these sites to Manhattan. However, there was a long history of

ferry service linking the two larger geographic areas of Middlesex County and Staten Island, specifically Perth Amboy and Tottenville (1860-1963) and Carteret and Travis, also referred to as Linoleumville (1916-1929). As late as 1961, Howland Hook/Port Ivory and Elizabethport in Union County, New Jersey were linked by ferry. Service between northern Staten Island (St. George and Stapleton) and Manhattan has a long history and continues today in the form of the Staten Island Ferry operated by the New York City Department of Transportation. While there is no evidence of passenger service from the subject sites, there is record of direct ferry service to a point further west on the Raritan River. Ferry service between New Brunswick and Manhattan operated as part of a boat/rail/boat service linking Philadelphia and New York City through the Camden and Amboy Railroad. This service was in operation for a period in the 1830's.

In an effort to expand the potential ferry service market, sites that logically could be linked together in Middlesex County and Staten Island were paired and the combined commuter markets and travel times were calculated. Since the total travel time from the first terminal would be most critical, only sites that have a combined travel time less than, or comparable to a direct trip from the first terminal site by other modes were included. In most cases the total travel time for passengers boarding at the first terminal site exceeded that for a direct trip by private automobile from the same area. When compared to other modes of transit, however, travel time by ferry from the first terminal site was generally better than a direct alternative transit trip from the same area.

Findings

The travel time and cost analysis indicated that the proposed direct ferry service was the most expedient trip to lower Manhattan from the eight sites investigated. The faster travel time is dependent upon the use of high-speed vessels capable of reaching a cruise speed of 35 knots, except the more northern Carteret and Port Ivory services, which can operate at 25 knots and remain competitive. However, the ferry fare, estimated at $7.50 per trip exceeds that of all other modes if the cost for parking is not included and the travel cost is limited to out of pocket expenses (fares and tolls). This ferry fare was derived by averaging the current monthly costs for a single trip on the Monmouth County high-speed ferry service ($10.00) and the Staten Island to Midtown Manhattan ferry ($5.00); however the actual fare would depend upon private capital investment and operating efficiencies.

The "break-even" analysis indicated that for a system comprised of two 35-knot vessels operating during peak periods, a daily ridership of 1,802 passengers would be required at the $7.50 fare. The annual cost for a systems, which includes amortization of the estimated $10 million capital cost is $3.44 million. Similarly, 1,622 passengers would be required for two 25-knot vessels and the annual cost would be $3.10 million.

The individual analysis disclosed that the sites in Staten Island have larger commuter populations traveling to Manhattan from within the primary three-mile radius market areas than the New Jersey sites. However, for each site, attributes were identified that could justify further research into their potential as a terminal site for high-speed ferry service to Manhattan.

5 Intrastate Passenger Commuter Ferry Study – Connecticut Department of Transportation (March 2001)

DOCUMENT:	**Intrastate Passenger Commuter Ferry Study, New Haven, Bridgeport, Norwalk, and Stamford**
DATE:	**March 2001**
PREPARER:	**Connecticut Department of Transportation, Office of Intermodal Planning**
CLIENT:	**State of Connecticut**

Introduction

The Intrastate Passenger Commuter Ferry Study analyzed the need and opportunity for establishing an intrastate passenger commuter ferry service along Long Island Sound, serving ports between Branford and Stamford, Connecticut. The feasibility of providing passenger ferry service focused on ports in Branford, New Haven, Bridgeport, Norwalk, and Stamford, with an emphasis on the opportunity to promote the diversion of auto traffic from the congested southwest corridor roadways to waterborne transportation.

This study investigated existing and planned ferry and transit operations along the southwest corridor and Long Island Sound. Various ferry operators were contacted for information regarding their operations and physical assets. The existing waterway facilities infrastructure in the study corridor was analyzed to determine the possibility of accommodating new ferry passenger service, and based on existing infrastructure; new waterway infrastructure requirements were identified.

Findings

The initial operating parameters of a potential service were determined based on the interest in providing service during the morning and evening commuting periods, with a minimal capital investment. Sites were identified in New Haven, Bridgeport, Norwalk, and Stamford that could be considered for developing new passenger ferry terminals. Providing a ferry passenger terminal in Branford was eliminated from further consideration due to inadequate water depths and insufficient land.

Two ferry vessels, with a seating capacity of 150 each, could make two round trips each day in the morning and evening commuter periods between New Haven and Stamford. One vessel would serve New Haven, Bridgeport, and Stamford, while the other would serve New Haven, Norwalk, and Stamford. It is projected that this service would carry approximately 50 passengers daily, in each direction.

Capital and operating costs were determined for two different vessel types with different operating characteristics, both functionally sufficient. An estimated capital investment of 15.6 million would be required to purchase two vessels, construct terminal/dock combinations and provide parking at each of the four sites. An estimated

annual operating expenditure of 1.4 million would be needed for personnel, fuel, equipment, infrastructure maintenance, insurance, marketing and training.

Conclusion

This new passenger ferry service would be operating between municipalities along a Connecticut corridor, which offer commuters a number of travel options, including commuter rail, bus and rideshare programs. The primary roadways in the corridor are Interstate 95, Route 15 and Route 1. Approximately 240,000 vehicles travel these roads daily, with the heaviest travel being during the commuter periods. Therefore, it was determined that the anticipated ridership of 100 daily commuter trips on a new passenger ferry service would have a negligible affect on the average daily or peak period traffic operations in the southwest corridor.

Furthermore, the Connecticut Department of Transportation capital and operating budgets are fully programmed and do not include the funds needed to initiate and operate a new passenger ferry service. Based on the findings of this investigation, the expenditure of public funds to initiate and operate the suggested passenger commuter ferry service could not be recommended.

6 National Parks of New York Harbor Waterborne Transportation Study – National Park Service Northeast Region (April 2001)

DOCUMENT:	**National Parks of New York Harbor Waterborne Transportation Study**
DATE:	**April 2001**
PREPARER:	**Volpe National Transportation Systems Center, in association with Cambridge Systematics, Inc., Norris and Norris Architects and Childs Engineering Corporation**
CLIENT:	**National Park Service Northeast Region**

Introduction

The National Parks of New York Harbor Waterborne Transportation Study focused on the National Parks of New York Harbor. Traffic congestion on local roadways results in difficult automobile access to the Gateway National Recreational Area (NRA) and other park assets. In addition, access by public transportation is poor, because the NRA is located away from urban neighborhoods and commercial centers. However, as an area centered on the water, ferry service could have a natural advantage for improving access. The goal of the Waterborne Transportation Study was identified as follows:

- Assess the viability of water transportation as an access mode serving the Gateway NRA and other assets of the National Parks of New York Harbor;
- Develop a preliminary ferry service concept plan to serve the needs of park visitors;
- Identify opportunities to implement ferry services;
- Analyze advantages and disadvantages of different service options;
- Identify required improvements and investments associated with different service concepts;
- Assess the feasibility of alternatives; and
- Develop a ferry service concept plan.

Demand and supply factors were evaluated to identify the most promising ferry routes in both a broad screening of potential opportunities and a more focused feasibility assessment. The site analysis addressed physical conditions at potential dock/ferry landing sites, based on criteria as follows:

- Presence of existing docks and their condition;
- Current use and resource sensitivity;
- Landside access characteristics; and
- Marine or waterside conditions – depth of sea, tidal currents, wind and sea exposure and proximity to shipping lanes.

Based on the initial screening, the list of the most promising ferry landing sites was developed as follows:

- Fort Wadsworth/Battery Weed on Staten Island;
- Riis Landing and Canarsie Pier at the Jamaica Bay/Breezy Point unit; and

- Two sites near Fort Hancock on Sandy Hook.

Additional sites that could serve as origins for ferry service to the Gateway NRA were identified as follows:

- Battery Park in Manhattan;
- Fulton Ferry Landing in Brooklyn;
- Brooklyn Army Terminal;
- Several sites in northern New Jersey on the Hudson River and Upper New York Bay; and
- New Jersey sites in Monmouth County near Sandy Hook.

Findings

The potential ferry landing sites in Gateway NRA and Battery Park were subjected to detailed site condition assessment and preliminary concept designs were developed for needed improvements. Ridership scenarios were developed for major origin and destination combinations, and revenue projections based on these estimates were compared to vessel capital and operating cost estimates. Based on the analysis, it was determined that if the routes would be operated as incremental additions to other successful services, particularly the commuter market, service on the routes connecting the major ferry landing sites could be financially viable. A ferry service concept plan was developed incorporating recommended routes and docking locations at three locations within Gateway NRA:

- Torpedo Pier at Fort Wadsworth;
- Riis Landing at Breezy Point; and
- Fort Hancock at Sandy Hook.

The study recommended a phased approach to developing these facilities, with the initial priority being the implementation of improvements, required for safe and reliable operations. Following the demonstration of initial service success, an investment in the construction of fixed piers would be recommended. Battery Park, another potential landing site, creating a commuter service from Riis Landing to Manhattan would be a promising strategy for funding visitor service to Jamaica Bay/Breezy Point and Fort Wadsworth. Potential ferry landing facilities administered by the Park Service were identified as the following routes:

- **Riis Landing to Fort Wadsworth to Battery Park** – commuter and visitor;
- **Sandy Hook to Fort Wadsworth to Battery Park** – primarily seasonal, visitor oriented service in the initial phase; and
- **Service to Fort Wadsworth** – could be provided as an intermediate stop on both routes, because of Fort Wadsworth's central location at the narrows.

Several additional potential routes that would serve Gateway NRA markets and are likely to be comparable in size to the market coming from Manhattan were identified as follows:

- Fulton Ferry Landing to Riis Landing;
- Brooklyn Army Terminal to Riis Landing; and

- New Jersey Hudson River/Upper Bay sites (Weehawken, Hoboken, Jersey City, Liberty State Park) to Sandy Hook or possibly Riis Landing New Jersey Bayshore (South Amboy, Belford) to Sandy Hook.

The Park Service would not own or manage the docks serving visitor origins. Instead, the Park Service could facilitate or support the implementation of these routes through a variety of mechanisms, including concession agreements with private operators to provide service from existing docks at the origin points. Since service to the park units would generally be concentrated in off-peak hours, relative to commuter service, there would likely be multiple opportunities to initiate such services, without undue capacity limitations or conflicts at existing docking facilities.

Service to Riis Landing on weekends would be seasonal, May through September, and would be year-round on weekdays – commuters in one direction and visitors in the reverse direction. The initial service between New Jersey origins and Sandy Hook would be seasonal and limited to weekends. On a long-term basis, a weekday service between Manhattan and Sandy Hook, with an intermediate stop at Fort Wadsworth, could be viable.

A secondary route that is considered promising would connect Riis Landing with Canarsie Pier; Riis Landing would serve as a hub with a primary route connection to Battery Park, Fort Wadsworth, and Fulton Ferry Landing or Brooklyn Army Terminal. The connection to Canarsie Pier would be a single spoke from this hub – Canarsie Pier serving primarily as a destination. Another potential spoke from the Riis Landing hub would be a link or excursion route through the Jamaica Bay Wildlife Refuge.

Conclusion

Financial feasibility of the proposed ferry system depends on the ability to ‘piggyback’ routes, serving park visitors onto other services that serve larger markets, typically commuters. As the number of services in the harbor grows, opportunities for such ‘piggybacking’ could be expected to increase.

In addition, there are two additional alternative strategies that could be possible for funding Gateway NRA ferry services:

- Pooling or sharing revenues with Statue of Liberty/Ellis Island services; and
- Subsidizing the service from other public sources.

However, in the absence of funding from either of these two alternative sources, ‘’piggybacking’ of park ferry services onto commuter routes appears to be a financial necessity.

7 Yonkers/Riverdale/Northern Manhattan Ferry Assessment – Port Authority of New York and New Jersey (April 2001)

DOCUMENT:	**Yonkers/Riverdale/Northern Manhattan Ferry Assessment**
DATE:	**April 2001**
PREPARER:	**Port Authority of New York and New Jersey**
CLIENT:	**Yonkers, Riverdale and Northern Manhattan**

Introduction

The Yonkers/Riverdale/Northern Manhattan Ferry Assessment was initiated on the part of elected officials – New York City Council Member June Eisland and Yonkers Mayor Spencer – to capitalize on the abundance of underutilized waterfront properties to improve commuting options for their constituents. Increasing levels of congestion on the Tappan Zee Bridge and the lack of significant improvement in transit alternatives contributed to the interest in waterborne transportation. Furthermore, it was determined that transit service and several major highways through the Yonkers/Riverdale/northern Manhattan area could feed and expand a ferry service. The considerable amount of necessary infrastructure in place should be planned and developed to provide safe, efficient and reliable transportation alternatives.

Conclusion

Journey-to-Work data from the 1990 Census indicated that a sizeable number of Yonkers residents travel to Manhattan for work. From a transportation and community planning prospective the Yonkers City Pier would be ideal for a new ferry service. The two-story structure would be at the heart of the City's plans for revitalizing downtown/waterfront properties and would be in proximity to the Yonkers Metro-North rail station and the Yonkers bus loop.

The concept of a new ferry service between Yonkers/Riverdale/northern Manhattan and midtown/downtown was conceptualized to address increasing congestion on the roadways. Although the Yonkers and Riverdale/northern Manhattan areas are served by transit, the number of individuals relying on rail – and subway transfer at Grand Central Station – for access to downtown and the proximity of the three proposed sites to major arterials should provide a sizeable market for the proposed service. If additional parking capacity cannot be created in the neighborhoods adjacent to the Dyckman Marina, a significant portion of the demand in the form of travelers on the local arterials would not be realized. Whether the parking issue is resolved favorable or not, it is recommended that some form of shuttle service be developed to ensure adequate access to both the Dyckman Marina and West 125th Street for all prospective ferry services users.

Beyond the Yonkers, Riverdale/northern Manhattan markets, Manhattan-bound commuters from west of the Hudson could offer additional demand for the proposed service. Based on the 1990 Census, approximately 9,900 Rockland County commuters travel to midtown Manhattan each day. Of those trips, 6,100 and 1,700 are made to midtown and downtown during the 6:30 to 8:30 A.M. peak period, respectively.

The proposed service was concluded to be an important enhancement to the regional transportation network, and was included in the "Regional Ferry Services" project approved by the Port Authority's Board of Commissioners at its February 22, 2001 meeting. As such, the Port Authority would offer assistance to local officials interested in advancing the project form the planning state to implementation

8 Assessment of Ferries as Alternatives to Land-Based Transportation: Phase 2: Case Studies of Five Ferry Networks – U.S. Department of Transportation, Federal Transit Administration (March 2004)

DOCUMENT:	**Assessment of Ferries as Alternatives to Land-Based Transportation: Phase 2: Case Studies of Five Ferry Networks**
DATE:	**March 2004**
PREPARER:	**Charles Norris and Urban Harbors Institute**
CLIENT:	**The Office of Technical Assistance and Safety, Federal Transit Administration**

Introduction

The Assessment of Ferries as Alternatives to Land-Based Transportation was organized to collect current information and impressions of the five selected systems, through site visits, interviews and data analysis.1 The approach was to research in detail such determining factors as historic decision points, regional transportation context, current market demands, operations and proposed expansion plans. Common decision patterns and ferry development trends were identified through comparative analysis of the functionally and geographically diverse ferry systems – Seattle and Puget Sound, Washington; Portland and the Casco Bay Islands, Maine; San Francisco Bay, California; the Mississippi River and New Orleans, Louisiana; and New York Harbor, New York.

Through more detailed evaluation of site visits, this study determined specific factors dominant in influencing local decisions on transportation modal choice. In addition, it was possible to identity determinants most likely to influence future planning choices and system operations. The case studies of this study included detailed historical analysis of the evolution of the systems and descriptions of performance characteristics of ferry routes related to regional transportation networks. Finally, the case studies were compared with one another and evaluated in terms of current national and regional transportation policy objectives such as those set forth in the Intermodal Surface Transportation Efficiency Act (ISTEA).

The case study approach and methodology were developed around the site visits and interviews. It became readily apparent from the earlier surveys that documentation of system histories, current operations and relationships of ferry systems to land-based choices was limited. Therefore, it was determined that a greater emphasis of the research would be placed on interviews with persons directly involved with local operations, planning and system management – as well as individual system users. In addition, it was determined necessary to directly visit and experience both the water routes and landside transportation alternatives in order to compare the choices and understand the influencing geographical context. The sequences of steps were as follows:

- Detailed study of available documents and list of preliminary site visit issues;
- Preparation of site visit data sheets and interview questionnaires;
- Schedule of site visits and interviews;

1 This literature review document will summarize one of the five selected systems – New York Harbor.

- Conduct site visits, collect new documents, conduct interviews and ride routes;
- Tabulate site visit information on data sheets and review new documents;
- Document and evaluate site visit findings;
- Conduct comparative analysis of case studies; and
- Document findings and prepare final report.

Findings

This study identified recent successes of the New York City ferry network that provide useful examples of various techniques for interagency ferry planning, definitions of public-private sector responsibility, implementation strategies, private ferry management options and vessel technology development for future urban commuter travel patterns and infrastructure challenges. In particular this study identified the following successes:

- **Public planning to integrate ferries in a regional transportation network** – inter-agency initiatives acted as catalysts to implementation programs for the private commuter ferry system.
    - Trans-Hudson Study (1984);
    - The Hoboken Ferry Plan (1988);
    - The Bayshore Ferry Plan (1991); and
    - The New York High-Speed Ferry Initiative (1993).

- **Public policy initiatives to facilitate private ferry operators** – coordinated inter-state public transportation policy initiatives were critical to the start-up and success of the private services.
    - New York City Waterborne Transportation Policy (1986);
    - NJ Transit / NJ DOT – policy to establish intermodal rail and bus connections; and
    - New York State High Speed Ferry Initiative (1993).

- **Creative fare structures and commuter transit incentives** – New Jersey and New York City public agencies instituted commuter voucher programs through employers to provide incentive to use transit commuter modes.

- **Visionary private ferry operators** – dedicated private operators determined to identify and serve ferry commuter markets.

- **Preferences of ferry users for optional water transit** – the Port Authority and Interstate Transportation Task Force conducted user polls and found two primary reasons for ferry choice – comfort (36 percent) and reliability (22 percent).

- **Need for funding flexibility** – according to Port Authority and New York City Department of Transportation, encouragement of private ferry service requires more flexible funding. Standard Federal programs do not provide enough adaptability to address interstate corridors or public-private partnerships.

- **New York City region as a cutting edge water transit demonstration context** – extreme commuting conditions and multitude of water crossings combine to create a challenging transit context.

9 Hunts Point Waterborne Freight Assessment – New York Metropolitan Transportation Council (September 2004)

DOCUMENT:	**Hunts Point Waterborne Freight Assessment, Opportunities to Meet the Communities Transportation Needs Through Waterborne Strategies**
DATE:	**September 2004**
PREPARER:	**Cambridge Systematics, Inc. in association with Seaworthy Systems, Inc. and M.G. McLaren, P.C.**
CLIENT:	**New York Metropolitan Transportation Council**

Introduction

The Hunts Point Waterborne Freight Assessment focused on the Hunts Point Food Distribution Center, the largest wholesale food distribution center in the nation. Truck access is a major regional and local transportation issue, and therefore this study focused on waterborne strategies to help offset some of the local and regional impacts of trucking to and from the Hunts Point area. In addition, this study investigated whether goods movement strategies also could meet related passenger transportation demand for employees and customers. In particular, the following potential waterborne services were selected for evaluation:

- Hunts Point to LaGuardia, Newark, and JFK Airports;
- Hunts Point to the East End of Long Island;
- Hunts Point to Port Authority of New York and New Jersey (PANYNJ) marine terminals and the Connecticut Coast; and
- Hunts Point to New Jersey markets and west of Hudson markets.

These selected potential ferry operations were evaluated based on the following criteria:

- Identifiable demand with a minimum base level of potential traffic to support the service;
- Physically and operationally feasible with a suitable location for an appropriately sized terminal, adequate navigation channels and effective connections to ferry users and the regional transportation network;
- Attractive level of performance with speed, price, frequency, reliability and security that is competitive with other available transportation choices to capture a fair share of market demand; and
- Economic, transportation, and environmental benefit at a reasonable cost, with a high likelihood of being stable and sustainable as a business proposition.

Findings

This study identified waterborne services with limited benefit or feasibility not recommended for further consideration as follows:

- **Hunts Point to LaGuardia Airport freight ferry** – no freight demand or suitable location for a freight ferry at LaGuardia.

- **Hunts Point to Newark Airport freight ferry or freight/passenger ferry** – very limited freight demand for Hunts Point commodities, no direct access to water at Newark Airport and no identifiable terminal location, no service competition with trucking and required heavy subsidization to offer a price competitive with trucking.

- **Hunts Point to JFK Airport freight or freight/passenger ferry** – significant constraints for vessel operation in Jamaica Bay, including shallow berthing areas, low bridges, and sensitive wetlands requiring low-speed/low-impact operations, no service competition with trucking and required heavy subsidization to offer a price competitive with trucking.

- **Hunts Point to East End of Long Island freight ferry or freight/passenger ferry** – limited freight demand for Hunts Point commodities, no suitable terminal location, high likelihood of local opposition by East End communities, no service competition with trucking and required heavy subsidization to offer a price competitive with trucking.

This study identified waterborne services with potential benefit recommended for further feasibility analyses as follows:

- **Hunts Point to Port of New York and New Jersey container barge** – an additional stop for a planned port-to-port container roll-on/roll-off barge service being implemented between the Port of New York and New Jersey (PONYNJ) and Bridgeport, Connecticut. It could provide a potentially viable alternative for moving international containers locally (between PONYNJ and the Bronx) and for moving domestic and international containers regionally (between New England and the Bronx). Key questions include the level of anticipated demand, the potential effect on community streets, whether the PONYNJ-Bridgeport service and its users would be negatively impacted by adding another stop, and the potential need for public subsidy.

- **Hunts Point to New Jersey and West of Hudson markets** – a drive on/drive off truck ferry service, providing a 'floating highway' link between Hunts Point and the west of Hudson regional and national transportation system. The west of Hudson market includes a mix of long-haul traffic as well as regional traffic. Further analysis will be needed to identify the specific origins and destinations of west of Hudson traffic, the range of vessel types and characteristics that might be used, the specific west of Hudson areas and sites that might be available, the incentives and improvements necessary for host communities to support a terminal, and the potential need for public subsidy. Strategies to limit the amount of 'through' traffic between North Jersey and areas other than Hunts Point also should be explored, so that Hunts Point is not burdened with additional non-local truck traffic. Options could include limiting the service to Hunts Point origins and destinations, or creating a multi-tiered pricing system to discourage through traffic, or to continue the service further east to a point on the Connecticut coast to accommodate North Jersey-New England traffic.

Although the cases for a container barge stop at Hunts Point, or for a truck ferry between Hunts Point and New Jersey, have not been proven, they are envisioned as local services to enhance truck access to and from the immediate Hunts Point community. They do not necessarily substitute or reduce the need for other major highway, rail, and marine transportation improvements being planned to serve the region. However, the fact that there are scenarios in which freight ferries serving Hunts Point could be competitive suggests that the opportunity merits further consideration as a limited capacity highway substitute for Hunts Point traffic that cannot be handled by rail or other alternative modes of freight transportation.

If freight services justify an investment in developing a ferry terminal at the Market, then passenger-only services could be added at relatively low-capital cost. Two concepts were identified as follows:

- **Hunts Point to LaGuardia passenger ferry service** – Ferry service to/from LaGuardia would be highly competitive with vehicular and transit services. Key questions include the total demand from Hunts Point, and the impact of increasing demand (by creating linkages to the New York City public transportation system) on Hunts Point Food Distribution Center activities.

- **Regional passenger ferry network connectivity** – Extending existing services currently operating in the East River, including the New York Water Taxi to Hunts Point. The availability of after-hours ferry service would be a key issue.

An initial limited engineering feasibility assessment suggests that development of a four-acre marine terminal could be developed adjoining the Fish Market site, on property owned, but not currently used, by the New York City Department of Sanitation. The terminal would have sufficient water depth and land area. The development cost is estimated at around $6.4 million based on currently available information. The terminal would be compatible with adjoining land uses, would not require major marine improvements and is not expected to require roadway improvements. Overall benefits associated with these waterborne service opportunities would include:

- Improved transportation services for Hunts Point Food Distribution Center businesses;
- Regional and local transportation system benefits;
- Regional air quality benefits; and
- Improved regional accessibility for employees, customers, and area residents.

Conclusion

As a next step in this process, it is recommended that the study sponsors and interested stakeholders work closely with the Hunts Point Food Distribution Center business community, with the larger Hunts Point community, and with responsible agencies at the Borough, City, regional and State levels to:

- Determine which, if any, of these opportunities to pursue further;
- Initiate discussions with potential service partners and regional stakeholders;

- Perform follow up estimates of travel patterns, market demand, and engineering feasibility where needed;
- Perform further studies of shipper specific distribution patterns; and
- Initiate discussions with potential developers, operators, and regional partners.

10 Long Island Sound Waterborne Transportation Plan – New York Metropolitan Transportation Council, Greater Bridgeport Regional Planning Agency and South Western Regional Planning Agency (November 2005)

DOCUMENT:	**Long Island Sound Waterborne Transportation Plan**
DATE:	**November 2005**
PREPARER:	**Cambridge Systematics, Inc. in association with Eng-Wong, Taub and Associates, Inc., Howard/Stein-Hudson Associates, Inc., Gruzen Samton Architects, Planners and Interior Designers, HydroQual, Inc., M.G. McLauren, PC, Management and Transportation Associates, Inc./Seaworthy Systems and STV Inc.**
CLIENT:	**New York Metropolitan Transportation Council, Greater Bridgeport Regional Planning Agency and South Western Regional Planning Agency**

Introduction

The Long Island Sound Waterborne Transportation Plan focused on the region adjoining Long Island Sound and its tributaries – including Suffolk and Nassau Counties, coastal Connecticut, Westchester, the Bronx and Queens. Despite the presence of commuter rail and bus transit networks that are among the most heavily used in the nation, congestion on regional highways, connectors and local access roads is in many cases already unacceptable, and is forecasted to increase over the next 20 years. In addition there is rising concern with transportation system redundancy and security measures. To address these issues, the Long Island Sound Waterborne Transportation Plan (LISWTP) focused on two key objectives as follows:

- Explore the potential for expanded use of Long Island Sound and its tributaries for waterborne passenger and freight transportation; and
- Develop a plan for waterborne transportation for Long Island Sound through the year 2025.

Six key features were identified to define the LISWTP process including the following:

- Develop a long-range regional plan of feasible, beneficial, and sustainable marine transportation improvements that reduce the region's reliance on highways;

- Analyze waterborne transportation through the same types of comprehensive, rigorous analyses that are typically applied to highway or rail transportation plans, including infrastructure conditions, market demand, connectivity to other modes, transportation benefit/cost, and community/land use/environmental impacts;

- Conduct extensive public outreach process, guided by a Steering Committee, an Advisory Committee, and an aggressive schedule of Community Planning Workshops and Public Review Meetings; and

- Examine a broad range of: routings, markets, services and facilities and technologies.

Public outreach suggestions reflected the consideration of a variety of factors, including:

- Potential market capture;
- Marine structures and navigation;
- Highway and rail access;
- Passenger and marine cargo terminals; and
- Environmental and community impacts.

For each community represented, the LISWTP team identified one or more physical site location deemed representative, and made general evaluations based on the following factors:

- Land use and development;
- Marine structures and vessel navigation;
- Natural resources and environmental permitting; and
- Landside access – auto, transit and pedestrian.

Conclusions

Following the evaluation of sites, potential services linking the most feasible sites were evaluated based on anticipated service characteristics – primarily speed, cost and service frequency – demand estimates and projected ability to cover anticipated daily vessel operating costs from revenues. Theses services were categorized into fast ferry, water taxi and freight service.

Fast Ferry Service

The regional geography of the **Glen Cove to Manhattan Fast Ferry** would favor a ferry, offering attractive travel times to Manhattan. However, there would be a low base of travel demand, possible due to the current difficulties in making the transition. However, ferry service could release latent demand, support changes in the travel patterns of current area residents and visitors and/or influence the attraction of future area residents and visitors. A service using two 25-knot vessels would offer the best chance for the recovery of vessel operating costs. The former Fox Navigation site would be a viable location.

A strong base of travel demand was identified for the **New Rochelle to Manhattan Fast Ferry**. However, the regional geography would not favor the ferry compared to ground modes, and the Metro North railroad offers a well-established, highly competitive rail transit service. Ferry service could prove a better alternative for some current auto and rail transit users, particularly to Lower Manhattan. There could be sufficient demand to support separate services to Midtown and Lower Manhattan, and proceeding with planning for a Lower Manhattan service as a first step, using two or more 25-knot vessels, which offer the best chance for recovery of vessel operating costs)

or two or more 35-knot vessels, which offer more competitive travel times. Further work would be needed to confirm a suitable location for a New Rochelle ferry terminal.

Travel demand to Manhattan would be relatively modest for the **Rye to Manhattan Fast Ferry** compared to New Rochelle. The regional geography would not favor the ferry compared to ground modes, and the Metro North offers a well-established, highly competitive rail transit service. No scenarios were identified where a ferry could recover vessel operating costs. In addition, the idea of developing a 'rail intercept' terminal at Rye, where Wall Street-bound rail passengers could transfer to a ferry would be unattractive service times. Therefore, Rye would not be recommended for further consideration for a fast ferry service. However, Playland was found to be a suitable location for some type of ferry service, and could host a water taxi operation, particularly in peak season where it would provide an alternative means of access to Playland itself.

Travel demand to Manhattan would be relatively modest for the **Bridgeport to Manhattan Fast Ferry,** and the Metro North offers a well-established rail transit service. No scenarios were identified where a Bridgeport to Manhattan ferry service could recover its vessel operating costs. However, the best possibility for a Bridgeport service is to look at it as a 'feeder' to help create a critical mass of Manhattan-oriented travel from Stamford. Two potential fast ferry terminal sites were identified – the existing terminal and the Remington property.

Travel demand to Manhattan would be relatively modest for the **Bridgeport/Stamford to Manhattan Fast Ferry**, and the Metro North offers a well-established rail transit service. However, the combination of Bridgeport and Stamford demand appears to create a critical mass of demand that could support a Manhattan ferry service. The best chance for cost recovery would be with 25-knot vessels, but these offer unattractive service times compared to transit, and therefore 35-knot vessels would be the minimum speed that should be considered. At a fare of around 17 dollars, the model suggested that a service using two 35-knot vessels would cover its vessel operating costs. An acceptable ferry terminal location was identified in Stamford, at the Northeast Utilities site.

The **New Haven to Long Island Fast Ferry or Conventional Ferry** service could not be modeled. It is recommended that further investigations be performed to the possibility of conventional vehicle ferry service to New Haven.

If ferry terminals and services would be established at New Rochelle, Glen Cove, Stamford, and/or Bridgeport, and are supported based on peak period Manhattan demand, it would be possible to offer **Cross-Connecting' Services** between these locations – as well as LaGuardia – during the off-peak periods.

Water Taxi Service

Along the Connecticut coast, it would be reasonable to look at linking adjacent coastal waterfront districts by **North Coast Water Taxi Service** – South Norwalk to Stamford, Stamford to Port Chester, Port Chester to Rye, Rye to Mamaroneck, and Mamaroneck to New Rochelle – with 20-knot water taxi services. There would be

underlying travel demand between the waterfronts and acceptable ferry locations were identified for each community. Further studies, including additional local surveys, would be needed to quantify the level of diversion and associated economics of these services.

This study examined a ferry route connecting Orient Point, Greenport, Riverhead, Shinnecock Inlet, Sag Harbor Village and Lake Montauk as **Inner Forks Water Taxi Service.** Acceptable ferry locations were identified for each community. However, primarily due to the distances involved, the ferry would not offer competitive travel times, except between Lake Montauk/Orient Point and Lake Montauk/Greenport. This route was recommended for further study. While it was not suggested for study as part of the LISWTP, the idea of a "Shelter Island Bypass" passenger service has been raised; it appears to offer faster times than the auto between Sag Harbor Village/Greenport and Sag Harbor Village/Orient Point, and merits further study.

Freight Service

The Bridgeport Port Authority identified an operator for its container barge service to/from the Port of New York and New Jersey. Ultimately, this container barge service might potentially be extended to New Haven and/or New London. However, it would be probably best to wait until the Bridgeport service establishes a track record before recommending potential extensions of the service. In the meantime, the State Pier in New London could be an excellent location for a container barge operation, and several sites – although none ideal – in New Haven could potentially host a container barge operation. There are concerns that New Haven would be too close to Bridgeport to merit a separate container barge service.

Dedicated truck ferries, as opposed to conventional ferry vessels carrying trucks along with cars, were recommended for further study as part of the Hunts Point Waterborne Freight Assessment. There would be no obvious services where a dedicated truck ferry would fill in a 'missing link' in the regional transportation system, other than between the north shore of Long Island and the south shore of Connecticut. This link was identified as a possibility for Bridgeport, New Haven, and New London, but objections were raised for the potential Long Island connections. However, other studies may offer the opportunity to explore this possibility.

In addition this study identified emergency conditions and final recommendations. Efficient utilization of existing resources – ferry terminals, parking, access routes, transit services – should be emphasized to help meet emergency transportation needs, should they arise. No new ferry terminals were proposed for this purpose. However, improvements should be made to both the Bridgeport and Port Jefferson ferry terminals to allow for the simultaneous loading and unloading of two vessels, which could prove important during periods of intensive use. Local and regional planners should coordinate to develop plans to best utilize existing facilities, to quickly adapt them to handle large traffic volumes if necessary, and to manage the associated access and parking requirements.

The LISWTP did not recommend any changes to existing ferry services – Bridgeport/Port Jefferson, New London/Orient Point, or New London/Montauk – but there are significant issues of parking, signage, and landside access at each location. These should be addressed through appropriate studies and improvement projects.

11 Bi-State Domestic Freight Ferries Study – Port Authority of New York and New Jersey (September 2006)

DOCUMENT:	**Bi-State Domestic Freight Ferries Study**
DATE:	**September 2006**
PREPARER:	**NYU Wagner Rudin Center and The State University of New Jersey Rutgers**
CLIENT:	**Port Authority of New York and New Jersey**

Introduction

The Bi-State Domestic Freight Ferries Study explored the feasibility of freight ferries as an alternative for domestic truck freight movements that cross the Hudson River through bridges and tunnels. This study differs from previous efforts because the scope was tightly focused on intra-harbor ferries that would carry domestic freight that would otherwise be transported by truck over the roadway network. In addition, this study concentrated on the key factors that have spurred freight ferry markets and use in other locations, rather than trying to identify specific routes or locations. Based on this study, three central conclusions emerged and were identified as follows:

- Regulation or prohibition of certain truck movements for safety, security or environmental reasons would likely be needed as a precondition to create and shape requisite markets for future freight ferry services in the region;

- Experience elsewhere suggests that niche market development, as opposed to approaches that would serve broad commercial traffic, would be viable starting points and likely the best way to ensure local success of freight ferry systems; and

- Increased security, new emergency services alternatives, and increased service efficiency would be potential regional benefits that could be derived from freight ferry system development.

Findings

This study suggests that a freight ferry would not provide the time and/or cost savings necessary to attract general freight movement given current, 'tolerable' levels of congestion and shippers' preference for single line highway service. Thus, without public policy intervention and leadership a ferry marking would unlikely develop on its own. Development of public policy to promote freight ferry operations in the region would prove complex because of the multiple public agencies, communities and private interests with development stakes.

With such public leadership, based on clear and practicable policies, a successful bi-state freight ferry operation could be implemented as has been done in at least two other cases as follows:

- Detroit-Windsor – a publicly-owned, privately-operated tunnel and a privately-owned and operated bridge both made formal corporate decisions to refuse to allow transport of a particular set of goods (hazardous material), thus providing

the service needs around which the Detroit-Windsor Truck Ferry built its initial operations. The Ferry has since attracted over-weight and over-dimensional vehicles as well as some general truck traffic to its service mix.

- Quincy-Deer Island – a public authority in conjunction with the local town, made the decision that all materials and personnel needed to build the Deer Island sewage treatment facility would be barged rather than driven on local streets into the construction site.

Four potential niche markets in the New York metropolitan region were identified as follows:

- Hazardous materials;
- Overweight and over-dimensional vehicles;
- Construction materials and equipment; and
- Air cargo movement to/from JFK.

A freight ferry could enhance emergency and security operations in several key ways as follows:

- Increased redundancy for the overall regional transportation network;
- Less susceptible to sabotage since it requires less fixed infrastructure; and
- More flexibility in times of crisis since freight to passenger use, routes and landing sites can be changed with relative ease.

For specific niche markets, a freight ferry would offer additional security benefits. By concentrating all Hazmat on ferries, agencies could gain tighter control of these shipments throughout the region. In the cases of overweight/over-dimensional vehicles and vehicles transporting Hazmat, enforcement could be made simpler and more effective because all vehicles would be utilizing a uniform crossing.

Conclusion

Leadership is important, particularly in a region with multiple jurisdictional authorities. In this regard the Port Authority of New York and New Jersey would be uniquely placed to provide such leadership where bi-state service would be involved. However, there are several other entities with whom the Port Authority of New York and New Jersey or any other lead agency would need to coordinate with to develop and implement requisite polices and rules.

Technically specific analyses would be needed for each of the potential niche markets identified. It would be possible that this next phase could be bolstered by a public request for proposals process that would outline work needed to be performed by private firms seeking to provide new freight ferry operations.

Experienced operator familiar with maritime operations and associated costs would be essential. Due diligence would be needed to refine the parameters, costs and aspects of each niche market service, and ensure that all regulations would be taken into account during decision making.

A series of federal considerations, ranging from the applicability of the Harbor Maintenance Tax (HMT) to crewing requirements would need to be formally addressed prior to the commencement of any service. These rules and regulations could potentially adversely affect operating costs. Among the issues would be the following:

- HMT – Though the HMT would not be an issue in the Harbor, because the wording of the regulation is open to interpretation, this would need to be formally clarified as actual routes and landing/staging areas are identified;

- Jones Act – While there would likely be vessels already built that could be used, thus reducing the Jones Act's impact on initial capital costs, other regulations regarding the percentage of the crew who are citizens versus those with working permits would need to be taken into account;

- Crewing – The number of crewmembers needed would have to be estimated since there are few freight ferries in the United States and there are no specific guidelines defined.

Freight ferries have been proven to work in certain situations and markets. These potential benefits could accrue to the region. However, without effective leadership, coordination on key policy decisions and sufficient enforcement by agencies in New York and New Jersey, moving the freight ferry options forward would likely prove difficult, if not impossible.

3 OTHER GEOGRAPHIC AREAS LITERATURE REVIEW

1 Rhode Island Waterborne Passenger Transportation Plan – State of Rhode Island (June 2002)

DOCUMENT:	**Rhode Island Waterborne Passenger Transportation Plan**
DATE:	**June 2002**
PREPARER:	**Rhode Island Statewide Planning Program**
CLIENT:	**State of Rhode Island**

Introduction

The Rhode Island Waterborne Transportation Plan was developed to investigate and provide the appropriate use of the State of Rhode Island's bays, harbors, and rivers for passenger transportation, and to develop a plan for waterborne passenger transportation in Rhode Island for the year 2010. Goals and policies were identified as follows:

- Promote the value of existing waterborne passenger transportation operations and implement measures to preserve and enhance them;
- Focus on the most feasible markets for service development;
- Assure that waterborne passenger transportation services support and complement intermodal transportation;
- Review proposed waterborne passenger services to identify needs for improved access to marine terminals;
- Develop major shoreside waterborne passenger transportation terminals for tourist and commuter traffic;
- Encourage the development of satellite shoreside waterborne passenger transportation terminals for tourists and commuters at any marine terminal constructed or modified to accommodate cruise ships;
- Cooperate in the development of a policy on dredging, including the identification of long-term disposal sites;
- Build facilities that would serve the public interest by improving existing transportation systems, accommodating large numbers of people;
- Coordinate development and operation; and
- Develop policy initiatives, facility improvement, and funding measures.

The feasibility of waterborne transportation was investigated based on the following criteria:

Vessels	Terminals	Demand	Cost	Financing/Operating	Environmental Impacts
Suitability of different vessel technologies, particularly high-speed ferries	Availability of strategically located landing/terminal locations accessible by both land and water	Passenger demand for the type and frequency of service that can be provided on alternative routes	Costs of providing the services	Feasibility of publicly and/or privately financing and operating services; and	Ability to minimize any adverse impacts of siting new terminals and other support facilities

Conclusion

The Rhode Island Department of Transportation identified several principles to develop and enhance water transportation services as follows:

- Waterborne passenger transportation services should be operated by private enterprises. The state should not assume that role, but work cooperatively with the Rhode Island Public Transit Authority in seeking ways to assist private-sector initiatives.

- Waterborne passenger transportation facilities should be built or funded with state assistance where those facilities would serve the public interest by improving the function of the state's transportation system and by accommodating large numbers of people. Where the state participates in the development of facilities, it should retain some property interest in the facilities to assure their continued use for transportation purposes.

- Work with other public agencies, private businesses, nonprofit organizations, tourism organizations, and local governments in the development and improvement of waterborne passenger transportation services as a component of the transportation system that complements highways and public transit.

- Promote and encourage, in cooperation with the Economic Development Corporation, the use of waterborne passenger transportation by tourists, commuters and the general public.

- Seek to locate terminal facilities in places where there are intermodal connections between waterborne transportation and automobiles, buses, bicycles and pedestrians.

- Assist owners of waterfront property seeking to develop terminals for use by passenger ferries by providing information on permitting, design and construction.

- Develop policies and regulations, in cooperation with the Coastal Resource Management Council and the Department of Environmental Management, that encourage the development of environmentally compatible marine terminals for

tourist and commuter use, and that provide thorough and efficient review of facilities devoted to such purposes while assuring compliance with clean air and congestion management requirements.

- Pursue available sources of federal funding, especially funds for alternative transportation projects and air-quality projects, to promote and develop waterborne passenger transportation.

- Develop state funding mechanisms that will leverage private investment and match federal funding sources to develop waterborne passenger transportation.

- Work with the Economic Development Corporation to pursue funds for demonstration projects for the construction of vessels suitable for high-speed passenger transport in Narragansett Bay and offshore.

- Establish a clearinghouse to provide information and guidance to present and potential providers of waterborne passenger transportation in identifying and obtaining funding to support the operation of routes with the potential to serve significant numbers of people.

2 Waterborne Transportation Study – Pierce County Public Works and Utilities Transportation Services (October 2003)

DOCUMENT:	**Waterborne Transportation Study**
DATE:	**October 2003**
PREPARER:	**IBI Group in association with Elliott Bay Design Group and Jacobs Civil**
CLIENT:	**Pierce County Public Works and Utilities Transportation Services**

Introduction

The Waterborne Transportation Study focused on the existing ferry service in Pierce County, Washington between the Town of Steilacoom, Anderson Island and Ketron Island. This service is provided by Pierce County Public Works and Utilities – Transportation Services, primarily through a 54-car vessel, with back up service through a 30-car vessel that is now almost 70 years old. The ferry system was last studied in 1989 – fourteen years ago. Since that time, the population of Anderson Island has increased 64 percent and the ferry is operating near full capacity in the A.M. and P.M. peak commuter periods. Furthermore, the 30-car vessel has reached the end of its serviceable life.

Responding to these changes, the four objectives of the Waterborne Transportation Study were identified as follows:

- Project population changes and assess impacts on ferry service through the year 2025;
- Identify changes to ferry service to meet projected demands and provide efficient operations;
- Identify opportunities to enhance customer service; and
- Achieve 80 percent recovery of ferry system costs from fares.

Findings

Findings from the demographic analysis and traffic projections depict that the current ferry service is reaching capacity during the morning (6:00 to 9:00 A.M.) and evening (5:00 to 7:00 P.M.) peak periods, primarily due to the presence of more working families on Anderson Island. With the current schedule, two direct sailings are provided to Anderson Island, and one direct sailing to Ketron Island. For Anderson Island, this provides an effective peak period capacity of 108 vehicles with the 54-car capacity vessel. This study projected moderate population growth for Anderson Island, assessing the impacts of growth on the current ferry service. The current ferry service is operating close to capacity for runs during the morning and evening peak periods. Traffic projections depict that by 2005, more vehicle overloads will occur on the Anderson Island run as traffic demands exceed available capacity.

Conclusion

To accommodate changes in demographic and projected future traffic growth, this study identified four key recommendations:

- Replace the existing direct Ketron Island runs with triangle runs that serve Steilacoom, Ketron Island and Anderson Island. This would add a third sailing to Anderson Island during each of the morning and evening peak periods, providing an effective peak period capacity of 162 vehicles and meeting projected demands through 2025. It would also be recommended that over length vehicles be prohibited from peak period runs to maximize available vehicle capacity.

- Add a 7:30 P.M. weekly Steilacoom to Anderson Island sailing. This would provide greater convenience for commuters living on the Island, residents who are shopping or conducting other activities on the mainland and students who wish to participate in after-school activities.

- Replace the 30-car vessel with a new 54-car vessel similar to the existing 54-car vessel. This would maintain route capacity when the existing 54-car vessel would be in dry-rock, extend periods between major overhauls by regularly alternating service between the two vessels and keep both vessels in good running condition by using them regularly. In addition, there would be the opportunity to operate both vessels during very high demand periods, doubling route capacity.

- Update the current fare pricing structure so that all fare categories would be based on algorithmic relationships between fare types, and update fares on a regular two-year cycle. This would provide a consistent, structured approach for computing fare prices.

Cost associated with these improvements was estimated, and financial cost recovery profiles generated. A recommendation was made to gradually move towards recovery of 80 percent of annual ferry system costs from fares. Achieving 80 percent recovery of costs from fares would allow enhanced service and funding of future vessel repair and replacement. Retaining interest in the ferry fund to offset costs, and fund future vessel and terminal improvements would also enhance cost recovery.

This study also identified potential near term improvements in ferry facilities, ticketing and public information. For each potential improvement, costs were identified along with the potential impacts on fares.

3 Summary of Service Findings – The Cleveland-Cuyahoga County Port Authority (May 2004)

DOCUMENT:	**Cleveland-Trans-Erie Ferry Feasibility Study, Summary of Service Findings**
DATE:	**May 26, 2004**
PREPARER:	**TranSystems Corporation**
CLIENT:	**The Cleveland-Cuyahoga County Port Authority**

Introduction

The objective of the Cleveland-Trans-Erie Ferry Feasibility Study was to determine if ferry service connecting the City of Cleveland and the London / St. Thomas region of Ontario could be operated as a profitable venture. Both freight and passenger flows were evaluated. Permitting and regulatory requirements were identified, as well as stakeholder issues such as tourism market connectivity and/or lakefront land use concerns. The study was divided into 7 primary parts:

- Base Conditions Assessment
  - Market Assessment;
  - Transportation Assessment;
  - Existing Landside; and
  - Stakeholder Assessment
- Evaluate and Test Scenarios
  - Ferry Vessel and Operations Assessment; and
  - Proposed Facility Assessment Financial Assessment
- Summary of Service Findings

The overall study progressed through each assessment task, building from a base of the market, transportation, and landside assessments. The results of these tasks yielded the required information to define a model ferry vessel with operational schedule and potential facility components. Financial modeling was completed based on assumptions derived from the developed feasibility service scenario. The model analysis results were then analyzed and summarized into service findings from which a realistic and feasible marketing plan can be developed for further pursuit.

Findings

This study conducted an assessment of the base conditions to develop an understanding the ferry service operations environment. An in-depth evaluation was completed for both passenger / tourism market and truck / cargo market considering the economic realm of the two terminal areas. Both assessments utilized existing statistical data on population / travel and cargo / shipping volumes and characteristics augmented by surveys developed for the ferry feasibility study to develop an estimation of market capture and penetration. To assist in the generation of accurate terminal development costs for the financial assessment, an evaluation of the potential terminal site opportunities was completed.

For each area, the existing and future usage, infrastructure, transportation connections and environmental / permitting constraints were considered. After establishing the base economic and demographic conditions for the area, the next step in evaluating the potential passenger, auto, and truck usage of the ferry was to define the primary, secondary, and tertiary market areas. Passenger / auto discretionary market differs from the truck non-discretionary market, and therefore the study utilized different market areas for the two types.

The existing landside and stakeholder assessment involved evaluating the existing infrastructure and potential sites for the ferry operations for transportation access, tourist activity access, permitting requirements and environmental. This work effort was based on visual site inspections, evaluation of existing and on-going studies as well as meetings with key stakeholders. With respect to Cleveland, Ohio the stakeholder meetings included discussions with the Port of Cleveland, the City of Cleveland, Cuyahoga County, Cleveland Growth Association, and the Northeast Ohio Area Coordinating Agency. In London / St. Thomas stakeholder meetings included discussions with representatives from the Corporation of the Municipality of Central Elgin, the County of Elgin, Department of Foreign Affairs and International Trade, the St. Thomas – Elgin Tourist Association and the St. Thomas Economic Development Corporation. The goal of this portion of the study was to assist in the facility assessment work task.

The service scenario evaluation consisted of taking the results of the base conditions assessment to determine a potential operating scenario for financial evaluation. This included vessel and operations assessment as well as facility assessment. The goal was to determine under what conditions the ferry service could be feasible and to identify any impediments to the feasibility of the service. Assessments included the following:

- Vessel and Operations Assessment –
    - Infrastructure limitations;
    - Weather conditions;
    - Regulatory issues; and
    - Model vessel and operations.
- Facility Assessment –
    - Terminal size assumptions;
    - Border security assumptions;
    - Component requirements;
    - Terminal suggested layout; and
    - Terminal order of magnitude cost estimates.
- Financial Analysis –
    - Vessel and operating schedule;
    - Revenue assumptions; and
    - Expense assumptions.

Conclusions

The following items would be areas of operator preference that could have significant impact on the model, but do not lend to the quantitative analysis performed:

- Vessel purchase – cost could be a highly variable portion of the analysis. An operator having an existing vessel that predominantly meets the service criteria would only have refurbishment, necessary technical upgrade, and repositioning costs to consider. Depending on the operational and flagging scenario, an operator may pursue funding opportunities associated with the vessel procurement that could reduce the initial or total operator vessel financial outlay. The vessel could be financed independently by a separate party. Similarly, it could be seen that to test the service, an existing vessel would be time chartered.

- Service administration costs – marketing estimates would be based on experience with similar large-scale services. However, each operator would have unique preferences in these areas and should review the costs based on personal considerations.

- Operational schedule – assumed a year-round service with some demand fluctuations. The finding for and inclusion of the freight traffic yielded to this decision. This does show an operating deficit in the winter months, which is not untypical for ferry operations. If either a seasonal service or higher truck fares were considered to reduce the seasonal loss, the estimated freight forecast could be reduced. Removing that demand from the estimated lane meter capacity requirement could yield to a smaller or different vessel need. The trade off of revenue reduction due to loss of freight cargo weighed against the potential expense reduction in operations would yield alternative financial results.

4 Victoria International Ferry Terminal Research Project – Greater Victoria Harbour Authority (August 2004)

DOCUMENT:	**Victoria International Ferry Terminal Research Project**
DATE:	**August 2004**
PREPARER:	**James Steele Consulting**
CLIENT:	**Greater Victoria Harbour Authority**

Introduction

In concert with the plans to upgrade the Victoria Harbour International Ferry Terminal, to make the facility self-sufficient financially and meet the requirements of the International Ship and Port Facility Security (ISPS) Code, it was determined that a comparison of various other sites in the vicinity would be advisable to ensure accurate and timely cost benefit analysis of the project.

The goal of the Victoria International Ferry Terminal Research Project was to conduct an analysis of the suitability of alternate sites for the international vehicular ferry terminal presently located in the Victoria Inner Harbour using a set of eleven criteria deemed to be the most important at this level of study detail. For comparison, the present facility was also assessed against these criteria as follows:

- Water Depth;
- Maneuvering Area and Access;
- Shelter at Berth;
- Holding area for vehicles;
- Terminal Buildings;
- Parking/Drop-off ;
- Approach Roads;
- Proximity to the city centre;
- Interference with current land use;
- Interference with current water use; and
- Cost.

Conclusion

There are a number of sites in the general area of Victoria that show potential for a vehicle ferry terminal but most have significant conflict with either the current users of the land and/or would not meet the criteria for easy access to the downtown area of Victoria. Costs to develop these sites would be significant, even without taking into account land acquisition. Furthermore, impact on the marine environment would become a factor in what is allowed on the waterfront.

Based on this study analysis, the current location would represent the best option for continuing to have an international vehicle ferry terminal in Victoria. Upgrading of the Belleville Street site would meet all the requirements although its footprint is stretched at present to handle traffic for a 120-vehicle ferry. A ferry with larger capacity would call for more efficient use of the land space. It should be noted that the present ‘no

reservations' system results in overload traffic occupying terminal space for up to five hours. Instituting a full reservations system should be considered in the upgrade planning to avoid congestion.

5 NSCCP Ferry Opportunities Study – Whatcom Council of Government and the North Sound Connecting Communities Project (March 2005)

DOCUMENT:	**NSCCP Ferry Opportunities Study**
DATE:	**March 2005**
PREPARER:	**Cascadia Center of Discovery Institute**
CLIENT:	**Whatcom Council of Governments and the North Sound Connecting Communities Project**

Introduction

The NSCCP Ferry Opportunities Study investigated the possible opportunities to establish new passenger ferry service in the North Puget Sound, sponsored by the North Sound Connecting Communities Project (NSCCP), a coalition of elected, agency and citizen representatives from the five north Sound counties (Whatcom, Skagit, Island, San Juan, and Snohomish). This study was undertaken to provide decision makers with a better understanding of need, opportunities, barriers and implementation options for regular passenger-only ferry service for commuting and other types of trips in North Sound. The study also explored operating structure options other than the State being the primary provider of such service.

A two-tiered Steering Committee provides guidance for NSCCP:

- One tier consisted of staff from Washington State Dept. of Transportation, Snohomish and Island Counties, Skagit Council of Governments, Whatcom Council of Governments, and the Cascadia Center at Discovery Institute; and

- A second tier consisted of elected officials from north Snohomish, Skagit, Island, San Juan, and Whatcom Counties who provided guidance to the staff members.

This study reports potential passenger ferry route locations, an assessment of possible connections with land based transit services and an action plan to outline the steps needed to implement passenger ferry service. Study tasks included:

- Organize and direct a North Sound Regional Ferry Steering Committee;
- The identification of possible routes, schedules and terminals;
- Examination of justification and an outline of an operating plan;
- Current travel patterns and possible ridership;
- Suggested changes to state and local law to allow for implementation;
- The examination of other structural/operational models;
- Consensus building and public outreach; and
- Preparation of a final report

Findings

- Two initial routes were suggested for initial consideration;
- These routes would require five vessels for weekday service;
- The capital requirements for service would be $12 to $15M initially with an additional $7 to $10M required in the first six years of service. $2.3M annually

would be needed to cover weekday operating cost for the two primary routes suggested;
- Weekend service for the two routes would require an additional $233,000 per year;
- Travel patterns in the North Sound suggested that sufficient travel demand exists in the corridors that these routes would cover; and
- The analysis indicated that about 80 percent of the seats would have to be filled and paid for in order to cover all system operating costs.

This study identified jurisdictional entities that have the legal authority to establish and operate passenger ferry service and also identified financial sources for funding such service.

Conclusions

The initial projections of ridership and system service produced in this analysis indicated that fare revenues and other minimal public funding could sustain a viable passenger ferry service in the north Sound. However, taxpayer approval of the local funding sources identified would have to be secured. It is important to note that this study did not quantify the benefits of this service to the North Sound. In addition, not all service benefits would be uniformly distributed across the region. This would further complicate justification for voters not directly benefited by the new service. Perhaps the most promising benefit to the region would be the economic development and the reduction of congestion to other modes of regional travel. Both of these benefits have not been calculated in this analysis.

The region's transit systems strongly suggested that before implementation of passenger ferry service be considered; the region should invest in an Origin and Destination (O&D) based ridership projection for the proposed routes. This modeling would verify that the proposed routes would serve the most needed corridors and that the revenue projections would be valid.

At the March 17, 2005 Steering Committee meeting for this study the Committee recommended forwarding this report and study to the NSCCP Committee for consideration and possible action. Members of the Committee pointed out that other studies of passenger ferry service had been done in the past, and perhaps now was the time for action. There was a question of whether funding for this service might be better applied to other transportation investments in the region, but overall, the Committee supported the study conclusion that the North Sound entities should seriously consider this service.

Several additional findings were suggested to the report, including the following:
- As the region moves forward toward possible implementation of this service, the State would need to become a financial partner in the endeavor.

- An early demonstration of one of the suggested routes should be done in conjunction with further studies on ridership and market, and should not wait for these study efforts to conclude.

- The Committee emphasized the intent to implement any service using a public/private operating scenario. Though underwritten, planned and overseen by some public entity, operational involvement by the private sector would be essential for success.

- Future environmental assessment would surely be needed when a project is defined and implementation impacts would be better known. It is assumed that environmental mitigation costs would add to total project costs.

- It should be assumed that if actual service is pursued that there will be trade-offs made between the speed and amenities of the vessels, environmental impacts, operational and schedule parameters. This study's assumptions and conclusions could change and evolve as implementation would be approached.

- Federal highway construction mitigation funding should be pursued as a funding source to initiate this service. Upcoming reconstruction of I-5 through Everett, the upcoming Olympics in British Columbia, and increasing regional traffic, would require progress be made on this issue.

6 Development of a Service Plan for Waterborne Transportation Service in Miami-Dade County – Miami-Dade County, Metropolitan Planning Organization (2005)

DOCUMENT:	**Development of a Service Plan for Waterborne Transportation Service in Miami-Dade County**
DATE:	**2005**
PREPARER:	**Kimley-Horn and Associates, Inc.**
CLIENT:	**Miami-Dade County, Metropolitan Planning Organization (Miami-Dade MPO)**

Introduction

The Miami-Dade Metropolitan Planning Organization (MPO) initiated the Development of a Service Plan for Waterborne Transit Services in Miami-Dade County. The goal of this study was to develop a water transit service plan that would describe a potential system intended to meet mobility, offer alternatives to local commuters driving private automobiles, and provide viable as well as attractive mobility options for tourists and other visitors. The service plan was designed to perform an impartial review of the projected ability of the system to meet these mobility objectives, to reasonably estimate realistic ridership, to determine the expected implementation and operating costs of such a system, and to recommend a good approach to implement such a system locally.

Findings

Waterborne transit services implemented in Miami-Dade County in the past have failed to become a viable public transportation option. A recent study, *Feasibility of Utilizing Miami-Dade County Waterways for Urban Commuter Travel*, concluded that by appropriately addressing a number of issues, waterborne transportation could indeed be successfully implemented and developed in Miami-Dade County.

This study provided a service plan that addressed many pertinent issues related to waterborne transit implementation and developed route structure and service characteristics intended to provide service adequate to attract local commuters and provide visitors and tourists with an attractive transit alternative by offering a reliable addition to the existing public transportation system.

Ferry service would be proposed to integrate with Metrobus routes and in Downtown Miami to integrate with Metromover. Shuttle buses associated with individual terminals would also be recommended to provide additional connectivity. Integrating the potential waterborne transportation system into the County's larger transportation system would be imperative.

The capital construction costs associated with implementation would be relatively high for a system, although the per mile construction cost for the water transit system would be significantly less than urban heavy rail systems. However, operating costs and

operating efficiency measures would be even less favorable for waterborne transit when compared to existing forms of transit.

Despite the cost of providing waterborne transit service, there would be several intrinsic advantages that water transit would have over other existing components of the multimodal network. Many visitors would be more willing to use the system than traditional forms of public transit for tourist trip purposes and may even view the systems as an extension of the local tourist activities. If routes would be planned and implemented to serve major travel patterns and meet their needs, some commuters would be more willing to travel by waterborne transit. Particularly if the travel times on routes are competitive with peak period landside travel options, and service would be viewed as providing a different, "better" atmosphere than other forms of local transit. In addition, initial routes could be implemented relatively quickly since the guideway – in this case Biscayne Bay – already exists.

Findings

Therefore, this study recommended developing waterborne transit services for Miami-Dade County on Biscayne Bay through a public/private partnership provided a waterborne transit demonstration project, or pilot program, would be deemed successful by local leaders at attracting commuters and tourists.

4 CONCLUSION

This comprehensive literature review summarizes previous research on waterborne transportation. It contains a detailed discussion of the major factors and components of growth that can be used in guiding the research team and NYMTC in the selection of alternative sites for development. These factors are likely to influence decision-making on the selection of sites and ferry services.

A total of seventeen studies are summarized in this literature review document. Of the seventeen studies eleven focus on the New York metropolitan area. The introduction and findings of these eleven studies are presented in Section 2. The remaining six studies focus on other geographic areas, both national and international. The introduction and findings of these six studies are presented in Section 3. These studies were reviewed because the research team determined that although the New York metropolitan area studies are most pertinent in providing information to guide in the selection of alternative sites in the NYMTC region, additional research from other geographic areas provides a larger comprehensive portrayal of waterborne transportation criteria and issues. Therefore, these six additional studies are also summarized in this document to support the studies in the New York metropolitan region.

Based on this literature review, it is evident that there is significant prior research on ferry services and the criteria necessary for feasibility and sustainability. The identified criteria from each study are documented into two criteria matrices, which follow in Section 5. One criteria matrix is based on studies from the New York metropolitan area and the other criteria matrix is based on studies from other geographic areas. The criteria are categorized into the following groups:

- Demand;
- Performance and competition;
- Terminal facilities;
- Benefit – economic, transportation and environmental;
- Sustainability;
- Community impact;
- Vessels
- Costs; and
- Regulations.

It is important for readers to note that the Ferry Parking and Landside Access Study places emphasis on the landside criteria rather than water in order to highlight the connection between landside attractions, potential demand and parking with waterborne travel.

Ferries have been an integral part of the New York metropolitan area transportation system throughout history. Formal ferry service was established as early as 1730 between New York and New Jersey, and by the end of the 19th century the area was served by fifty ferry routes, carrying tens of thousands daily passengers (Norris, 1994).

However, with the emergence of the automobile era and the construction of New York's bride and tunnel river crossings ferry service quickly became almost non-existent; only the Staten Island remained in operation.

In the last twenty years several factors have sparked a renewed interest in waterborne transportation. The waterborne transportation alternative has become increasingly attractive as a way to alleviate traffic congestion on the bridges and tunnels leading to Manhattan, and take pressure off the overcrowded PATH system. In addition, the New York metropolitan area has experienced a revival of waterfront land, which not only creates potential demand for ferry services; but also is critical to ferry service success.

The next step in the Ferry Parking and Landside Access Study – currently underway – is expert interviews. The results of these interviews will be integrated with the criteria matrices to develop a criteria list for this study. Guided by the Ferry Parking and Landside Access Study Steering Committee, the list of criteria will be used along with the data collected in Task 2 to create a long list of potential ferry service sites. Task 2 will develop of an interactive Geographic Information Systems (GIS) based scenario builder that will assist decision-makers in understanding how individual factors, such as prevailing land use patterns, as well as the relationship between factors, such as land uses, land values, and prevailing traffic flows, shape the criteria used to identify viable sites for development.

Task 3 will utilize the identified assessment criteria to conduct a detailed analysis of no more than ten to twelve sites. Once the analysis of sites is complete, guided by the Ferry Parking and Landside Access Study Steering Committee, a prioritized list of sites suitable for development will be prepared. Prioritization will be based on the growth potential of these sites, their role in the regional intermodal transportation system, expandability of the facilities, impacts of development, such as environmental impacts and congestion, community acceptability, cost effectiveness, general public safety, as well as homeland security concerns.

DOCUMENT:	Waterborne Freight Transportation Study	Intrastate Passenger Commuter Ferry Study	National Parks of New York Harbor Waterborne Transportation Study	Hunts Point Waterborne Freight Assessment	Long Island Sound Waterborne Transportation Plan	Bi-State Domestic Freight Ferries Study
PREPARER:	Department of City Planning	Connecticut Department of Transportation, Office of Intermodal Planning	Volpe National Transportation Systems Center	Cambridge Systematics, Inc.	Cambridge Systematics, Inc.	NYU Wagner Rudin Center and The State University of New Jersey Rutgers
DATE:	May-90	Mar-01	Apr-01	Sep-04	Nov-05	Sep-06
CLIENT:	City of New York	State of Connecticut	National Park Service Northeast Region	NYMTC	NYMTC	Port Authority of New York and NJ
LOCATION:	Boroughs of NY and waterfront cities of NJ	Long Island Sound, serving ports between Bradford and Stamford, Connecticut	New York Harbor	Hunts Point Food Distribution Center	Long Island Sound and its tributaries - including Suffolk and Nassau Counties, coastal Connecticut, Westchester, the Bronx and Queens	Hudson River crossings
PASSENGER OR FREIGHT:	Freight	Passenger	Passenger	Passenger and freight	Passenger and freight	Freight
OVERVIEW:	Evaluates the feasibility of a city-wide waterborne freight transportation network that serves waterfront air and rail terminals, as well as waterfront industrial areas in an efforts to reduce congestion and pollution problems in the metro area.	Analyzes the need and opportunity for establishing an Intrastate Passenger Commuter Ferry service along the LIS, serving Branford and Stamford, Connecticut. Determines the opportunity to promote the diversion of auto traffic from the congested southwest corridor roadways to waterborne travel as an alternative mode of transportation.	Assesses the viability of water transportation as an access mode serving the Gateway NRA and other assets of the National Parks of New York Harbor and develops a preliminary ferry service concept plan to serve the needs of park visitors.	Focuses on waterborne strategies to help offset some of the local and regional impacts of trucking to and from the Hunts Point area.	Explores the potential for expanded use of LIS and its tributaries for waterborne passenger and freight transportation and develops a plan for waterborne transportation for the LIS through the year 2025.	Explores the feasibility of freight ferries as an alternative for domestic truck freight movements that cross the Hudson River through existing bridges and tunnels.
CRITERIA:						
Demand	Ferry demand and interest		Market analysis	Meet identifiable demand	Potential market capture	Creating a niche market
Performance and competition	Incentives targeted to trucking companies, carrier services and vessel operators	User willing to pay for a unique commuting experience	Signage and information - consistent system of multi-media information and directional signage	Provide an attractive level of performance - competitive with available transportation choices		Travel preferences - "one-seat ride"
	Travel cost	Commuter schedule	Safety features - lighting, communication and maritime environment needs	Reliability		Reliability
	Travel time	Speed		Speed		Enhanced security and safety - less fixed infrastructure and greater flexibility in crisis
	Coordination and cooperation of state and local agencies	Smoother ride		Service frequency		
		Scenic ride		Price		
				Visibility		
				Security		
				Capture 'fair share' of market demand		
Terminal Facilities	Availability and condition of ferry landing facilities - piers that may potentially serve as transfer locations should be active or stable and require little renovation	Equipment storage and repair areas	Terminal site improvements	Physical and operationally feasible terminal	Marine structure and navigation	Environmental concerns
	Access to highways, seaports and airports	Transit access to terminals	Site area sufficient for initial phases and longer term expansion needs	Suitable location of appropriately sized terminal	Marine structures existing at the site to support vessel access requirements, or new facilities to be constructed - piers, marinas, a bulkhead - physical possible location for passenger and/or marine cargo terminals	
	Available space for parking	Parking	Navigation conditions	Adequate navigation channels	Deep enough to accommodate passenger/freight vessels	
	Available space for warehouse facilities	Vessel draft and wake	Landside access - pedestrian/bicycle access and ADA access	Effective connections to ferry users	Highway and rail access	
		Vessel size and capacity	Landside access - transit, highway, street access and intermodal connections	Effective connections to transportation network	Environmental concerns addressed - dredging, permitting	
			Location and design to respect environmental conditions - avoid dredging			
			Parking and amenities			
Economic benefit	Economic benefit			Provide economic benefit	Successful in terms of revenue generation	
Transportation benefit	Transportation benefit			Provide transportation benefit	Successful in terms of mitigation of congestion on the regional transportation network	
Environmental benefit				Provide environmental benefit	Successful in terms of traffic levels	
Sustainability				Stable and sustainable as a business proposition	Natural marine resources	
Community Impact	Recreational benefit		Historic resource impacts		Community impact	
					Land use	
					Traffic	
					Quality of life	
Costs	Government incentives					Initial capital investment and construction
	Permissible zoning					Initial start-up of the operation and continuing operation of the ferry
						Funding sources and methods
Regulations			Regulatory and permitting requirements			Regulatory issues
			ADA access			Harbor Maintenance Tax - assessed on the value of shipments of commercial cargo through the nation's ports ("the biggest issue hampering short sea shipping")
						Jones Act - all vessels operating between US ports must be domestically built, owned, operated and crewed

DOCUMENT:	Rhode Island Waterborne Passenger Transportation Plan	Pierce County Public Works & Utilities Transportation Services Waterborne Transportation Study	Cleveland-Trans-Erie Ferry Service Feasibility Study	Victoria International Ferry Terminal Research Project	NSCCP Ferry Opportunities Study	Development of a Service Plan for Waterborne Transportation Service in Miami-Dade County
PREPARER:	Rhode Island Statewide Planning Program	IBI Group	TransSystems	Captain James K. Steele	Cascadia Center of Discovery Institute	Miami-Dade County, Metropolitan Planning Organization
DATE:	Jun-01	Oct-03	May-04	Aug-04	Mar-05	2005
CLIENT:	State of Rhode Island	Pierce County Department of Public Works and Utilities	The Cleveland - Cuyahoga County Port Authority	Greater Victoria Harbour Authority	Whatcom Council of Governments and the North Sound Connecting Communities Project	Miami-Dade County
LOCATION:	State of Rhode Island's bays, harbors and rivers	Ferry service between the Town of Steliacoom, Anderson Island and Ketron Island	Port of Cleveland - connecting the City of Cleveland and the London/St. Thomas region of Ontario	Victoria Harbour	North Puget Sound	Miami-Dade County
PASSENGER OR FREIGHT:	Passenger	Passenger	Passenger and freight	Passenger	Passenger	Passenger
OVERVIEW:	Provides appropriate use of the State of Rhode Island's bays, harbors and rivers for passenger transportation and to develop a plan for waterborne passenger transportation in Rhode Island for the year 2010.	Studies existing ferry system (last studied fourteen years ago - 1989), responding to population increases of Anderson Island and end of serviceable life of one vessel.	Determines if ferry service, under certain conditions, could be operated as a profitable venture.	Studies Victoria Harbour International Ferry Terminal on Belleville Street with a view to upgrade the facility for financial self sufficiency and to meet the requirements of the International Ship and Port Facility Security (ISPS) Code, Part A.	Reports potential passenger ferry route locations, as well as an assessment of possible connections with land based transit services. Provides decision makers with a better understanding of needs, opportunities, barriers and implementation options for regular passenger-only ferry service for the community and other types	Develop a water transit service plan that would describe a potential system intended to meet mobility, offer alternatives to local commuters driving private automobiles, and provide viable as well as attractive mobility options for tourists and other visitors.
CRITERIA:						
Demand	Passenger demand for type and frequency of service	Meet current and projected demographics				Commuters and tourists
Performance and Competition						Competitive times
						Better' service
Terminal Characteristics	Availability of strategically located landing/terminal locations	Improvements for dissemination of information	Terminal sites		Terminal sites	
	Land/terminal locations accessible to land and water	Security	Land availability and existing infrastructure and synergy with existing operations and future planned land uses	Interference with current land and/or water use and maneuvering area and access	Existing facilities - minimal facilities, require extensive improvement	
	Minimize adverse impacts of siting new terminals	Sensitivity to future changes and uncertainty	Ease of water navigation	Water depth	Transit service to passenger ferry facilities	
			Tourist activity access - passenger highway to tourism, passenger walking to transit and passenger walking to tourism	Proximity to the city centre		
			Transportation access - freight highway connection and freight other modes (rail) connection	Approach roads		
			Environmental concerns	Terminal building and parking/drop-off		
			Rapid development opportunity	Shelter at berth		
			Amenities	Holding area for vehicles		
Economic benefit		Economic benefit of utilizing diesel/natural gas				
Environmental benefit		Environmental benefits of utilizing diesel/natural gas				
Community Impact	Minimize adverse impacts of siting new terminals and support facilities					
Vessels	Suitability of vessel technologies to water conditions	Propulsion system	Vessel and operations		Vessels	Appropriate hull
			Infrastructure limitations		Used or new uniform fleet	Shallow draft
			Passenger, vehicle, motor coach and freight capability		Marketing appeal	
			Weather conditions		Maintenance costs	
			Wind conditions		Fuel efficiency	
			Wave conditions		Lower shoreline wake impact - avoidance of shoreline erosion	
			Ice conditions		Size and capacity	
					Cost	
					Fuel efficiency	
					Stability	
					Passenger comfort	
Costs	Cost of providing services			Terminal cost	Capital costs	Costs
	Feasibility of publicly and/or privately financing and operating services			Future upgrading costs	Vessel cost	Existing 'guideway'
					Terminal cost	Public/private business model
					Parking cost	
					Land acquisition	
					Passenger waiting facilities	
					Operating costs	
					Aggregate costs	
					Operating entity	
Regulations			Coasting Trade Act - requires any vessel operating in regular service between Canadian ports within the Great lakes be a Canadian flag or pay a monthly Coastal Trade license fee			
			Pilotage restrictions - US Coast Guard requires all vessels employ a licensed pilot when sailing on the Great Lakes and in/out of Cleveland			

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Task 2

Expert Interviews, GIS Repository and Long List of Ferry Sites

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1 INTRODUCTION

The goal of the Ferry Parking and Landside Access Study (FPLAS) is to assist the New York Metropolitan Transportation Council (NYMTC) in the assessment and evaluation of both current and future potential sites suitable for the development of facilities to support waterborne transportation of people and freight. Specifically, the study will focus on the development of assessment criteria to optimize underutilized marine transportation resources and services through the following:

- Review previous research about waterborne transportation needs of the region;
- Develop criteria to assess the viability of existing and potential sites that can be used for the development of facilities and infrastructure to support waterborne transportation; and
- Evaluate and prioritize sites for development.

The study region encompasses all ten NYMTC counties but concentrates on filling the current gaps in existing knowledge and studies. Therefore, areas previously studied, specifically the Long Island Sound, will not be revisited beyond incorporating the salient findings of such previous work, including potential sites that were not examined in the previous study.

The study effort is guided by a Steering Committee drawn from NYMTC's member agencies. This Steering Committee reviews the work of the consultant team, determines priorities and direction for the study and helps shape project deliverables.

The FPLAS is by no means the first to focus on waterborne transportation needs of the New York metropolitan region. Therefore, as the first task in this study, the consultant team conducted a rigorous review of literature related to the development of waterborne transportation infrastructure including previous reports and studies conducted in the region, such as the Long Island Sound Waterborne Transportation Plan project, the Hunt's Point Waterborne Freight Assessment and the New York City Department of City Planning Landside Access to Ferry Landings, in order to provide a thorough understanding of the complex nature of the current endeavor.

The deliverable for this task is a comprehensive research report that summarizes previous research in this area, including a detailed discussion of the major factors and components of growth that can be used in guiding the research team and NYMTC in the selection of alternative sites for development. Of particular note, are factors likely to influence decision-making criteria.

The Task 1 – Literature Review includes a summary of a total of seventeen studies. Of the seventeen studies, eleven focus on the New York metropolitan area. The remaining six studies focus on other geographic areas, both national and international. In addition, this deliverable includes two criteria matrices – one for ferry service criteria based on the New York metropolitan area studies and another for ferry service criteria based on the studies from other geographical areas.

Task 1 forms the foundation for the subsequent FPLAS work. In particular, Task 2 involves expert interviews, the development of a Geographic Information System (GIS) database and long list of potential ferry sites. The FPLAS team's work on Task 2 is the premise of this report.

Following this introduction (Section 1), Section 2 of this report includes a summary of the eleven interviews conducted by the FPLAS team. Section 2 also includes a list of the departments, agencies and individual people interviewed.

Section 3 describes the efforts to create a GIS repository for the FPLAS region. The FPLAS team has compiled data from the NYMTC region as well as neighboring New Jersey counties, to be used in the analysis for Task 3. Task 2 can be conceptualized in two steps: to estimate demand and supply for

existing and potential ferry services; and to look at the feasibility of ferry sites from the perspective of parking and landside access, in which the latter includes criteria and constraints of a very diverse nature. Section 3 also includes an overview of the database, current as of the time of the first draft of this report – June 2007.

Section 4 includes the long list of potential ferry sites. These sites were extracted from the literature review of Task 1. Section 5 accompanies Section 4, and includes maps of the 85 sites included in the long list of potential ferry sites.

Finally, Section 6 includes the current skeleton of the long list site matrix. This section also includes a brief description of the matrix.

2 EXPERT INTERVIEWS

1 Summary of Interviews

As part of the FPLAS effort to develop a set of criteria for ferry parking and landside access, the FPLAS team interviewed several experts. The interviews began in February of 2007, after Task 1 – Literature Review was completed so that the literature could inform the interviewing process.

Though the focus of the interviews was on the issue of landside access, we also asked questions regarding: 1) each interviewee's role and connection to waterborne transportation; and 2) each interviewee's opinion on the place of waterborne transportation in the regional transportation system. We also asked each person interviewed for assistance in providing, or helping us locate data to be used in developing our interactive GIS model. The first part of this report is a brief summary of what was learned regarding waterborne transportation in the region. The second part describes the criteria for landside access that were suggested in the interviews.

We conducted 13 interviews. In some cases, more than one individual was present at a session, and therefore, we interviewed a total of 24 people. Among those interviewed was a private operator of a ferry service, the executive director of a publicly-operated system, the executive director of a non-profit organization concerned with waterborne transportation and several planners, policy analysts and decision-makers at the local, county, regional and State levels. (A complete list of those who were interviewed is included at the end of this section)

2 Need for Waterborne Transportation in the Region

All of the individuals we interviewed agreed that increasing the availability of waterborne transportation would provide benefits to the region. Continued growth in population and employment is projected in the New York metropolitan area. Most roads are severely congested, even outside peak hours. Many mass transit systems are at capacity during peak hours. Thus, developing new and extending existing waterborne transportation systems is viewed by all as a necessity, if the region is to remain economically strong and competitive.

The reduction in traffic congestion and the concomitant environmental improvements were seen as the primary benefits to be obtained from the increased use of ferries. Other benefits were mentioned by more than one of our respondents. For example, ferries could prove extraordinarily useful for evacuation purposes in the event of a disaster, manmade or natural. This was clearly demonstrated after the tragic events of September 11th.

In many parts of the region, new residential and mixed-use development is taking place adjacent to, or within proximity of waterfronts. The provision of ferry service can help promote these developments, and likely reduce the need for other types of transportation infrastructure. Finally, ferry service is seen by several respondents as an important tool to contribute to the revitalization of Lower Manhattan. The newly instituted service between Yonkers and lower Manhattan was undertaken primarily for this reason.

3 Criteria for Landside Access

For the most part, there were no criteria for landside access suggested by the respondents that did not correspond to the Task 1 – Literature Review. However, some criteria were mentioned more often than others, and some of the criteria had more emphasis placed on them compared to others.

Before describing those criteria deemed important, several of the interviewees distinguished between two types of sites – origin sites and destination sites. The former are where passengers board a ferry (typically the home-based end of a trip), and the latter are where passengers disembark (typically the work-based end). In some cases, the landside access criteria are different for each type of site.

At the origin end, the main criterion mentioned was accessibility, i.e., "*How can ferry passengers get to the point of departure*?" For most of the currently operating systems, a large percentage of passengers arrive by automobile. Using an automobile would also be likely for many of the prospective sites. Some interviewees referred to this mode of access as "park-and-sail". Road access and the availability of parking are essential. It is critical to have sufficient area to build surface parking, or a parking structure large enough to meet the projected demand for the service. This would be a prerequisite for instituting service from many areas.

There are other ways to get to an origin site than by motor vehicle. Mass transit, particularly bus, was mentioned frequently by the respondents. However, very small numbers on current systems use this mass transit option. In order for a mass transit system to attract ridership there must be sufficient population density at the origin. If the catchment area of a proposed site does not have the density, public transportation will not work and vehicle parking spaces are a necessity. There are a couple of exceptions. Many people boarding the ferry in Staten Island arrive by bus, and the New York Waterway service from Hoboken Terminal has many passengers arriving by New Jersey Transit trains. However, many of the respondents felt that services starting up in the future would not have many users arriving by bus. For most proposed origin sites, the catchment areas are large and the population densities are low.

Lastly, walking and biking were mentioned as ways that passengers could get to an origin site. Conventional wisdom in transportation planning says that people will walk/bike no more than 15-minutes to get to a transit stop. This suggests a maximum distance of approximately one-quarter to one-half mile for pedestrians and approximately three miles for cyclists. Residential density at the origin end thus becomes an important criterion for landside access. The more people who live within walking or cycling distance of a ferry landing, the more might walk or cycle to the landing. This also demonstrates why potential sites for ferry service are also sites where new residential or mixed-use development could take place. The waterfront areas of Williamsburg, Yonkers, Haverstraw and Weehawken are examples. As such, ferry service is a marketing tool for residential development because prospective residents can walk to the ferry.

Another criterion mentioned by some of the interviewees was the need for space to store the ferries. If the point of origin is distant from midtown and lower Manhattan, it is necessary to have space where the watercraft can be kept overnight, and where operations and maintenance can occur, including cleaning and re-fueling. This obviates the necessity of ferries having to deadhead to their base in the evening, and back to the departure point in the morning, which would incur unnecessary fuel costs and produce additional environmental pollutants.

The vast majority of ferry passengers in the New York metropolitan area have their workplace as the destination. Most of these passengers commute to midtown or lower Manhattan. Therefore, ferry landings at the destination end must meet one of two important criteria. The first is that the site be within walking distance of a passenger's workplace. The maximum walking distance, as mentioned above, is approximately 15-minutes. Because of its geography, almost any site in lower Manhattan meets this criterion.

For sites where passengers would be heading to midtown walking might not be feasible. Therefore, ferry sites for passengers destined to mid-Manhattan must have frequent and convenient intermodal connections, including buses and subways. Thus, ferry sites should be developed at locations where bus and subway routes already exist. The ferry to subway connection only exists for passengers disembarking in lower Manhattan who could have relatively easy access to a subway station. As such, the

Manhattan terminal of the Staten Island Ferry was often mentioned in the interviews as a promising site. This is because it is only a short distance from the landing to a subway station. In terms of bus service, careful planning is necessary to coordinate the development of a ferry site with the institution of new bus service. Some interviewees felt strongly that no sites should be developed at the destination end without inter-agency planning and coordination to have mass transit connections in place before the site opens.

Finally, mentioned by some interviewees is the need for community acceptance. A few respondents used the example of the Village of Nyack in Rockland County. Although an ideal location for ferry service, with the potential to provide an alternative transportation mode to the overcrowded Tappan Zee Bridge, residents of Nyack vehemently opposed ferry service. As such, community acceptance will be an important criteria in the analysis of potential ferry sites. The Ferry Parking and Landside Access Study will include community acceptance in Task 3 of the study, through public outreach mechanisms.

4 Conclusion

To summarize what the FPLAS team has learned from the expert interviews about criteria for the development of ferry landings in one word, it would be accessibility. For a site to be viable at the origin end, parking is critical. There should be a place for passengers to be dropped off by car and there should be mass transit connectivity. At the destination, a site should be a short walk from major centers of employment, or have convenient connection to other transit modes.

These criteria should come as no surprise to transportation planners, policy makers or system operators. Decades of research show that convenience and reliability is as important, and perhaps more important, than the cost of a ride on a particular mode. The criteria for waterborne access that the FPLAS team has developed from the literature review and the expert interviews emphasize this. These criteria form the basis of the Task 2 interactive GIS-based model the FPLAS team is building. This model will be a critically important tool used by the FPLAS team and NYMTC throughout the FPLAS, as well as in the future to assist decision-makers in the selection of potential ferry sites.

5 List of Interviews

New York Water Taxi – February 15, 2007
Tom Fox

Port Authority of New York and New Jersey – March 6, 2007
Amit Bhowmick
Janet Burgos
Lisette Bowen
Janet Cox

Westchester County Department of Transportation – March 12, 2007
Naomi Klein

Regional Plan Association – March 16, 2007
Jeffrey Zupan

Lower Manhattan Development Corporation – March 26, 2007
Philip Plotch

New York City Department of Transportation – March 30, 2007
Alan Olmsted
Deborah Siegel Baker

Metropolitan Waterfront Alliance – April 9, 2007
Carter Craft

San Francisco Bay Area Water Transit Authority – April 19, 2007
Steve Castleberry

New York State Department of Transportation – April 25, 2007
Gene Kosoy

Metropolitan Transportation Authority – May 9, 2007
Danny O'Connell
Ted Orosz
Conrad Hardy

Rockland County Department of Planning – May 21, 2007
Dr. James Yarmus
Susan Meyer
Patrick Gerdin

Nassau County Department of Planning – October 18, 2007
Aryeh Lemberger
Robert Brickman
Lawrence Berger

Suffolk County Department of Planning – October 24, 2007
John Murray
Robert Shinnick

3 DATA COLLECTION – BUILDING OF A GIS REPOSITORY

This section describes efforts to create a Geographic Information Systems (GIS) repository for the FPLAS region. In Task 2, the FPLAS team has compiled data from the NYMTC region as well as neighboring New Jersey counties, to be used in the analysis for Task 3 of the FPLAS. Task 2 can be conceptualized in two steps: to estimate demand and supply for existing and potential ferry services; and to look at the feasibility of sites from the perspective of parking and landside access, in which the latter includes criteria and constraints of a very diverse nature.

For the first step, the FPLAS team has collected data such as residential populations, workforce and school enrollments to infer general demand for transportation. Augmented with census data, transportation data will allow the FPLAS team to model the demand for each mode of transit at the census tract level, and in some cases down to the block level.

In addition, the FPLAS team has conducted many interviews with local area experts (see Section 1 of this deliverable) and collected information about historical and existing ferry services offered during the past 25 years. Combined with an extensive list of port facilities from the United States Army Corps of Engineers, this resulted in the list of 85 known sites listed in Section 4. The FPLAS team believes that this list covers more than 90 percent of all sites in the FPLAS region. However, additional input may come from the FPLAS Steering Committee, as well as information derived from building permits and environmental impact statements developed for larger construction projects in the study area.

The preliminary long list of existing and potential ferry landings is graphically depicted on the map on Page 3-2. Detailed maps dissecting the region into ten smaller study areas can be found in Section 5.

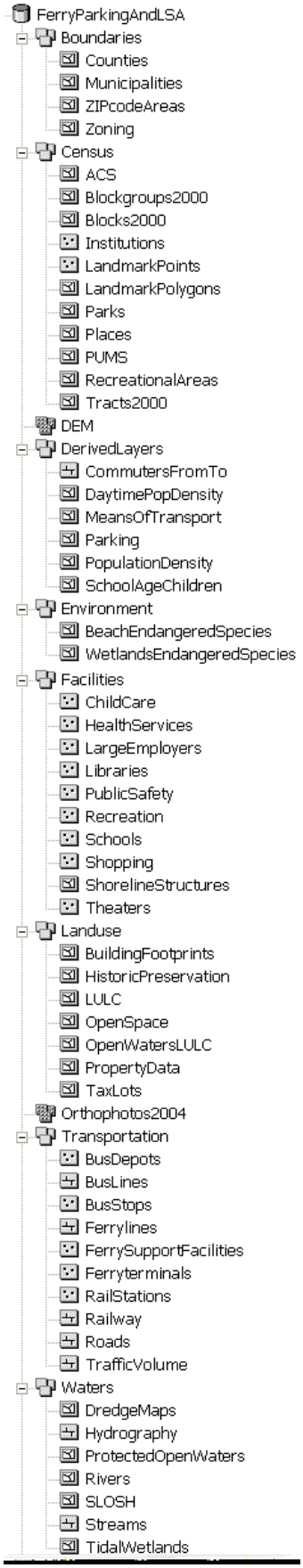
The FPLAS team has received data from:

- New Jersey Department of Transportation (NJDOT) – road
- New Jersey Transit (NJ Transit) – bus, railroad
- New Jersey Map (NJmap) – many layers
- National Oceanic and Atmospheric Administration (NOAA) – shoreline
- New York State GIS Clearinghouse – many layers
- New York City Department of Information Technology and Telecommunications (DOITT) – building, open space
- New York City Landmarks Preservation Commission (LPC) – historic preservation
- New York City Department of City Planning (NYCDCP) – LION, facility, zoning
- (Lower New York) SuperDisk property data
- United States Army Corps of Engineers Navigation Data Center – port, chart, dredging
- Westchester County GIS Department – many layers

The FPLAS team is missing data from:

- Metropolitan Transit Authority (MTA) – schedule, ridership information
- NJ Transit – bus stop, schedule
- DOITT – orthophoto
- Rockland, Putnam and many New Jersey counties – parcel landuse
- State, county and local governments – shoreline development permits
- Tourism offices and business bureaus – visitor numbers at tourist attractions, including museums and shopping centers


Overview of Existing and Potential
Ferry Landing Sites
Within the Study Region
ORANGE
ROCKLAND
WESTCHESTER
NY
NJ
NY
CT
Hudson River
Long Island Sound
BRONX
MANHATTAN
QUEENS
BROOKLYN
NASSAU
SUFFOLK
STATEN ISLAND
Atlantic Ocean
0 5 10 Miles
8 16 Kilometers
N
* Some of these sites reference generic locations rather than actual locations. See Site Matrix for details.



1 Overview of the Database (current as of June 2007)

The most common units of analysis (in addition to census boundaries) are the jurisdictional boundaries of counties and municipalities, ZIP code areas and planning regions, in particular zoning areas. The United States Census is a rich source of demographic, commuting and attractions data, and with the advent of the 2005 American Community Survey, the FPLAS team has more recent data information. While many of the census datasets are cumbersome and require considerable reformatting to be usable, they contain a wealth of information that can be incorporated into derived GIS layers.

Long stretches of the Hudson shoreline do not lend themselves as ferry sites because of the nature of the terrain. The digital elevation model of the region allows the FPLAS team to identify this constraint.

Public transit is economically feasible only if there is density at either the origin or destination of a ferry line, preferably both. The FPLAS team intends to use sophisticated methods of determining densities that exclude uninhabited areas such as Parks based on parcel-level landuse data (see below). These, as well as mode split information can be derived from census data. Parking has been identified as a crucial criterion. The sources of information on existing and potential parking are extremely diverse (land use, cadastral and some dedicated transportation data sets) and require substantial analytical effort.

Similarly to terrain, environmental constraints, particularly in tidal wetlands and on some beaches, will force the FPLAS team to reject potential sites.

The facilities data is in some aspects the most challenging aspect of the FPLAS GIS work. While the FPLAS team has a plethora of information on potential attractors of public transit, in most cases the necessary numbers to estimate real demand is lacking. Shoreline structure data is only available for New Jersey, but provides useful information on existing infrastructure that may be a potential benefit or restriction.

The landuse data will be used in Task 3 to derive detailed (parcel-level) information on the sites and their immediate surroundings. Some of the layers will also provide additional information on potential constraints such as historic preservation. The orthophotos serve a dual purpose of providing visual context and aiding in the identification of landuse, in which official data on the latter is insufficient.

The transportation data sets are the most obvious, yet the FLPAS team is lacking information on bus stops outside of New York City and Westchester County, as well as schedules and passenger numbers throughout the FPLAS area. A particular challenge is the network of transit and road lines . The FPLAS team will be incorporating parallel efforts in support of the NYMTC best practice model.

Although the focus of the FPLAS is on landside access, a ferry project could not succeed without information on the waters in the region. This information comes from a wide variety of federal, state and local sources and many of the datasets, such as dredge maps, do not exist in GIS format. Most of these layers will act as constraints in the site selection process.

4 LONG LIST OF EXISTING AND POTENTIAL SITES

This list of 85 sites includes 25 existing and 60 potential ferry sites. This list forms the basis for the FPLAS site matrix; a very preliminary version of which is included as Section 6.

1. 90th Street
2. Atlantic Avenue (P.A. Pier 6 and 7)
3. Battery (Battery Maritime Building, Slip 6, and Pier A)
4. Battery Park City; WFC
5. Brooklyn Army Terminal / 69th Street
6. East 34th
7. Fire Island*
8. Flushing Bay Marina, Queens; Shea Stadium
9. Fort Tilden/Riis Landing at Breezy Point
10. Fulton Ferry Landing
11. Governors Island
12. Haverstraw
13. Hunters Point, Queens
14. Nyack
15. Ossining
16. Pier 11
17. Pier 45 (at West Christopher Street) Manhattan
18. Pier 63, West 23rd Street Pier (behind World Yacht Services)
19. Pier 84, West 44th
20. Red Hook (behind Fairway)
21. Schaefer Landing
22. South Street Seaport
23. West 38th, West 39th, Midtown, Pier 78
24. Yankee Stadium
25. Yonkers
26. 44 Drive Pier, Queens
27. 65th Street – Bay Ridge
28. Arverne, Queens
29. Beechhurst Residents' Park, Queens
30. Brooklyn Navy Yard
31. Brooklyn-Port Authority Marine Terminal (1 through 5)
32. Canarsie Pier
33. Camp St. Edward, Staten Island
34. Captree State Park
35. Castle Hill, Bronx
36. College Point Sites, Queens**
37. Co-op City, Bronx
38. Cresthaven Marina, Queens
39. East 63rd Street, Manhattan; Rockefeller University
40. East River Landing, Manhattan***
41. Echo Bay
42. Erie Basin
43. Ferry Point Park, Bronx
44. Fordham Landing, Bronx
45. Fort Slocum Road
46. Freeport
47. Glen Cove, Fox Navigation Site
48. Great Kills Harbor
49. Harlem Piers
50. Howland Hook Container Terminal
51. Huguenot Avenue, Staten Island
52. Hunts Point
53. Inwood Terminal
54. Kent Terminal, Brooklyn
55. LaGuardia Airport
56. Mamaroneck
57. Marina Del Ray, Bronx
58. Mariner's Harbor
59. Oak Point Railyard
60. Orchard Beach
61. Peekskill, Westchester
62. Pier 36 (East River), Manhattan
63. Pier 40 (at West Houston Street, Hudson River)
64. Point Little Bay, Queens
65. Port Chester
66. Port Ivory – former Procter and Gamble site; on Richmond Terrace opposite Western Ave.
67. Port Regalle, Staten Island
68. Port Richmond
69. Randalls Island
70. Red Hook Container Terminal
71. Rockaway
72. Roosevelts Island
73. Rye/Rye Playland, Westchester
74. Sheepshead Bay, Brooklyn
75. Shore Towers, Queens (Pot Cove)
76. Shorehaven, Bronx
77. Snug Harbor, Staten Island (Sailor's Snug Harbor)
78. South Brooklyn Marine Terminal
79. Tarrytown
80. Torpedo Pier at Fort Wadsworth
81. Tottenville, Staten Island
82. Toys 'R' Us
83. Trump City
84. Watersedge Estates
85. Williamsburg

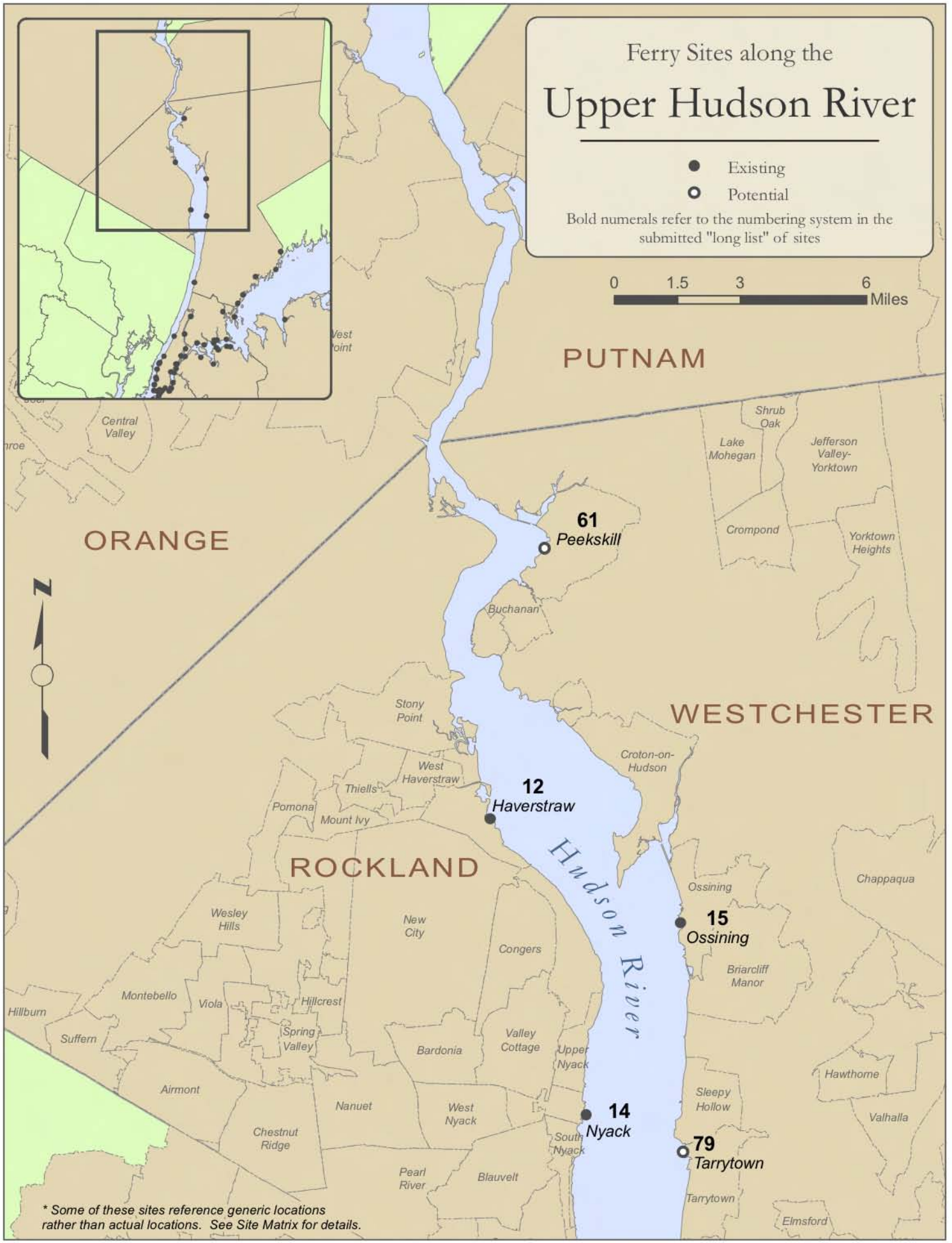
* This site is a generic location to represent all of the existing Fire Island summer ferry services.

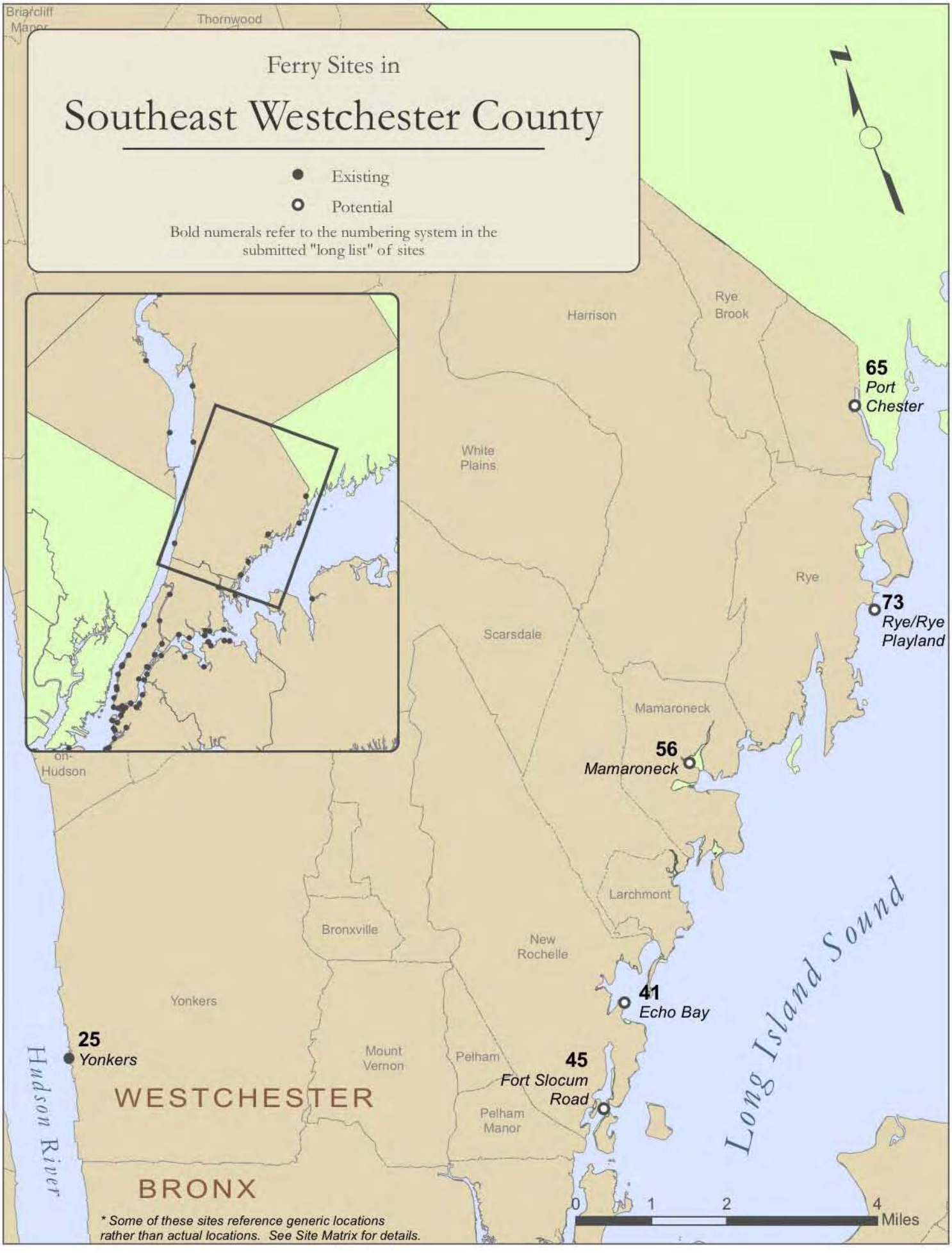
** This site is a generic location to represent sites identified as Long-Term Service Potential in the 1990 NYCDCP's Landside Opportunities for Expanding Ferry Services Final Report.

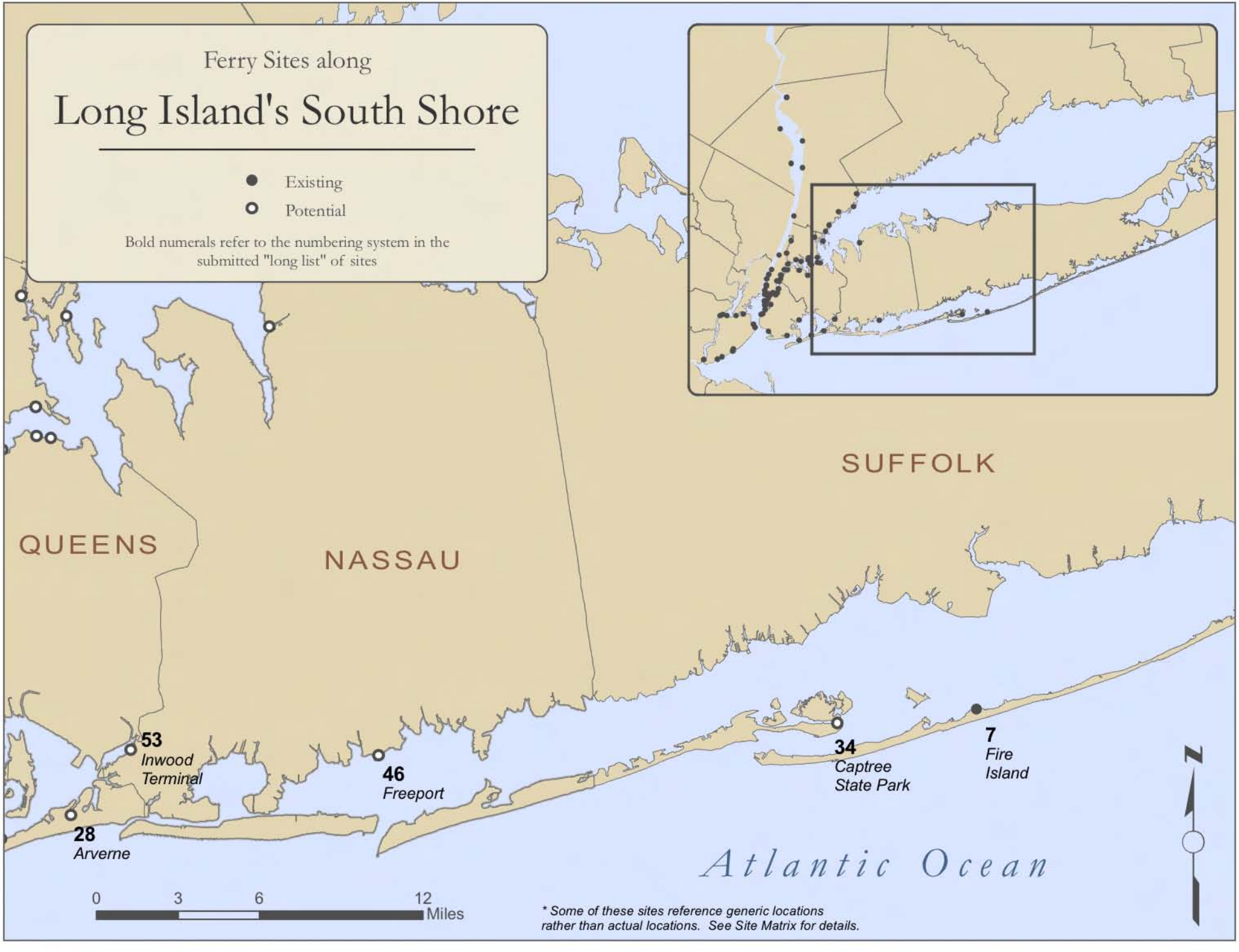
*** This site is a generic location to represent a proposed development planned in the area extending from the Battery Maritime Building to the South Street Seaport.

5 DETAILED MAPS OF EXISTING AND POTENTIAL SITES

- Upper Hudson
- Southeast Westchester
- Long Island's South Shore
- Upper East River
- Upper Manhattan
- Lower Manhattan
- Brooklyn
- Jamaica Bay
- Staten Island


Ferry Sites along the
Upper Hudson River
Existing
Potential
Bold numerals refer to the numbering system in the submitted "long list" of sites
0 1.5 3 6 Miles
PUTNAM
ORANGE
WESTCHESTER
ROCKLAND
61 Peekskill
12 Haverstraw
15 Ossining
14 Nyack
79 Tarrytown
Hudson River
N
Central Valley
Shrub Oak
Lake Mohegan
Jefferson Valley-Yorktown
Crompond
Yorktown Heights
Buchanan
Stony Point
Croton-on-Hudson
West Haverstraw
Thiells
Pomona
Mount Ivy
Ossining
Chappaqua
Briarcliff Manor
Wesley Hills
New City
Congers
Montebello
Viola
Hillcrest
Spring Valley
Hillburn
Suffern
Bardonia
Valley Cottage
Upper Nyack
Hawthorne
Sleepy Hollow
Valhalla
Airmont
Nanuet
West Nyack
Chestnut Ridge
South Nyack
Pearl River
Blauvelt
Tarrytown
Elmsford
* Some of these sites reference generic locations rather than actual locations. See Site Matrix for details.


Ferry Sites in
Southeast Westchester County
Existing
Potential
Bold numerals refer to the numbering system in the submitted "long list" of sites
N
Briarcliff Manor
Thornwood
Harrison
Rye Brook
White Plains
Rye
Scarsdale
Mamaroneck
Larchmont
Bronxville
New Rochelle
Yonkers
Mount Vernon
Pelham
Pelham Manor
on-Hudson
65
Port Chester
73
Rye/Rye Playland
56
Mamaroneck
41
Echo Bay
45
Fort Slocum Road
25
Yonkers
WESTCHESTER
BRONX
Hudson River
Long Island Sound
0
1
2
4
Miles
* Some of these sites reference generic locations rather than actual locations. See Site Matrix for details.

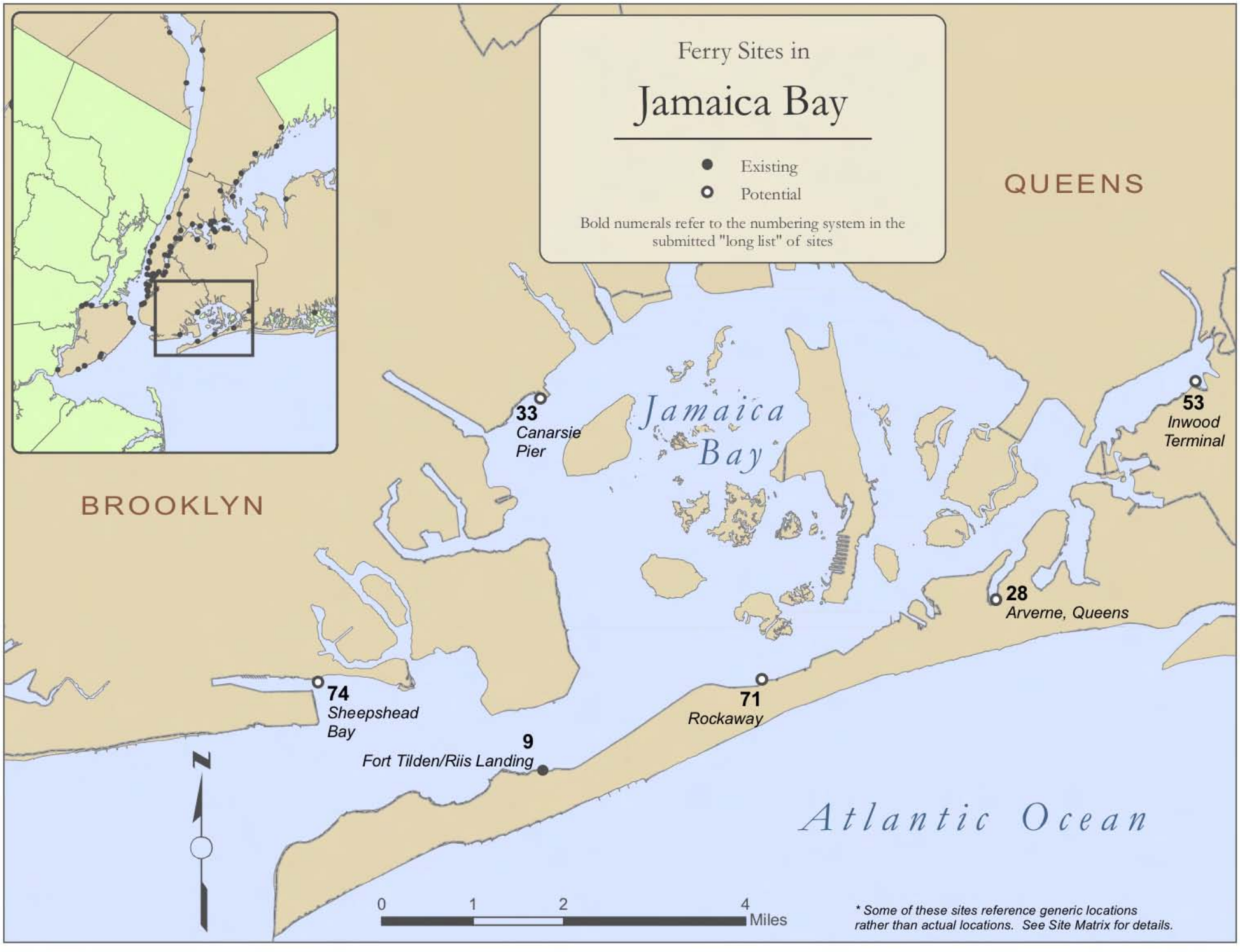

Ferry Sites along
Long Island's South Shore
Existing
Potential
Bold numerals refer to the numbering system in the submitted "long list" of sites
SUFFOLK
QUEENS
NASSAU
53
Inwood
Terminal
46
Freeport
28
Arverne
34
Captree
State Park
7
Fire
Island
Atlantic Ocean
0
3
6
12
Miles
N
* Some of these sites reference generic locations rather than actual locations. See Site Matrix for details.


Ferry Sites along the
Upper East River
Existing
Potential
Bold numerals refer to the numbering system in the submitted "long list" of sites
* Some of these sites reference generic locations rather than actual locations. See Site Matrix for details.
37
Co-op City
60
Orchard Beach
47
Glen Cove
Long Island Sound
BRONX
NASSAU
35
Castle Hill
43
Ferry Point Park
59
Oak Point Railyard
52
Hunts Point
76
Shorehaven
57
Marina Del Ray
29
Beechhurst Res. Park
East River
36
College Point
38
Cresthaven Marina
64
Point Little Bay
55
LaGuardia Airport
QUEENS
8
Flushing Bay Marina (Shea Stadium)
N
0
1
2
4
Miles


Ferry Sites in and around
Upper Manhattan
Existing
Potential
Bold numerals refer to the numbering system in the submitted "long list" of sites
* Some of these sites reference generic locations rather than actual locations. See Site Matrix for details.
0
0.5
1
2
Miles
N
BERGEN
BRONX
MANHATTAN
QUEENS
Hudson River
East River
44 Fordham Landing
24 Yankee Stadium
59 Oak Point Railyard
49 Harlem Piers
69 Randall's Island
75 Shore Towers (Pot Cove)
1 90th Street
83 Trump City
72 Roosevelt Island
39 E. 63rd St.
26 44th Dr. Pier
19 Pier 84 (W. 44th St.)
13 Hunters Point
23 W. 38th (39/Midtown)
6 E. 34th St.


Ferry Sites in and around
Lower Manhattan
Existing
Potential
Bold numerals refer to the numbering system in the submitted "long list" of sites
* Some of these sites reference generic locations rather than actual locations. See Site Matrix for details.
18
Pier 63
(W. 23rd St.)
85
Williamsburg
MANHATTAN
Hudson River
17
Pier 45
(Christopher St.)
63
Pier 40
62
Piers 36 and 42
East River
4
BPC/WFC
22
South Street
Seaport
10
Fulton Ferry
Landing
40
East
River
Landing
16
Pier 11
3
Battery
31
Bklyn PA
Mar. Term. (1-5)
BROOKLYN
0
0.25
0.5
1
Miles


Ferry Sites along the
Brooklyn Waterfront
Existing
Potential
Bold numerals refer to the numbering system in the submitted "long list" of sites
* Some of these sites reference generic locations rather than actual locations. See Site Matrix for details.
MANHATTAN
BROOKLYN
New York Bay
85 Williamsburg
21 Schaefer Landing
62 Piers 36 and 42
30 Brooklyn Navy Yard
22 South St. Seaport
10 Fulton Ferry Landing
16 Pier 11
31 Bklyn PA Mar. Term. (1-5)
40 East River Landing
2 Atlantic Ave.
54 Kent Terminal
70 Red Hook Container Term.
11 Governors Island
20 Red Hook (Fairway)
42 Erie Basin
78 South Bklyn Marine Term.
5 Brooklyn Army Terminal
27 65th St., Bay Ridge
82 Toys 'R' Us
0 0.5 1 2 Miles


Ferry Sites in
Jamaica Bay
Existing
Potential
Bold numerals refer to the numbering system in the submitted "long list" of sites
QUEENS
BROOKLYN
Jamaica Bay
33
Canarsie Pier
53
Inwood Terminal
28
Arverne, Queens
74
Sheepshead Bay
71
Rockaway
9
Fort Tilden/Riis Landing
Atlantic Ocean
N
0 1 2 4
Miles
* Some of these sites reference generic locations rather than actual locations. See Site Matrix for details.


Ferry Sites in
Staten Island
Existing
Potential
Bold numerals refer to the numbering system in the submitted "long list" of sites
* Some of these sites reference generic locations rather than actual locations. See Site Matrix for details.
84
Watersedge Estates
77
Snug Harbor
80
Torpedo Pier/Ft. Wadswort
68
Port Richmond
Kill van Kull
58
Mariners Harbor
66
Port Ivory
50
Howland Hook
STATEN ISLAND
Arthur Kill
48
Great Kills Harbor
67
Port Regalle
51
Huguenot Avenue
32
Camp St. Edwards
81
Tottenville
0
1
2
4
Miles

6 SITE MATRIX

The following six pages form the current skeleton of the FPLAS site matrix. It is important to keep in mind that this long list of sites is in a draft stage and is not yet completely finalized (although the FPLAS team expects only minor changes). The FPLAS work over the summer 2007 and early fall will be spent filling the empty cells of this matrix.

The first three columns, identified in orange, include the site number, site name and matching service. The ferry site numbers correspond to the previously listed long list of ferry sites, as well as the preceding maps. The ferry site name includes the site name, as well as alternate defining name, when applicable. The matching service is either historical or current and is based on the Task 1 – Literature Review, particularly the Regional Plan Association 2006 report.

The next two columns, identified in blue, include the source of each site. In particular, identifying which study from the FPLAS Task 1 – Literature Review the site was extracted from, the entity the study was prepared for and the summary and concluding remarks about the ferry site.

The next thirteen columns, identified in green, include the criteria derived from the Task 2 interviews with local area experts, which is discussed in greater detail in Section 1 of this deliverable. The cells in these columns are currently filled in with information derived from the Task 1 – Literature Review. The Task 1 – Literature Review, however is only one element contributing to ferry site criteria. The FPLAS GIS analysis will fill in the empty cells, and thereby reduce this long list to a manageable size of approximately one dozen sites that will be studied in greater detail.

Finally, the last column, also identified in blue, includes any additional pertinent information about each ferry site on the FPLAS long list that does not fit into an aforementioned column.

Task 2 Long List			Task 1 Literature		Task 2 Criteria - Expert Interviews / Task 1 Literature Review Data													Task 1
Site #	Site Name (Alternate Name)	Matching Service Historical and Projected	Preparer and Prepared for	Summary Evaluation	Land Use and Zoning	Road Access	Intermodal Connections	Parking: Existing and Potential	Population Density: Walking	Population Density: Driving and Public Transit	Walk to Destinations	Service Demand: Historical and Projected	Site Ownership	Existing infrastructure	New Development	Boat Service and Storage Area	Community Acceptance	Safety and Security	Notes
EXISTING FERRY SITES																			
1	90th Street	LaGuard a Airport	RPA 2006 - commuter									Assume demand not adequate to support service as of 12/1999; discontinued, LaGuard a: 5 h ghest month daily riders per RPA 2006		Yes					
2	Atlantic Avenue (P.A. P er 6 and 7)		NYCDCP 1990a - Fre ght	Did not meet cri eria (NYCDCP 1990a)		Poor								Yes, large cargo ac ltates					L ttle cargo activ ty, po ent al for rush-hour congestion
3	Battery (Ba tery Maritime Bui ding, Slip 6, and P er A)	Lincoln Harbor, Pavonia, Hoboken	RPA 2006 - commuter									Lincoln Harbor: 681, Pavonia: 2,865 and Hoboken: 18,056 h ghest month daily riders per RPA 2006		Yes					Several docks at Bat ery Park; currently it is unclear if these four represent truly separate s tes as they are referred to by multiple names in the li erature
		Weehawken	RPA 2006 - commuter									Weehawken: 90 highest month daily riders per RPA 2006		Yes					Several docks at Bat ery Park; currently it is unclear if these four represent truly separate s tes as they are referred to by multiple names in the li erature
		Harbors de, P er 11	RPA 2006 - commuter, National Park Service 2001 - passenger	Promising (National Park Service /2001)			Excel ent - subway and other ferry	Ex sting - commercial with excess parking available on weekends			Cast e Clinton and other tour sm	Harborside: 3,769 and Pier 11: 1795 highest month daily riders per RPA 2006	C ty of New York - maintained in cooperat on West/ Park Service	Yes, Battery Apron Slip #2 and Marine Inspection Office (MIO) piers; however, development necessary to expand capac ty given current use by Ellis Island and Statue of Liberty lines	WTC				Several docks at Bat ery Park; currently it is unclear if these four represent truly separate s tes as they are referred to by multiple names in the li erature
4	Battery Park City (BPC): Wor d Financial Center (WFC)	P er 11	RPA 2006 - commuter						3,500 plus res den ial uni s		WFC and waterfront esplanade	Pier 11: 81 h ghest month da ly r ders per RPA 2006		Yes					Several docks at Bat ery Park; currently it is unclear if these four represent truly separate s tes as they are referred to by multiple names in the li erature
		Hoboken South, Co gate, Liberty Landing, LaGuard a, South Street Seaport, Liberty State Park, Pavonia, Weehawken, Hoboken North, West 38th	RPA 2006 - commuter								Lower Manhattan off ces and tourist sites	Supports four routes from Jersey C ty and Hoboken: 7,700 riders daily, Hoboken: 10,921, Colgate: 620, Liberty Landing: 9 8, LaGuardia: 17, South Street Seaport: 159, Liberty S ate Park: 1,017, Pavon a: 303, Weehawken: 702, Hoboken: 0 and West 38th: 315 highest month da ly r ders per RPA 2006		Yes					
5	Brooklyn Army Terminal / 69th Street (BAT)	P er 11	Nat onal Park Service 2001 - passenger	Promising for passenger (National Park Service /2001)								Pier 11: 2,015 highest month daily riders per RPA 2006		Yes					
			NYCDCP 1990a - Fre ght	Did not meet cri eria for freight (NYCDCP 1990a - Freight)			Bus and subway 1 mile away	Weekend			Of ice, reta l and res den ial			Yes, exis ing loa ing pier					
6	East 3 th	H ghlands, Atlantic H gh ands, Hunters Pt., LaGuard a, Port Liberte, Glen Cove, Inwood, St. George, South Amboy, Water Taxi Hop on/Hop of	RPA 2006 - commuter									Supports 2 routes from Monmouth County: 1,300 riders da ly, East River shuttle: 500 riders daily, H gh ands: 1,02 , Atlantic H gh ands: 561, Hunters Point: 236, LaGuardia: 101, Port Liberte: 2 , G en Cove: 3, Inwood: 9 and St. George: 1,605 highest month daily riders per RPA 2006		Yes					
7	Fire ls and* ** (This site is a generic location to represent all of the exist ng Fire Island summer ferry services.)*		**Steer ng Comm ttee Task 2 Comments*																
8	Flushing Bay Marina, Queens (Shea Stadium)	A lan ic H ghlands	NYCDCP 1990b	Immediate Potential (NYCDCP 1990b)		Excel ent - Grand Central Parkway, Van Wyck Expressway and Northern Bou evard	Subway 7 line and Q66 bus ine	Ex sting - 250 in (3) nearby lots and Shea Stadium parking		Down own Flushing, w th many bus lines	Shea S adium			Yes		Working marina			Recreational use - fishing trips depart from here, 196 -1965 Worlds Fair ferry service to Wall Street
9	Fort Tilden/Ri s Landing at Breezy Point		Nat onal Park service /2001 - passenger	Concept plan deve oped (Nat onal Park Serv ce /2001)		Yes	None, recommended for access to beach and exis ing parking	1/2 mi e to ex sting (shuttle or new parking recommended)			R is beach 1 25 miles away (shu tle recommended)		National Park Service / Coast Guard	Yes; however temporary improvements suggested ($725,000)					
10	Fu ton Ferry Landing (Fu ton Landing)	P er 11, Manhattan stops, Hunters Point, Schaefer Landing	Nat onal Park Service 2001 - passenger, RPA 2006 - commuter	Promising (National Park Service /2001)			Subway A, C, F lines - within walking d stance		Brooklyn Heigh s and other res den ial	Yes, by subway	Empire-Ful on Ferry State Park and active mixed uses	Yes (Brooklyn Heights, other res dentia), Pier 11: 199 and four Manhattan stops: 6 highest month da ly r ders per RPA 2006		Yes					
11	Governors Island		**Expert Interviews*																
12	Haverstraw	Ossining	RPA 2006 - commuter									Ossining: 52 highest month daily riders per RPA 2006		Yes					

Task 2 Long List			Task 1 Literature		Task 2 Criteria - Expert Interviews / Task 1 Literature Review Data														Task 1
Site #	Site Name (Alternate Name)	Matching Service Historical and Projected	Preparer and Prepared for	Summary Evaluation	Land Use and Zoning	Road Access	Intermodal Connections	Parking: Existing and Potential	Population Density: Walking	Population Density: Driving and Public Transit	Walk to Destinations	Service Demand: Historical and Projected	Site Ownership	Existing infrastructure	New Development	Boat Service and Storage Area	Community Acceptance	Safety and Security	Notes
13	Hunters Point, Queens	East3 th, P er 11, Schaeffer Landing, Fulton Ferry Landing	NYCDCP 1990b, RPA 2006 - commuter	Addit onal study required - new development (NYCDCP 1990b)			Subway 7 line		New development		Water Taxi Beach and res den ial developments	Currently operat onal - supports service to Pier 11, Schaefer Landing, East 3 th Street, East 3 th: 236 and Pier 11: 507 highest month daily riders per RPA 2006		Yes	6, 00 resident al units in mixed-use development				Is there currently a ferry service between Hunters point and East 3 th street, not re lected in the RPA document? The current P er 11 service referred to has very low ridership; and may be part of a mu tip e site service on the East River
14	Nyack																		
15	Ossining	Haverstraw	RPA 2006 - commuter			Somewhat difficult	Metro-North Railroad					Haverstraw: 52 h ghest month daily riders per RPA 2006		Yes					
16	Pier 11	H ghlands, Brooklyn Army Terminal / 69th Street, Liberty Harbor, At ant c H ghlands, Weehawken, Keyport, Glen Cove, Rockaway, Elizabeth, Fulton Landing, Bayonne, Keansburg, LaGuardia, Pavonia, Will amsburg, Sheepshead Bay, Inwood Mariner's Harbor, Hoboken, Co gate, Hunters Pt., Pier A, BPC, South Amboy, Harbors de Belford, West 39th, East 3 th	RPA 2006 - commuter								Wall Street	Supports ten routes: 15,800 r ders da ly, H gh ands: 1,901, BAT: 2,015, Liberty Harbor: 1,878, At ant c Highlands: 1,0 3, Weehawken: 2,029, Keyport: 629, G en Cove: 353, Rockaway: 321, Elizabeth: 71, Fu ton Landing: 199, Bayonne: 387, Keansburg: 115, LaGuard a: 165, Pavonia: 59, W i amsburg: 9, Sheepshead Bay: 15, Inwood: 195, Mariner s Harbor: 5 , Hoboken: 7,3 0, Co gate: 971, Hunters Pt.: 507, P er A: 1,975, BPC: 81, South Amboy: 615, Harbors de: 1,330 and Bel ord: 2,3 6 highest month daily riders per RPA 2006		Yes					
		Port Liberte	RPA 2006 - commuter									Port Liberte: 917 highest month daily peak riders per RPA 2006		Yes					
			NYCDCP 1990a - fre ght	Met criter a for freight (NYCDCP 1990a)										Yes					Sui able for sma l package transport
17	Pier 5 (at West Christopher Street) Manha tan	Water Taxi Hop on/Hop off												Yes					
18	Pier 63 (West 23rd Street Pier)	Water Taxi Hop on/Hop off	NYCDCP 1990a - fre ght	Met criter a for freight (NYCDCP 1990a)		Good								Yes					Used for car rental ac lity; behind World Yacht Services
19	Pier 8 (West th)	Lincoln Harbor, Water Taxi Hop on/Hop off	RPA 2006 - commuter									Lincoln Harbor: 1 highest month daily riders per RPA 2006		Yes					
20	Red Hook (behind Fairway)	Water Taxi Hop on/Hop off									Fairway Supermarket			Yes					
21	Schaefer Landing	Hunters Landing East3 th, Fulton Ferry Landing, Pier 11, Water Taxi Hop on/Hop off					No train		New, increasing res dent al development			Currently operat onal - supports service to Pier 11 (60 r ders daily), and part cipates in East River shuttle (East3 th Street, Hunters Point)		Yes	New residential towers				
22	South Street Seaport	WFC	RPA 2006 - commuter									WFC: 159 highest month daily r ders per RPA 2006		Yes					
23	West 38th (West 39th, M dtown or Pier 78)	WFC, Weehawken, Lincoln Harbor, Hoboken No., Colgate (Paulus Hook), Pavonia, Harborside, Edgewater, Newport	RPA 2006 - commuter				NYWaterways bus to midtown					Supports five routes from Hudson County, NJ: 12,100 r ders da ly, WFC: 315, Weehawken: 13,16 , Lincoln Harbor: 3,080, Hoboken No.: 2,235, Colgate: 2,3 8, Pavonia: 1, 99 and Harborside: 292 highest month daily riders per RPA 2006		Yes					
			NYCDCP 1990a - fre ght	Met criter a for freight (NYCDCP 1990a)		Good								Yes, very good condition					Used as car pound
24	Yankee Stadium	A lan ic H ghlands									Yankee Stadium			Yes					
25	Yonkers		NYCDCP 1990b	Immediate po ent al (NYCDCP 1990b)		Excel ent	Metro-North Railroad and several buses	Ex sting - 50 spots plus vacant and	Downtown Yonkers	Yonkers Raceway, Cross County Ma l	Downtown Yonkers			Yes, covered 2-story pier	Housing bu lt nearby				

Task 2 Long List			Task 1 Literature		Task 2 Criteria - Expert Interviews / Task 1 Literature Review Data													Task 1
Site #	Site Name (Alternate Name)	Matching Service Historical and Projected	Preparer and Prepared for	Summary Evaluation	Land Use and Zoning	Road Access	Intermodal Connections	Parking: Existing and Potential	Population Density: Walking	Population Density: Driving and Public Transit	Walk to Destinations	Service Demand: Historical and Projected	Site Ownership	Existing infrastructure	New Development	Boat Service and Storage Area	Community Acceptance	Safety and Security	Notes
POTENTIAL FERRY SITES																			
26	Drive P er, Queens		NYCDCP 1990b	Short Term Po ent al (NYCDCP 1990b)				Ex sting - restaurant, Board of Educa ion, and Ports and Trade	Near Hunters Point and S hvercup West developments				P er maintained by Waters Edge restaurant	Yes, public access pier					
27	65th Street – Bay Ridge		NYCDCP 1990a - Fre ght	Met criter a (NYCDCP 1990a)			Fre ght rail							Yes, floating br dge					
28	Arverne, Queens		NYCDCP 1990b	Addit onal study required - new development (NYCDCP 1990b)											Up to 10,000 resident al units				
29	Beechhurst Residents' Park, Queens		NYCDCP 1990b	Long term potential (NYCDCP 1990b)						Nearby dense development			Priva e park	Yes, recreat onal pier					
30	Brooklyn Navy Yard		NYCDCP 1990a - Fre ght	Met criter a (NYCDCP 1990a)										Yes, good cond tion					Many diverse small businesses, facili ies fully leased
31	Brooklyn-Port Author ty Marine Terminal (1-5)		NYCDCP 1990a - Fre ght	Did not meet cri eria for freight (NYCDCP 1990a)										Yes					No longer su tab e for maritime use
32	Camp St. Edward, Staten Island		NYCDCP 1990b	Addit onal study required - new development (NYCDCP 1990b)		Narrow and unpaved			272 res dent al uni s										
33	Canarsie Pier		NYCDCP 1990b	Immediate Potential (NYCDCP 1990b)		Excel ent, w th turnaround	Subway L line and B 2, B17, B50 bus lines	Ex sting - approximately 350 spots		Starrett City, 80,000 peop e in Canarsie			Requires agreement with National Park Service?	Yes	New residential along Fresh Creek				
			Nat onal Park Service 2001 - passenger	Promising for passenger (National Park Service (2001)			Bus	Ex sting		Brooklyn and Queens residents	Park faci it es and recreation	Park visitors exceed parking capac ty and non-auto owners	National Park Service	Yes, floating dock					
34	Captree State Park		*Steer ng Comm ttee Task 2 Comments*																
35	Cas le Hi l, Bronx		NYCDCP 1990b	Addit onal study required - new development (NYCDCP 1990b)											residential units				Wet ands, no water depth, under LaGuardia f ight path
36	Col age Point S tes, Queens* ** (This site is a generic location to represent s tes ident fied as Long-Term Service Potential in the 1990 NYCDCP's Landside Opportun ties for Expanding Ferry Services Final Report.)*		NYCDCP 1990b	Long term potential (NYCDCP 1990b)						New development				Marina built?	1100 plus residential units				Six or more loca ions: Riverv ew, Silverpoint, East Point, Flushing V ew Terrace, Bay Esta es and Skyline Terrace; East Point presen s best opportunity
37	Co-op C ty, Bronx		NYCDCP 1990b	Short Term Po ent al (NYCDCP 1990b)					36,000 - 50,000										Large market, navigable river, no other transit to Manhattan aside from express buses
38	Cresthaven Marina, Queens		NYCDCP 1990b	Addit onal study required - new development (NYCDCP 1990b)				Ex sting - 50 spots, with vacant and nearby						Yes, marina				Dangerous access	
39	East 63rd Street		NYCDCP 1990b	Short term po ent al (NYCDCP 1990b)		First Avenue, plus pedestrian bridge		Ex sting			Rockefel er University								Strong East River currents w ll have to be addressed in des gning pier
		LaGuard a Airport	RPA 2006 - commuter									Assume demand not adequate to support service as of 11/2000; discontinued, LaGuard a: 62 highest month daily riders per RPA 2006		Yes, as of 11/2000					
40	East River Landing, Manha tan* ** (This site is a generic location to represent a proposed development planned in the area extending from the Battery Marit me Build ng to the South Street Seaport.)*		NYCDCP 1990b	Addit onal study required - new development (NYCDCP 1990b)											Cou d replace Pier 11				
41	Echo Bay		*Steer ng Comm ttee Task 2 Comments*																
42	Erie Basin		NYCDCP 1990a - fre ght	Did not meet cri eria for freight (NYCDCP 1990a)		Poor	Poor access to rail							Yes					
43	Ferry Point Park, Bronx		NYCDCP 1990b	Short term po ent al (NYCDCP 1990b)		Last exit before Whi estone		Large unpaved lot											
44	Fordham Landing, Bronx		NYCDCP 1990b	Addit onal study required - new development (NYCDCP 1990b)		Diff cu t	Railroad								86 residential units				
45	Fort Slocum Road		*Steer ng Comm ttee Task 2 Comments*																
46	Freeport		*Steer ng Comm ttee Task 2 Comments*																
47	Glen Cove, Fox Nav gat on S te	P er 11, East3 th	NYMTC 11/2005 - passenger and freight, RPA 2006 - commuter	Feasible (NYMTC 11/2005)		Highway 5 miles away by local streets through CBD	Long Island Railroad several miles away and wou d require shutt e service	More than 50 spaces, new facil ties necessary, undeveloped land avai able		Yes, C ty of G en Cove and neighboring vil ages w thin 10 to 15 minutes	No walking access to CBD	Pier 11: 353 and East 3 th: 3 highest month daily r ders per RPA 2006		Yes, exis ing terminal, floating barge required for fast ferry and ADA	Glen Cove s planning Esplanade, may improve s te viab lity				
48	Great K lls Harbor		PANYNJ 8 1996 - passenger			Good	NYCT local and express bus and Staten Island Rap d Transit	Limited exis ing, vacant parcels nearby		23,853 Manha tan commuters in market area									See Port Regalle
49	Harlem Piers						Bus and subway nearby							Yes	Columb a Univers ty expansion				
50	Howland Hook Container Terminal		NYCDCP 1990a - Fre ght	Met criter a for freight (NYCDCP 1990a)		Good connect ons								Yes					
51	Huguenot Avenue, S aten Island		PANYNJ 8 1996 - passenger			Limited	Local and express buses	Limited, residential		16,167 Manha tan commuters in market area				None - numerous sandbars prob ematic; would require ex ending a terminal to adequate depth					Site represen ative of numerous possible s tes on south shore of Sta en Island

Task 2 Long List			Task 1 Literature		Task 2 Criteria - Expert Interviews / Task 1 Literature Review Data														Task 1
Site #	Site Name (Alternate Name)	Matching Service Historical and Projected	Preparer and Prepared for	Summary Evaluation	Land Use and Zoning	Road Access	Intermodal Connections	Parking: Existing and Potential	Population Density: Walking	Population Density: Driving and Public Transit	Walk to Destinations	Service Demand: Historical and Projected	Site Ownership	Existing infrastructure	New Development	Boat Service and Storage Area	Community Acceptance	Safety and Security	Notes
52	Hunts Point		NYMTC 9 200 - passenger and freight, NYCDCP 1990a - fre ght	Possible for passenger and freight (NYMTC 9/200), met cr teria for freight (NYCDCP 1990a)		Poor	Truck (and rail)							Yes					
53	Inwood Terminal (Inwood)	P er 11, East3 th	NYCDCP 1990a - Fre ght, RPA 2006 - commuter	Met criter a for freight (NYCDCP 1990a)								Pier 11: 185 and East 3 th 9 highest month da ly r ders		Yes					
54	Kent Terminal, Brooklyn		NYCDCP 1990a - Fre ght	Met criter a for freight (NYCDCP 1990a)										Yes	1986 p ans for resident al and community deve opment				
55	LaGuardia Airport (LaGuardia)	P er 11, East3 th, WFC, 62nd Street, 90th Street	NYMTC 9 200 - passenger and freight, NYCDCP 1990a - fre ght, NYMTC 11 2005 - - passenger and freight, RPA 2006 - commuter	Further study for passenger (NYMTC 9 200), no for fre ght (NYMTC 9 200), feasible for freight and passenger (NYMTC 11/2005), met criteria for freight (NYCDCP 1990a)		Yes	Air; NYC Trans t buses; expansion of airport shut le essential to support ferry service (currently serves Del a terminal only)	Ex sting - airport parking lo s	No	Yes	Other terminals not eas ly accessib e on foot	PANYNJ evaluating resuming service to Manhattan, Pier 11: 165, East 3 th: 101, WFC: 17, 62nd Street: 62 and 90th Street: 5 h ghest month daily r ders per RPA 2006		Yes, exis ing erminal; however addit on of floating barge necessary					
56	Mamaroneck		NYMTC 11/2005 - passenger and freight	Feasible (NYMTC 11/2005)		1 mile from in erstate	Train 30 minutes by foot	Ex sting - approximately 100	Adjacent res den ial area	Adjacent resident al area	CBD within thirty minute walk, other business and res den ial closer			No, construct on of fu l s ze terminal (T) and f oating barge recommended					
57	Marina Del Ray, Bronx		NYCDCP 1990b	Short term po ent al (NYCDCP 1990b)		Good		Ex sting - 2 250 spots unused during the day						Yes, but needs repair					
58	Mariner s Harbor	P er 11	RPA 2006 - commuter									Assume demand not adequate to support service as of 5/98. D scontinued, Pier 11: 5 highest month daily riders per RPA 2006		Yes, as of 5/1998					
59	Oak Point Ra lyard		NYCDCP 1990a - fre ght	Met criter a for freight (NYCDCP 1990a)			Truck and rail							Yes					
60	Orchard Beach		*Expert Interviews																
61	Peekskill, Westchester		NYCDCP 1990b	Immediate po ent al (NYCDCP 1990b)			Metro-North Railroad and #16 bus	Ex sting - 1 0 with 0 vacant	Downtown within a 7 minute walk					Yes, concrete					
62	Pier 36 & 2, Manhattan		NYCDCP 1990a - fre ght	Met criter a for freight (NYCDCP 1990a)										Yes					Formerly used for receipt of general cargo and containers by vessel
		LaGuard a Airport	NYCDCP 1990a - fre ght	Met criter a for freight (NYCDCP 1990a)										Yes					Formerly used for receipt of fruit by vessel
63	Pier 0, Manhattan		NYCDCP 1990a - fre ght	Met criter a for freight (NYCDCP 1990a)				Currently used for parking						Yes					Temporary docking s te of pr son barge
64	Point L ttle Bay, Queens		NYCDCP 1990b	Addit onal study required - new development (NYCDCP 1990b)						Adjacent area s densely popula ed					20 residential units and public fishing p er				
65	Port Chester		NYMTC 11/2005 - passenger and freight	Feasible (NYMTC 11/2005)		Highway nearby, accessed by CBD roads, poten ial traf ic ssues	Metro-North Railroad station 3 blocks away	Ex sting - 20 spaces with it e room for addition			CBD 3 blocks away		Publ c and private surrounding	No; small terminal and floating barge recommended, space is limited	City developing reta l in walking distance				

Task 2 Long List			Task 1 Literature		Task 2 Criteria - Expert Interviews / Task 1 Literature Review Data														Task 1
Site #	Site Name (Alternate Name)	Matching Service Historical and Projected	Preparer and Prepared for	Summary Evaluation	Land Use and Zoning	Road Access	Intermodal Connections	Parking: Existing and Potential	Population Density: Walking	Population Density: Driving and Public Transit	Walk to Destinations	Service Demand: Historical and Projected	Site Ownership	Existing infrastructure	New Development	Boat Service and Storage Area	Community Acceptance	Safety and Security	Notes
66	Port Ivory - former Procter and Gamb e site		NYCDCP 1990a - fre ght	Did not meet cri eria for freight (NYCDCP 1990a)		Poor								Yes					Wet ands
			PANYNJ 8 1996 - passenger			Good highway access	NYCT express and local bus	Available and for parking		17,5 0 Manha tan commuters in market area					High potential for new development in area				Richmond Terrace opposite Western Avenue
67	Port Regal e, Sta en Island		NYCDCP 1990b	Immediate po ent al (NYCDCP 1990b)			Sta en Island Rap d Trans t and buses less than 1 m le	Ex sting - at nearby marina	65 resident al units and 55 proposed		Great Kil s Park			Yes		Marina			Good stop on Highlands <-> Wall Street route
68	Port Richmond		NYCDCP 1990a - fre ght	Did not meet cri eria for freight (NYCDCP 1990a)										Yes, but poor condit on					Sewage treatment facil ty
69	Randalls Island		*Expert Interviews*																
70	Red Hook Container Terminal (Piers 11 and 12)		NYCDCP 1990a - fre ght	Met criter a for freight (NYCDCP 1990a)		Poor								Yes					
71	Rockaway	P er 11	RPA 2006 - commuter									Assume demand not adequate to support service as of 10/98. D scontinued, Pier 11: 321 highest month daily riders per RPA 2006		Yes, as of 10/1998					
72	Roosevelts Is and		*Expert Interviews*																
73	Rye Rye Playland, Westches er County		NYMTC 11/2005 - passenger and freight	Feasible (NYMTC 11/2005)		I-95 and I-287			Low-density res den ial	Possible van service from Mamaroneck	Several large irms - IBM, AT&T and NYNEX			Yes, but high p er in need of repair					Good or recreat onal ferry and reverse commuting
			NYDCDP 1990b	Long term potential (NYDCDP 1990b)		Intersta e, regional highway 1 m le away	Bus connection to train	Ex sting - abundant at Rye Playland, 0.25 m le from site	Rye residents	Rye residents	Playland and other Rye destinations	Vis tors to Playland and other Rye destinat ons; or Rye residents traveling to Manhattan or other coastal destination	Publ c	Yes, exis ing pier in good condi ion, ferry anding and structure; modificat ons or new construc ion necessary depending on vessel type					
74	Sheepshead Bay, Brooklyn	P er 11	NYCDCP 1990b, RPA 2006 - commuter	Addit onal study required - new development (NYCDCP 1990b)		Near highway entrance and ex ts		Vacant land adjacent			Floating restaurant	Pier 11: 15 h ghest month da ly r ders per RPA 2006		Yes, concrete p er at end of Knapp Street					
75	Shore Towers, Queens (Pot Cove)		NYCDCP 1990b	Addit onal study required - new development (NYCDCP 1990b)		Near Triboro Bridge exit					Astor a Park and pool				10 residential units				Possible sites at street ends
76	Shorehaven, Bronx		NYCDCP 1990b	Addit onal study required - new development (NYCDCP 1990b)											1, 37 resident al units near water				
77	Snug Harbor, Staten Is and (Sailor's Snug Harbor)		NYCDCP 1990b	Addit onal study required - new development (NYCDCP 1990b)							Projected promenade and cu tural center								Proposed landing would serve promenade and cultural center; recreat onal/commuter ferry would attract some of North Shore population
78	South Brooklyn Marine Terminal	Greenv lle Yard	NYCDCP 1990a - fre ght	Met criter a for freight (NYCDCP 1990a)			Truck and rail							Yes					Coffee receipt and d stribution site, w th 750,000 square oot of shed space
			NYCDCP 1990b	Immediate Potential (NYCDCP 1990b)		Excel ent	Subway N, R and B lines and B35, B70 and B37 bus lines	Ex sting - Cocoaport employees					Publ c land nearby	Yes				Parking has security	
79	Tarrytown		NYCDCP 1990b	Short term po ent al (NYCDCP 1990b)			Metro-North Railroad	2000 car lot w ll be bu lt						Yes, pier near auto plant, with marina nearby					
80	Torpedo Pier at Fort Wadsworth		Nat onal Park Service 2001 - passenger	Concept plan deve oped (Nat onal Park Serv ce /2001)		Steep, shutt e recommended					Vis tor center, Upper Battery and other facil ties of Fort Wadsworth close, but require shuttle to negotiate steep grade			No dock; improvemen s suggested ($ 00 000); 75-100 ft. grade or lands de access					
81	Tottenv le, Staten Island		PANYNJ 8 1996 - passenger			Good	Sta en Island Rap d Trans t at Bentley Street and MTA buses	Limited, addit onal facil ties necessary		3,511 Manha tan commuters in market area									Sea Breeze housing deve opment near water (NYCDCP 5/1990)
82	Toys R' Us		NYCDCP 1990b	Short term po ent al (NYCDCP 1990b)		Good, from Bay & Belt Parkways		Ex sting - ample											
83	Trump City		NYCDCP 1990b	Addit onal study required - new development (NYCDCP 1990b)					New development - 7,600 residential un ts, hotel, commercial and Parks		New development - 7,600 res den ial un ts, hotel, commercial and Parks				7,600 resident al units, ho el, commercial and Parks				
84	Wa ersedge Estates		NYCDCP 1990b	Addit onal study required - new development (NYCDCP 1990b)		Prob ematic		None							App ication for 96 residential units				
85	Wi liamsburg	P er 11	RPA 2006 - commuter									Assume demand not adequate to support service as of 6/1998; discontinued, P er 11: 9 highest month daily riders per RPA 2006		Yes, as of 6/1998					Uncertain which s te RPA 2006 refers o; multiple possibl ties in Wi liamsburg

Task 2B

GIS-Based Tool and Short List of Potential Ferry Sites

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APPENDIX -

January 23, 2008 Workshop: Attendance Sign-in Sheet and Power Point Presentation

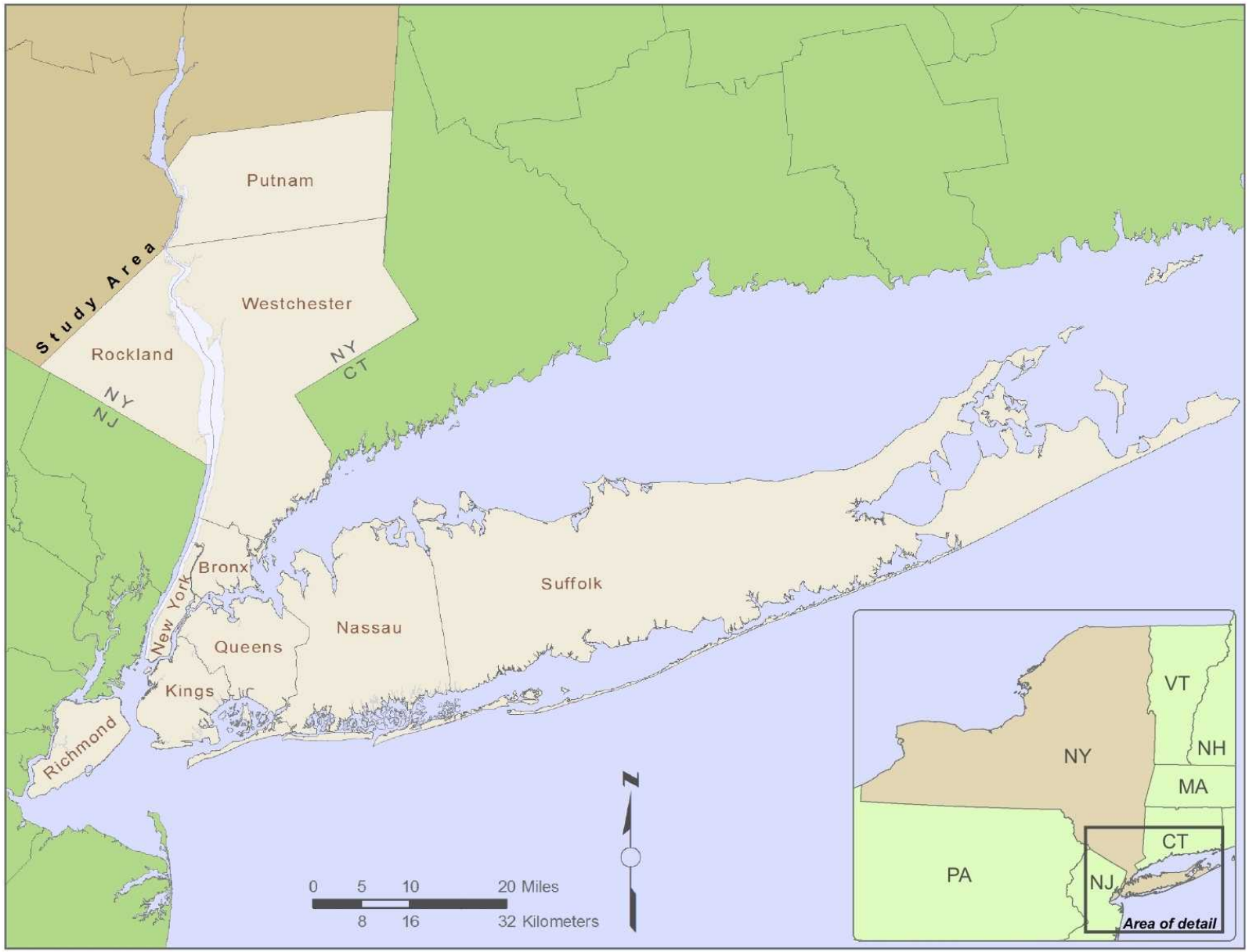


FIGURE 1-1 Ferry Parking and Landside Access Study Area

1 INTRODUCTION

A Project Background

The goal of the Ferry Parking and Landside Access Study (FPLAS) is to assist the New York Metropolitan Transportation Council (NYMTC) in the assessment and evaluation of both current and future potential sites suitable for the development of facilities to support waterborne transportation. Specifically, the study focuses on the development of assessment criteria to optimize underutilized waterborne transportation resources and services through the following:

- Review previous research about waterborne transportation needs of the region;
- Develop criteria to assess the viability of existing and potential sites that can be used for the development of facilities and infrastructure to support waterborne transportation; and
- Evaluate and prioritize sites for development.

The study region encompasses nine NYMTC counties, and is guided by a Steering Committee drawn from NYMTC member agencies. This Steering Committee reviews the work of the consultant team, determines priorities and direction for the study, and helps shape project deliverables.

B Previous Tasks

As the first task of the FPLAS, the consultant team conducted a rigorous review of literature related to the development of waterborne transportation infrastructure including previous reports and studies conducted in the region, such as the Long Island Sound Waterborne Transportation Plan project, the Hunt's Point Waterborne Freight Assessment, and the New York City Department of City Planning Landside Access to Ferry Landings, in order to provide a thorough understanding of the complex nature of the current endeavor.

The deliverable for this task is a comprehensive research report that summarizes previous research in this area including a detailed discussion of the major factors and components of growth that can be used in guiding the research team and NYMTC in the selection of alternative sites for development. Of particular note are factors likely to influence decision-making.

The Task 1 – Literature Review includes a summary of a total of seventeen studies. Of the seventeen studies, eleven focus on the New York metropolitan area. The remaining six studies focus on other geographic areas, both national and international. In addition, this deliverable includes two criteria matrices – one for ferry service criteria based on the New York metropolitan area studies and another for ferry service criteria based on the studies from other geographical areas. Task 1 forms the foundation for the subsequent FPLAS work and is available on NYMTC's project website, www.nymtc.org/project/FPLAS/fplas_index.html.

Task 2 of the FPLAS involved expert interviews, the development of a Geographic Information System (GIS) database, and a long list of existing and potential ferry sites. This work in summarized in the November 2007 Task 2 Deliverable. The Task 2 Deliverable includes a summary of the eleven interviews conducted by the FPLAS team, a list of the departments, agencies and individual people interviewed, a description of the efforts to create a GIS repository for the FPLAS region, an overview of the database, the long list of existing and potential ferry sites extracted from the literature review of Task 1 and expert interviews of Task 2, and finally, a long list site matrix and is also available on NYMTC's project website, www.nymtc.org/project/FPLAS/fplas_index.html.

C Scope and Contents of Task 2B Deliverable

The work following the submittal of the Task 2 Deliverable is the subject of this report, the Task 2B Deliverable. After this introductory section, section two outlines the GIS-based site comparison tool. Following the submittal of the November 2007 deliverable, the consultant team continued building the GIS repository. Once this repository was complete, the GIS-based site comparison tool was constructed through a multi-step process of (i) formalization, (ii) modeshed creation, and (iii) model development. A workshop was held on January 23, 2008 to introduce the site comparison tool to NYMTC staff and members of the FPLAS Steering Committee. During this meeting, the ten workshop participants ranked numerous criteria derived in Task 1 by applying relative weighting. Then, based on the combined criteria weights, the GIS-based tool was run resulting in a ranking of the long list of 85 sites existing and potential sites.

The resultant ranking allowed the comparison of our long list of ferry sites throughout the NYMTC region. Based on this ranking, as well as meetings with NYMTC staff, FPLAS Steering Committee members, county officials and staff from individual municipalities, a short list of thirteen potential ferry sites was determined. Section 3 outlines the short list of thirteen potential ferry sites and includes initial site reports for each of these sites. Finally, Section 4 outlines the next step, which includes detailed analysis of each of the thirteen potential ferry sites.

2 GEOGRAPHIC INFORMATION SYSTEMS (GIS)-BASED TOOL

This section describes the GIS-based site comparison tool. In Task 2, the FPLAS team compiled data from the NYMTC region in order to conduct a comparative analysis of the long list of sites previously identified in Task 2 and listed in Section 3 of this report. The GIS repository contains data about land use, demographics, mobility patterns, and ridership counts. A more comprehensive description of this GIS repository is included in the November Task 2 Deliverable. The data was then used to create a GIS-based decision-making tool that can be used to interactively compare individual sites with one another using a common set of criteria. A description of this tool is provided below.

1 Tool Creation

A Formalization

The first step in building the tool was the formalization of criteria. Our literature review, expert interviews, and meetings with stakeholders collectively generated criteria that can be used to evaluate individual sites. However, since these criteria are the result of conversations between people, they are expressed in natural language – language that people understand, but which is too ambiguous for computers. Therefore, to evaluate sites using GIS, these natural language concepts must be translated into unambiguous references, and then coded in computer language. This process is called formalization.

B Modeshed Creation

The next step in creating the GIS-based site comparison tool was to create catchments or modesheds, a delineated area accessible from a site by driving, cycling, or walking. The modesheds serve as the area to identify the boundaries for specific analyses, for example, to answer a question “how many people reside within the walking catchment?” To create these modesheds, a dedicated geoprocessing model, called *Modeshed Creation*, was used. *Modeshed Creation* identifies all segments of a street network reachable from one location based on user-defined criteria, such as distance (e.g., ½ mile).

Modeshed Creation also calculates network distance where travel is assumed to occur on roads and sidewalks using the three mode-specific street networks in the supporting geodatabase, rather than as calculating simple radial distances “as the crow flies”. Parameter values for driving and identifying access

roads can be specified in minutes, miles, or kilometers; while biking and walking distances can be specified in miles, meters, or kilometers. These analyses are used to identify the demographic profiles of potential ferry users that can access the site by each mode. Other useful information including transit connections, land uses, and employment centers within a particular spatial extent can be determined through the modeshed creation process.

C Sub-models

The FPLAS GIS-based site comparison tool includes several sub-models. Essentially, each step in the analysis required the development of a customized model. The purpose of each sub-model is described briefly below. In addition, the model and sub-model relationship is shown on Figure 2-1.

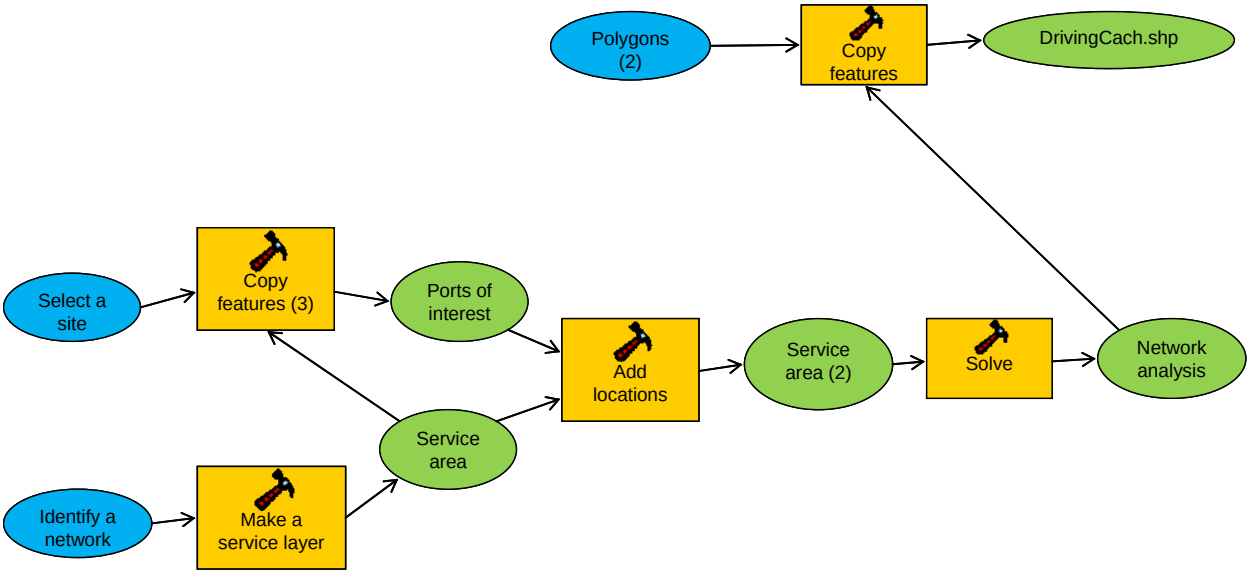


Figure 2-1 Model – Sub-model Relationship

The *Origin Demographic Analysis* sub-model characterizes the population with access to a site by each mode, resulting in precise values for population, housing units, outgoing commuters, and Manhattan-bound commuters within each modeshed. Population-weighted averages of median household income and vehicle ownership rates are also computed. These estimates are based on assumptions that population and housing units are uniformly distributed across census block groups, and commuter counts at the tract level are distributed among these block groups in proportion to block group population.

A *Destination Demographic Analysis* sub-model implements the same processes for the walkshed in order to characterize the population likely to be affected by the potential development of a ferry site.

Two sub-models summarize land use characteristics at origin and destination sites: *Origin Land Use Analysis* and *Destination Land Use Analysis*. Both models use broad definitions of ownership type (public/private) and broad land use classifications (residential, commercial, and vacant) in order to determine availability of land suitable for parking, and to identify the presence of office, factory, or retail space that can serve as employment generators.

The number of incoming commuters, associated with a destination site, is determined by the *Destination Employment Analysis*. The *Mode Change Opportunity Analysis* summarizes the opportunities for commuters to change transit modes within walking distance of a potential site. An *Access Road Analysis* sub-model summarizes the road access at a site.

Two *Site Description Summary* sub-models, an origin and a destination summary, combine the information about a site generated by the other sub-models in preparation for report generation and multicriteria evaluation. These sub-models join the summary tables generated by each sub-model to a point feature that can be displayed on a map to visually represent the particular site that is being analyzed. Summary reports for each site are included in Section 3.

Thus, a*n Origin Site Analysis* model implements a complete origin site analysis by combining the *Modeshed Creation*, *Origin Land Use Analysis*, *Origin Demographic Analysis*, *Mode Change Opportunity Analysis*, *Access Road Analysis*, and *Origin Site Summary* sub-models. Likwise, a *Destination Site Analysis* model does the same for destination sites. These models are organized so that the user can enter the parameters for, and create the data products of, each sub-model individually or grouped together.

Finally, the *Origin Site Comparison* and *Destination Site Comparison* sub-models implement a multi-attribute comparison of sites using factors derived and collected by the other sub-models. The site comparison models take a group of site summaries (generated by the *Site Description Summary* sub-models) and a set of criteria weights selected by users.

The set of site descriptors, or factors, combined in multicriteria analysis through the *Site Comparison* sub-models are as follows:

Origin analysis site descriptors:

- Commuters leaving block groups from each modeshed
- Manhattan-bound commuters from each modeshed
- Housing units in each modeshed
- Car ownership rate in each modeshed
- Median household income in each modeshed
- Known existing parking in the walkshed
- Potential parking in the walkshed
- Area of land known to be publicly owned in the walkshed
- Area of land known or assumed to be privately owned in the walkshed
- Percentage of land in the walkshed known to be publicly owned
- Number of bus and commuter rail connections within walkshed
- Length of access roads within the access road search distance

Destination analysis site descriptors:

- Vacant land in the walkshed
- Area of land known to be publicly owned in the walkshed
- Length of access roads within the access road search distance
- Number of bus and subway connections within the walkshed
- Commuters entering the walkshed
- Area of known office, retail and factory space in the walkshed
- Number of housing units in the walkshed
- Median household income in walkshed

The model implements a series of table operations, which linearly standardize the raw values of the site descriptors. The standardized values are then combined with user-specified weights for each site descriptor using a weighted linear combination (WLC) decision rule. The resulting uni-dimensional value associated with each site, called the composite origin or destination score, is written to a new field in a table combining the site summaries for the entire group. The raw values, factor scores, and composite

scores in these tables may be used as attributes for mapping site evaluations and comparisons, and as a matrix of site evaluation factors. This process is outlined in Table 2-1.

Table 2-1 Calculation of Indicator and Composite Scores from Raw Values

Origin indicator	Value	Minimum for all sites	Range for all sites	Score = (value - minimum)/range	Weight	Score x weight
Commuters leaving walkshed	974	0	9920	0.10	4.17	0.41
Number of Manhattan-bound commuters within walkshed	20	0	8972	0.00	4.17	0.01
Housing units in walkshed	705	0	10373	0.07	2.78	0.19
Average median household income in walkshed	$31,902	0	114816	0.28	2.78	0.77
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	0.98	0	2	0.52	2.78	1.45
Commuters leaving bikeshed	19,920	0	396791	0.05	4.17	0.21
Number of Manhattan-bound commuters within bikeshed	2,388	0	349524	0.01	4.17	0.03
Housing units in bikeshed	15,857	0	413311	0.04	2.78	0.11
Average median household income in bikeshed	$67,792	0	92838	0.73	2.78	2.03
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	1.52	0	2	0.87	2.78	2.40
Commuters leaving driveshed	505,763	0	1495760	0.34	4.17	1.41
Number of Manhattan-bound commuters within driveshed	132,827	0	225889	0.59	4.17	2.45
Housing units in driveshed	478,350	0	1138716	0.42	2.78	1.17
Average median household income in driveshed	$55,773	0	87070	0.64	2.78	1.78
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	1.12	0	2	0.58	2.78	1.62
Existing parking within walkshed (m^2)	0	0	37945	0.00	4.17	0.00
Potential parking within walkshed (m^2)	24,677	0	185622	0.13	4.17	0.55
Total length of access roads, class ACC 1-5 in search distance (m)	517	24	1367	0.36	4.17	1.50
Number of bus stops within walkshed	8	0	34	0.24	12.50	2.94
Number of commuter rail connections within walkshed	1	0	1	1.00	12.50	12.50
Non-public land ownership area in walkshed (m^2)	437,247	0	520791	0.84	4.17	3.50
Public land ownership area in walkshed (m^2)	26,091	0	314648	0.08	4.17	0.35
Percent of land in walkshed known to be publicly owned	5.60%	0	100	0.06	4.17	0.23
Composite origin score = sum of weighted scores						**37.61**

Destination indicator	Value	Minimum for all sites	Range for all sites	Score = (value - minimum)/range	Weight	Score x weight
Number of commuters entering walkshed	1,596	1	77638	0.02	20.00	0.41
Office, retail and industrial space within walkshed (ft2)	0	0	22575098	0.00	32.00	0.00
Number of bus stops within walkshed	8	0	34	0.24	16.00	3.76
Number of subway stops within walkshed	0	0	5	0.00	16.00	0.00
Housing units in walkshed	705	0	10373	0.07	8.00	0.54
Average Median household income in walkshed	$31,902	0	114816	0.28	8.00	2.22
Total length of access roads, class ACC 1-5 in search distance (m)	0.98	24	1367	0.36	0.00	0.00
Public land ownership area in walkshed (m2)	26,091	0	314648	0.08	0.00	0.00
Vacant land area in walkshed (m2)	24,677	0	185622	0.00	0.00	0.00
Composite destination score = sum of weighted scores						**6.94**

Table 2-2 Origin Evaluation Criteria

	Demographics								
	Walkshed			Bikeshed			Driveshed		
	Housing units	Median income	Car ownership rate	Housing units	Median income	Car ownership rate	Housing units	Median income	Car ownership rate
Criteria Weights	3	3	3	3	3	3	3	3	3

	Parking and Land Use					
	Existing parking	Potential parking	Total length of access roads	Non-public land use	Public land use	% public land
	4	4	4	4	4	4

Table 2-3 Destination Evaluation Criteria

	Mode Change Opportunities		**Commuters through Xshed**					
			Walkshed		Bikeshed		Driveshed	
	Bus connections	Rail connections	Outgoing commuters	Commuters to Manhattan	Outgoing commuters	Commuters to Manhattan	Outgoing commuters	Commuters to Manhattan
Criteria Weights	13	13	4	4	4	4	4	4

2 January 23rd Workshop

A three-hour workshop to introduce this tool was held on January 23, 2008 at Hunter College, 695 Park Avenue, Manhattan, New York. The meeting included representatives from NYMTC, the FPLAS Steering Committee, including representatives from the New York State Department of Transportation (NYSDOT), New York City Department of City Planning (NYCDCP), New York City Department of Transportation (NYCDOT), Westchester County, and Rockland County, Hunter College, and Rutgers University. A full list of workshop attendees and the power point presented is included in Appendix A.

During this meeting, attendees were asked to rank criteria preferences for both the origin and destination sites. For origin sites, attendees were polled on demographics, parking, mode change, and commuters through walkshed; and for destination sites, demographics, employment, mode change opportunities, and commuters through walkshed. In each case, participants ranked the criteria on a sale of 1 to 4, 1 being 'less important' and 4 being 'very important'.

Participants marked their weights anonymously. For origin sites, the opinions were equally spread, whereas for destination sites, a consensus evolved that employment and mode change opportunities rank more important than demographics or commuters through the walkshed of the destination site. The origin sites' four groupings of criteria resulted in 23 measurable indicators, with unique values for each site, and for the destination sites four major groupings of criteria resulted in nine measurable indicators, with unique values for each site. A matrix showing the measurable indicators that were used to represent criteria groups and the associated weightings are provided as Tables 2-1 and 2-2 above.

In the next step, the measured values of each indicator are scaled from 0 to 1, and the scaled values are then multiplied by weights chosen for each criterion. The resulting values are added up to generate a composite score. This score summarizes how well each site meets the established set of criteria and the relative importance against all the other sites.

3 February 27th Steering Committee Meeting

On February 27, 2008 a FPLAS steering committee meeting was held to discuss the resulting site ranking. Representatives from NYMTC, the NYSDOT, the NYCDOT, the New York City Department of City Planning (NYCDCP) Transportation Division, Westchester County, Nassau County, Hunter College, and Rutgers University attended. As a result of this meeting, subsequent meetings were held with representatives of the NYCDOT, Nassau County, and Westchester County. A short list of thirteen potential sites was finalized in consultation with NYMTC staff.

3 SHORT LIST OF POTENTIAL FERRY SITES

As presented in the November Task 2 Deliverable, the long list of existing and potential ferry sites includes 85 sites: 25 existing; and 60 potential.

1. 90th Street
2. Atlantic Avenue (P.A. Pier 6 and 7)
3. Battery (Battery Maritime Building, Slip 6, and Pier A)
4. Battery Park City; WFC
5. Brooklyn Army Terminal / 69th Street
6. East 34th
7. Fire Island (1)
8. Flushing Bay Marina, Queens; Shea Stadium
9. Fort Tilden/Riis Landing at Breezy Point
10. Fulton Ferry Landing
11. Governors Island
12. Haverstraw
13. Hunters Point, Queens
14. Nyack
15. Ossining
16. Pier 11
17. Pier 45 (at West Christopher Street) Manhattan
18. Pier 63, West 23rd Street Pier (behind World Yacht Services)
19. Pier 84, West 44th
20. Red Hook (behind Fairway)
21. Schaefer Landing
22. South Street Seaport
23. West 38th, West 39th, Midtown, Pier 78
24. Yankee Stadium
25. Yonkers
26. 44 Drive Pier, Queens
27. 65th Street – Bay Ridge
28. Arverne, Queens
29. Beechhurst Residents' Park, Queens
30. Brooklyn Navy Yard
31. Brooklyn-Port Authority Marine Terminal (1 through 5)
32. Canarsie Pier
33. Camp St. Edward, Staten Island
34. Captree State Park
35. Castle Hill, Bronx
36. College Point Sites, Queens (2)
37. Co-op City, Bronx
38. Cresthaven Marina, Queens
39. East 63rd Street, Manhattan; Rockefeller University
40. East River Landing, Manhattan (3)
41. Echo Bay
42. Erie Basin
43. Ferry Point Park, Bronx
44. Fordham Landing, Bronx
45. Fort Slocum Road
46. Freeport
47. Glen Cove, Fox Navigation Site
48. Great Kills Harbor
49. Harlem Piers
50. Howland Hook Container Terminal
51. Huguenot Avenue, Staten Island
52. Hunts Point
53. Inwood Terminal
54. Kent Terminal, Brooklyn
55. LaGuardia Airport
56. Mamaroneck
57. Marina Del Ray, Bronx
58. Mariner's Harbor
59. Oak Point Railyard
60. Orchard Beach
61. Peekskill, Westchester
62. Pier 36 (East River), Manhattan
63. Pier 40 (at West Houston Street, Hudson River)
64. Point Little Bay, Queens
65. Port Chester
66. Port Ivory – former Procter and Gamble site; on Richmond Terrace opposite Western Ave.
67. Port Regalle, Staten Island
68. Port Richmond
69. Randalls Island
70. Red Hook Container Terminal
71. Rockaway
72. Roosevelts Island
73. Rye/Rye Playland, Westchester
74. Sheepshead Bay, Brooklyn
75. Shore Towers, Queens (Pot Cove)
76. Shorehaven, Bronx
77. Snug Harbor, Staten Island (Sailor's Snug Harbor)
78. South Brooklyn Marine Terminal
79. Tarrytown
80. Torpedo Pier at Fort Wadsworth
81. Tottenville, Staten Island
82. Toys 'R' Us
83. Trump City (Riverside South)
84. Watersedge Estates
85. Williamsburg

(1) This site is a generic location to represent all of the existing Fire Island summer ferry services.

(2) This site is a generic location to represent sites identified as Long-Term Service Potential in the 1990 NYCDCP's Landside Opportunities for Expanding Ferry Services Final Report.

(3) This site is a generic location to represent a proposed development planned in the area extending from the Battery Maritime Building to the South Street Seaport.

Based on the GIS-based site comparison tool, technical analyses, and consultation with NYMTC and the FPLAS steering committee, the consultant FPLAS team has comprised a short list of thirteen potential ferry sites to move on to Task 3. These sites performed relatively well using the GIS-based site comparison tool and are distributed across both city and suburban communities.

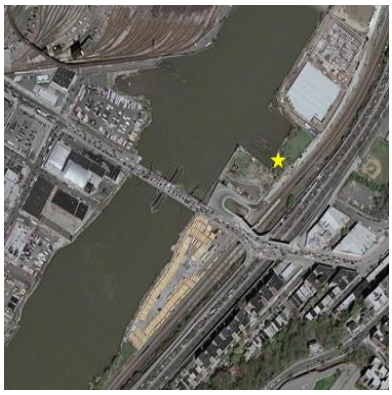
In consultation with NYMTC staff, and those members of the steering committee present on the February 27th meeting, the consultant team determined to only include potential sites on the short list. Although existing sites are relevant in planning for comprehensive waterborne transportation in the region, a detailed analysis of existing sites may not yield many new insights.

The short list of thirteen potential ferry sites is presented below. Preliminary site reports for each of these sites are included in the subsequent pages.

- Fordham Landing, Bronx
- Marina Del Ray, Bronx
- Trump City (Riverside South), Manhattan
- East River Landing, Manhattan
- East 63rd Street, Manhattan
- Pier 40/Hudson Yards, Manhattan
- Beechhurst Residential Park, Queens
- Port Richmond, Staten Island
- Freeport, Nassau County
- Port Chester, Westchester County
- Tarrytown, Westchester County
- Peekskill, Westchester County
- Fort Slocum Road, Westchester County

Figure 3-1 Fordham Landing, Bronx

Factors influencing site evaluation	Value
Commuters leaving walkshed	4,205
Commuters entering walkshed	2,195
Number of Manhattan-bound commuters within walkshed	2,590
Housing units in walkshed	4,979
Average median household income in walkshed	$24,202
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	0.28
Commuters leaving bikeshed	232,925
Number of Manhattan-bound commuters within bikeshed	116,426
Housing units in bikeshed	277,148
Average median household income in bikeshed	$27,013
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	0.34
Commuters leaving driveshed	276,760
Number of Manhattan-bound commuters within driveshed	144,959
Housing units in driveshed	343,395
Average median household income in driveshed	$26,580
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	0.34
Existing parking within walkshed (m^2)	37,850
Potential parking within walkshed (m^2)	32,347
Total length of access roads, class ACC 1-5 in search distance (m)	645
Number of bus stops within walkshed	10
Number of NYC subways stops within walkshed	1
Number of commuter rail connections within walkshed	1
Non-public land ownership area in walkshed (m^2)	276,482
Public land ownership area in walkshed (m^2)	104,067
Office, retail and industrial space in walkshed (ft^2)	429,965
Percent of land in walkshed known to be vacant	17.4%
Percent of land in walkshed known to be publicly owned	27.3%



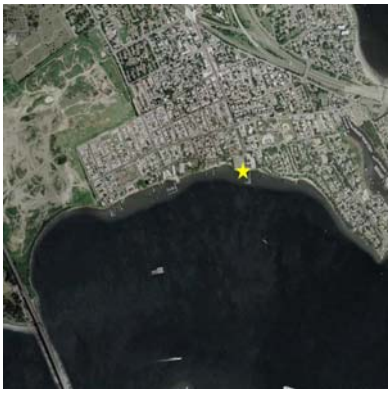
Site Name: Fordham Landing

Municipality: Borough of the Bronx

County: Bronx

Figure 3-2 Marina Del Ray, Bronx

Factors influencing site evaluation	Value
Commuters leaving walkshed	2,218
Commuters entering walkshed	483
Number of Manhattan-bound commuters within walkshed	615
Housing units in walkshed	2,030
Average median household income in walkshed	$56,353
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	1.42
Commuters leaving bikeshed	32,179
Number of Manhattan-bound commuters within bikeshed	11,376
Housing units in bikeshed	33,906
Average median household income in bikeshed	$42,080
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	0.99
Commuters leaving driveshed	588,932
Number of Manhattan-bound commuters within driveshed	223,365
Housing units in driveshed	654,631
Average median household income in driveshed	$34,827
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	0.67
Existing parking within walkshed (m^2)	2,069
Potential parking within walkshed (m^2)	34,211
Total length of access roads, class ACC 1-5 in search distance (m)	643
Number of bus stops within walkshed	22
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	0
Non-public land ownership area in walkshed (m^2)	457,150
Public land ownership area in walkshed (m^2)	38,424
Office, retail and industrial space in walkshed (ft^2)	68,963
Percent of land in walkshed known to be vacant	18.4%
Percent of land in walkshed known to be publicly owned	7.8%



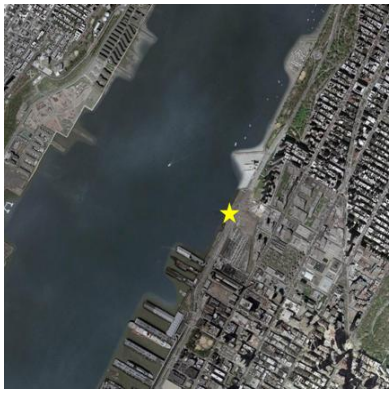
Site Name: Marina Del Ray

Municipality: Borough of the Bronx

County: Bronx

Figure 3-3 Trump City, Manhattan

Factors influencing site evaluation	Value
Commuters leaving walkshed	7,748
Commuters entering walkshed	6,540
Number of Manhattan-bound commuters within walkshed	6,715
Housing units in walkshed	9,176
Average median household income in walkshed	$68,380
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	0.30
Commuters leaving bikeshed	341,134
Number of Manhattan-bound commuters within bikeshed	301,904
Housing units in bikeshed	357,535
Average median household income in bikeshed	$72,901
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	0.30
Commuters leaving driveshed	N/A
Number of Manhattan-bound commuters within driveshed	N/A
Housing units in driveshed	N/A
Average median household income in driveshed	N/A
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	N/A
Existing parking within walkshed (m^2)	17,054
Potential parking within walkshed (m^2)	81,278
Total length of access roads, class ACC 1-5 in search distance (m)	1,257
Number of bus stops within walkshed	27
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	0
Non-public land ownership area in walkshed (m^2)	274,901
Public land ownership area in walkshed (m^2)	80,587
Office, retail and industrial space in walkshed (ft^2)	1,010,873
Percent of land in walkshed known to be vacant	43.8%
Percent of land in walkshed known to be publicly owned	22.7%



Site Name: Trump City

Municipality: Borough of Manhattan

County: New York

Figure 3-4 East River Landing, Manhattan

Factors influencing site evaluation	Value
Commuters leaving walkshed	603
Commuters entering walkshed	33,397
Number of Manhattan-bound commuters within walkshed	521
Housing units in walkshed	538
Average median household income in walkshed	$109,616
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	0.31
Commuters leaving bikeshed	155,458
Number of Manhattan-bound commuters within bikeshed	128,851
Housing units in bikeshed	152,856
Average median household income in bikeshed	$51,639
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	0.25
Commuters leaving driveshed	N/A
Number of Manhattan-bound commuters within driveshed	N/A
Housing units in driveshed	N/A
Average median household income in driveshed	N/A
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	N/A
Existing parking within walkshed (m^2)	613
Potential parking within walkshed (m^2)	12
Total length of access roads, class ACC 1-5 in search distance (m)	416
Number of bus stops within walkshed	11
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	0
Non-public land ownership area in walkshed (m^2)	66,247
Public land ownership area in walkshed (m^2)	15,729
Office, retail and industrial space in walkshed (ft^2)	12,918,511
Percent of land in walkshed known to be vacant	0.0%
Percent of land in walkshed known to be publicly owned	19.2%

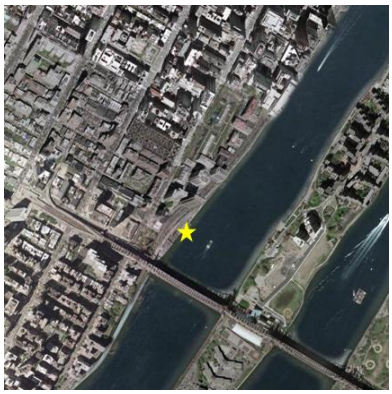
Site Name: East River Landing

Municipality: Borough of Manhattan

County: New York

Figure 3-5 East 63rd Street, Manhattan

Factors influencing site evaluation	Value
Commuters leaving walkshed	9,920
Commuters entering walkshed	15,430
Number of Manhattan-bound commuters within walkshed	8,972
Housing units in walkshed	10,373
Average median household income in walkshed	$80,209
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	0.32
Commuters leaving bikeshed	217,058
Number of Manhattan-bound commuters within bikeshed	191,011
Housing units in bikeshed	221,962
Average median household income in bikeshed	$68,029
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	0.28
Commuters leaving driveshed	N/A
Number of Manhattan-bound commuters within driveshed	N/A
Housing units in driveshed	N/A
Average median household income in driveshed	N/A
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	N/A
Existing parking within walkshed (m^2)	6,032
Potential parking within walkshed (m^2)	5,255
Total length of access roads, class ACC 1-5 in search distance (m)	154
Number of bus stops within walkshed	17
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	0
Non-public land ownership area in walkshed (m^2)	257,634
Public land ownership area in walkshed (m^2)	12,356
Office, retail and industrial space in walkshed (ft^2)	2,420,995
Percent of land in walkshed known to be vacant	2.8%
Percent of land in walkshed known to be publicly owned	4.6%



Site Name: East 63rd Street

Municipality: Borough of Manhattan

County: New York

Figure 3-6 Pier 40/Hudson Yards, Manhattan

Factors influencing site evaluation	Value
Commuters leaving walkshed	2,536
Commuters entering walkshed	13,233
Number of Manhattan-bound commuters within walkshed	2,278
Housing units in walkshed	2,111
Average median household income in walkshed	$89,309
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	0.34
Commuters leaving bikeshed	266,095
Number of Manhattan-bound commuters within bikeshed	232,304
Housing units in bikeshed	266,243
Average median household income in bikeshed	$54,948
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	0.23
Commuters leaving driveshed	N/A
Number of Manhattan-bound commuters within driveshed	N/A
Housing units in driveshed	N/A
Average median household income in driveshed	N/A
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	N/A
Existing parking within walkshed (m^2)	9,177
Potential parking within walkshed (m^2)	8,854
Total length of access roads, class ACC 1-5 in search distance (m)	722
Number of bus stops within walkshed	11
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	0
Non-public land ownership area in walkshed (m^2)	147,293
Public land ownership area in walkshed (m^2)	51,092
Office, retail and industrial space in walkshed (ft^2)	4,910,438
Percent of land in walkshed known to be vacant	4.8%
Percent of land in walkshed known to be publicly owned	25.8%

Site Name: Pier 40

Municipality: Borough of Manhattan

County: New York

Figure 3-7 Beechhurst Residential Park, Queens

Factors influencing site evaluation	Value
Commuters leaving walkshed	1,503
Commuters entering walkshed	562
Number of Manhattan-bound commuters within walkshed	398
Housing units in walkshed	1,387
Average median household income in walkshed	$56,916
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	1.37
Commuters leaving bikeshed	58,714
Number of Manhattan-bound commuters within bikeshed	17,666
Housing units in bikeshed	54,731
Average median household income in bikeshed	$51,029
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	1.24
Commuters leaving driveshed	546,962
Number of Manhattan-bound commuters within driveshed	207,048
Housing units in driveshed	525,749
Average median household income in driveshed	$42,427
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	0.85
Existing parking within walkshed (m^2)	8,844
Potential parking within walkshed (m^2)	5,959
Total length of access roads, class ACC 1-5 in search distance (m)	485
Number of bus stops within walkshed	25
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	0
Non-public land ownership area in walkshed (m^2)	379,227
Public land ownership area in walkshed (m^2)	332
Office, retail and industrial space in walkshed (ft^2)	101,528
Percent of land in walkshed known to be vacant	3.2%
Percent of land in walkshed known to be publicly owned	0.1%

Site Name: Beechhurst

Municipality: Borough of Queens

County: Queens

Figure 3-8 Port Richmond, Staten Island

Factors influencing site evaluation	Value
Commuters leaving walkshed	1,407
Commuters entering walkshed	1,759
Number of Manhattan-bound commuters within walkshed	299
Housing units in walkshed	1,363
Average median household income in walkshed	$31,274
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	0.70
Commuters leaving bikeshed	56,088
Number of Manhattan-bound commuters within bikeshed	15,516
Housing units in bikeshed	51,387
Average median household income in bikeshed	$51,727
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	1.25
Commuters leaving driveshed	121,574
Number of Manhattan-bound commuters within driveshed	34,589
Housing units in driveshed	113,209
Average median household income in driveshed	$51,233
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	1.24
Existing parking within walkshed (m^2)	37,945
Potential parking within walkshed (m^2)	29,198
Total length of access roads, class ACC 1-5 in search distance (m)	459
Number of bus stops within walkshed	30
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	0
Non-public land ownership area in walkshed (m^2)	470,389
Public land ownership area in walkshed (m^2)	82,692
Office, retail and industrial space in walkshed (ft^2)	490,663
Percent of land in walkshed known to be vacant	15.7%
Percent of land in walkshed known to be publicly owned	15.0%

Site Name: Port Richmond

Municipality: Borough of Staten Island

County: Richmond

Figure 3-9 Freeport, Nassau County

Factors influencing site evaluation	Value
Commuters leaving walkshed	210
Commuters entering walkshed	92
Number of Manhattan-bound commuters within walkshed	19
Housing units in walkshed	179
Average median household income in walkshed	$65,568
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	1.82
Commuters leaving bikeshed	17,445
Number of Manhattan-bound commuters within bikeshed	1,690
Housing units in bikeshed	12,878
Average median household income in bikeshed	$56,155
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	1.63
Commuters leaving driveshed	1,003,680
Number of Manhattan-bound commuters within driveshed	188,110
Housing units in driveshed	784,773
Average median household income in driveshed	$64,523
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	1.56
Existing parking within walkshed (m^2)	0
Potential parking within walkshed (m^2)	0
Total length of access roads, class ACC 1-5 in search distance (m)	62
Number of bus stops within walkshed	2
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	0
Non-public land ownership area in walkshed (m^2)	0
Public land ownership area in walkshed (m^2)	0
Office, retail and industrial space in walkshed (ft^2)	0
Percent of land in walkshed known to be vacant	0
Percent of land in walkshed known to be publicly owned	0%

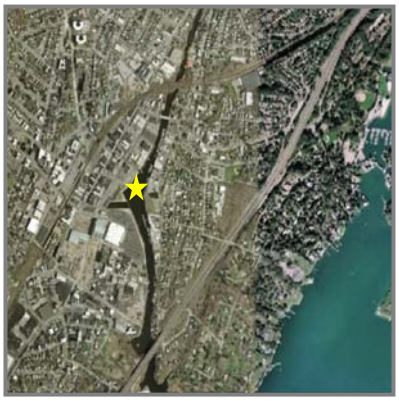
Site Name: Freeport

Municipality: Village of Freeport

County: Nassau

Figure 3-10 Port Chester, Westchester County

Factors influencing site evaluation	Value
Commuters leaving walkshed	974
Commuters entering walkshed	1,596
Number of Manhattan-bound commuters within walkshed	20
Housing units in walkshed	705
Average median household income in walkshed	$31,902
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	0.98
Commuters leaving bikeshed	19,920
Number of Manhattan-bound commuters within bikeshed	2,388
Housing units in bikeshed	15,857
Average median household income in bikeshed	$67,792
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	1.52
Commuters leaving driveshed	505,763
Number of Manhattan-bound commuters within driveshed	132,827
Housing units in driveshed	478,350
Average median household income in driveshed	$55,773
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	1.12
Existing parking within walkshed (m^2)	0
Potential parking within walkshed (m^2)	24,677
Total length of access roads, class ACC 1-5 in search distance (m)	517
Number of bus stops within walkshed	8
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	1
Non-public land ownership area in walkshed (m^2)	437,247
Public land ownership area in walkshed (m^2)	26,091
Office, retail and industrial space in walkshed (ft^2)	0
Percent of land in walkshed known to be vacant	13.3%
Percent of land in walkshed known to be publicly owned	5.6%



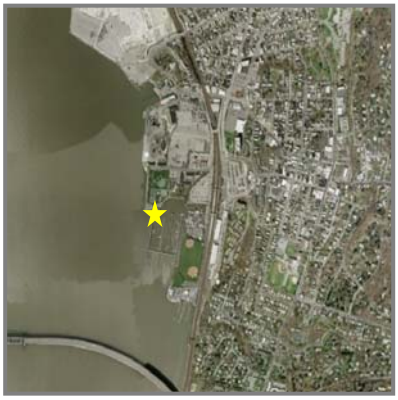
Site Name: Port Chester

Municipality: Village of Port Chester

County: Westchester

Figure 3-11 Tarrytown, Westchester County

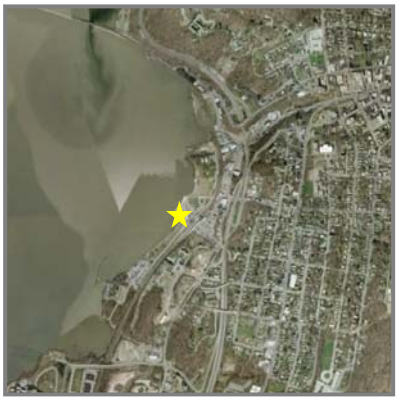
Factors influencing site evaluation	Value
Commuters leaving walkshed	176
Commuters entering walkshed	346
Number of Manhattan-bound commuters within walkshed	33
Housing units in walkshed	155
Average median household income in walkshed	$59,493
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	1.18
Commuters leaving bikeshed	9,338
Number of Manhattan-bound commuters within bikeshed	1,790
Housing units in bikeshed	7,405
Average median household income in bikeshed	$66,675
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	1.46
Commuters leaving driveshed	176,152
Number of Manhattan-bound commuters within driveshed	29,922
Housing units in driveshed	135,650
Average median household income in driveshed	$76,289
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	1.61
Existing parking within walkshed (m^2)	0
Potential parking within walkshed (m^2)	284
Total length of access roads, class ACC 1-5 in search distance (m)	196
Number of bus stops within walkshed	4
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	1
Non-public land ownership area in walkshed (m^2)	157,473
Public land ownership area in walkshed (m^2)	0
Office, retail and industrial space in walkshed (ft^2)	0
Percent of land in walkshed known to be vacant	0.2%
Percent of land in walkshed known to be publicly owned	0%



Site Name:	Tarrytown
Municipality:	Village of Tarrytown
County:	Westchester

Figure 3-12 Peekskill, Westchester County

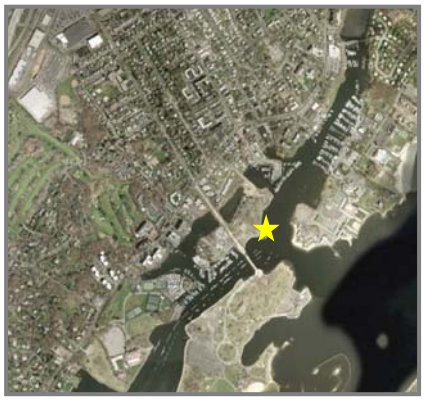
Factors influencing site evaluation	Value
Commuters leaving walkshed	662
Commuters entering walkshed	482
Number of Manhattan-bound commuters within walkshed	26
Housing units in walkshed	548
Average median household income in walkshed	$42,037
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	1.35
Commuters leaving bikeshed	12,878
Number of Manhattan-bound commuters within bikeshed	1,116
Housing units in bikeshed	10,934
Average median household income in bikeshed	$53,191
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	1.45
Commuters leaving driveshed	335,672
Number of Manhattan-bound commuters within driveshed	47,009
Housing units in driveshed	258,203
Average median household income in driveshed	$74,340
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	1.73
Existing parking within walkshed (m^2)	0
Potential parking within walkshed (m^2)	0
Total length of access roads, class ACC 1-5 in search distance (m)	405
Number of bus stops within walkshed	5
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	1
Non-public land ownership area in walkshed (m^2)	440,074
Public land ownership area in walkshed (m^2)	0
Office, retail and industrial space in walkshed (ft^2)	0
Percent of land in walkshed known to be vacant	0.0%
Percent of land in walkshed known to be publicly owned	19.2%



Site Name:	Peekskill
Municipality:	City of Peekskill
County:	Westchester

Figure 3-133 Fort Slocum Road, Westchester County

Factors influencing site evaluation	Value
Commuters leaving walkshed	619
Commuters entering walkshed	185
Number of Manhattan-bound commuters within walkshed	99
Housing units in walkshed	525
Average median household income in walkshed	$53,420
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	1.40
Commuters leaving bikeshed	28,815
Number of Manhattan-bound commuters within bikeshed	4,703
Housing units in bikeshed	24,642
Average median household income in bikeshed	$55,979
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	1.31
Commuters leaving driveshed	222,262
Number of Manhattan-bound commuters within driveshed	63,827
Housing units in driveshed	216,360
Average median household income in driveshed	$50,251
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	1.03
Existing parking within walkshed (m^2)	0
Potential parking within walkshed (m^2)	10,046
Total length of access roads, class ACC 1-5 in search distance (m)	24
Number of bus stops within walkshed	7
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	0
Non-public land ownership area in walkshed (m^2)	205,378
Public land ownership area in walkshed (m^2)	14,536
Office, retail and industrial space in walkshed (ft^2)	0
Percent of land in walkshed known to be vacant	5.4%
Percent of land in walkshed known to be publicly owned	6.6%



Site Name:	Ft. Slocum Rd.
Municipality:	New Rochelle
County:	Westchester

4 NEXT STEPS

Now that the short list of 13 potential sites has been finalized and agreed upon by the consultant team, NYMTC, and the FPLAS steering committee, Task 2 of the FPLAS is complete. The FPLAS will move into subsequent work in Task 3 – Detailed Analysis. Field work and site visits to potential sites will be one component in the site identification and selection process. Each of the sites will be characterized for the type of service it is intended to provide.

Although the focus of this task is on the land side access and parking, additional considerations, which facilitate the evaluation of site suitability for the intended service, will include constructability of terminal facilities, accessibility from water side, docking and terminal accessibilities, environmental and regulatory issues, and the impacts of new development on existing regional passenger services. Examples of criteria that could be included in the site assessment are as follows: water depth, breakwater, maneuvering area and access, land side (for long term parking, or vessels queued to be loaded to the ferry), buildings (administration, ticket sales, staff offices, waiting rooms, maintenance equipment, possibly a control center, and/or retail space), short term access to vehicles (drop-off, public transport), approach roads (capacity and accessibility), proximity to activity centers, interference with current land and water use, environmental and habitat issues, and cost.

In addition to the detailed analysis, public outreach will be conducted based on coordination with government officials in each of the thirteen sites. These conversations with local government officials and public constituents will help confirm that the site meets community needs and there is community acceptance for the development of a particular site. At the same time, the outreach effort will help to ensure that the viability of a particular site or location has not been overlooked. NYMTC staff will support this effort by providing logistical support and helping to facilitate the meetings and presentations.

Reports for each site will be prepared to identify and document whether, how, and to what extent, each of the sites meets the assessment criteria. At the close of the detailed analysis, NYMTC staff, the FPLAS steering committee, and the consultant team will review these site assessment reports and prioritize the sites suitable for development. Prioritization will be based on the growth potential of these sites, as well as their role in the regional intermodal transportation system, expandability of the facilities, impacts of such development, cost effectiveness, general public safety, and homeland security. This prioritization will be Task 4 of the FPLAS and will close the FPLAS with a final report summarizing all previous tasks.

Appendix

January 23, 2008 Workshop: Attendance Sign-in Sheet and Power Point Presentation

Brandon Derman	Hunter College	Chad Wilcomb	NYMTC
Eric Bohn	Hunter College	Fatai Adekoya	NYMTC
Jochen Albrecht	Hunter College	Munesh Patel	NYMTC
Laxmi Ramasubramanian	Hunter College	Alan Ward	NYS DOT
Stephanie Camay	Hunter College	Gennadiy Kosoy	NYS DOT
William Milczarski	Hunter College	Ian Frank	NYS DOT
Mihalis Golias	Rutgers University	Neil Trenk	Rockland County
Jerry Chang	NYC DCP	Charles Sutter	Westchester County
Deborah Seigel Baker	NYC DOT		

Ferry Parking and Landside Access Study

Interactive GIS Tool Workshop

January 23, 2008

CUNY The City University of New York
HUNTER
Rutgers The State University of New Jersey

Agenda

9:30 Breakfast

10:00 Intro & Tool Demo

10:30 Discussion

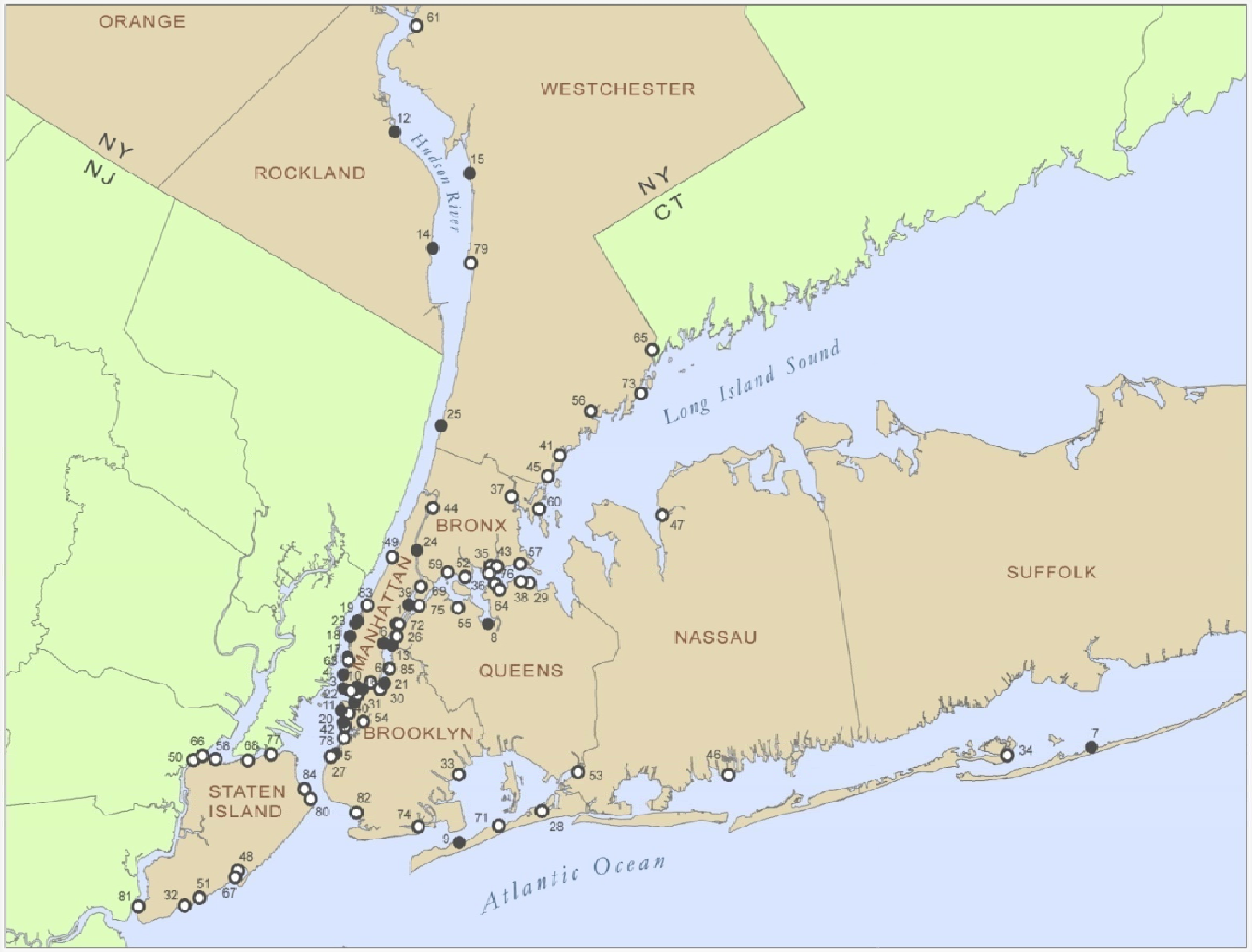
11:00 Getting to Specifics

- Underlying Data & Model Workflow
- Model Descriptors & Criteria Weighting

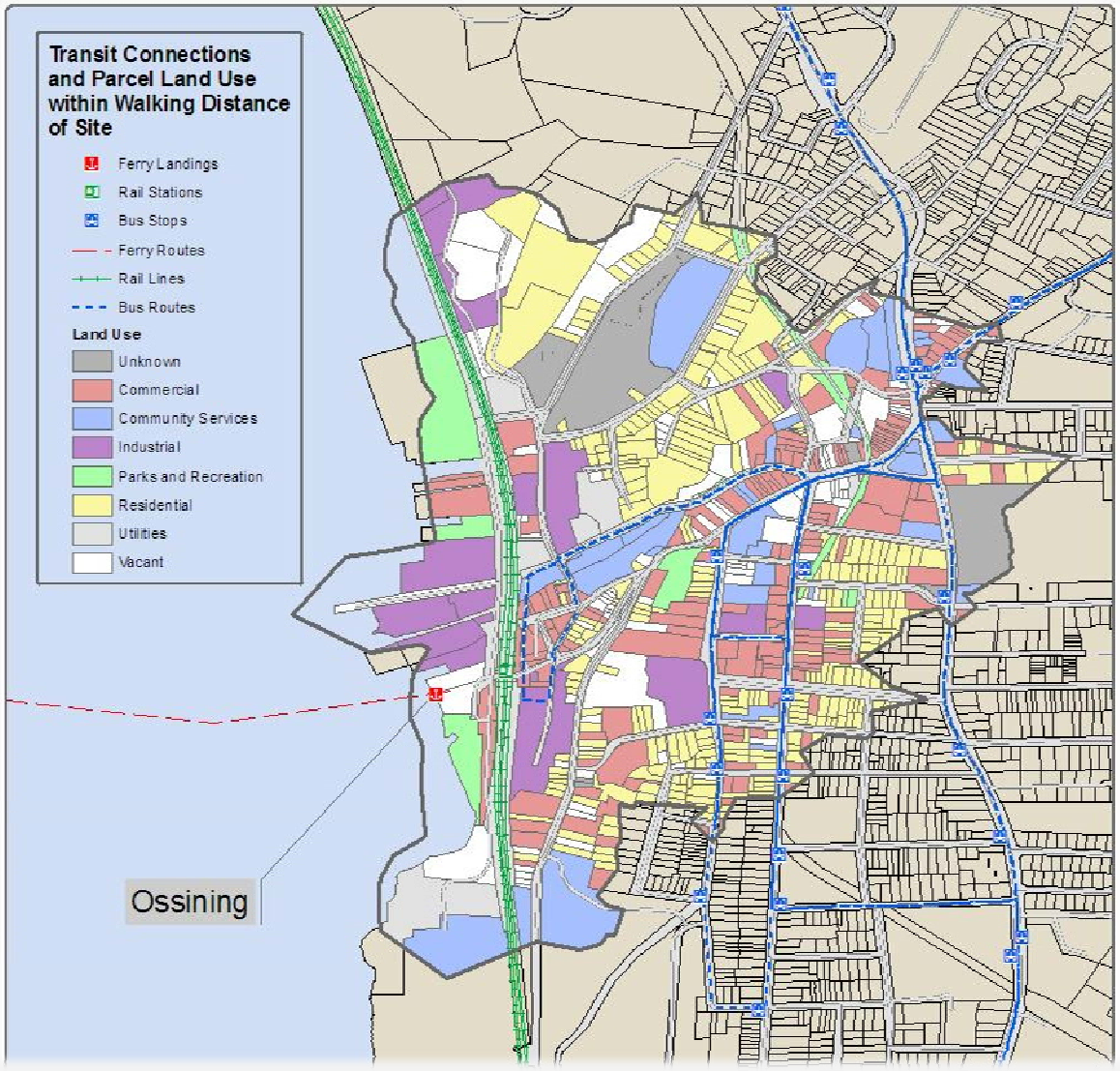
11:45 Lunch (Room 1022)

12:30 Discussion of next steps

Existing and Potential Sites



Sample Origin Site: Ossining



Origin Site Evaluation Tool Interface

Full Origin Site Evaluation

Select a map layer or file containing sites to evaluate:
Transit/Long List Sites

Enter evaluation site name, in double quotation marks:
“Ossining”

Enter the distance users are likely to walk to access the site:
0.75

Specify walking units:
Miles

Enter the distance users are likely to bicycle to access the site:
3

Specify biking units:
Miles

Enter the time or distance users are likely to drive to access the site:
15

Specify driving units:
Minutes

Enter distance or driving time from site to identify access roads:
200

Specify search units:
Meters

Enter distance along shore to search for parcels in public ownership:
200 Meters

Enter projected percentage increase in population:
0

Enter path and name for output table:
C:\OssiningOriginEvaluation.dbf

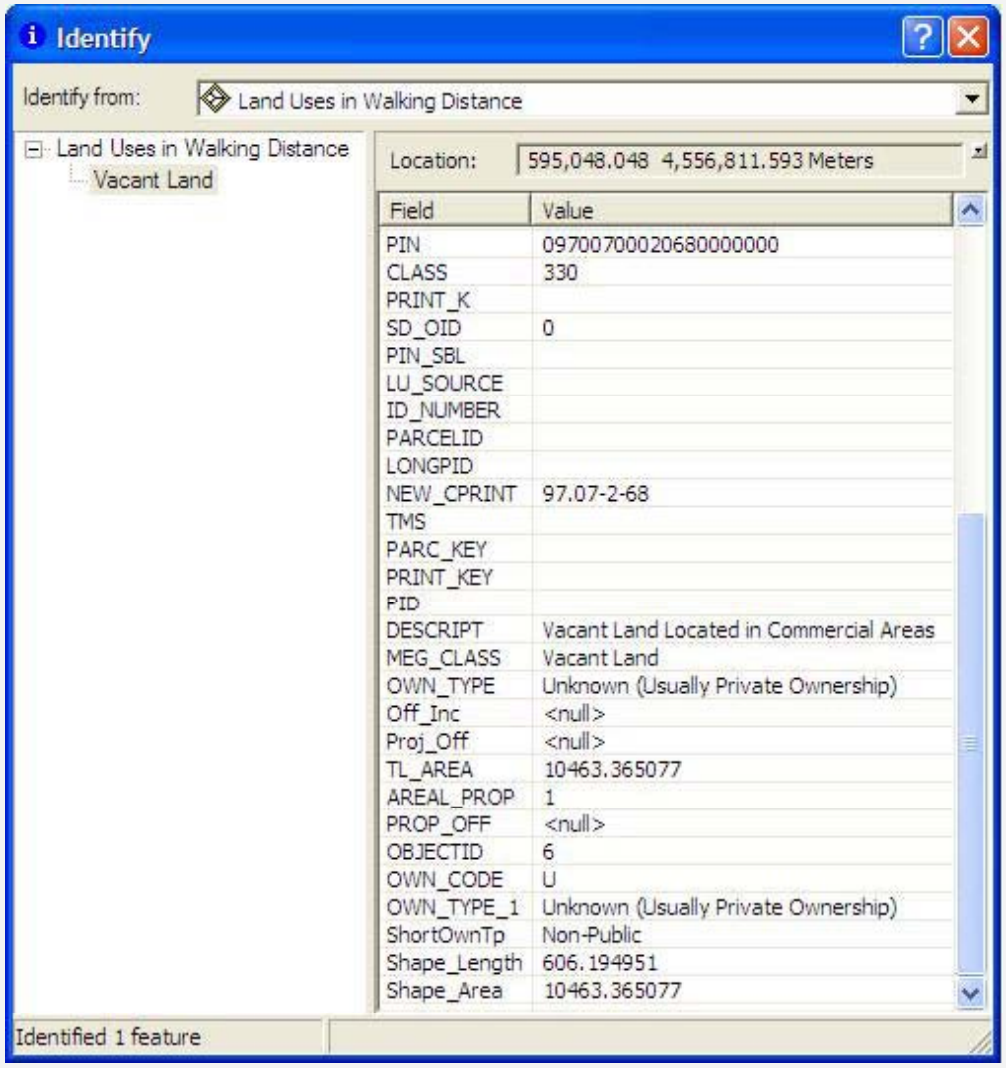
Select a map layer or file containing sites to evaluate:

Welcome to the Landside Access Study ‘Origin Site Evaluation Tool’.

This tool will evaluate a potential passenger ferry site as an origin site according to specific criteria selected by the user.

- Step 1 – In the fields at left, enter the values used to assess the criteria of a chosen site, or accept the default value.
- Step 2 – Place the cursor in each field to display additional information about each field.
- Step 3 – Click ‘OK’ to run the model.

Identify Tool



High-level Workflow

Catchment Creation

Allows us to analyze the site's accessibility by three modes: walking, biking, and driving. The catchment for each mode is made using a network of streets traversable by that mode

Origin Demographic Analysis

Answers questions about who lives within each catchment – the potential users

Origin Land Use Analysis

Summarizes information about land uses accessible from a site: parking, land use class, ownership

Destination Employment Analysis

Summarizes employment within walking distance of a destination site

Mode Change Opportunity Analysis

Describes the opportunities for users to transfer to other modes of transportation within walking distance of a site

Access Road Analysis

Describes the roadways which provide local access to a site. These are identified within a dedicated catchment area

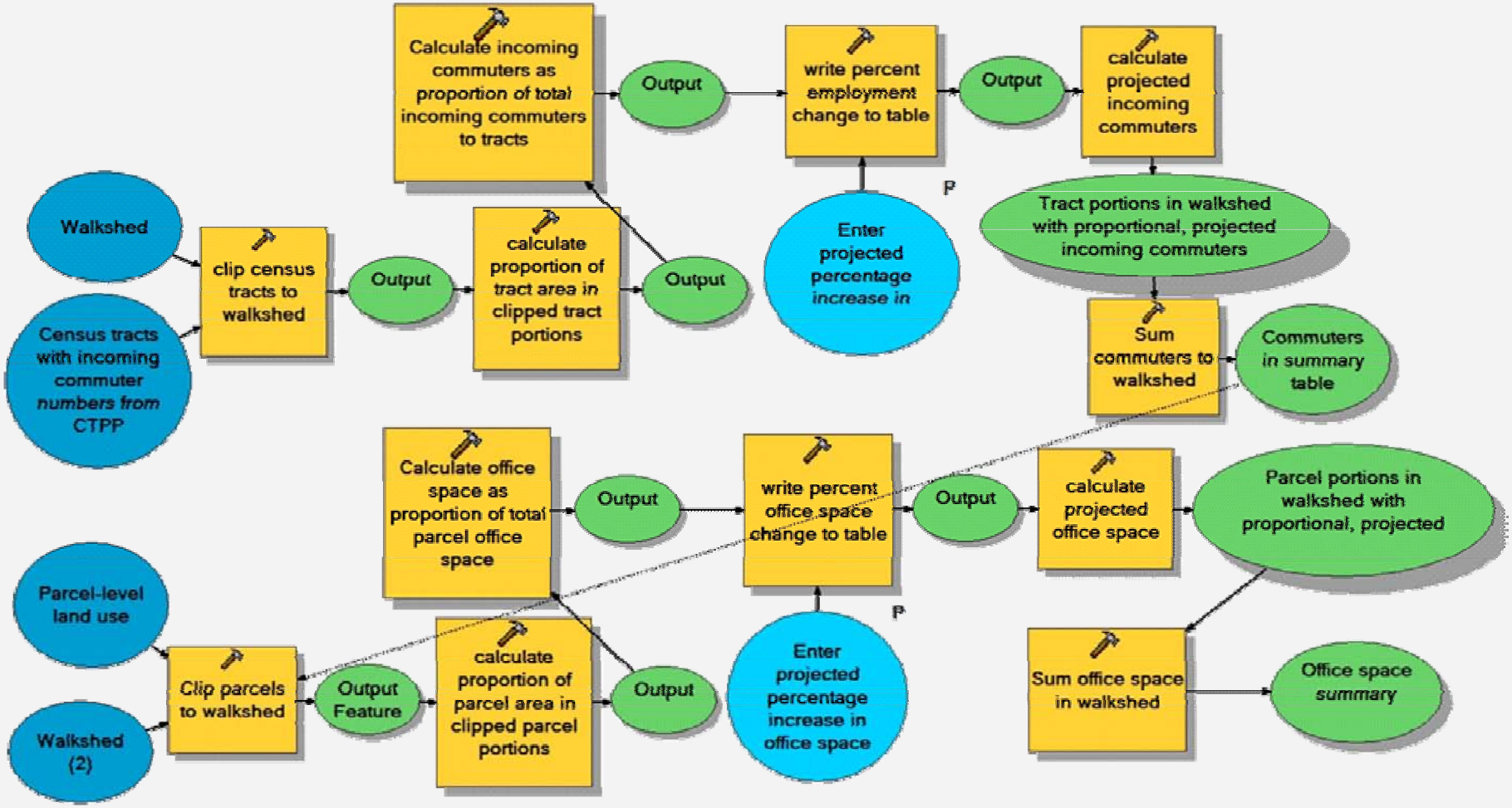
Site Description Summary

Table operations which associate site descriptors with the site analyzed. Preparatory for generating site reports and comparison of multiple sites

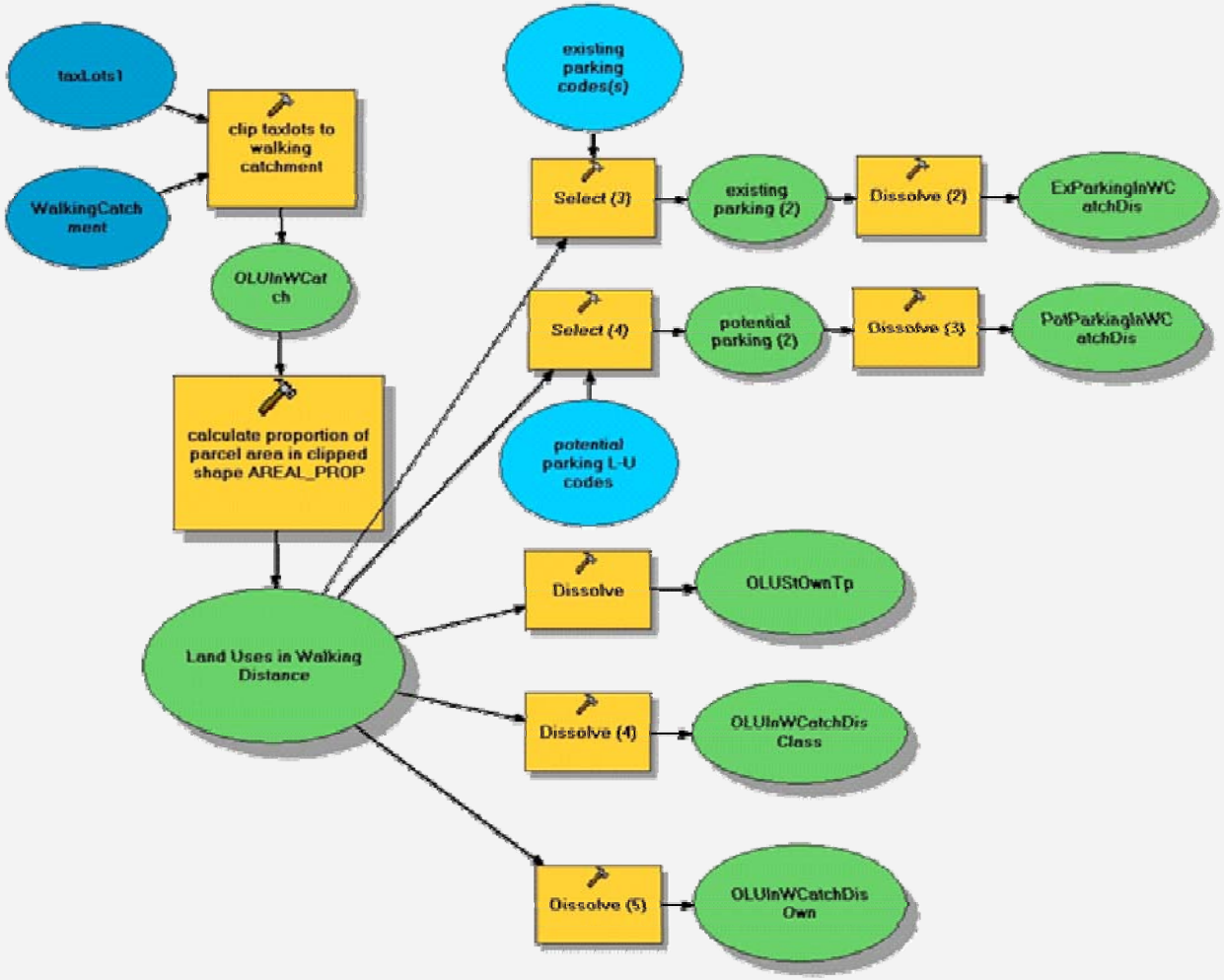
Site Comparison

Compares two or more analyzed sites

Destination Employment SubModel



Origin Land Use Submodel



Data Sources

- **Census data**
  - # of residents
  - Car ownership rate
  - Commuters to NYC
  - Median income
- **Land use data**
  - Zoning
  - Parking
  - Attractors (e.g. schools, hospitals, etc.)
- **Transportation data**
  - Routes and stops
  - Schedules
  - Ridership
  - Commuter patterns (CTTP)

Site Descriptors

(Projected) commuters leaving block groups from each mode catchment
(Projected) commuters to Manhattan from each mode catchment
(Projected) housing units in each mode catchment
Car ownership rate in each mode catchment
Median household income in each mode catchment

Existing parking in walkshed of site
Potential parking in walkshed of site
Land ownership in walkshed of site: public/private
Proportion of land use classes in walkshed of site: vacant, commercial, residential

(Projected) incoming commuters to walkshed of site
(Projected) office space in walkshed of site
Vacant land area in walkshed of site

Transit connections in walkshed of site: number, type, name, line served

Total road length of ACC class 5 or below in search distance from site
(2 or more lanes, "neighborhood" or higher accessibility)

CUNY The City University of New York

HUNTER

Rutgers The State University of New Jersey

Sample Site Report

Variable Name	Variable	Value
SiteName	Site Name	Ossining
ProjCOutWC	(Projected) out-of-tract commuters leaving walkshed	2579
ProjManCWC	(Projected) commuters to Manhattan leaving walkshed	73
ProjUsWC	(Projected) housing units in walkshed	1120
MHHIncWC	Median household income in walkshed	36505
VehOwnWC	Car ownership rate in walkshed (per occupied housing unit)	1.14
ProjCOutBC	(Projected) out-of-tract commuters leaving bikeshed	24257
ProjManCBC	(Projected) commuters to Manhattan leaving bikeshed	1683
ProjUsBC	(Projected) housing units in bikeshed	10444
MHHIncBC	Median household income in bikeshed	68075
VehOwnBC	Car ownership rate in bikeshed (per occupied housing unit)	1.6
ProjCOutDC	(Projected) out-of-tract commuters leaving driveshed	194587
ProjManCDC	(Projected) commuters to Manhattan leaving driveshed	24613
ProjUsDC	(Projected) housing units in driveshed	97844
MHHIncDC	Median household income in driveshed	49871
VehOwnDC	Car ownership rate in driveshed (per occupied housing unit)	2.1
ExParkWC	Existing parking area in walkshed (in square meters)	22637
PotParkWC	Potential parking area in walkshed (in square meters)	82864
RdLgO6ACC	Total road length in meters of class ACC 5 or below in search distance (2 or more lanes, "neighborhood" or higher accessibility)	8271
bus	Bus connections in walkshed	11
commuter_railroad	Commuter rail connections in walkshed	1
Non_Public	Non-public land use area in walkshed (in square meters)	790528
*Public_*	Public land use area in walkshed (in square meters)	57859
PercPub	Percent public land use in walkshed	6.8

Weighting to Compare Sites

Origin	Demographics	Parking	Mode change opportunities	Commuters through walkshed
Destination	Demographics		Mode change opportunities	Commuters through walkshed

Please fill in your respective ranking of weights and drop this sheet off before you head out for lunch.

Comments & Feedback

Task 3

Site Detailed Description and Assessment

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1. INTRODUCTION

The goal of the Ferry Parking and Landside Access Study (FPLAS) is to assist the New York Metropolitan Transportation Council (NYMTC) in the assessment and evaluation of both current and future potential sites suitable for the development of facilities to support waterborne transportation. Specifically, the study focuses on the development of assessment criteria to optimize underutilized waterborne transportation resources and services through the following:

- Review previous research about waterborne transportation needs of the region;
- Develop criteria to assess the viability of existing and potential sites that can be used for the development of facilities and infrastructure to support waterborne transportation; and
- Evaluate and prioritize sites for development.

In previous tasks, the consultant team developed a comprehensive research report (Task 1 report) that summarizes previous research in the area, including a detailed discussion of the major factors and components of growth, which were used in guiding the selection of alternative sites for development. Task 2 involved expert interviews, the development of a Geographic Information System (GIS) database, and a long list of existing and potential ferry sites. This work is summarized in the Task 2 report. Following the submittal of the Task 2 report, a GIS-based site comparison tool was developed and a workshop was conducted for the purpose of developing numerical ranking of various site evaluation criteria. Based on this ranking, as well as meetings with NYMTC staff, FPLAS Steering Committee members, county officials and staff from individual municipalities, a short list of thirteen potential ferry sites was determined. This list is presented below.

- Fordham Landing, Bronx
- Marina Del Ray, Bronx
- Trump City (Riverside South), Manhattan
- East River Landing, Manhattan
- East 63rd Street, Manhattan
- Pier 40/Hudson Yards, Manhattan
- Beechhurst Residential Park, Queens
- Port Richmond, Staten Island
- Freeport, Nassau County
- Port Chester, Westchester County
- Tarrytown, Westchester County
- Peekskill, Westchester County
- Fort Slocum Road, Westchester County

The work following the submittal of the Task 2B Deliverable is the subject of this report, the Task 3 Deliverable. This report contains detailed site evaluations for the twelve sites listed above (Freeport will not be analyzed in this report). Each site was first researched focusing on available data about the adjacent major attractions, accessibility of the sites, available transit, traffic conditions within the proximity of the site, demographics and

future development. These data were obtained through the GIS database developed under Task 2B and Internet search. Interviews were then conducted to obtain updated information about demographics within the site's area, future development and general information that was potentially overlooked during the initial research. Another goal of the interview was to obtain a first-hand opinion on the availability of alternative sites and the development of potential waterborne services. Each site was then physically visited and photographed to visually record any existing differences from the aerial images that were being analyzed during the initial research. An additional purpose of the site visits was to gain the commuters' perspective of the area around the site. The consultant team walked from potential ferry landing sites to local transit hubs, parking decks and local attractions. Each site report contains some background information on the area surrounding the site along with photographic material to give the reader a better perspective on the site and its characteristics. Then, the current conditions on each site, focusing on land use, demographics and commute patterns, vehicular accessibility, transit accessibility, pedestrian and bicycle accessibility, and parking are discussed. An assessment framework is presented next, which ranks each potential site based on a set of criteria, reflecting the categories discussed under the previous section on current conditions. The criteria used in the assessment framework deal primarily with the land side access and parking availability, which are the focal points of this study. Waterside access and suitability criteria fall beyond the detailed scope of the project. Nevertheless, these criteria are discussed in the section dealing with additional considerations. Although somewhat different criteria are used to evaluate origin and destination sites and some of the criteria would carry different weight and should be ranked with a different priority depending on whether a site is considered primarily as an origin or a destination, specific criteria used to evaluate the sites include the following:

Vehicular Accessibility

1. Highway connectivity of the site with areas within the driveshed
2. Availability and condition of access roads

Transit/Intermodal connectivity

1 Proximity to existing bus routes
2 Proximity to existing rail service
3 Availability of intermodal transfer stations
4 Frequency/Level of proximate transit service

Pedestrian and Bicycle Access

1 Directness of pedestrian/bike routes
2 Quality of pedestrian/bike environment

Parking

1. Proximity to Parking
2. Availability of Adequate Parking Spaces

Land Use

1 Proximity to housing

2 Proximity to jobs
3 Proximity to retail/entertainment
4 Proximity to parks/open spaces

Demographics and Commute Patterns

1. Potential of the site to attract demand

Additional considerations are also included at the end of the site evaluations, regarding criteria that will need to further be evaluated. These include water depth, wave protection, maneuvering area and navigable access, interference with current water use, environmental and habitat issues, including the impact of wakes and cost. These criteria are being discussed at the end of the report. Site evaluation based on these criteria requires further analysis which is beyond the scope of this project. These criteria, however, are important in determining the constructability and viability of a site.

2. DEFINITION OF CRITERIA

Highway connectivity of the site with areas within the driveshed: the number and type of major highways providing access to the broader area where the potential ferry landing site would be located would affect the propensity of potential users to access the site by car.

Availability and condition of access roads: the number and condition of roads providing access to the potential ferry landing site is a critical element of the evaluation, as traffic on these roads is expected to increase as a result of the development of new ferry service.

Proximity to existing bus routes: examines the potential for transfers between bus and ferry. Close proximity of the ferry site to bus services increases the probability of potential users accessing the ferry site by bus.

Proximity to existing rail service: similar to the previous criterion, proximity to existing rail service increases the probability of transfers between rail and ferry and of potential users accessing the ferry by train.

Availability of intermodal transfer stations: existence of intermodal transfer stations can further increase the propensity of people transferring from one mode to another, with more services and amenities provided and better coordinated services.

Frequency/Level of proximate transit service: transfers from one transit service to another are more likely to happen when there is frequent service, which minimizes waiting time, and/or good coordination between services.

Directness of pedestrian/bike routes: people are in general willing to use bicycle and/or walk only a short distance to a transit station, so close proximity of the station to demand generating areas is a factor that would affect transit use.

Quality of pedestrian/bike environment: in addition to the proximity of the station on foot or by bicycle, the conditions of the surrounding environment also affect people's willingness to walk or use bicycle to access the station. Convenient walkway to the docking facilities is a plus.

Proximity to Parking: parking available to use by ferry riders should be available in close proximity to the ferry landing site for people to be willing to drive, park, and use ferry. [1]

Availability of Adequate Parking Spaces: the parking facility should provide adequate space to accommodate the potential demand for ferry services. The pattern and frequency of the ferry service determines parking space requirements. [2]

Proximity to housing: proximity of a ferry landing site to housing is a factor affecting the potential demand for ferry service through this site, primarily as an origin node.

Proximity to jobs: proximity of a ferry landing site to jobs is a factor affecting the potential demand for ferry service through this site, primarily as a destination node for commuter services.

Proximity to retail/entertainment: proximity of a ferry landing site to retail and entertainment opportunities is a factor affecting the potential demand for ferry service through this site, primarily as a destination node for shopping and entertainment trips.

Proximity to parks/open spaces: proximity of a ferry landing site to parks and open spaces is a factor affecting the potential demand for ferry service through this site, primarily as a destination node for recreational trips.

Potential of the site to attract demand: demographics and existing commute patterns in an area are factors affecting the potential demand for future ferry services. For example, the higher the employment outside the region, or the closer the site along existing main commuter corridors, the higher the probability that it will attract demand for the new service.

In the next sections, site specific evaluations are given for each of the twelve sites analyzed in this report, based on the criteria presented above. Site conditions related to these criteria are discussed, followed by an assessment of each site.

[1] In this study, proximity to any facility that could potentially provide parking space to ferry riders is considered

[2] The level of utilization of existing parking facilities and availability of parking spaces are considered. An underutilized facility has greater potential to provide parking to ferry riders. The amount of parking that would be required, however, cannot be determined without an estimate of the potential ferry demand, which is beyond the scope of this project

3. FORDHAM LANDING, BRONX COUNTY

3.1 Site Summary

Fordham Landing is located in Bronx County, New York. The site is located just north of the University Heights Bridge on the eastern bank of the Harlem River in the Bronx. The bridge connects 207th Street in the Inwood neighborhood of Manhattan to West Fordham Road in the University Heights section of the Bronx. The FPLAS team ranked the site with a score of 45.64, ranking first as an origin site while scoring 14.61 and ranking twentieth as a destination site. Factors influencing this site's evaluation are shown in Figure 1. Details on how these factors were derived are given in the Task 2B Deliverable. For the purpose of developing a better perspective, however, on what these factors represent, it is noted here that the walkshed is defined as the area within a 0.75 mile radius, the bikeshed is the area within a 3 mile radius and the driveshed is the area within a 15 minute drive from the site marked with a star in figure 1.

Factors influencing site evaluation	Value
Commuters leaving walkshed	4,205
Commuters entering walkshed	2,195
Number of Manhattan-bound commuters within walkshed	2,590
Housing units in walkshed	4,979
Average median household income in walkshed	$24,202
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	0.28
Commuters leaving bikeshed	232,925
Number of Manhattan-bound commuters within bikeshed	116,426
Housing units in bikeshed	277,148
Average median household income in bikeshed	$27,013
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	0.34
Commuters leaving driveshed	276,760
Number of Manhattan-bound commuters within driveshed	144,959
Housing units in driveshed	343,395
Average median household income in driveshed	$26,580
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	0.34
Existing parking within walkshed (m²)	37,850
Potential parking within walkshed (m²)	32,347
Total length of access roads, class ACC 1-5 in search distance (m)	645
Number of bus stops within walkshed	10
Number of NYC subways stops within walkshed	1
Number of commuter rail connections within walkshed	1
Non-public land ownership area in walkshed (m²)	276,482
Public land ownership area in walkshed (m²)	104,067
Office, retail and industrial space in walkshed (ft²)	429,965
Percent of land in walkshed known to be vacant	17.4%
Percent of land in walkshed known to be publicly owned	27.3%

Site Name:	Fordham Landing
Municipality:	Borough of the Bronx
County:	Bronx

Figure 1: Factors Influencing Site Evaluation

The GIS database was developed based on publicly available databases that were available at the time of this study effort and may not reflect current conditions. For this purpose, the research team searched for updated information through interviews, Internet search and site visits.

Figure 2 shows an overview image of the site. The Fordham Landing site is marked in Figure 2 by the number 44, which corresponds to the sites index number in the long list of sites. The site is located in the Bronx on the eastern bank of the Harlem River. The site is adjacent to Interstate 87 (Major Deegan Expressway) and just north of the University Heights Bridge, which connects Manhattan and the Bronx.

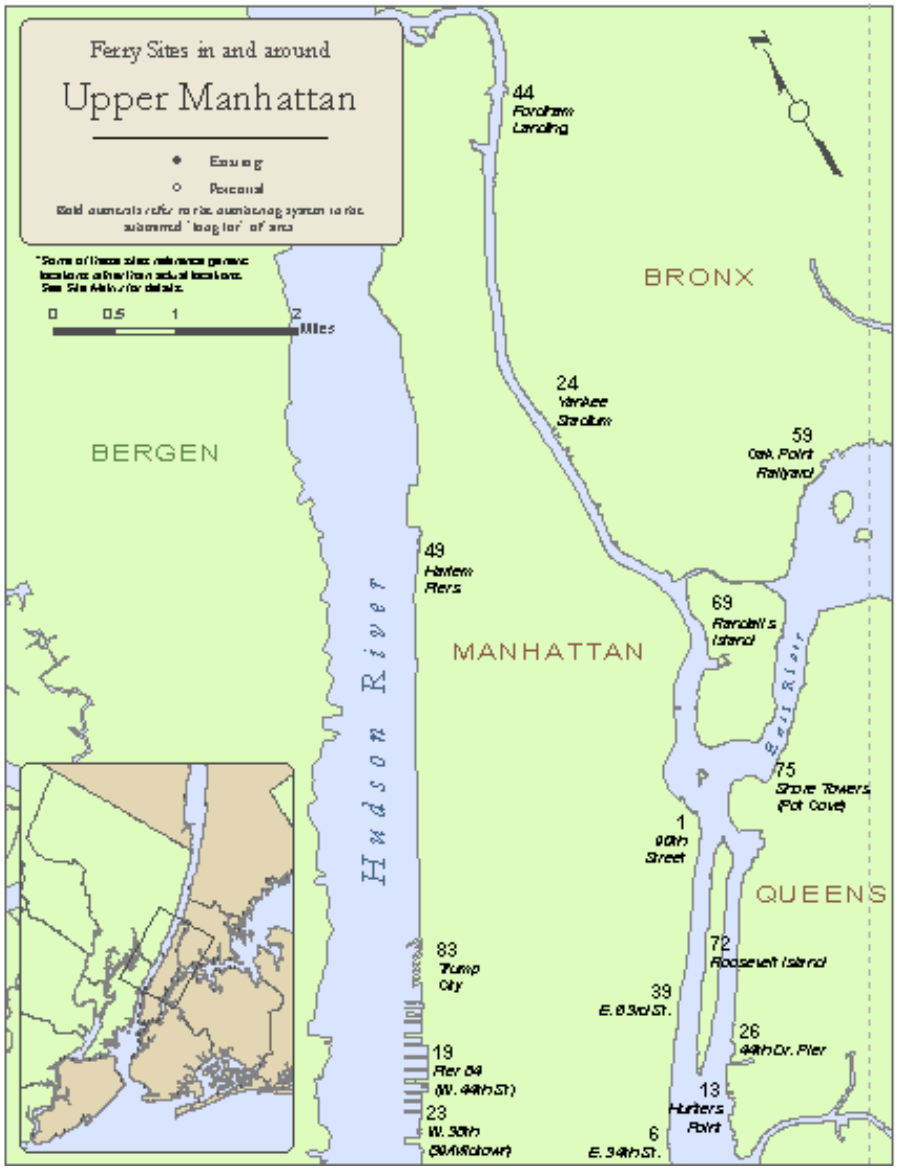


Figure 2: Overview Map Fordham Landing

During the site visits photos were taken to document the sites and their surroundings. Figure 3 shows an aerial view of the Fordham Landing site with the locations where photos 1 through 8 below were taken during the site visit. The photo locations are represented by the red balloons in Figure 3. The legend in the figure shows which direction each photo faces with respect to the compass in the figure.

Photo 1fl was taken from the road along the waterfront that the site lies on. This picture shows the only access road to the site. This is a private road where no parking is allowed. There are fences on both sides of the road. The fence to the east separates the road from the rail tracks and the fence to the west blocks off the waterfront. Also there is no pedestrian or bike paths on this road. This road is mainly used as a service road for the industrial businesses that are at the end of the road. Photo 2fl was taken from the same position as photo 1fl however the direction of this photo is northwest. It shows the storage warehouse that is adjacent to the site. This warehouse is one of three major facilities along the waterfront in this area. Photo 3fl is a photo of the actual pier. The pier could not be directly accessed due to the landscape. There are a number of trees and debris in front of the pier. Also the pier is torn down and falling apart. A significant amount of investment would be needed to clean this site and reconstruct and make operable the pier. Photo 4fl shows another warehouse that is at the end of the pier's access road. This is a scaffold warehouse that also generates a significant amount of truck traffic on the small access road that the site lies on. Photo 5fl shows the rail tracks that are just across the road from the site. These tracks are a barrier to the accessibility of the site. There is only one way to access this site (access road on bridge) due to the rail tracks. Photos 6fl and 7fl show the entrance of the access road from the bridge. The intersection here is already very busy. Vehicles are entering and exiting I-87 at this intersection and crossing into Manhattan over the bridge. There is no light for vehicles exiting the access road. The maneuver onto West Fordham Road from the site is a difficult one. Photo 8fl shows the University Heights Bridge that is directly next to the proposed site. The bridge has pedestrian and bike paths, therefore it is easy to cross the Harlem River into Manhattan.

Photo 8fl

Photo7fl

Photo 6fl

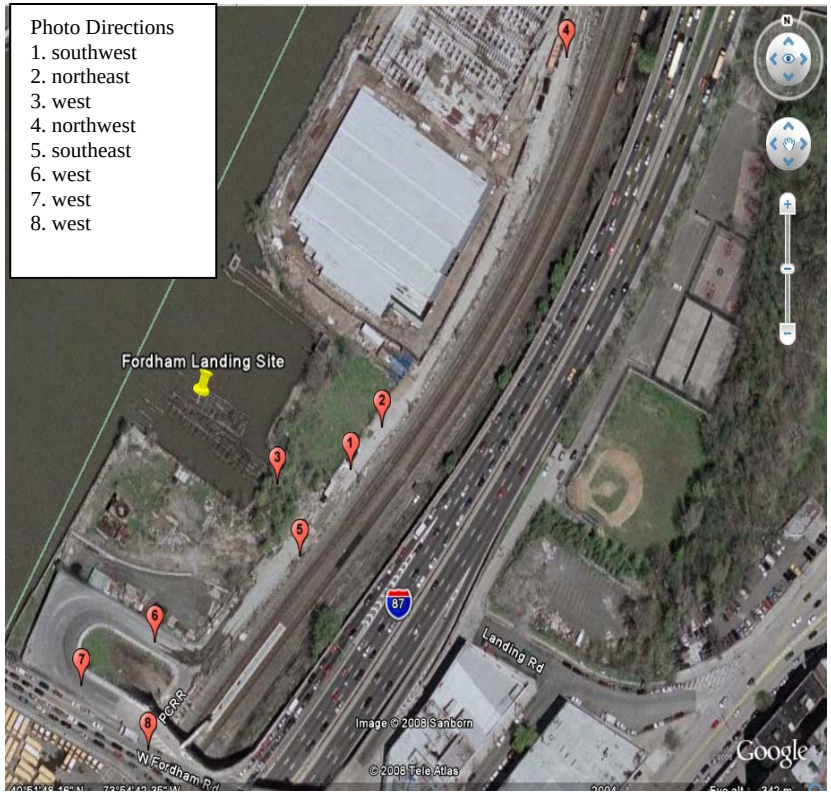


Photo 1fl

Photo 2fl

Photo 3fl

Figure 3: Fordham Landing Site (Source: Google Earth)

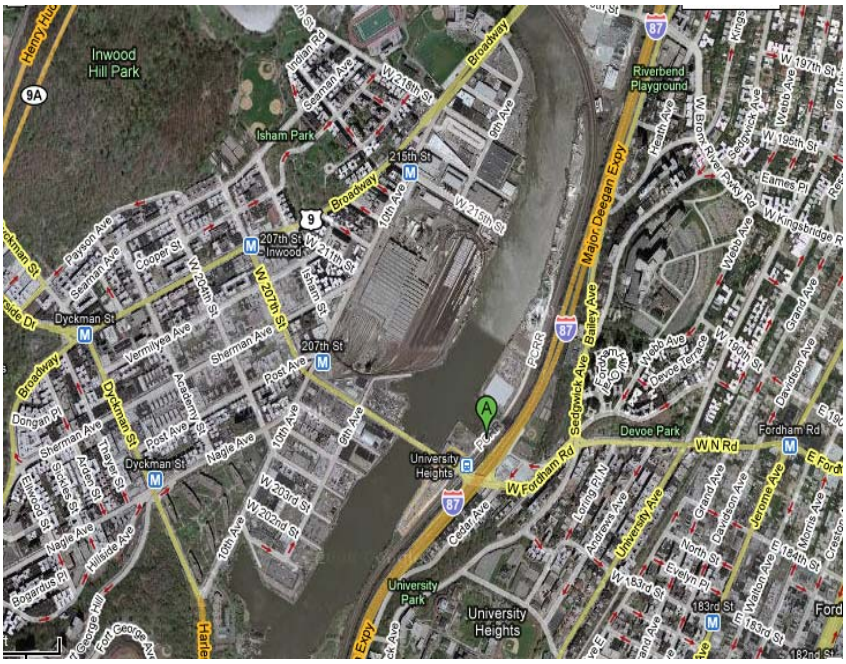
Photo 5fl

Photo 4fl

3.2 Current Conditions

According to interviews with local officials the city has not looked at this site as a potential ferry site. It was suggested that a ferry from the area might not save time over other transit modes. If much new development takes place there, ferry service might prove useful. The site is adjacent to Manhattan and there are public transit connections within the walkshed. The travel time for these modes would be much shorter than the travel time of the ferry to Manhattan. The ferry would have to traverse through the Harlem River then make its way down either the Hudson River or the East River to its destination. The metro or bus routes seem like a much more direct trip into lower Manhattan.

The University Heights neighborhood of the Bronx is a low income residential area. The neighborhood has a population of over 40,000 and a majority of the population lives below the poverty line. A large percentage of the land in the area is 5 or 6-story tenement buildings, older multi-unit homes and multi-unit apartments and townhouses. The area is also home to the Bronx Community College which is part of CUNY. Fordham Landing is approximately 100 yards north of the University Heights Bridge. In 1950 the New York City Department of Parks and Recreation acquired this land along with six other parks that border the Major Deegan Expressway. The pier at the site is currently not operable. The actual structure of the pier is torn down and falling apart and the land just in front of the pier is covered with old tires and trash. This site would need substantial cleanup efforts and construction to become operable.



Source: Google Maps

Figure 4: Close-up Aerial View of Fordham Landing

3.2.1 Vehicular Accessibility

The Fordham Landing site is accessible by vehicle. The site is just off the Major Deegan Expressway (I-87) that connects to I-278 in South Bronx and runs north through upstate New York. The site is connected to Manhattan via the University Heights Bridge which is adjacent to the site. The University Heights Bridge connects 207th Street in Manhattan with West Fordham Road in the Bronx.

However, the site can only be accessed by vehicle from a small road that is connected to the bridge shown in Figure 5 by the red balloon marked 'A'. This road is not well marked and it is unclear of where it directly leads to from the bridge. The road that the pier is actually on is a small service road for the storage and scaffold companies that are along the waterfront. This road is shown in Figure 5 by the red balloon marked 'B'. The road is very small and there are warning signs that the area is private land and there is no parking allowed.

Source: Google Earth

Figure 5: Fordham Landing Access Roads

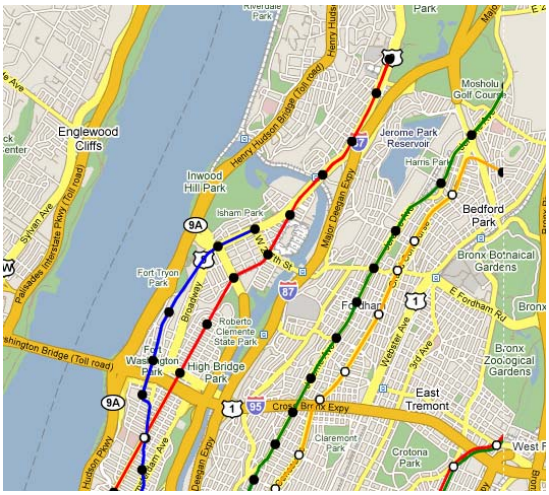
3.2.2 Transit Accessibility

There are 3 metro stops on the Bronx side of the Harlem River and within the .75 mile walkshed. Figure 6 shows the number of bus stops within the .75 mile radius walkshed. There are numerous bus stops in University Heights. The walkshed includes the Manhattan side because there is a pedestrian and bike pathway over the University Heights Bridge shown below.

Figure 7 shows the metro lines that run through the University Heights neighborhood. Line 4, represented by the green line has three stops within the Forhdam Landing walkshed. There is one stop at the corner of Fordham Road and Jerome Avenue, one at 183rd Street and Jerome Avenue and one at Burnside Avenue and Jerome Avenue. Line 4 runs from Woodlawn, Bronx south through Manhattan and into Brooklyn where it stops at Utica Avenue in the Crown Heights neighborhood. Other parts of the city can be

accessed as well by transferring to different metro lines. There are also a few accessible stops in Manhattan if one was to walk across the University Heights bridge which is pedestrian friendly and within the walkshed. Line 1 can be accessed just on the other side of the bridge at 207th Street and 10th Avenue. This line runs from Van Courtland Park at 242 Street in the Bronx south through Manhattan to the South Ferry. Line A can be accessed at 207th Street in Inwood and travels south through Manhattan and into the Rockaway neighborhood of Queens. The Fordham Landing site is also served by an MTA train station that is located less than 100 yards from the site. The line that serves the University Heights Station is the Hudson Line. The Hudson Line runs along the Hudson River from New York City (Grand Central Station) to Poughkeepsie, New York. The Hudson Line stops at this station every 30 minutes during peak hours and every hour during off peak hours.

Figure 6: Bus Stops and Bus Routes within Walkshed



Source: MTA

Figure 7: NYC Metro Stop

Source: Google Earth

Figure 8: MTA Rail Lines (Hudson Line is Green)

3.2.3 Pedestrian/Bicycle Accessibility

University Heights is pedestrian and bicycle friendly as are most New York City neighborhoods. There are walk paths along the majority of the roadways. However, direct pedestrian access to the site is not as friendly. There are no actual pedestrian or bike paths that lead directly to the site. The one access road to the site that is connected to the bridge would not be safe for pedestrians. Trucks from the industrial sites next to the pier that use this road would make it dangerous for pedestrians. Direct pedestrian access would need to be provided, if a ferry service was implemented at this site.

3.2.4 Parking

There is no parking at the actual site. The road that the site lies on is a private road and there is no parking allowed. There are a few small parking lots within the walkshed that are possibly already at capacity and are fairly expensive.

3.2.5 Demographics/Commute Patterns

The FPLAS Task 2B Deliverable reported figures for the number of total commuters and Manhattan-bound commuters leaving and entering the walkshed, the bikeshed, and the driveshed. There are an average of 2,590 potential Manhattan-bound commuters within the walkshed, 116,426 potential Manhattan-bound commuters within the bikeshed and 276,760 potential Manhattan-bound commuters within the driveshed.

3.2.6 Land Use

Figures 9 through 12 show the percent of land use per building area for commercial, office, retail and residential land use respectively. The legend shows that the percentages are broken into 5 separate intervals with the lightest color, yellow representing the smallest percentages and the darkest color, blue representing the largest percentages. Figure 12 shows that the majority of the land within the walkshed of the Fordham Landing site is residential. There is also a significant amount of commercial land use in the area shown in Figure 9.

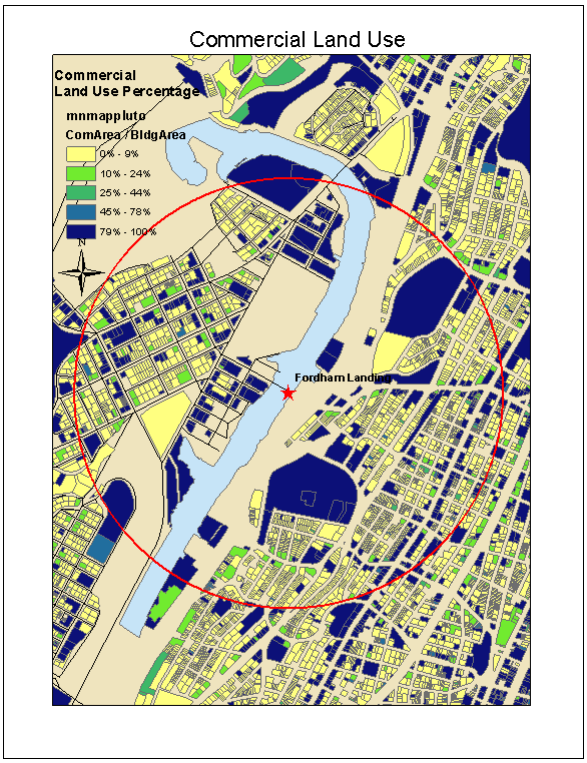


Figure 9: Fordham Landing Commercial Land Use Within Walkshed

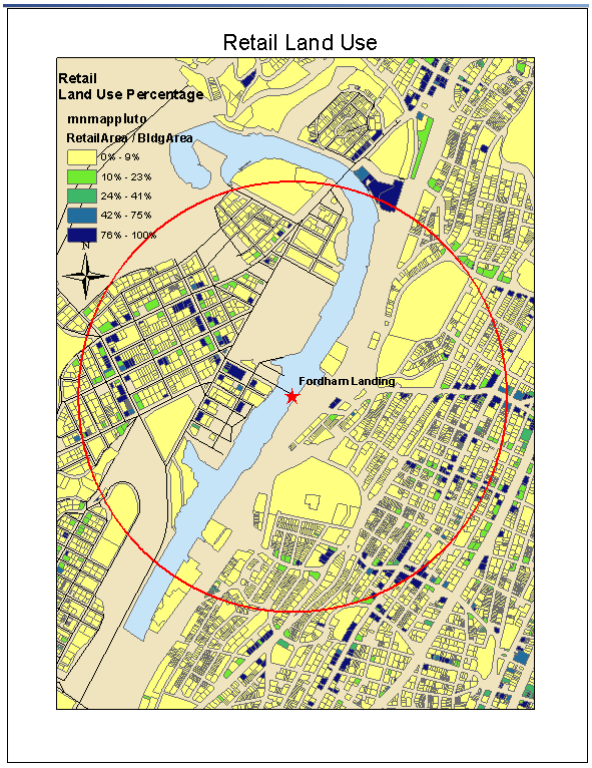


Figure 11: Fordham Landing Retail Land Use Within Walkshed

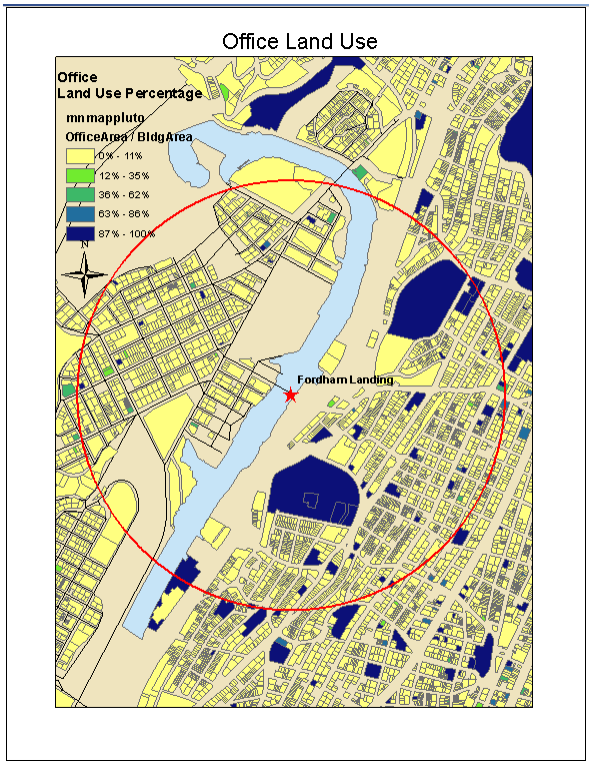


Figure 10: Fordham Landing Office Land Use Within Walkshed

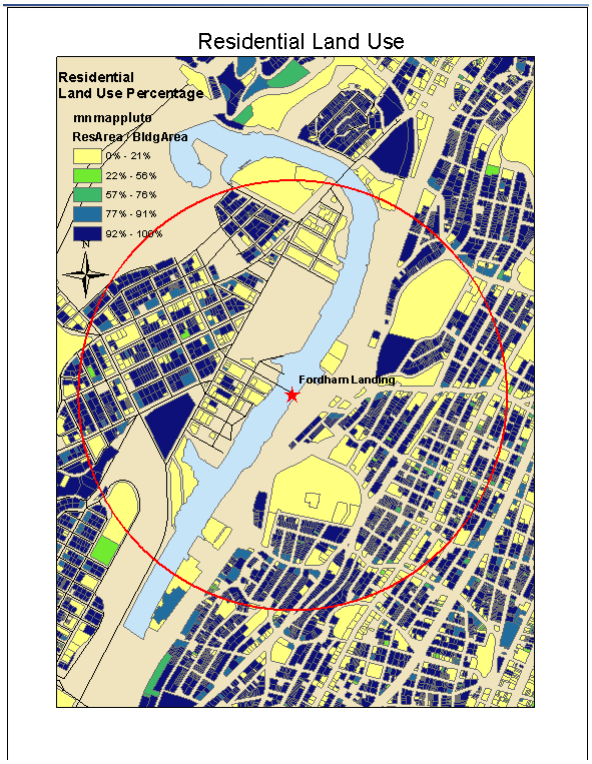


Figure 12: Fordham Landing Residential Land Use Within Walkshed

3.3 Site Assessment

Based on the discussion presented in section 3.2 the evaluation criteria were assessed according to a 4 point ranking scoring system: *Poor*, *Fair*, *Good*, and *Excellent*. Rating of the evaluation criteria and the assessment of the site are shown in Table 1 below.

The assessment of the Fordham Landing site shows that *from a parking and land side access perspective*, the site would need a significant amount of improvement to implement a ferry service. The pier at the site is torn down and hard to access. The land at the site would need to be cleared of trees and trash and a new pier would need to be constructed. The site would also need to somehow allow direct pedestrian access. Currently the only way to access the site is from a small service road at the base of the University Heights Bridge where there is a very busy intersection.

Table 1: Fordham Landing Site Assessment

Evaluation Criteria	Site Evaluation
Vehicular Accessibility	
Highway connectivity of the site with areas within the driveshed	Good
Availability and condition of access roads	Poor
Transit/Intermodal connectivity	
Proximity to existing bus routes	Excellent
Proximity to existing train service	Excellent
Availability of intermodal transfer stations	Fair
Frequency/Level of proximate transit service	Good
Pedestrian and Bicycle Access	
Directness of pedestrian/bike routes	Fair
Quality of pedestrian/bike environment	Poor
Parking	
Proximity to Parking	Fair
Availability of Adequate Parking Spaces	Poor
Land Use	
Proximity to housing	Excellent
Proximity to jobs	Fair
Proximity to retail/entertainment	Poor
Proximity to parks/open spaces	Fair
Demographics and Commute Patterns	
Potential of the site to attract demand	Good

4. MARINA DEL RAY, BRONX COUNTY

4.1 Site Summary

Marina Del Ray is located in Throgs Neck in Bronx County, New York. The site is located in the southeastern part of the Bronx on the bank of the East River between the Throgs Neck Bridge and the Bronx Whitestone Bridge. The FPLAS team ranked the site with a score of 33.67, ranking seventh as an origin site while scoring 16.07 and ranking fifteenth as a destination site. Factors influencing this site's evaluation are shown in Figure 13. Details on how these factors were derived are given in the Task 2B Deliverable. For the purpose of developing a better perspective, however, on what these factors represent, it is noted here that the walkshed is defined as the area within a 0.75 mile radius, the bikeshed is the area within a 3 mile radius and the driveshed is the area within a 15 minute drive from the site marked with a star in figure 13.

Factors influencing site evaluation	Value
Commuters leaving walkshed	2,218
Commuters entering walkshed	483
Number of Manhattan-bound commuters within walkshed	615
Housing units in walkshed	2,030
Average median household income in walkshed	$56,353
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	1.42
Commuters leaving bikeshed	32,179
Number of Manhattan-bound commuters within bikeshed	11,376
Housing units in bikeshed	33,906
Average median household income in bikeshed	$42,080
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	0.99
Commuters leaving driveshed	588,932
Number of Manhattan-bound commuters within driveshed	223,365
Housing units in driveshed	654,631
Average median household income in driveshed	$34,827
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	0.67
Existing parking within walkshed (m^2)	2,069
Potential parking within walkshed (m^2)	34,211
Total length of access roads, class ACC 1-5 in search distance (m)	643
Number of bus stops within walkshed	22
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	0
Non-public land ownership area in walkshed (m^2)	457,150
Public land ownership area in walkshed (m^2)	38,424
Office, retail and industrial space in walkshed (ft^2)	68,963
Percent of land in walkshed known to be vacant	18.4%
Percent of land in walkshed known to be publicly owned	7.8%

Site Name:	Marina Del Ray
Municipality:	Borough of the Bronx
County:	Bronx

Figure 13: Factors Influencing Site Evaluation

The GIS database was developed based on publicly available databases that were available at the time of this study effort and may not reflect current conditions. For this purpose, the research team searched for updated information through interviews, Internet search and site visits.

Figure 14 shows an overview image of the site. The Marina Del Ray site is marked in Figure 14 by the number 57, which corresponds to the sites index number in the long list of sites. Marina Del Ray is located on the southeastern side of the Bronx between the Throgs Neck Bridge and the Bronx Whitestone Bridge. Figure 16 shows a close-up aerial satellite image of the site, which is marked by the green balloon.

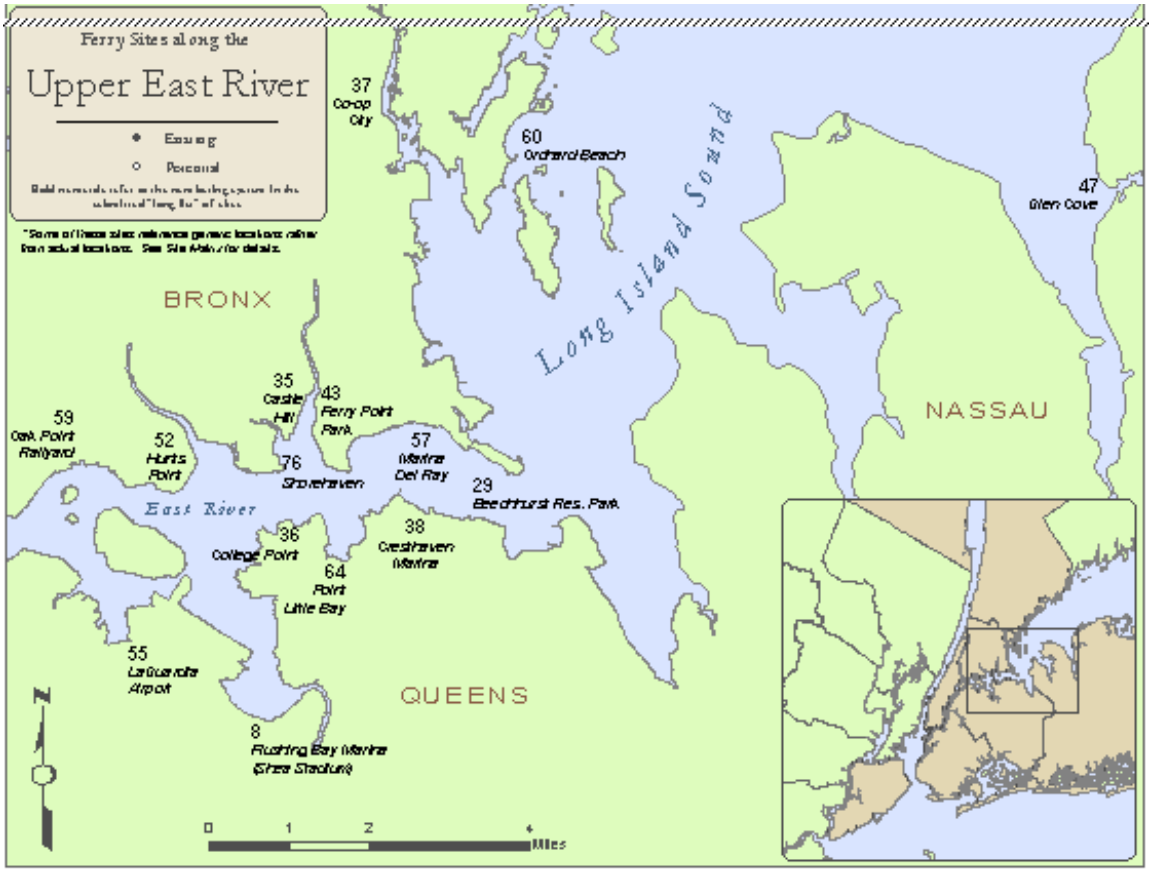


Figure 14: Overview Map Marina Del Ray

During the site visits photos were taken to document the sites and their surroundings. Figure 15 shows an aerial view of the Marina Del Ray site with the locations where photos 1 through 8 below were taken during the site visit. The photo locations are represented by the red balloons in Figure 15. The legend in the figure shows which direction each photo faces with respect to the compass in the figure.

Photo 1m was taken at the entrance of Marina Del Ray. The marina is a privately owned luxury caterer and wedding reception hall on the East River in Throgs Neck. This marina has ample parking however everything on the waterfront in Throgs Neck is private land.

Photos 2m and 4m were taken off the parking lot at Marina Del Ray. The lot can accommodate a significant number of vehicles, however as stated before this property is all private land. Photo 3m was taken off the Marina Del Ray pier which is used to berth their new luxury yacht. This figure shows that a long pier structure would be needed to berth a ferry boat due to the shallow waters at the river bank. The pier is built in high piles and stretches out into the water a good distance. Photo 5m was taken a few hundred yards down the road from the Marina Del Ray. This is a private fenced-in beach for the residents of the town. Photo 6m was taken through the fenced gate at the private beach. It shows that there is a picnic area, a small beach and recreational activities. Photos 7m and 8m were taken from the corner of the Marina Del Ray parking lot. These photos show the waterfront in Throgs Neck which is all private land. There are condos, single family homes, and private clubs along this stretch of the waterfront.

Photo 8m

Photo7m

Photo 6m

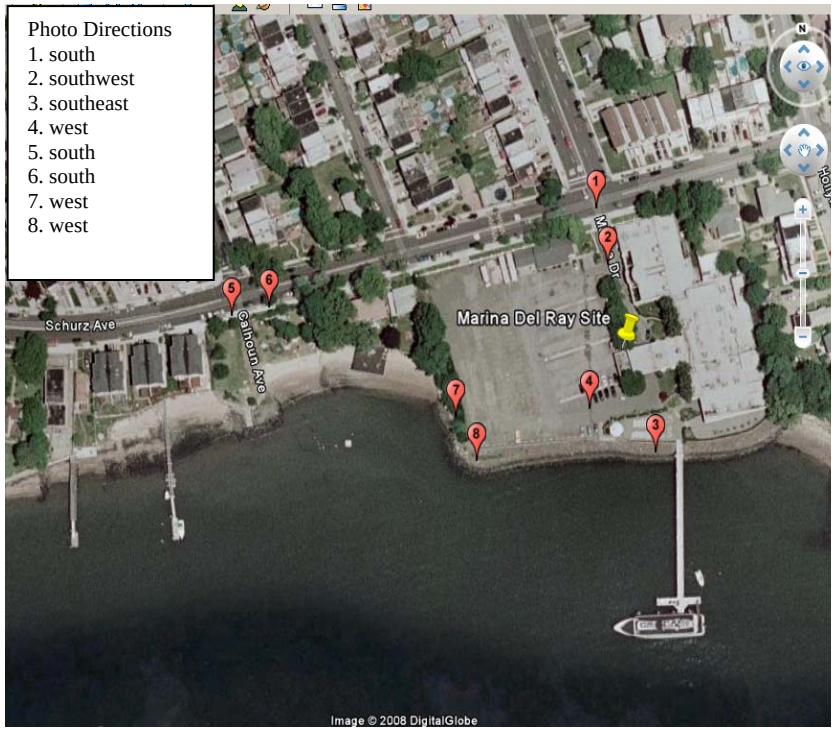


Figure 15: Marina Del Ray Site (Source: Google Earth)

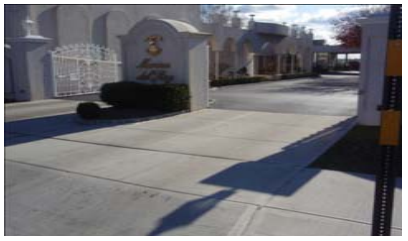


Photo 1m

Photo 2m

Photo 3m

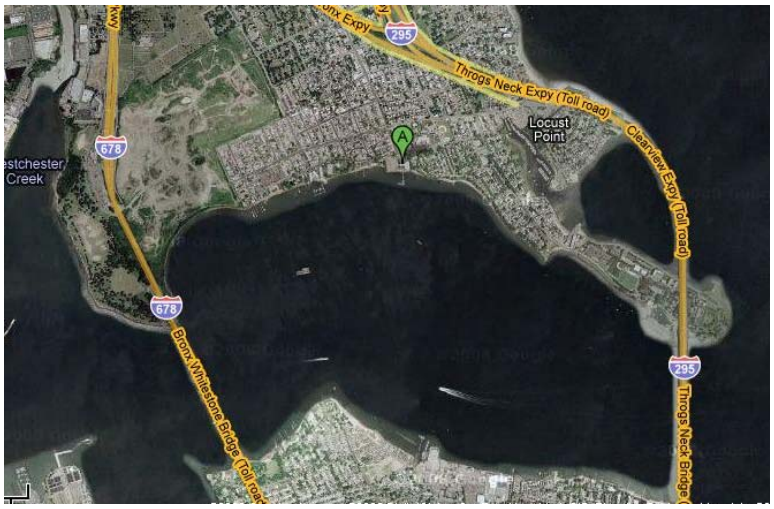
Photo 5m

Photo 4m

4.2 Current Conditions

Interviewed local officials were not very familiar with this area. They suggested the area might have some potential as an originator of trips because of its residential character and that if there really is a marina there, then they could explore it as a place to develop a landing.

Currently the Marina Del Ray is an upscale caterers, restaurant and wedding reception hall. The Marina Del Ray also accommodates a new luxury yacht for private parties. This facility has recently undergone a multimillion dollar renovation with improvements to the lobby, ballroom and terrace. This site has one pier used to berth their luxury yacht. This successful private business has been run by the same family for over 35 years. It seems that there would potentially be issues and objections to a public ferry service from this site. The entire waterfront within the walkshed of this site is privately owned land, of highly residential character.



Source: Google Maps

Figure 16: Close-up Aerial View of Marina Del Ray

4.2.1 Vehicular Accessibility

The Marina Del Ray Site is very accessible by vehicle. The site lies between the Throgs Neck Bridge and the Bronx Whitestone Bridge. The Cross Bronx Parkway (I-95) leads to the Throgs Neck Expressway (I-295) and the Hutchison River Parkway which cross over the two bridges and continue in Queens and through Long Island. This site is very well connected and lies at the intersection of three major highways in the area. The site is located on the waterfront so a few local streets lead to it. Although the streets are fairly narrow due to parking on both sides, there is no problem accessing the site through town. The commute is easy and pleasant and there is not much traffic within the residential section which makes up the walkshed.

4.2.2 Transit Accessibility

There are no NYC subway stops or commuter rail stops within the walkshed of the Marina Del Ray Site. In figure 13 FPLAS reports that there are 22 bus stops within the

.75 miles walkshed. The Bx8, Bx40, Bx42, and the BxM9 are the bus routes that serve Throgs Neck. The Bx8 goes to Pelham Bay Park or Simpson Street Station, the Bx40 and the Bx42 go to Morris Heights, Bronx and the BxM9 goes into Midtown Manhattan. The BxM9 is an express bus into Manhattan and is the most direct route via public transit however Manhattan can be accessed by connecting to the subway or the Metro-North Railroad via the Bx8, Bx40 or Bx42. Figure 17 shows the number of bus stops and the bus routes that serve the Marina Del Ray site. The red star represents the actual site. The red line shows the .75 mile walkshed around the site and the blue lines show the bus routes. Figure 18 shows a more detailed layout of the bus routes through Throgs Neck.

Figure 17: Bus Stops and Bus Routes withinWalkshed

Source: MTA

Figure 18: Throgs Neck Bus Routes

4.2.3 Pedestrian/Bicycle Accessibility

Throgs Neck is very pedestrian and bicycle friendly. Almost all roadways have pedestrian and bike paths. The area within the walkshed of Marina Del Ray seems to be an upscale neighborhood and very pleasant for pedestrians to travel through.

4.2.4 Parking

There is a significant number of parking spots on the streets in the town, however allowing parking for a ferry service in the neighborhood would most likely cause objection from the community. Parking for a public use facility is questionable in this town.

4.2.5 Demographics/Commute Patterns

The FPLAS Task 2B Deliverable reported figures for the number of total commuters and Manhattan-bound commuters leaving and entering the walkshed, the bikeshed, and the driveshed. There are an average of 398 potential Manhattan-bound commuters within the walkshed, 17,666 potential Manhattan-bound commuters within the bikeshed and 207,048 potential Manhattan-bound commuters within the driveshed.

4.2.6 Land Use

Figures 19 through 22 show the percent of land use per building area for commercial, retail, office and residential land use respectively. The legend shows that the percentages

are broken into 5 separate intervals with the lightest color, yellow representing the smallest percentages and the darkest color, blue representing the largest percentages. Figure 22 shows that the majority of the land within the walkshed of the Marina Del Ray site is residential. This area is a high income area consisting mainly of single family homes. The buildings within the walkshed have a limited amount of retail, office and commercial land uses.

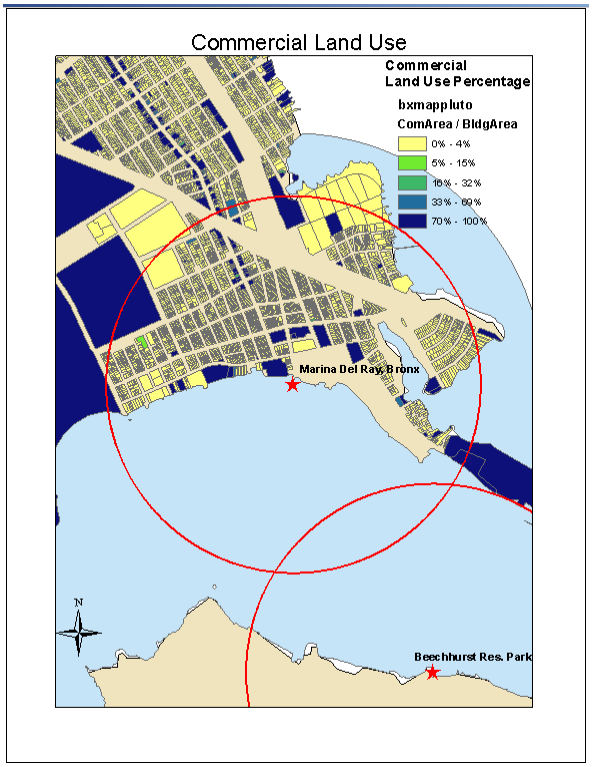


Figure 19: Marina Del Ray Commercial Land Use Within Walkshed

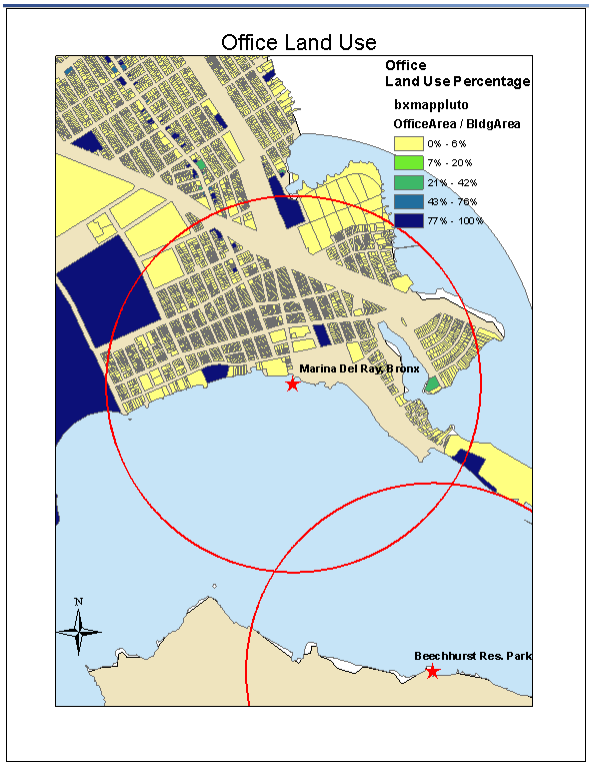


Figure 20: Marina Del Ray Office Land Use Within Walkshed

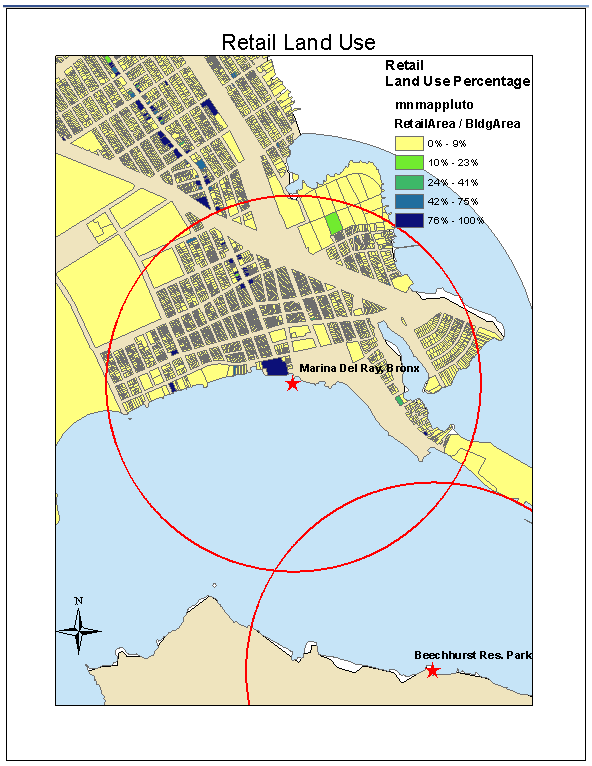


Figure 21: Marina Del Ray Retail Land Use Within Walkshed

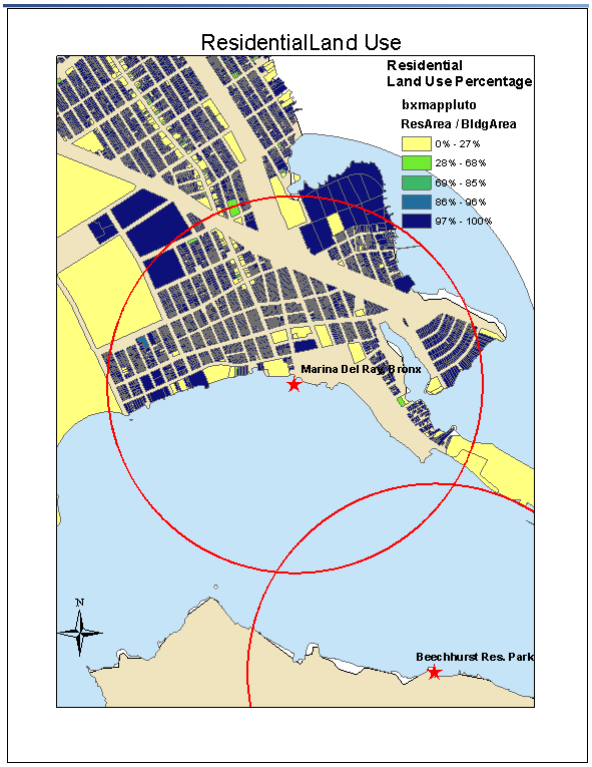


Figure 22: Marina Del Ray Residential Land Use Within Walkshed

4.3 Site Assessment

Based on the discussion presented in section 4.2 the evaluation criteria were assessed according to a 4 point ranking scoring system: *Poor*, *Fair*, *Good*, and *Excellent*. Rating of the evaluation criteria and the assessment of the site are shown in Table 2 below.

The assessment of the Marina Del Ray site shows that *from a parking and land side access perspective*, the site has strong potential as an originator of trips, however the fact that the majority of the waterfront land in Throgs Neck is privately owned makes it questionable that this site would be a good location to implement the ferry service. Although the rankings for this site are fairly high, a future ferry service in this location depends upon availability of land to build and run a ferry service.

Table 2: Marina Del Ray Site Assessment

Evaluation Criteria	Site Evaluation
Vehicular Accessibility	
Highway connectivity of the site with areas within the driveshed	Excellent
Availability and condition of access roads	Excellent
Transit/Intermodal connectivity	
Proximity to existing bus routes	Excellent
Proximity to existing train service	Poor
Availability of intermodal transfer stations	Poor
Frequency/Level of proximate transit service	Fair
Pedestrian and Bicycle Access	
Directness of pedestrian/bike routes	Excellent
Quality of pedestrian/bike environment	Excellent
Parking	
Proximity to Parking	Good
Availability of Adequate Parking Spaces	Fair
Land Use	
Proximity to housing	Excellent
Proximity to jobs	Good
Proximity to retail/entertainment	Fair
Proximity to parks/open spaces	Good
Demographics and Commute Patterns	
Potential of the site to attract demand	Good

5. TRUMP CITY, MANHATTAN

5.1 Site Summary

The Trump City site is located in Manhattan, in New York County, New York. The site is located on the west side of Manhattan at the end of west 66th Street. The FPLAS team ranked the site with a score of 44.75, ranking second as an origin site while scoring 27.66 and ranking seventh as a destination site. Factors influencing this site's evaluation are shown in Figure 23. Details on how these factors were derived are given in the Task 2B Deliverable. For the purpose of developing a better perspective, however, on what these factors represent, it is noted here that the walkshed is defined as the area within a 0.75 mile radius, the bikeshed is the area within a 3 mile radius and the driveshed is the area within a 15 minute drive from the site marked with a star in figure 23.

Factors influencing site evaluation	Value
Commuters leaving walkshed	7,748
Commuters entering walkshed	6,540
Number of Manhattan-bound commuters within walkshed	6,715
Housing units in walkshed	9,176
Average median household income in walkshed	$68,380
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	0.30
Commuters leaving bikeshed	341,134
Number of Manhattan-bound commuters within bikeshed	301,904
Housing units in bikeshed	357,535
Average median household income in bikeshed	$72,901
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	0.30
Commuters leaving driveshed	N/A
Number of Manhattan-bound commuters within driveshed	N/A
Housing units in driveshed	N/A
Average median household income in driveshed	N/A
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	N/A
Existing parking within walkshed (m²)	17,054
Potential parking within walkshed (m²)	81,278
Total length of access roads, class ACC 1-5 in search distance (m)	1,257
Number of bus stops within walkshed	27
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	0
Non-public land ownership area in walkshed (m²)	274,901
Public land ownership area in walkshed (m²)	80,587
Office, retail and industrial space in walkshed (ft²)	1,010,873
Percent of land in walkshed known to be vacant	43.8%
Percent of land in walkshed known to be publicly owned	22.7%

Site Name: Trump City
Municipality: Borough of Manhattan
County: New York

Figure 23: Factors Influencing Site Evaluation

The GIS database was developed based on publicly available databases that were available at the time of this study effort and may not reflect current conditions. For this purpose, the research team searched for updated information through interviews, Internet search and site visits.

Figure 24 shows a GIS image of the four Manhattan sites from the FPLAS shortlist and their respective locations in the city. The Trump City site is located on the west side of Manhattan at the end of West 66th Street. Figure 25 shows an overview image of the site. The Trump City site is marked in Figure 25 by the number 83, which corresponds to the sites index number in the long list of sites.

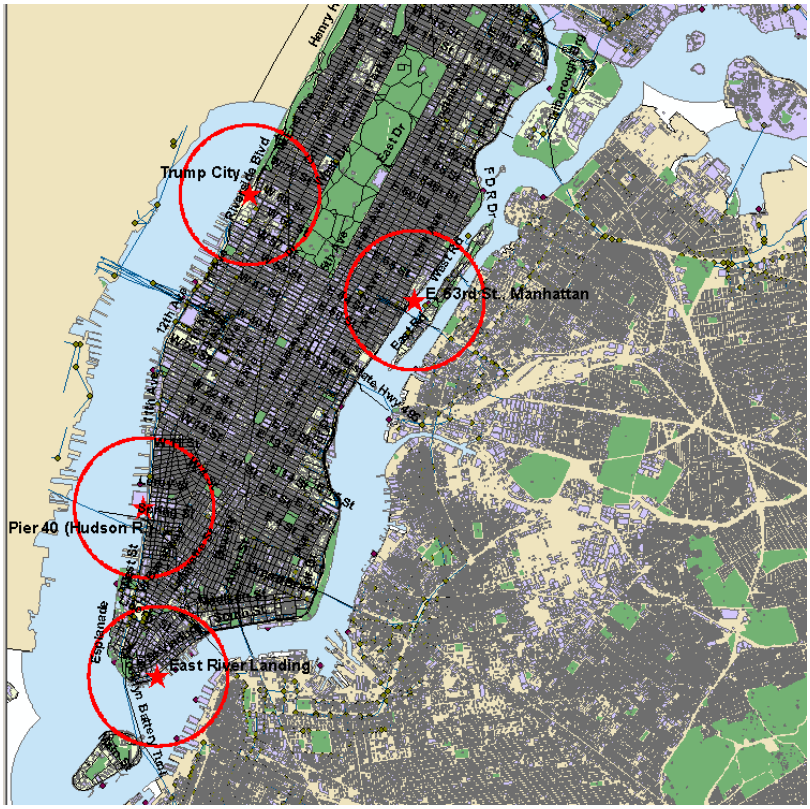


Figure 24: GIS Image of Manhattan Sites

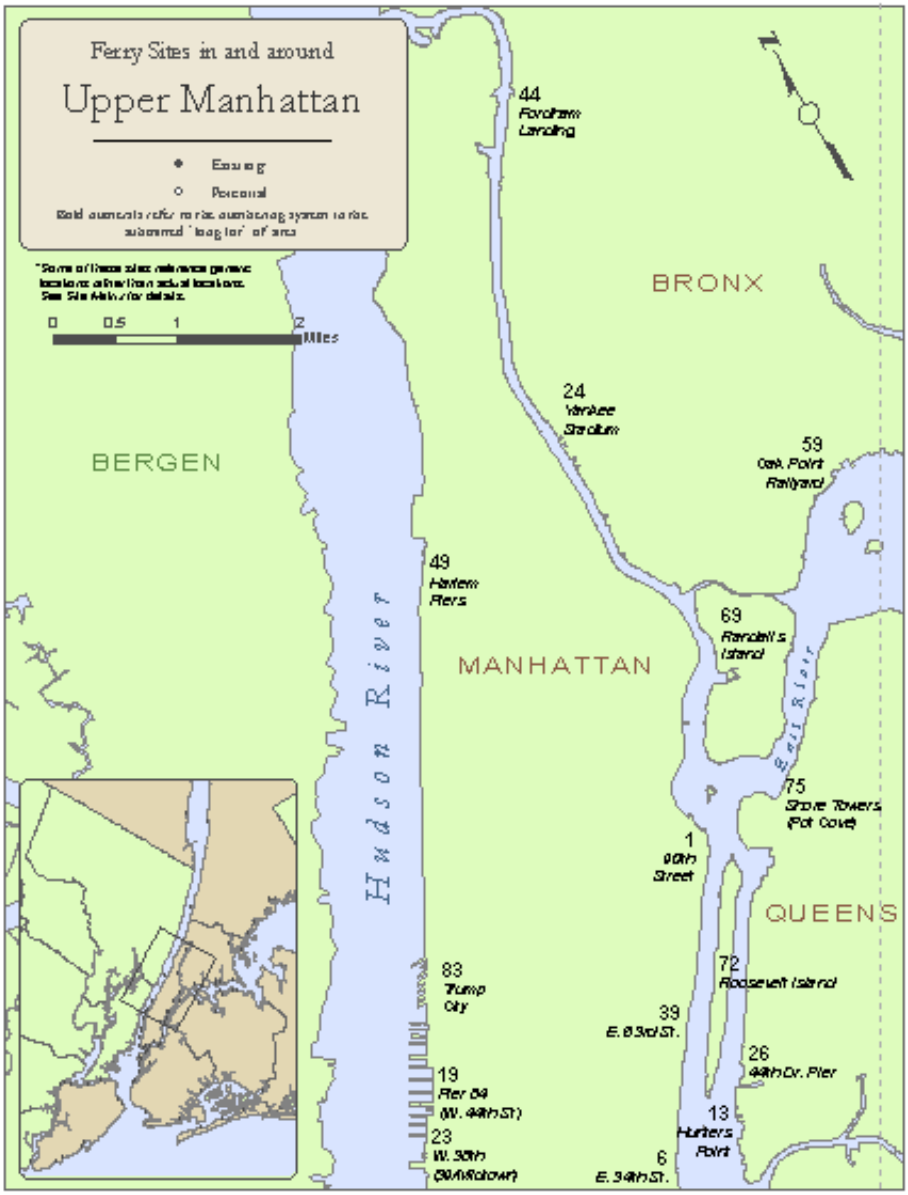


Figure 25: Overview Map Trump City Site

During the site visits photos were taken to document the sites and their surroundings. Photos 1 through 17 below were taken during the site visit. These photos were taken at the specific site location and show the available piers, pedestrian access and other properties of the site.

Photos 1tc and 2tc were taken just off the waterfront at the end of West 70th Street. These photos show the park that runs along the waterfront underneath the Henry Hudson Parkway. Photo 2tc shows that the highway is raised providing pedestrian access underneath the highway. Photo 3tc shows another picture from the park just off the waterfront. This picture shows stairs leading from the street allowing pedestrian access from the street through the park and to the waterfront and the bicycle access to the site. Photo 4tc shows the bicycle access and walkway that leads from the street to the

waterfront. Photos 6tc and 7tc were taken directly underneath the Henry Hudson Parkway. There are pedestrian and bicycle paths that run underneath the highway which is directly next to the waterfront. Photo 8tc was taken next to the highway on the waterfront side. It shows there is plenty of open space which could accommodate a ticket booth or small customer service area for the ferry service. Photos 9tc through 17tc are pictures of the pier at the end of West 70th Street. The pier is very large and has ample space to accommodate heavy demand from a ferry service. The pier is raised out of the water and also has guardrails along the perimeter. An intermediate berth structure, possibly floating, would need to be constructed to allow access on and off of the ferry if it was to dock at this pier.

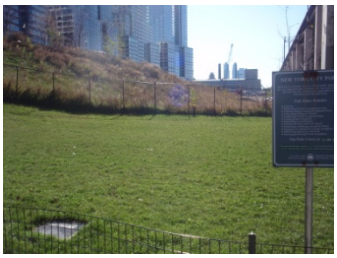


Photo 1tc

Photo 2tc

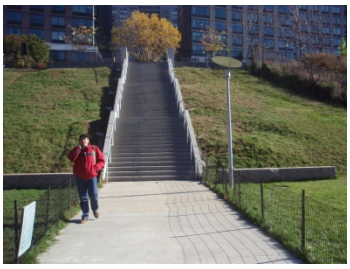


Photo 3tc

Photo 4tc

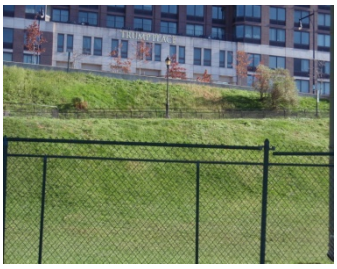


Photo 5tc

Photo 6tc

Photo 7tc

Photo 8tc


Photo 9tc


Photo 10tc


Photo 11tc


Photo 12tc


Photo 13tc


Photo 14tc


Photo 15tc


Photo 16tc


Photo 17tc

5.2 Current Conditions

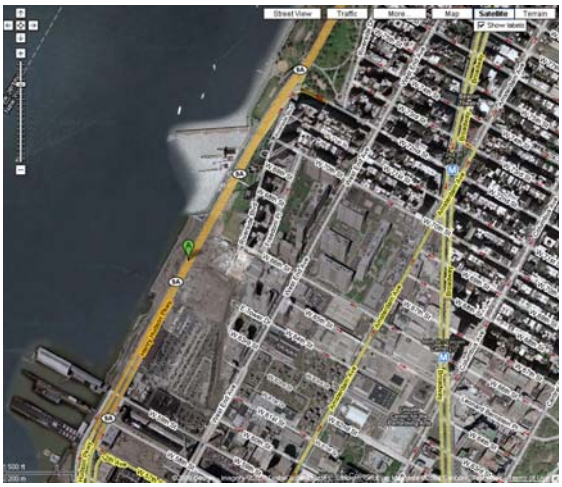
During the interview process with local officials, the interviewees stated that they saw this area as primarily an originator of trips, but may have some potential as a destination site. They also stated that there is a pier at 79th Street and an old railroad bridge at 69th street which could serve as landings. These two landing areas were not in the preliminary GIS database.

The pier at 79th street is the 79th Street Boat Basin. This pier serves as a popular home to recreational boaters. It accommodates boats of all sizes with 116 slips and 80 moorings with two fixed and three floating piers. It seems unlikely that a commuter ferry would be able to launch and dock at this recreational facility in Riverside Park.

The railroad float at 69th street was once the 69th street transfer bridge which was a dock for car floats which allowed the transfer of railroad cars from the rail line to the barges which were then transported over the Hudson River to New Jersey Rail Lines. This dock is part of the National Register of Historic Places.

The plan for this immediate area is not available yet. The Riverside South Planning Corporation will announce its master plan soon (riverside-south.org).

The Trump City site is located just west of the Lincoln Square neighborhood of Manhattan. The Lincoln Square neighborhood is home to the Lincoln Center for the Performing Arts, Fordham University and the Juilliard School among other popular attractions. Figure 26 shows the site represented by the green balloon on the waterfront north of 59th street and west of the Henry Hudson Parkway (9A). The site is just north of the 58th street piers that were used to import coal used for the Interborough Rapid Transit (IRT) subway powerhouse located between 58th and 59th street.



Source: Google Maps
Figure 26: Close-up Aerial View Trump City Site

5.2.1 Vehicular Accessibility

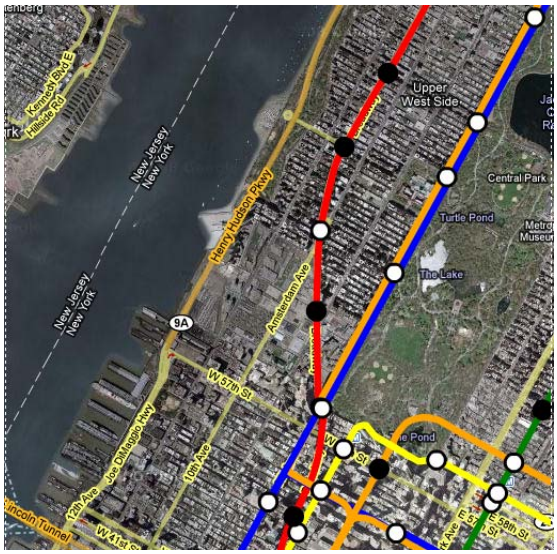
This site is easily accessed by vehicle. The site is directly next to the Henry Hudson Parkway (9A) and there is an exit less than a half mile north of the site. The site can then be accessed via 68th Street, 70th Street and Riverside Boulevard. There are numerous off street parking facilities within the walkshed however the prices are prohibitive, starting around $10 per hour.

5.2.2 Transit Accessibility

Figure 27 shows the number of bus stops and the bus routes that serve the Trump City site. The red star represents the actual site. The red line shows the .75 mile walkshed around the site and the blue lines show the bus routes. There are numerous bus stops within the walkshed that head to most parts of the city. If a bus does not head to a specific location, a connection to that location is not far. Figure 28 shows the New York City metro stops and routes close to Trump City. There are only a few metro stops within the walkshed of this site. The red shows the 1, 2 and 3 lines. The 1 line runs from the Bronx at 242 Street through Manhattan and ends at the South Ferry Terminal in Manhattan. Lines 2 and 3 run from Manhattan into Brooklyn. The A, C and E lines are also accessible within the walkshed. These lines run along the blue line in Figure 28. Line A runs from Harlem at 207th street through Manhattan and Brooklyn to JFK International Airport and Jamaica Bay. Line C runs a similar path but stops before the airport. Line E runs through Queens into Manhattan and then south to the World Trade Center Sites. The B, D, F, and V can be accessed within the walkshed and are shown by the orange line in Figure 28. B and D run all the way from the Bronx around 205th Street

down to Coney Island and Brighton Beach while the F and V through Queens into Manhattan where the V stops, but the F goes down to Coney Island also.

Figure 27: Bus Stops and Bus Routes within Walkshed



Source: MTA
Figure 28: NYC Metro Stops

5.2.3 Pedestrian/Bicycle Accessibility

The site is very accessible via walking or biking. The waterfront is well connected to the other side of the highway (Route9A). The highway is raised and there are multiple walkways and stairs that lead to the waterfront from the street. There is also pedestrian and bike paths that run underneath of the highway.

5.2.4 Parking

Parking is limited around the area. There are a number of off street parking facilities within the area but prices are prohibitive starting around $10 per hour. It seems unreasonable for commuters to park and use the ferry at this site due to parking prices and how well connected the site is to public transit.

5.2.5 Demographics/Commute Patterns

The FPLAS Task 2B Deliverable reported figures for the number of total commuters and Manhattan-bound commuters leaving and entering the walkshed, the bikeshed, and the driveshed. There are an average of 6,715 potential Manhattan-bound commuters within the walkshed, 301,904 potential Manhattan-bound commuters within the bikeshed. The site is an excellent originator of trips. There is a significant amount of residential land use within the walkshed of the site. The site is also very accessible to these residents living within the walkshed.

5.2.6 Land Use

Figures 29 through 32 show the percent of land use per building area for commercial, retail, office and residential land use respectively. The legend shows that the percentages

are broken into 5 separate intervals with the lightest color, yellow representing the smallest percentages and the darkest color, blue representing the largest percentages. Figure 29 shows that the majority of the land south of the site and within the walkshed of the Trump City site is commercial use. Figure 32 shows that the majority of the land north of the site and within the walkshed of the Trump City site is residential.

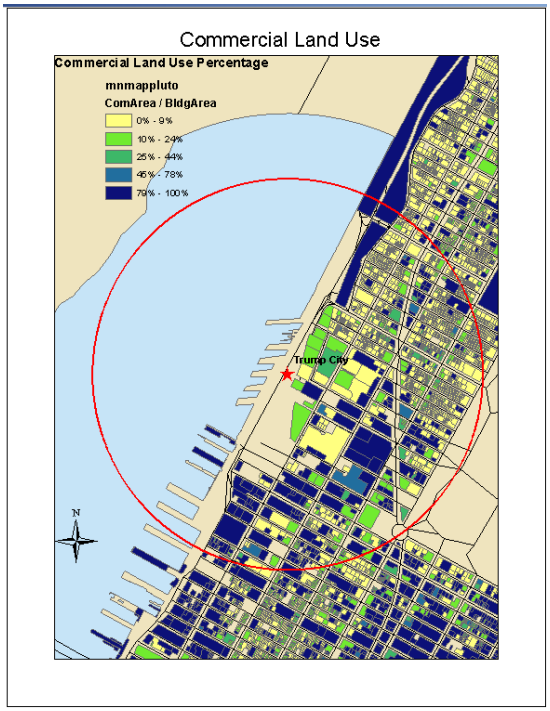


Figure 29: Trump City Commercial Land Use Within Walkshed

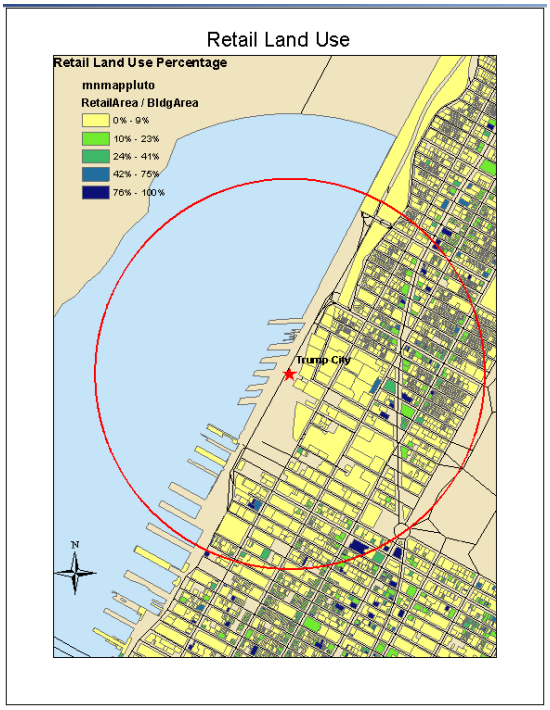


Figure 30: Trump City Retail Land Use Within Walkshed

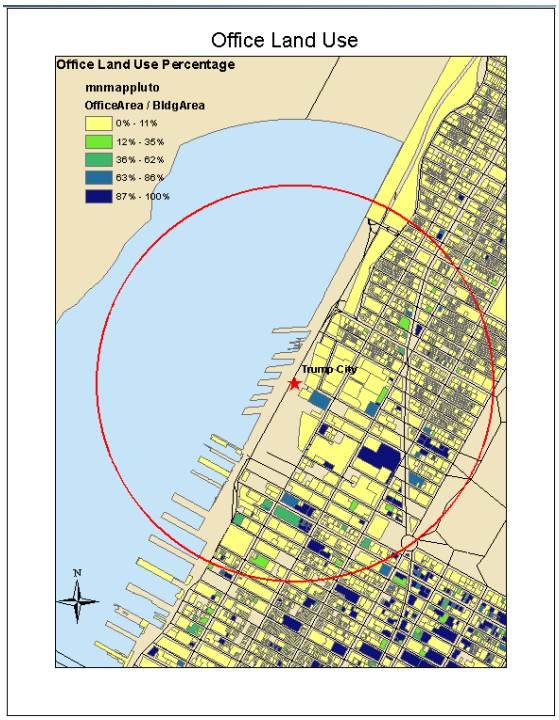


Figure 31: Trump City Office Land Use Within Walkshed

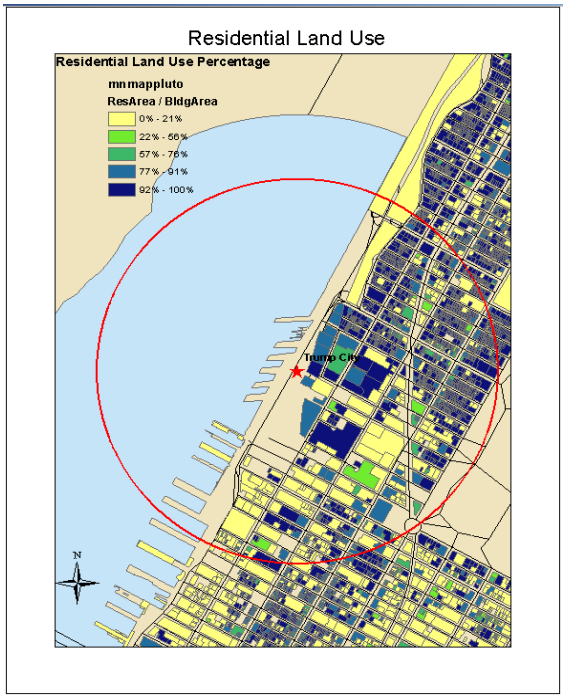


Figure 32: Trump City Residential Land Use Within Walkshed

5.3 Site Assessment

Based on the discussion presented in section 5.2 the evaluation criteria were assessed according to a 4 point ranking scoring system: *Poor, Fair, Good,* and *Excellent*. Rating of the evaluation criteria and the assessment of the site are shown in Table 3 below.

The assessment of the Trump City site shows that *from a parking and land side access perspective*, the site has great potential to support ferry service. There is currently an existing pier that could accommodate heavy demand from a ferry service with some minor improvements such as a structure to allow commuters to walk from the pier to onto the ferry. The site is very accessible to pedestrians and has a great potential to attract demand with a large, dense residential neighborhood just north of the site. As with all the Manhattan sites, there is parking however it is very expensive. However this would not be an issue due to how accessible the site is via public transit and to the number of potential users within the walkshed.

Table 3: Trump City Site Assessment

Evaluation Criteria	Site Evaluation
Vehicular Accessibility	
Highway connectivity of the site with areas within the driveshed	Good
Availability and condition of access roads	Fair
Transit/Intermodal connectivity	
Proximity to existing bus routes	Excellent
Proximity to existing train service	Excellent
Availability of intermodal transfer stations	Good
Frequency/Level of proximate transit service	Excellent
Pedestrian and Bicycle Access	
Directness of pedestrian/bike routes	Excellent
Quality of pedestrian/bike environment	Excellent
Parking	
Proximity to Parking	Good
Availability of Adequate Parking Spaces	Fair
Land Use	
Proximity to housing	Excellent
Proximity to jobs	Good
Proximity to retail/entertainment	Excellent
Proximity to parks/open spaces	Excellent
Demographics and Commute Patterns	
Potential of the site to attract demand	Excellent

6. EAST RIVER LANDING, MANHATTAN

6.1 Site Summary

East River Landing is located in Manhattan in New York County, New York. The site is located on the southeastern tip of Manhattan along FDR Drive. The FPLAS team ranked the site with a score of 16.73, ranking sixty-ninth as an origin site while scoring 40.14 and ranking fifth as a destination site. Factors influencing this site's evaluation are shown in Figure 33. Details on how these factors were derived are given in the Task 2B Deliverable. For the purpose of developing a better perspective, however, on what these factors represent, it is noted here that the walkshed is defined as the area within a 0.75 mile radius, the bikeshed is the area within a 3 mile radius and the driveshed is the area within a 15 minute drive from the site marked with a star in figure 33.

Figure 3-4 East River Landing, Manhattan

Factors influencing site evaluation	Value
Commuters leaving walkshed	603
Commuters entering walkshed	33,397
Number of Manhattan-bound commuters within walkshed	521
Housing units in walkshed	538
Average median household income in walkshed	$109,616
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	0.31
Commuters leaving bikeshed	155,458
Number of Manhattan-bound commuters within bikeshed	128,851
Housing units in bikeshed	152,856
Average median household income in bikeshed	$51,639
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	0.25
Commuters leaving driveshed	N/A
Number of Manhattan-bound commuters within driveshed	N/A
Housing units in driveshed	N/A
Average median household income in driveshed	N/A
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	N/A
Existing parking within walkshed (m²)	613
Potential parking within walkshed (m²)	12
Total length of access roads, class ACC 1-5 in search distance (m)	416
Number of bus stops within walkshed	11
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	0
Non-public land ownership area in walkshed (m²)	66,247
Public land ownership area in walkshed (m²)	15,729
Office, retail and industrial space in walkshed (ft²)	12,918,511
Percent of land in walkshed known to be vacant	0.0%
Percent of land in walkshed known to be publicly owned	19.2%

Site Name:	East River Landing
Municipality:	Borough of Manhattan
County:	New York

Figure 33: Factors Influencing Site Evaluation

The GIS database was developed based on publicly available databases that were available at the time of this study effort and may not reflect current conditions. For this purpose, the research team searched for updated information through interviews, Internet search and site visits.

Figure 34 shows a GIS image of the four Manhattan sites from the FPLAS shortlist and their respective locations in the city. The East River Landing is located on the southeastern tip of Manhattan just north of the Brooklyn Battery Tunnel. Figure 35 shows an overview image of the site. The East River Landing site is marked in Figure 35 by the number 40, which corresponds to the sites index number in the long list of sites.

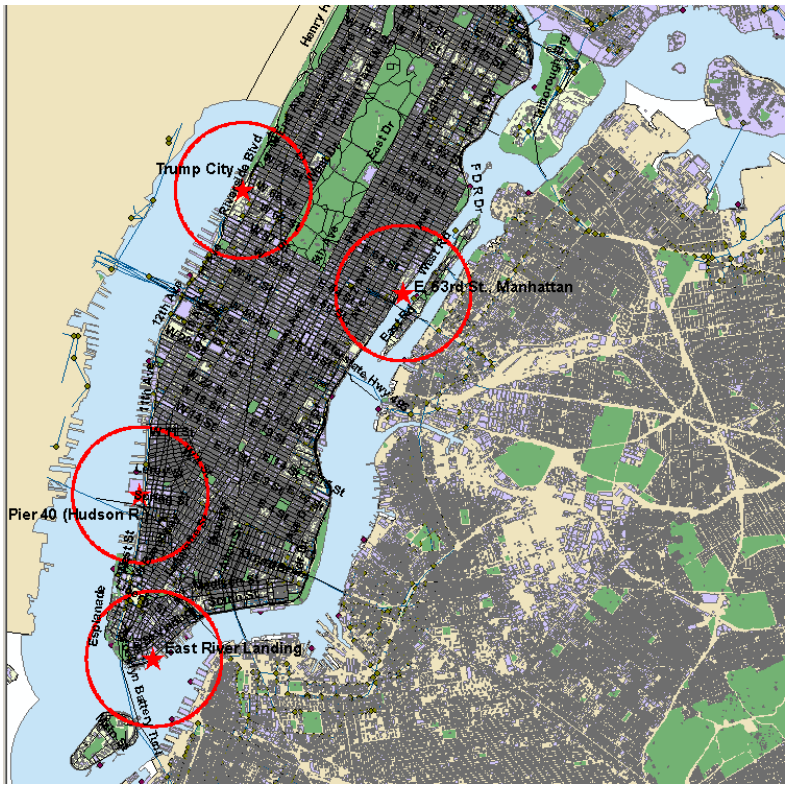


Figure 34: GIS Image of Manhattan Sites

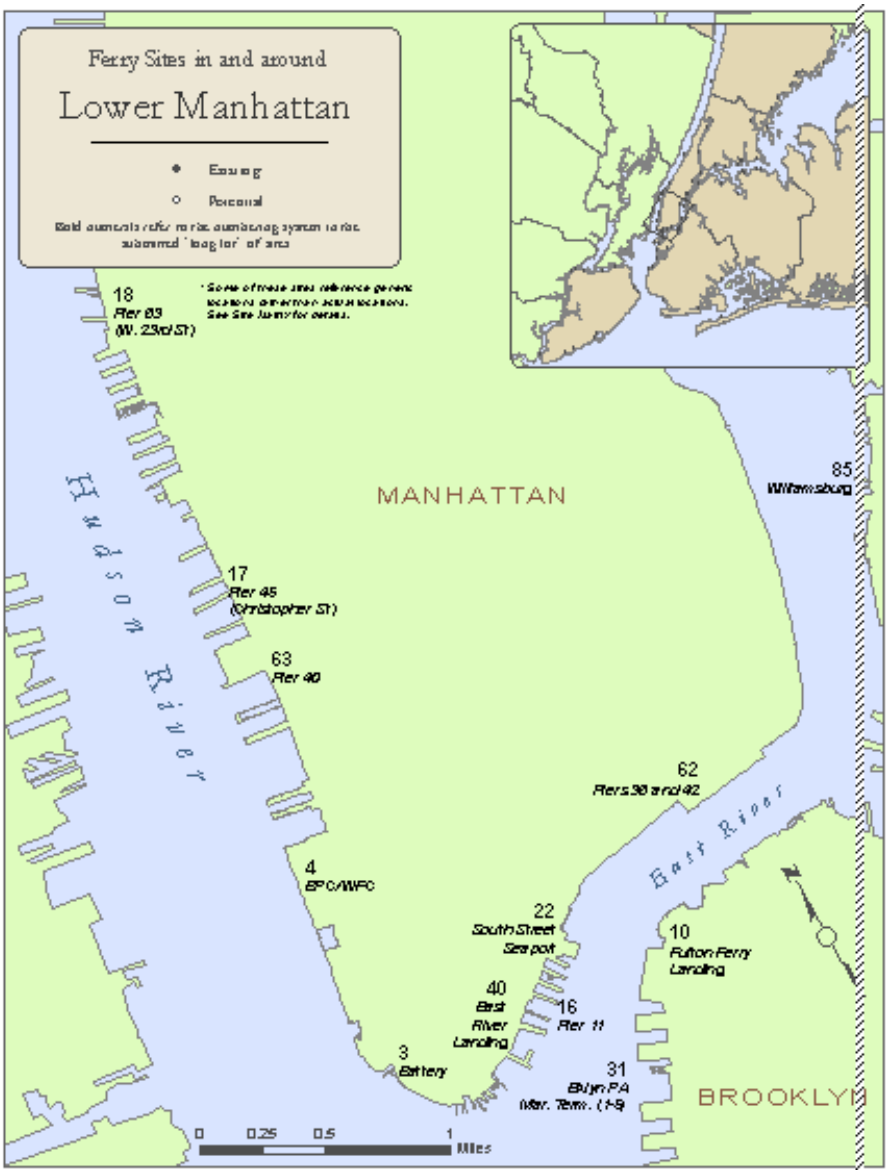


Figure 35: Overview Map East River Landing

During the site visits photos were taken to document the sites and their surroundings. Photos 1 through 9 below were taken during the site visit. These photos were taken at the specific site location and show the available piers, pedestrian access and other properties of the site.

Photo 1el and 2el show the waterfront at the site. The site is very pedestrian and bicycle friendly. The area is very crowded due to the two existing ferry terminals in the area. Photos 4el through 9el show the existing ferry terminal at Pier 11 that is less than 300 feet away. This terminal is one of the most heavily used ferry terminals in Manhattan and can accommodate 5 ferry vessels simultaneously. More information on the existing ferry service in the area is provided in the following section.


Photo 1el

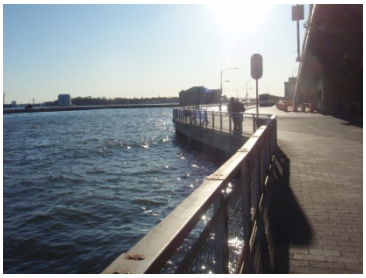


Photo 2el

Photo 3el


Photo 4el


Photo 5el


Photo 6el


Photo 7el


Photo 8el

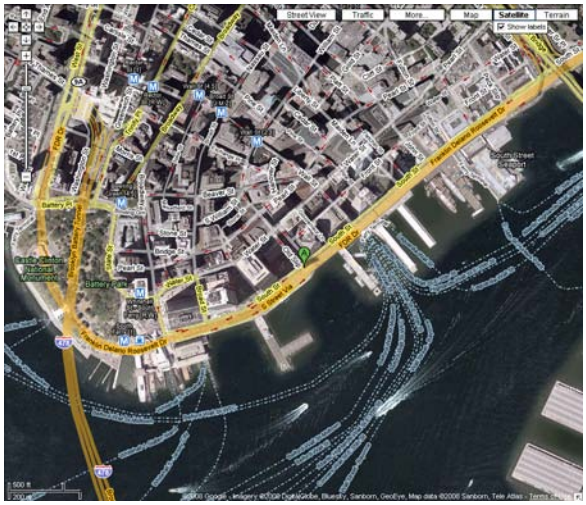

Photo 9el

6.2 Current Conditions

During the interview process with local officials the interviewees stated that they were unclear on a specific site. The site in GIS is located on the heli-pad between the two existing ferry terminals. The interviewees believe that there is no site that is feasible between pier 11 and the Battery. They suggested looking at the northern end of the financial district, however it was determined on the site visit that no other specific location at the northern end of the financial district along the east side of Manhattan was found particularly suitable.

The East River Landing site is located between two existing ferry terminals. The green balloon in Figure 36 represents the site. The blue lines just north and just south of the site show the existing ferry lines that run out of each terminal. The Whitehall Manhattan Ferry Terminal is just south of the site. Existing lines out of the site go to Staten Island, Weehawken, Jersey City and Governor's Island. The Pier 11/Wall Street Terminal is just north of the site. Existing lines from this terminal include service to: Belfor/Harbor Way, Hoboken/NJ Transit Terminal, Liberty Harbor/Marin Boulevard, Paulus Hook, Port Imperial/Weehawken and Port Liberty. This terminal is also a stop on the Wall Street/Bayonne Line and The Highlands-Wall Street-East 35th Street Line. Figure 37 is an image from the USDOT that shows where the NYC ferry terminals are located and the volume that each ferry route serves annually. There are four ferry terminals in the immediate vicinity of the proposed site and a large percentage of the annual volume

shown in this image goes through this area on the southern tip of Manhattan. The four terminals include the two mentioned previously (Whitehall Manhattan Terminal and Pier11/Wall Street Terminal) along with the Battery Park and Battery Maritime Terminals.



Source: Google Maps
Figure 36: Close-up Aerial View East River Landing

Source: Google Maps
Figure 37: NYC Ferry Terminals and Passenger Routes

New York City is currently planning to begin construction on a two-block portion of the waterfront to showcase the $150 million East River Waterfront Development Plan. The East River Landing Site would be located in the area of development. The immediate area around the site is currently home to the FDR drive viaduct, the Brooklyn and Manhattan Bridges, three ferry terminals and the Downtown Heliport. Water Street and South Street provide major connections with the lower Manhattan Street network. Ensuring pedestrian accessibility to the lower east side is one of the major goals of this development plan. The project plans to provide improvements that will provide safer pedestrian access while maintaining traffic operations. The city is looking to reconnect the waterfront area with the city by building a number of waterfront amenities and recreation space.

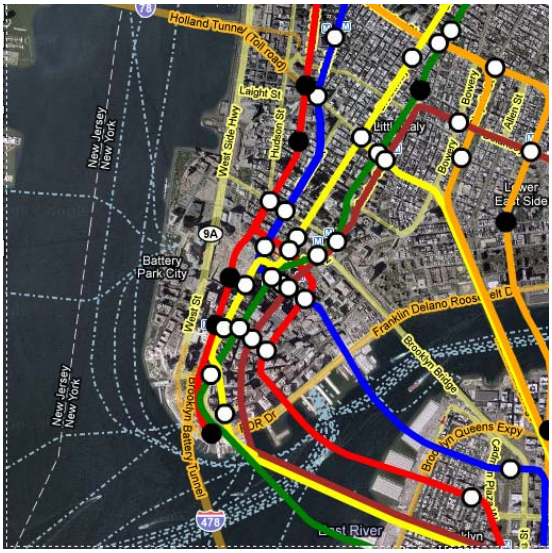
6.2.1 Vehicular Accessibility

This site is easily accessed by vehicle. The site is directly next to FDR Drive and the Brooklyn Battery Tunnel and there is an exit less than a half mile north of the site. The site can then be accessed via South Street. There are numerous off street parking facilities within the walkshed, however the prices are prohibitive, which along with the peak hour congestion in the area, discourages access by vehicle.

6.2.2 Transit Accessibility

Figure 38 shows the number of bus stops and the bus routes that serve the East River Landing site. The red star represents the actual site. The red line shows the .75 mile walkshed around the site and the blue lines show the bus routes. There are numerous bus stops within the walkshed that head to most parts of the city. If a bus does not head to a specific location, a connection to that location is not far. Figure 39 shows the New York City metro stops and routes close to East River Landing. Almost every NYC metro line can be accessed within the walkshed of this site. The red shows the 1, 2 and 3 lines. The 1 line runs from the Bronx at 242 Street through Manhattan and ends at the South Ferry Terminal in Manhattan. Lines 2 and 3 run from Manhattan into Brooklyn. The A, C and E lines are also accessible within the walkshed. These lines run along the blue line in Figure 39. Line A runs from Harlem at 207th street through Manhattan and Brooklyn to JFK International Airport and Jamaica Bay. Line C runs a similar path but stops before the airport. Line E runs through Queens into Manhattan and then south to the World Trade Center Sites. The 4, 5 and 6 can be accessed on the green line that runs from Pelham Bay Park and Van Courtland Park in the Bronx through Manhattan and into Brooklyn. The N, Q, R and W run through Queens south through Manhattan and separate through the multiple parts of Brooklyn. These lines are accessed on the yellow line in Figure 39. Any part of the city is easily accessed by subway or bus within the walkshed of this site.

Figure 38: Bus Stops and Bus Routes within Walkshed



Source: Google Maps

Figure 39: NYC Metro Stops

6.2.3 Pedestrian/Bicycle Accessibility

This site is extremely accessible via walking and biking. All streets leading to the site have walk and bike paths and the waterfront is designed for pedestrians.

6.2.4 Parking

There are a number of off street parking lots within the walkshed. However, the site is in lower Manhattan and parking prices are very expensive. This site is extremely well connected via public transit and parking should not be an issue.

6.2.5 Demographics/Commute Patterns

The FPLAS Task 2B Deliverable reported figures for the number of total commuters and Manhattan-bound commuters leaving and entering the walkshed, the bikeshed, and the driveshed. There are an average of 6,715 potential Manhattan-bound commuters within the walkshed, 301,904 potential Manhattan-bound commuters within the bikeshed. This site is located on the southern tip of Manhattan near the financial district. The pedestrian traffic is very heavy in the area.

6.2.6 Land Use

Figures 40 through 43 show the percent of land use per building area for commercial, retail, office and residential land use respectively. The legend shows that the percentages are broken into 5 separate intervals with the lightest color, yellow representing the smallest percentages and the darkest color, blue representing the largest percentages. Figures 40 and 41 show that the majority of the land is commercial space and office space. The financial district of Manhattan makes up the walkshed for this site providing a significant number of jobs in this area.

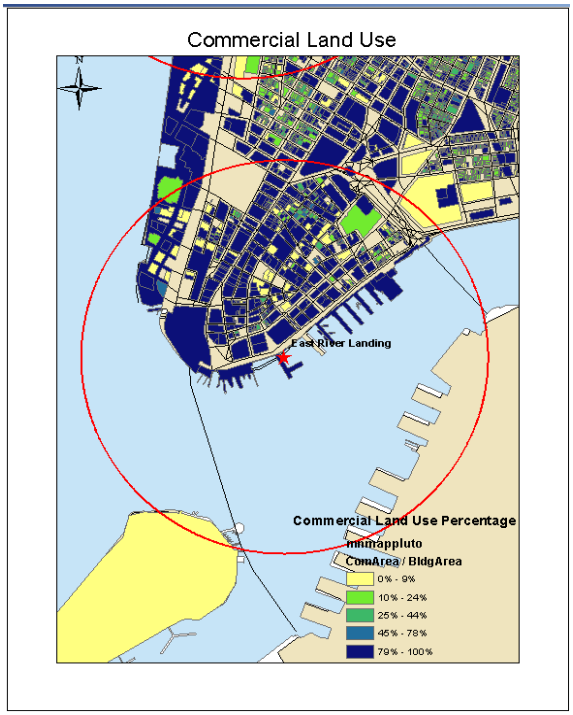


Figure 40: East River Landing Commercial Land Use Within Walkshed

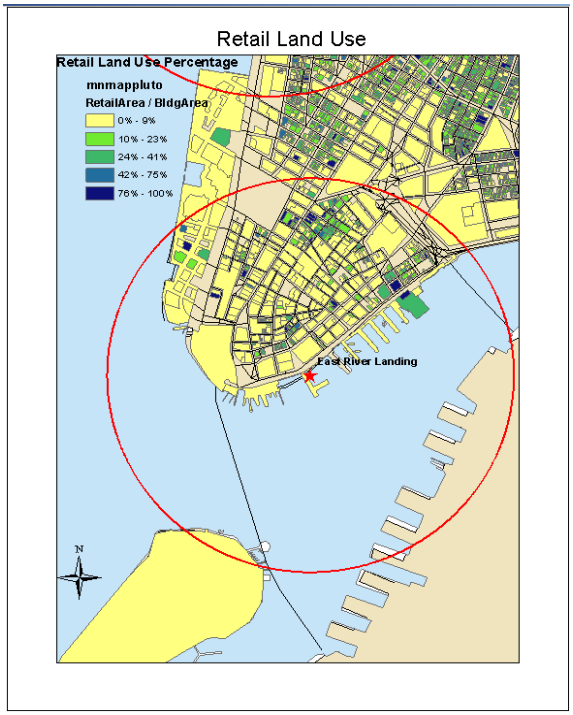


Figure 42: East River Landing Retail Land Use Within Walkshed

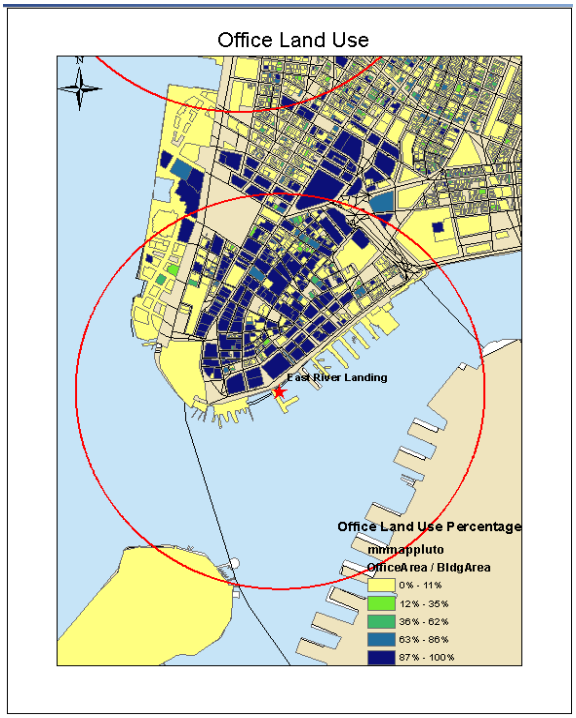


Figure 41: East River Landing Office Land Use Within Walkshed

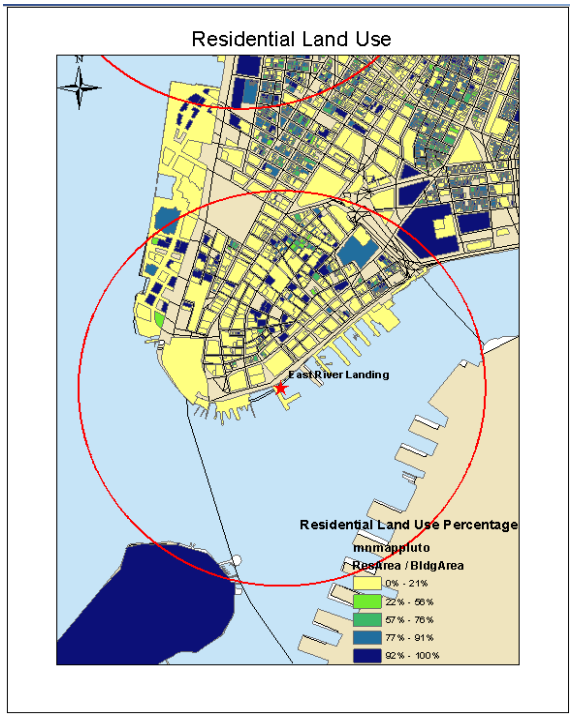


Figure 43: East River Landing Residential Land Use Within Walkshed

6.3 Site Assessment

Based on the discussion presented in section 6.2 the evaluation criteria were assessed according to a 4 point ranking scoring system: *Poor, Fair, Good,* and *Excellent*. Rating of the evaluation criteria and the assessment of the site are shown in Table 4 below.

The assessment of the East River Landing site shows that *from a parking and land side access perspective*, the site ranks very high based on the scoring criteria but it is located directly between two of the most heavily used ferry terminals in Manhattan (Whitehall Manhattan Terminal and Pier 11 Terminal) as previously discussed. It seems that constructing a new ferry service in this area would not make sense. Further investigation would require a ferry service network and demand analysis.

Table 4: East River Landing Site Assessment

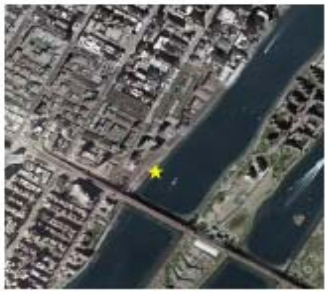
Evaluation Criteria	Site Evaluation
Vehicular Accessibility	
Highway connectivity of the site with areas within the driveshed	Excellent
Availability and condition of access roads	Good
Transit/Intermodal connectivity	
Proximity to existing bus routes	Excellent
Proximity to existing train service	Excellent
Availability of intermodal transfer stations	Excellent
Frequency/Level of proximate transit service	Excellent
Pedestrian and Bicycle Access	
Directness of pedestrian/bike routes	Excellent
Quality of pedestrian/bike environment	Excellent
Parking	
Proximity to Parking	Excellent
Availability of Adequate Parking Spaces	Fair
Land Use	
Proximity to housing	Good
Proximity to jobs	Excellent
Proximity to retail/entertainment	Excellent
Proximity to parks/open spaces	Good
Demographics and Commute Patterns	
Potential of the site to attract demand	Excellent

7. EAST 63RD STREET, MANHATTAN

7.1 Site Summary

The East 63rd Street Site is located in Manhattan in New York County, New York. The site is located on the east side of Manhattan at the end of 63rd street just north of the Queensboro Bridge. The FPLAS team ranked the site with a score of 31.9, ranking eleventh as an origin site while scoring 29 and ranking sixth as a destination site. Factors influencing this site's evaluation are shown in Figure 44. Details on how these factors were derived are given in the Task 2B Deliverable. For the purpose of developing a better perspective, however, on what these factors represent, it is noted here that the walkshed is defined as the area within a 0.75 mile radius, the bikeshed is the area within a 3 mile radius and the driveshed is the area within a 15 minute drive from the site marked with a star in figure 44.

Factors influencing site evaluation	Value
Commuters leaving walkshed	9,920
Commuters entering walkshed	15,430
Number of Manhattan-bound commuters within walkshed	8,972
Housing units in walkshed	10,373
Average median household income in walkshed	$80,209
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	0.32
Commuters leaving bikeshed	217,058
Number of Manhattan-bound commuters within bikeshed	191,011
Housing units in bikeshed	221,962
Average median household income in bikeshed	$68,029
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	0.28
Commuters leaving driveshed	N/A
Number of Manhattan-bound commuters within driveshed	N/A
Housing units in driveshed	N/A
Average median household income in driveshed	N/A
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	N/A
Existing parking within walkshed (m²)	6,032
Potential parking within walkshed (m²)	5,255
Total length of access roads, class ACC 1-5 in search distance (m)	154
Number of bus stops within walkshed	17
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	0
Non-public land ownership area in walkshed (m²)	257,634
Public land ownership area in walkshed (m²)	12,356
Office, retail and industrial space in walkshed (ft²)	2,420,995
Percent of land in walkshed known to be vacant	2.8%
Percent of land in walkshed known to be publicly owned	4.6%



Site Name: East 63rd Street

Municipality: Borough of Manhattan

County: New York

Figure 44: Factors Influencing Site Evaluation

The GIS database was developed based on publicly available databases that were available at the time of this study effort and may not reflect current conditions. For this purpose, the research team searched for updated information through interviews, Internet search and site visits.

Figure 45 shows a GIS image of the four Manhattan sites from the FPLAS shortlist and their respective locations in the city. East 63rd is located on the eastern side of Manhattan just north of the Queensboro Bridge. Figure 46 shows an overview image of the site. The East 63rd Street site is marked in Figure 46 by the number 39, which corresponds to the sites index number in the long list of sites.

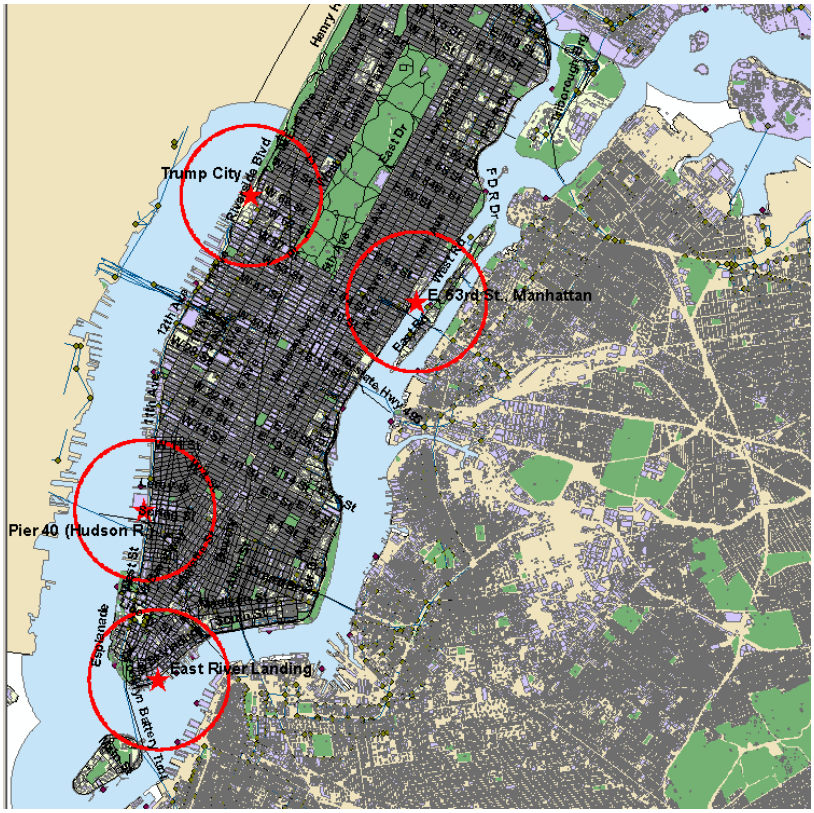


Figure 45: GIS Image of Manhattan Sites

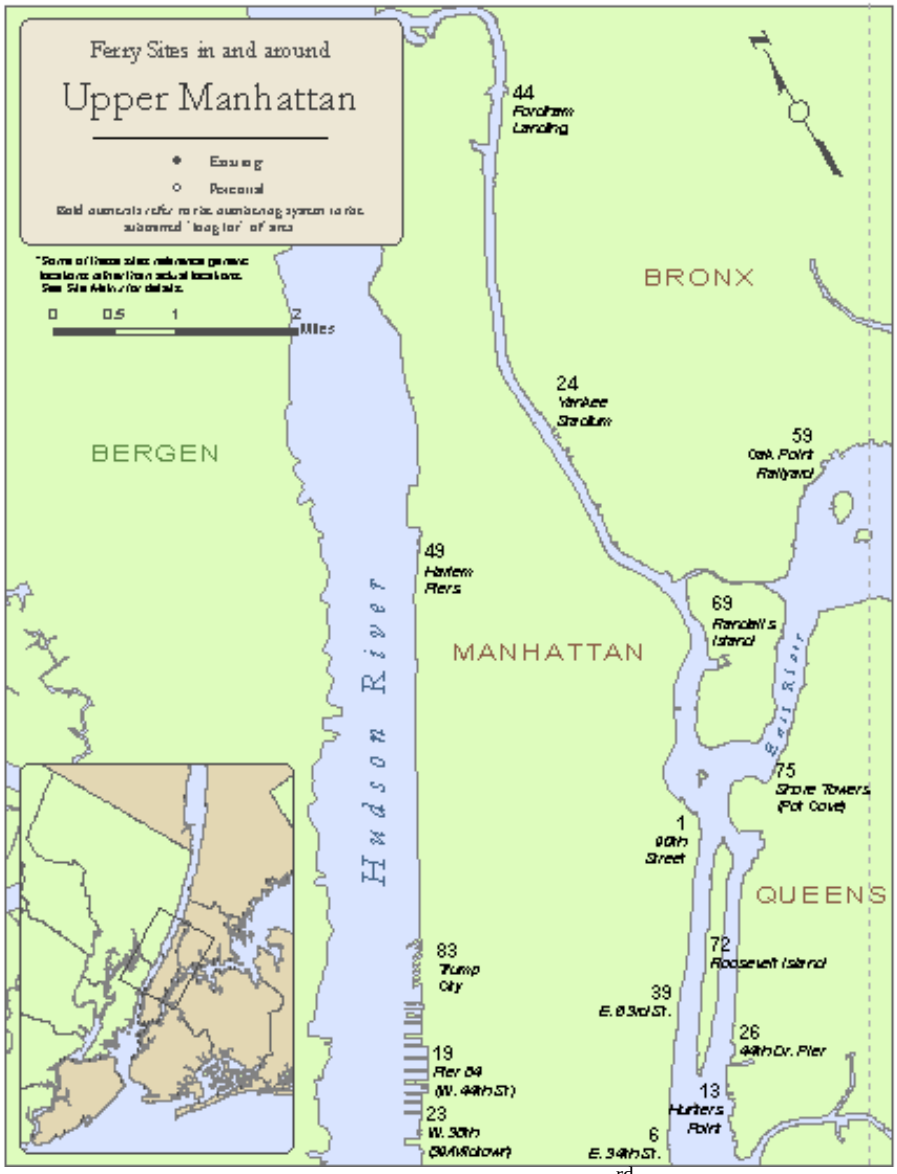


Figure 46: Overview Map East 63rd Street

During the site visits photos were taken to document the sites and their surroundings. Photos 1 through 9 below were taken during the site visit. These photos were taken at the specific site location and show the available piers, pedestrian access and other properties of the site.

Photos 1es through 3es were taken along the waterfront at the proposed site. Currently there is no landside facility. The area should be developed with a landside facility and an appropriate pier structure. Photos 4es through 7es show the pedestrian and bicycle access in the area of the site. Photo 4es shows the walkway leading to the site from East 63rd Street. Photos 5es, 6es and 7es show the direct pedestrian and bicycle overpass access to the waterfront at the site. Overall this site has excellent accessibility for pedestrians and bicycles by the overpass. Photos 8es through 10es show the Roosevelt Island Tramway

on the Queensboro Bridge that connects Roosevelt Island to Manhattan. The Tramway makes approximately 115 trips per day.


Photo 1es


Photo 2es


Photo 3es


Photo 4es

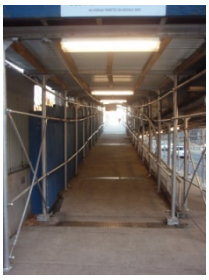


Photo 5es


Photo 6es


Photo 7es


Photo 8es


Photo 9es


Photo 10es

7.2 Current Conditions

During the interview process with local officials the interviewees stated that the best site for a ferry landing is actually the old heliport site at East 62nd Street. This site was proposed for development in the mid-90s.

There was opposition to this development by the US Coast Guard and tug and barge operators. The channel is narrow and has very strong currents. Opposition to the development of a ferry landing here was based on the fact that such development would further narrow the channel. However DOT favors this site because of its large market potential.

The East 63rd Street site is located along the East River waterfront, east of FDR Drive at the end of 63rd Street. Figure 47 shows the site represented by the green balloon a few blocks north of the Queensboro Bridge. This site is in the Upper East Side neighborhood, which is bordered by 59th street and 96th street, between Central Park and the East River. Some of the major attractions in this neighborhood include: the Guggenheim, the Jewish Museum, the Metropolitan Museum of Art, the National Academy of Design and the

Whitney Museum of American Art. According to the FPLAS there is 2,420,995 square feet of office, industrial, and retail space in the walkshed.

Source: Google Maps

Figure 47: Close-up Aerial View East 63rd Street Site

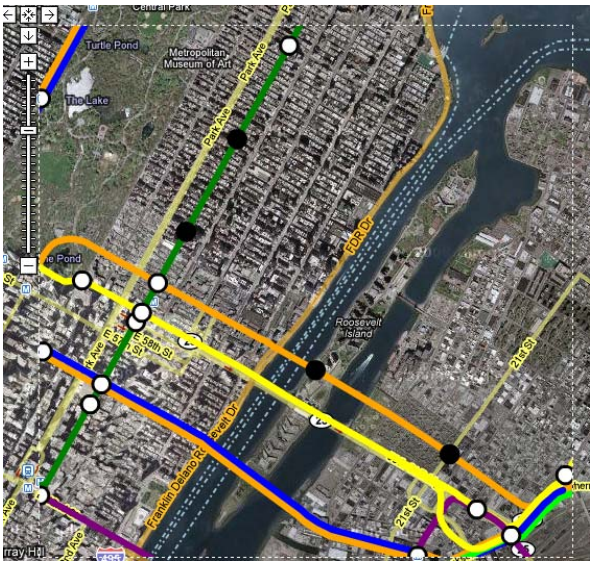
7.2.1 Vehicular Accessibility

This site is easily accessed by vehicle. The site is directly next to FDR Drive and there is an exit less than a half mile north of the site. The site can then be accessed via 63th Street or a number of other parallel roads that head to the waterfront. There are numerous off street parking facilities within the walkshed however the prices are prohibitive, starting around $10 per hour.

7.2.2 Transit Accessibility

Figure 48 shows the number of bus stops and the bus routes that serve the East 63rd Street site. The red star represents the actual site. The red line shows the .75 mile walkshed around the site and the blue lines show the bus routes. There are numerous amounts of bus stops within the walkshed that head to most parts of the city. If a bus does not head to a specific location, a connection to that location is not far. Figure 49 shows the New York City metro stops and routes close to East 63rd Street. There are only a few metro stops within the walkshed of this site. The B, D, F, and V can be accessed within the walkshed and are shown by the orange line in Figure 49. B and D run all the way from the Bronx around 205th Street down to Coney Island and Brighton Beach while the F and V through Queens into Manhattan where the V stops, but the F goes down to Coney Island also. The N, Q, R and W run through Queens south through Manhattan and separate through the multiple parts of Brooklyn. These lines are accessed on the yellow line in Figure 49.

Figure 48: Bus Stops and Bus Routes within Walkshed



Source: MTA

Figure 49: NYC Metro Stops

7.2.3 Pedestrian/Bicycle Accessibility

The site is very accessible via walking or biking. An overpass of the FDR provides for easy pedestrian and bicycle access.. There is also pedestrian and bike paths on the Queensboro Bridge which is adjacent to the site.

7.2.4 Parking

There are a number of off street parking lots within the walkshed. However, parking prices in Manhattan are very expensive. This site is extremely well connected via public transit and parking should not be an issue.

7.2.5 Demographics/Commute Patterns

The FPLAS Task 2B Deliverable reported figures for the number of total commuters and Manhattan-bound commuters leaving and entering the walkshed, the bikeshed, and the driveshed. There are an average of 8,972 potential Manhattan-bound commuters within the walkshed, 191,011 potential Manhattan-bound commuters within the bikeshed.

7.2.6 Land Use

Figures 50 through 53 show the percent of land use per building area for commercial, retail, office and residential land use respectively. The legend shows that the percentages are broken into 5 separate intervals with the lightest color, yellow representing the smallest percentages and the darkest color, blue representing the largest percentages. Figure 53 shows that the majority of the land use within the walkshed residential. There is also a significant amount of commercial space in this area. This site is in the Upper East Side and is in close proximity to a number of jobs and residential buildings

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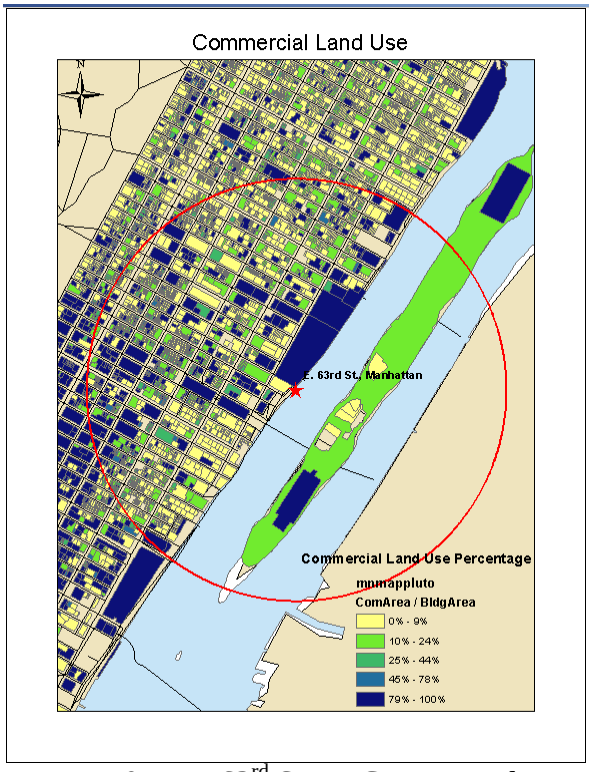


Figure 50: East 63rd Street Commercial Land Use Within Walkshed

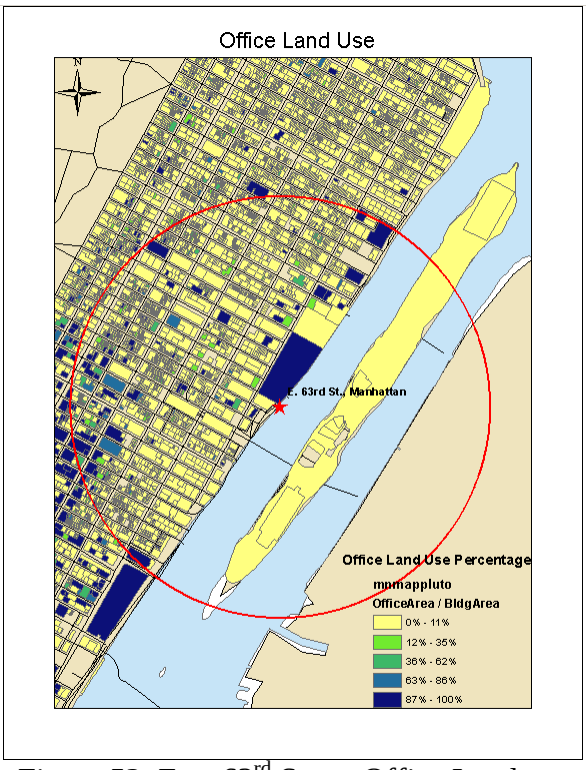


Figure 52: East 63rd Street Office Land Use Within Walkshed

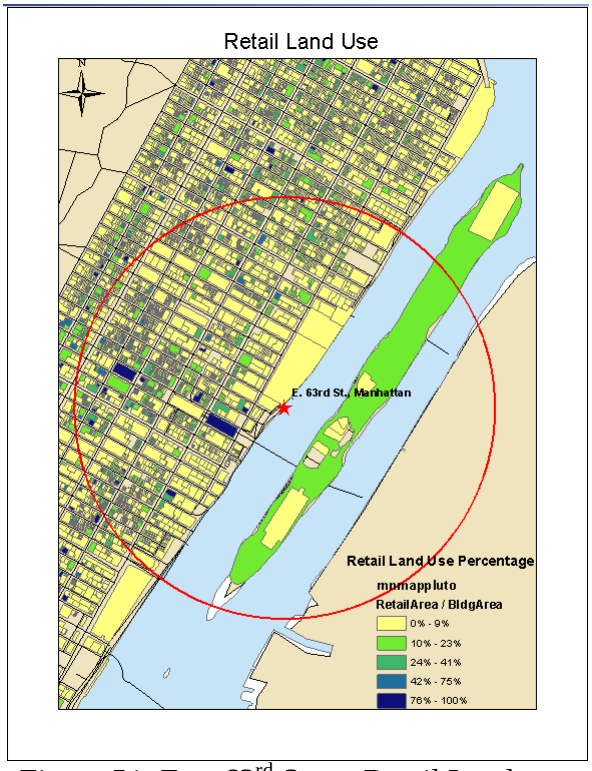


Figure 51: East 63rd Street Retail Land Use Within Walkshed

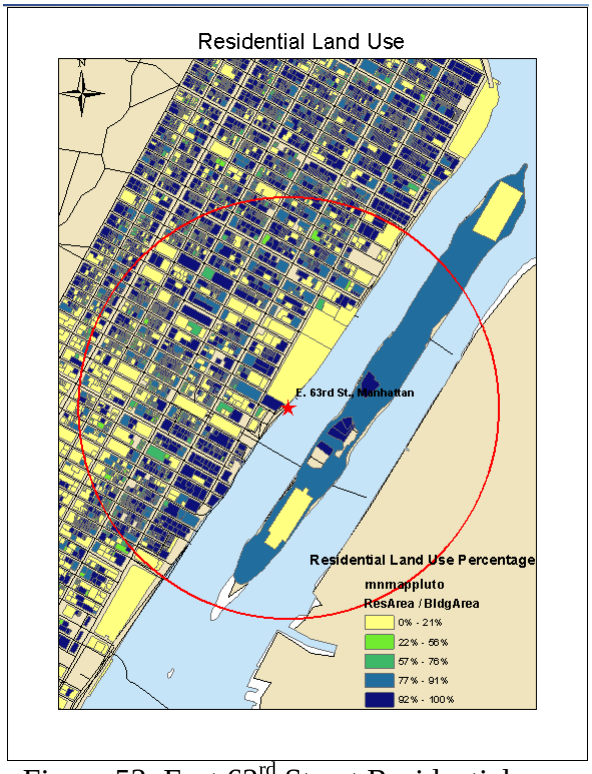


Figure 53: East 63rd Street Residential Land Use Within Walkshed

7.3 Site Assessment

Based on the discussion presented in section 7.2 the evaluation criteria were assessed according to a 4 point ranking scoring system: *Poor*, *Fair*, *Good*, and *Excellent*. Rating of the evaluation criteria and the assessment of the site are shown in Table 5 below.

The assessment of the East 63rd Street site shows that *from a parking and land side access perspective*, the site has a great potential to support ferry service. The site shows strong characteristics to be both an origin and a destination site due to the major attractions and dense residential space within the walkshed. One impediment the site has is that there is no existing landside structure to berth the ferry. A large investment would be needed to construct a new ferry landing here.

Table 5: East 63rd Street Site Assessment

Evaluation Criteria	Site Evaluation
Vehicular Accessibility	
Highway connectivity of the site with areas within the driveshed	Excellent
Availability and condition of access roads	Good
Transit/Intermodal connectivity	
Proximity to existing bus routes	Excellent
Proximity to existing train service	Excellent
Availability of intermodal transfer stations	Excellent
Frequency/Level of proximate transit service	Excellent
Pedestrian and Bicycle Access	
Directness of pedestrian/bike routes	Excellent
Quality of pedestrian/bike environment	Excellent
Parking	
Proximity to Parking	Excellent
Availability of Adequate Parking Spaces	Fair
Land Use	
Proximity to housing	Excellent
Proximity to jobs	Excellent
Proximity to retail/entertainment	Excellent
Proximity to parks/open spaces	Excellent
Demographics and Commute Patterns	
Potential of the site to attract demand	Excellent

8. PIER 40, MANHATTAN

8.1 Site Summary

Pier 40 is located in Manhattan in New York County, New York. The site is located on the west side of Manhattan at the end of West Houston Street and just north of the Holland Tunnel. The FPLAS team ranked the site with a score of 25.02, ranking thirty-sixth as an origin site while scoring 23.4 and ranking ninth as a destination site. Factors influencing this site's evaluation are shown in Figure 54. Details on how these factors were derived are given in the Task 2B Deliverable. For the purpose of developing a better perspective, however, on what these factors represent, it is noted here that the walkshed is defined as the area within a 0.75 mile radius, the bikeshed is the area within a 3 mile radius and the driveshed is the area within a 15 minute drive from the site marked with a star in figure 54.

Factors influencing site evaluation	Value
Commuters leaving walkshed	2,536
Commuters entering walkshed	13,233
Number of Manhattan-bound commuters within walkshed	2,278
Housing units in walkshed	2,111
Average median household income in walkshed	$89,309
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	0.34
Commuters leaving bikeshed	266,095
Number of Manhattan-bound commuters within bikeshed	232,304
Housing units in bikeshed	266,243
Average median household income in bikeshed	$54,948
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	0.23
Commuters leaving driveshed	N/A
Number of Manhattan-bound commuters within driveshed	N/A
Housing units in driveshed	N/A
Average median household income in driveshed	N/A
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	N/A
Existing parking within walkshed (m^2)	9,177
Potential parking within walkshed (m^2)	8,854
Total length of access roads, class ACC 1-5 in search distance (m)	722
Number of bus stops within walkshed	11
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	0
Non-public land ownership area in walkshed (m^2)	147,293
Public land ownership area in walkshed (m^2)	51,092
Office, retail and industrial space in walkshed (ft^2)	4,910,438
Percent of land in walkshed known to be vacant	4.8%
Percent of land in walkshed known to be publicly owned	25.8%

Site Name: Pier 40
Municipality: Borough of Manhattan
County: New York

Figure 54: Factors Influencing Site Evaluation

The GIS database was developed based on publicly available databases that were available at the time of this study effort and may not reflect current conditions. For this purpose, the research team searched for updated information through interviews, Internet search and site visits.

Figure 55 shows a GIS image of the four Manhattan sites from the FPLAS shortlist and their respective locations in the city. Pier 40 is located on the southwestern side of Manhattan just north of the Holland Tunnel. Figure 56 shows an overview image of the site. The Pier 40 site is marked in Figure 56 by the number 63, which corresponds to the sites index number in the long list of sites.

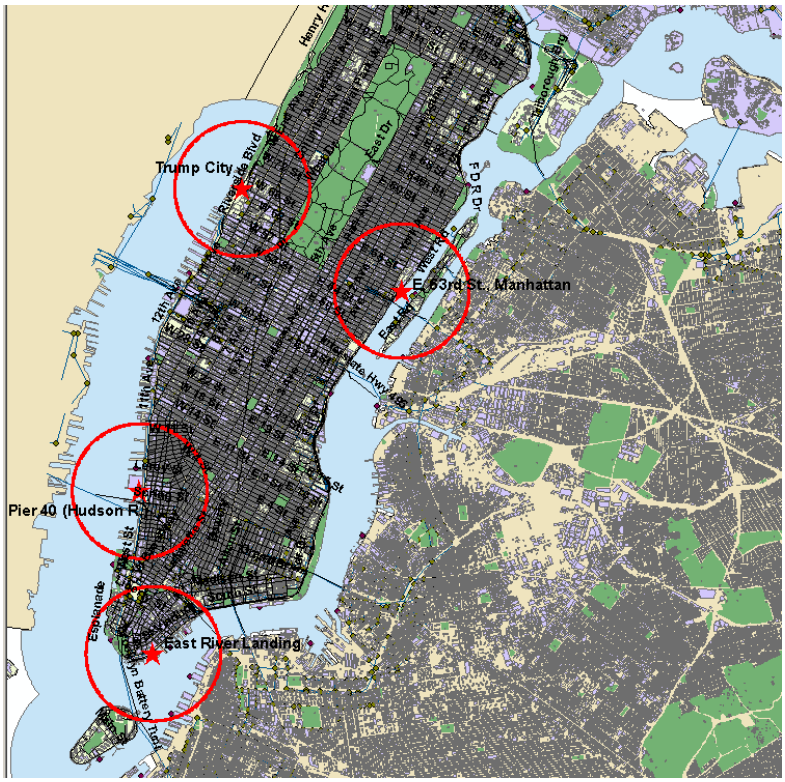


Figure 55: GIS Image of Manhattan Sites

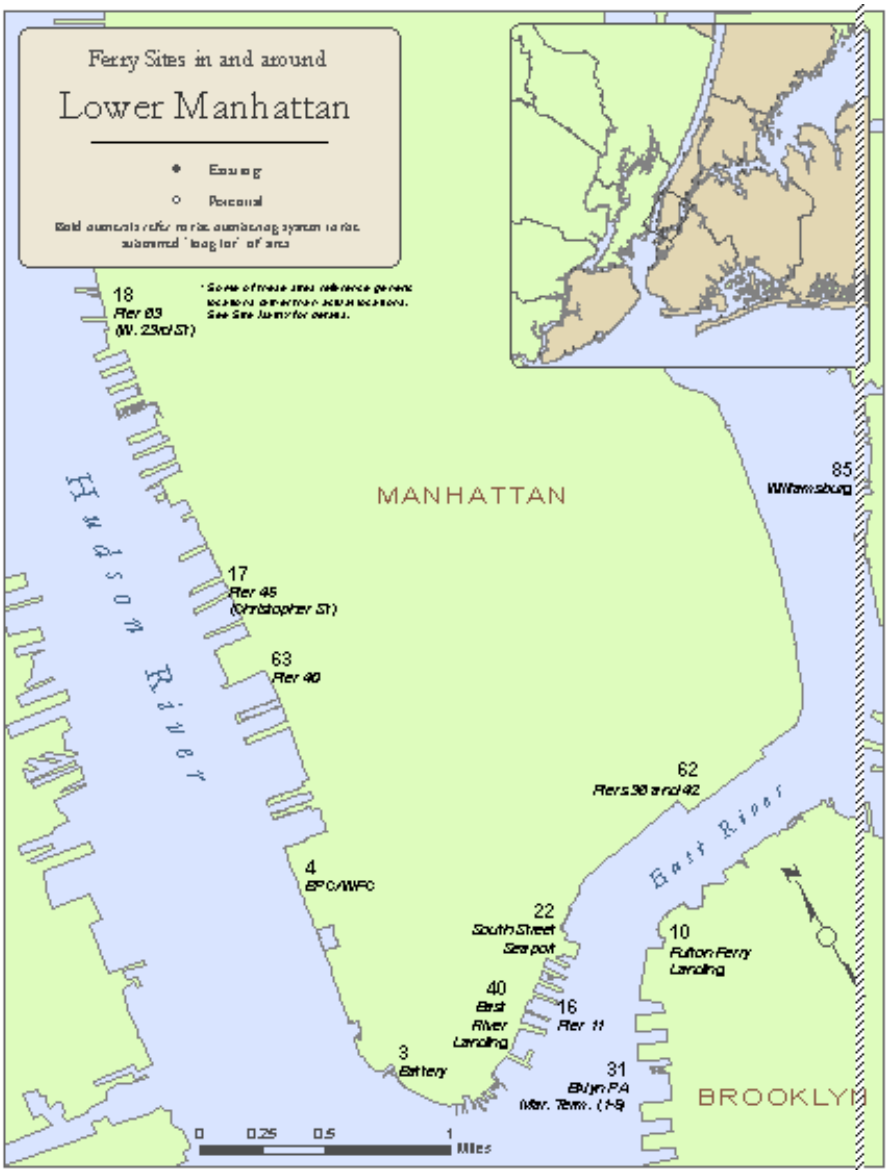


Figure 56: Overview Map Pier 40

During the site visits photos were taken to document the sites and their surroundings. Photos 1 through 9 below were taken during the site visit. These photos were taken at the specific site location and show the available piers, pedestrian access and other properties of the site.

Photo 1p was taken at the waterfront next to Pier 40. This picture shows a pedestrian and bike path that is available on the waterfront in the area. Photos 2p and 4p show other possible piers that could be used for a ferry service. Pier 45 and 54 could be considered as alternatives provisionally. Photos 6p and 7p show the walkway along the northern side of Pier 40. The northern side of pier 40 is occupied by FDNY vessels and older vessels. The front side of the Pier 40 is shown in photos 8p and 9p. This side of the pier can accommodate the ferry boat, if a special floating structure is put in place to achieve the

required elevation for the passengers to board the ferry. Furthermore, access to heavy demand may be an issue with the current tenants of the pier.

Photo 1p

Photo 2p

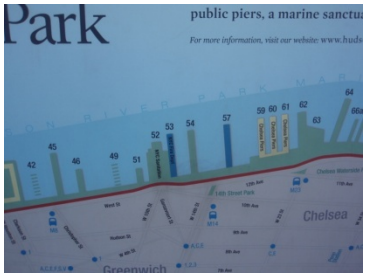


Photo 3p

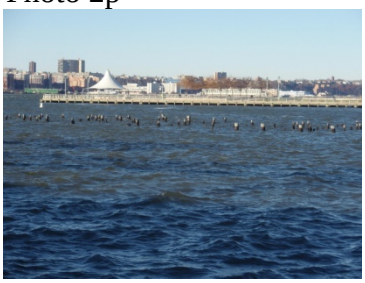


Photo 4p

Photo 5p

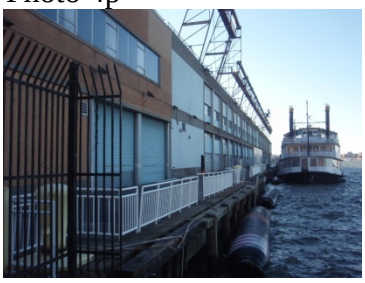


Photo 6p

Photo 7p

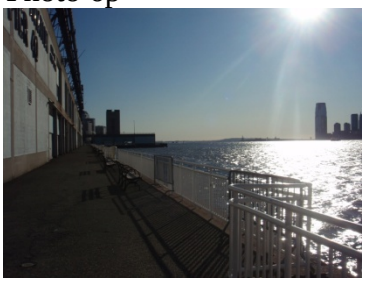


Photo 8p

Photo 9p

8.2 Current Conditions

Local officials interviewed, stated that they believe that there is a good market for both origin and destination trips for sites in this area.

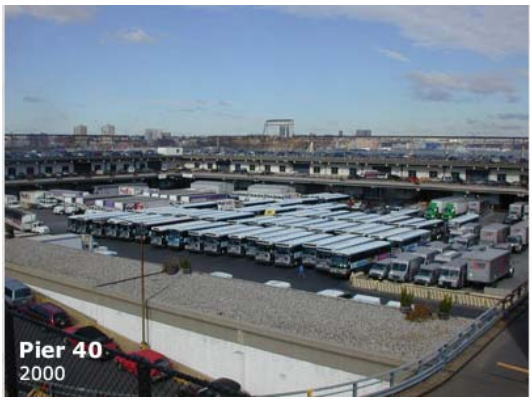
Pier 40 is located within the Hudson River Park and was completed in 1963. The pier has 15 acres of outdoor recreation space, surrounded by 1.2 million square feet of underused space that needs to be repaired. Figure 57 shows a close-up aerial view of the pier. The pier is a large parking garage and houses approximately 2,200 long-term parking spaces. The entire perimeter of the pier is a public esplanade. Pier 40 is also home to indoor and outdoor athletic fields where a range of sports including soccer, football, rugby and baseball are played. The south side of the pier houses the Downtown Boathouse, the Village Community Boathouse, New York Kayak Company, and Biz Kidz, a theater education program. The north side of the pier houses the Lilac, a historic steamship, along with the *Queen of Hearts* and the *Star of Palm Beach* that are used for themed cruises operated by Affairs Afloat (www.hudsonriverpark.org).

Interviewees indicated that this entire area of the waterfront is under the control of the Hudson River Park Trust (HRPT) and any landing would need the approval of the HRPT.

The Hudson River Park Trust has been trying to find a way to redevelop the Pier, repair it and produce the amount of income needed to maintain it. There is a large community objection to the current proposals. The most recent $430 million proposal, which was a mega-development project was just rejected less than a month ago. The plan proposed things such as a performing arts center for Cirque du Soleil and resembled a second South Street Seaport. The majority of the community would like to see the pier remain as one of the only recreational areas in lower Manhattan. Figure 58 and figure 59 show the new recreational development that is on the top of the pier. Figure 60 shows an outline for the development and construction within the Hudson River Park.

Source: Google Maps

Figure 57: Close-up Aerial View Pier 40

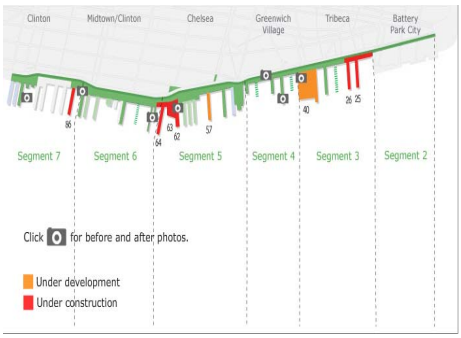


Source: Hudson River Parks

Figure 58: Top of Pier 40 in 2000 and Today

Source: Hudson River Parks

Figure 59: Pier 40



Source: Hudson River Parks

Figure 60: Hudson River Park Development and Construction

8.2.1 Vehicular Accessibility

This site is easily accessed by vehicle. The site is directly next to the Henry Hudson Parkway (9A) and there is an exit less than a half mile north of the site. The site can then be accessed via West Houston Street. There are numerous off street parking facilities within the walkshed and parking actually on Pier 40. However, the parking is quite expensive and may prohibit commuters driving to the ferry to park and ride.

8.2.2 Transit Accessibility

Figure 61 shows the number of bus stops and the bus routes that serve the Pier 40 site. The red star represents the actual site. The red line shows the .75 mile walkshed around the site and the blue lines show the bus routes. There are numerous bus stops within the walkshed that head to most parts of the city. If a bus does not head to a specific location, a connection to that location is not far. Figure 62 shows the New York City metro stops and routes close to Pier 40. The red shows the 1 line that runs from the Bronx at 242 Street through Manhattan and ends at the South Ferry Terminal in Manhattan. Just outside of the walkshed at Chambers Street and West Broadway or at 14th Street and 7th

Ave one can access the 2 and 3 lines which run into Brooklyn. The A, C and E lines are also accessible within the walkshed. These lines run along the blue line in Figure 62. Line A runs from Harlem at 207th street through Manhattan and Brooklyn to JFK International Airport and Jamaica Bay. Line C runs a similar path but stops before the airport. Line E runs through Queens into Manhattan and then south to the World Trade Center Sites. The B, D, F, and V can be accessed within the walkshed and are shown by the orange line in Figure 62. B and D run all the way from the Bronx around 205th Street down to Coney Island and Brighton Beach while the F and V through Queens into Manhattan where the V stops, but the F goes down to Coney Island also.

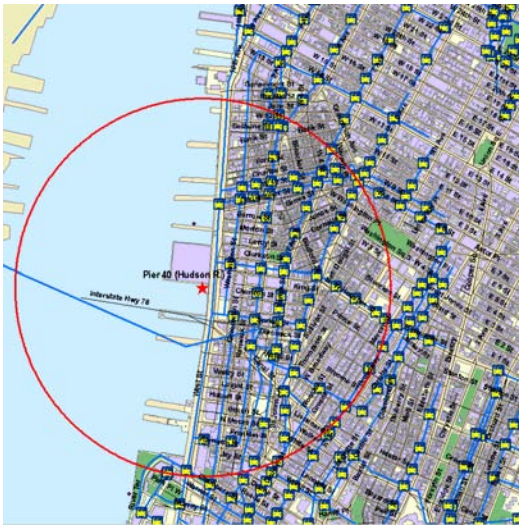
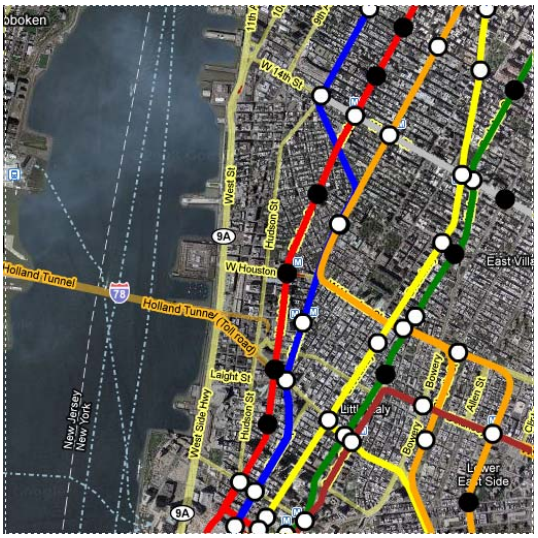


Figure 61: Bus Stops and Bus Routes within Walkshed



Source: MTA

Figure 62: NYC Metro Stops

8.2.3 Pedestrian/Bicycle Accessibility

The site is very accessible via walking or biking. One obstacle pedestrians would face is crossing Route 9A which is adjacent to the site.

8.2.4 Parking

There is available parking at Pier 40, however this Pier is under the control of the Hudson River Park Trust. The pier is a large parking garage and houses approximately 2,200 long-term parking spaces. The price of parking has not been determined. However, most parking in Manhattan is excessively expensive and most commuters would probably choose not to park and then ride the ferry.

8.2.5 Demographics/Commute Patterns

The FPLAS Task 2B Deliverable reported figures for the number of total commuters and Manhattan-bound commuters leaving and entering the walkshed, the bikeshed, and the driveshed. There are an average of 2,278 potential Manhattan-bound commuters within the walkshed, 232,304 potential Manhattan-bound commuters within the bikeshed.

8.2.6 Land Use

Figures 63 through 66 show the percent of land use per building area for commercial, office, retail and residential land use respectively. The legend shows that the percentages are broken into 5 separate intervals with the lightest color, yellow representing the smallest percentages and the darkest color, blue representing the largest percentages. Figure 63 shows that the area around West Houston Street is mainly commercial and office land use. A mixture of commercial and residential use comprises most of the land within the walkshed. The residential area seems to be more north of the site and along the perimeter of the walkshed.

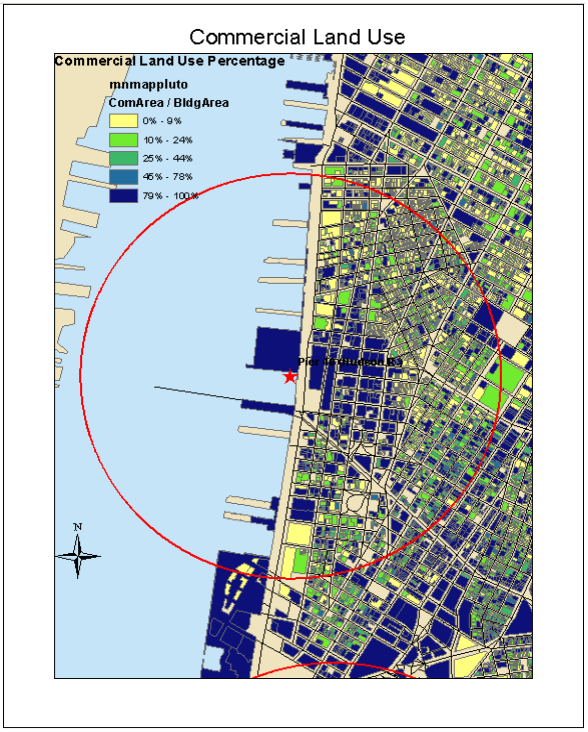


Figure 63: Pier 40 Commercial Land Use

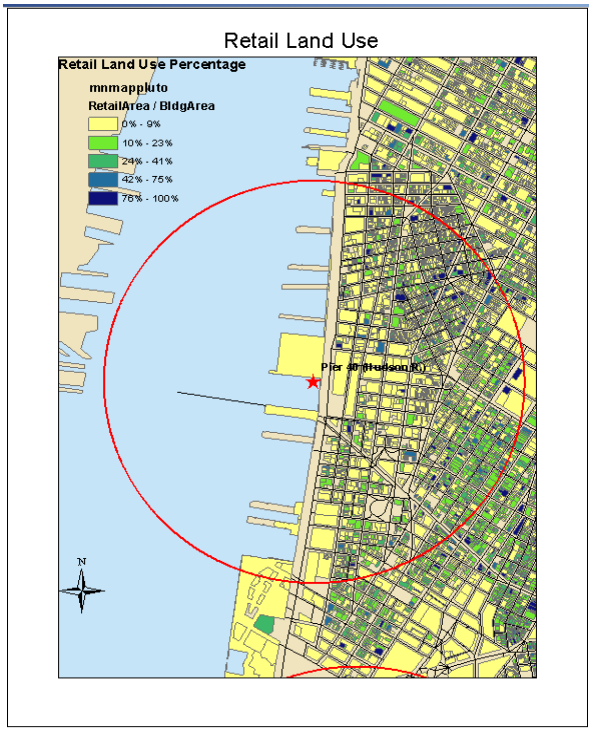


Figure 64: Pier 40 Retail Land Use Within Walkshed

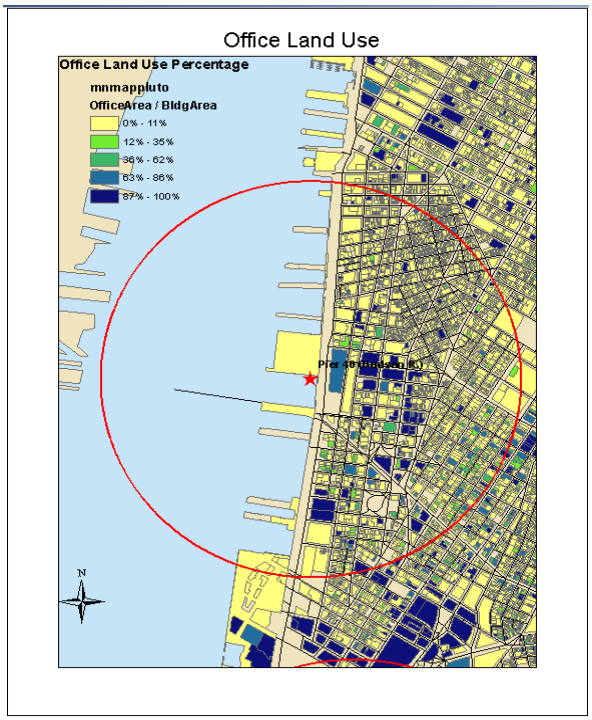


Figure 65: Pier 40 Commercial Land Use Within Walkshed

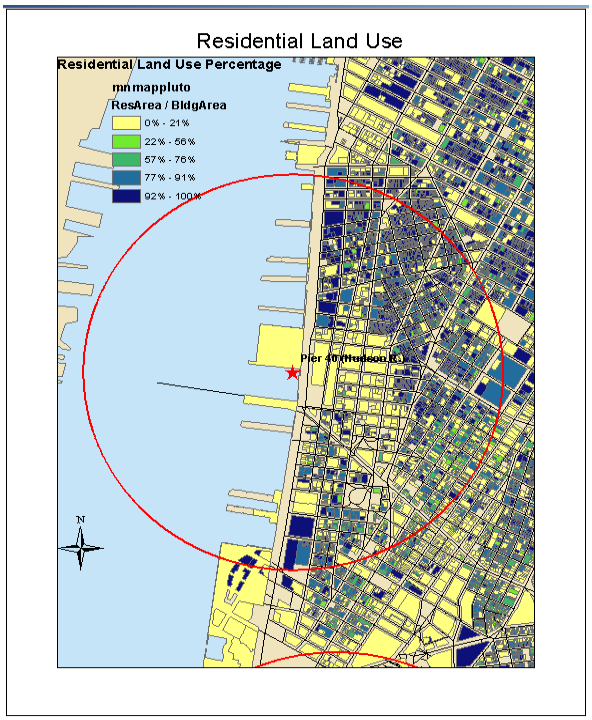


Figure 66: Pier 40 Residential Land Use Within Walkshed

8.3 Site Assessment

Based on the discussion presented in section 8.2 the evaluation criteria were assessed according to a 4 point ranking scoring system: *Poor, Fair, Good,* and *Excellent*. Rating of the evaluation criteria and the assessment of the site are shown in Table 6 below.

The assessment of the Pier 40 site shows that *from a parking and land side access perspective*, the site has a decent potential to support ferry service. The site shows strong characteristics to be both an origin and destination site due to the major attractions (recreational activities) and dense residential space within the walkshed. The site has an existing structure that could accommodate heavy demand from a ferry service with some small improvements. The only obstacle with this site would be the plans for future development for the site. The Hudson River Parks Trust owns pier 40 and the future of the pier is ultimately in their hands.

Table 6: Pier 40 Site Assessment

Evaluation Criteria	Site Evaluation
Vehicular Accessibility	
Highway connectivity of the site with areas within the driveshed	Excellent
Availability and condition of access roads	Good
Transit/Intermodal connectivity	
Proximity to existing bus routes	Excellent
Proximity to existing train service	Excellent
Availability of intermodal transfer stations	Excellent
Frequency/Level of proximate transit service	Excellent
Pedestrian and Bicycle Access	
Directness of pedestrian/bike routes	Excellent
Quality of pedestrian/bike environment	Excellent
Parking	
Proximity to Parking	Excellent
Availability of Adequate Parking Spaces	Excellent
Land Use	
Proximity to housing	Good
Proximity to jobs	Excellent
Proximity to retail/entertainment	Good
Proximity to parks/open spaces	Fair
Demographics and Commute Patterns	
Potential of the site to attract demand	Excellent

9. BEECHHURST RESIDENTIAL PARK, QUEENS COUNTY

9.1 Site Summary

Beechhurst Residential Park is located in Beechhurst, Queens, New York. The site is located in the northeastern section of Queens on the bank of the East River between the Throgs Neck Bridge and the Bronx Whitestone Bridge. The FPLAS team ranked the site with a score of 33.24, ranking eight as an origin site while scoring 17.09 and ranking twelfth as a destination site. Factors influencing this site's evaluation are shown in Figure 67. Details on how these factors were derived are given in the Task 2B Deliverable. For the purpose of developing a better perspective, however, on what these factors represent, it is noted here that the walkshed is defined as the area within a 0.75 mile radius, the bikeshed is the area within a 3 mile radius and the driveshed is the area within a 15 minute drive from the site marked with a star in figure 67.

Factors influencing site evaluation	Value
Commuters leaving walkshed	1,503
Commuters entering walkshed	562
Number of Manhattan-bound commuters within walkshed	398
Housing units in walkshed	1,387
Average median household income in walkshed	$56,916
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	1.37
Commuters leaving bikeshed	58,714
Number of Manhattan-bound commuters within bikeshed	17,666
Housing units in bikeshed	54,731
Average median household income in bikeshed	$51,029
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	1.24
Commuters leaving driveshed	546,962
Number of Manhattan-bound commuters within driveshed	207,048
Housing units in driveshed	525,749
Average median household income in driveshed	$42,427
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	0.85
Existing parking within walkshed (m^2)	8,844
Potential parking within walkshed (m^2)	5,959
Total length of access roads, class ACC 1-5 in search distance (m)	485
Number of bus stops within walkshed	25
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	0
Non-public land ownership area in walkshed (m^2)	379,227
Public land ownership area in walkshed (m^2)	332
Office, retail and industrial space in walkshed (ft^2)	101,528
Percent of land in walkshed known to be vacant	3.2%
Percent of land in walkshed known to be publicly owned	0.1%

Site Name: Beechhurst
Municipality: Borough of Queens
County: Queens

Figure 67: Factors Influencing Site Evaluation

The GIS database was developed based on publicly available databases that were available at the time of this study effort and may not reflect current conditions. For this purpose, the research team searched for updated information through interviews, Internet search and site visits.

Figure 68 shows an overview image of the site. The Beechhurst Residential Park site is marked in Figure 68 by the number 29, which corresponds to the sites index number in the long list of sites. Beechhurst Residential Park is located in the northeastern section of the Queens between the Throgs Neck Bridge and the Bronx Whitestone Bridge. Figure 70 shows a close-up aerial satellite image of the site, which is marked by the green balloon.

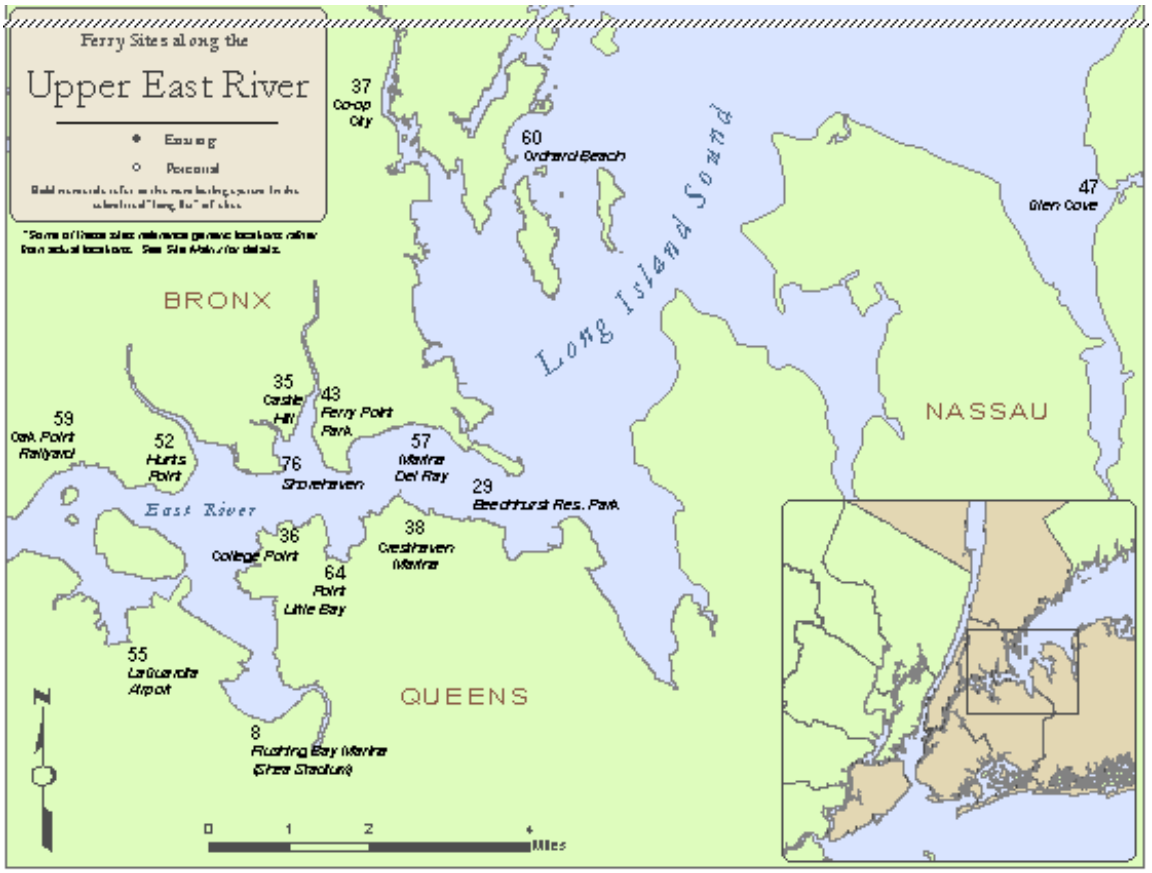


Figure 68: Overview Map Beechhurst Residential Park

During the site visits photos were taken to document the sites and their surroundings. Figure 69 shows an aerial view of the Beechhurst Residential Park site with the locations where photos 1 through 9 below were taken during the site visit. The photo locations are represented by the red balloons in Figure 69. The legend in the figure shows which direction each photo faces with respect to the compass in the figure.

Photo 1bh was taken at the end of 158th Street at the waterfront. The photo shows the entrance to a private beach. The beach has a recreational area, picnic tables, and a

swimming area. The entire coastline of Beechhurst is privately owned property and the waterfront could not be directly accessed. Photo 2bh is the entrance of the Tropicana warehouse. The warehouse occupies a large amount of space on the waterfront and is highly guarded by fences and security. Photo 3bh shows one of the upscale gated condominiums along the waterfront. Photo 4bh shows some of the single family homes along the waterfront. This is all private property and in both of these cases the waterfront could not be accessed due to the fences and gates. The waterfront consists of condos, homes, and a Tropicana warehouse and fenced in construction. Photo 5bh shows some of the fenced in construction on the waterfront. This was typical to see around the waterfront. Photo 6bh was taken through the fence shown in photo 5bh. This picture shows an area along the waterfront that is under construction. Photo 7bh is another picture of a fenced off area along that waterfront that is under construction. Photos 8bh and 9bh show the one location that the waterfront could be accessed. This was at 6th Avenue and Powells Cove Blvd. The pier was located between a single family house and an empty lot that was undergoing construction. There is an existing pier at this location, however it is torn down and falling apart. Substantial construction would be needed to provide a new pier at this location. It was undetermined who this land is owned by.

Photo 9bh

Photo 8bh

Photo7bh

Photo 6bh

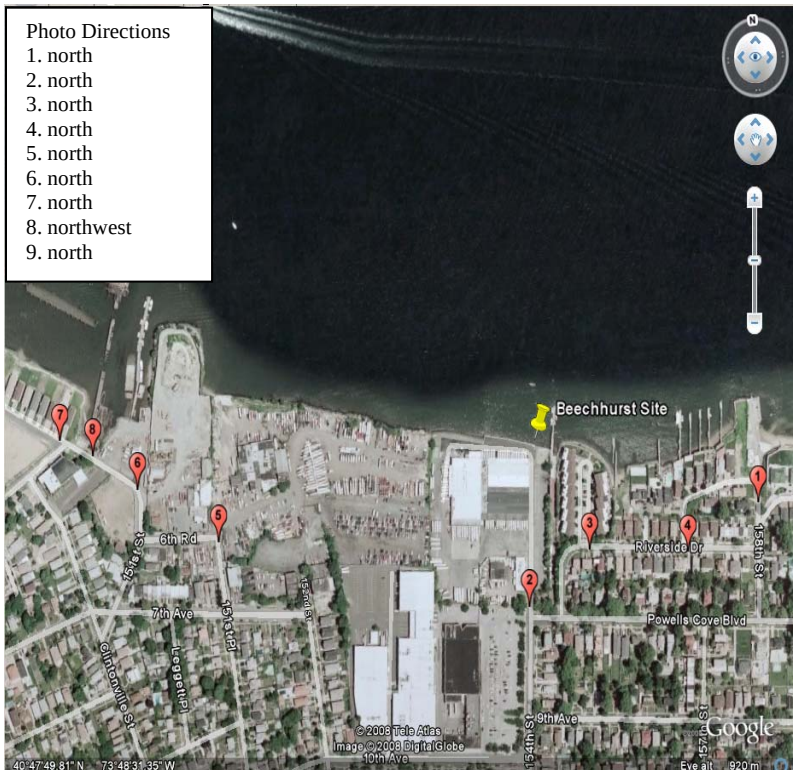


Figure 69: Beechhurst Site (Source: Google Earth)

Photo 5bh

Photo 4bh

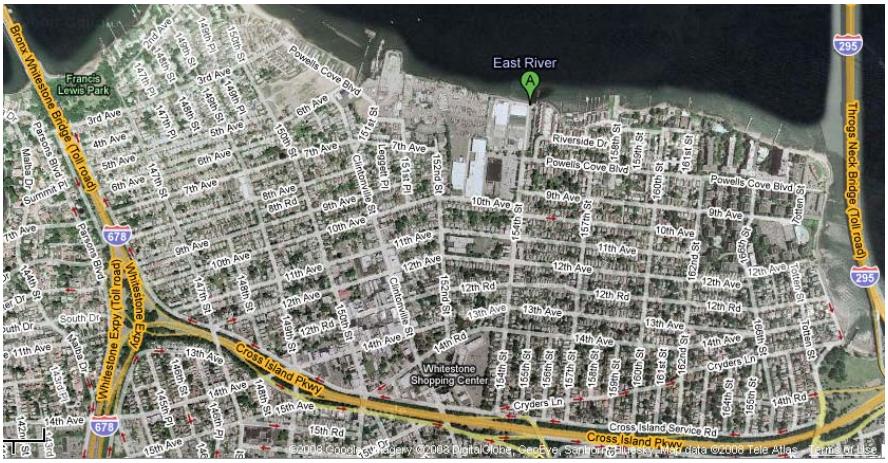
Photo 1bh

Photo 2bh

Photo 3bh

9.2 Current Conditions

Local officials interviewed stated that they didn't have a specific site in mind. They believe that the whole north shore of Queens has good origin potential.



Source: Google Maps

Figure 70: Close-up Aerial View of Beechhurst Residential Park

9.2.1 Vehicular Accessibility

The Beechhurst Residential Park Site is very accessible by vehicle. The site lies between the Throgs Neck Bridge and the Bronx Whitestone Bridge. The Cross Island Expressway leads to the Whitestone Expressway and the Clearview Expressway which cross over the two bridges and continue through the Bronx. This site is very well connected and lies at the intersection of three major highways in the area. The site is located on the waterfront so a few residential streets lead to the site. Although the streets are fairly narrow due to parking on both sides of the street there was no problem accessing the site through town. The commute was easy and pleasant and there is not much traffic within the residential section which makes up the walkshed.

9.2.2 Transit Accessibility

There are no NYC subways stops or commuter rail stops within the walkshed of the Beechhurst Residential Park Site. In figure 67 FPLAS reports that there are 25 bus stops within the .75 miles walkshed. The Q14, Q15, and the Q76 are the bus routes that serve Beechurst. The Q14 runs into Flushing, Queens via 149th Street and the Q15 runs in Flushing, Queens via 150th Street. The Q76 runs into Jamaica, Queens via Francis Lewis Boulevard. The Q15 provides direct access to and from the Flushing-Main Street Terminal. This terminal is a stop on the Port Washington Branch line can be used for easy access into Manhattan. The Q15 to the Port Washington Branch line is the most direct route into Manhattan however it can be accessed by connecting to the subway or the Metro-North Railroad through a number of different connections. Figure 71 shows the number of bus stops and the bus routes that serve the Beechhurst Residential Park site. The red star represents the actual site. The red line shows the .75 mile walkshed around the site and the blue lines show the bus routes. Figure 72 shows a more detailed

layout of the bus routes through Beechhurst and Figure 73 shows the MTA rail lines that run through Long Island.

Figure 71: Bus Stops and Bus Routes within Walkshed

Source: MTA

Figure 72: Beechhurst Bus Routes (Source: MTA)

Source: MTA

Figure 73: Long Island Rail Lines and Stops

9.2.3 Pedestrian/Bicycle Accessibility

Beechhurst is very pedestrian and bicycle friendly. Almost all roadways have pedestrian and bike paths. The area within the walkshed of Beechhurst seems to be an upscale neighborhood and would be very pleasant for pedestrians to walk through.

9.2.4 Parking

There is a significant amount of parking on the streets of Beechhurst. The number of parking spots on the streets in the town, however allowing parking for a ferry service in the neighborhood would most likely cause objection from the community. Parking for a public use facility is questionable in this town.

9.2.5 Demographics/Commute Patterns

The FPLAS Task 2B Deliverable reported figures for the number of total commuters and Manhattan-bound commuters leaving and entering the walkshed, the bikeshed, and the driveshed. There are an average of 398 potential Manhattan-bound commuters within the walkshed, 17,666 potential Manhattan-bound commuters within the bikeshed and 207,048 potential Manhattan-bound commuters within the driveshed.

9.2.6 Land Use

Beechhurst in Queens is largely a residential community. The entire waterfront within the walkshed is privately owned land. The waterfront can only be accessed from one single location at 6th Avenue and Powells Cove Blvd and this also seemed to be privately owned land. The majority of the single family homes and condominiums on the waterfront are gated or fenced in. The large Tropicana warehouse that also sits on the waterfront is also a secure site. There are also numerous fenced in construction sites within the town. New development of beachfront property seemed common throughout Beechhurst.

9.3 Site Assessment

Based on the discussion presented in section 9.2 the evaluation criteria were assessed according to a 4 point ranking scoring system: *Poor, Fair, Good,* and *Excellent*. Rating of the evaluation criteria and the assessment of the site are shown in Table 7 below.

The assessment of the Beechhurst Residential Park site shows that *from a parking and land side access perspective*, the site has strong potential as an originator of trips, however the fact that the majority of the waterfront land in Beechhurst is privately owned makes it questionable that this site would be a good location to implement the ferry service. Although the ranking for this site are fairly high, a future ferry service in this location depends upon availability of land to build and run a ferry service.

Table 7: Beechhurst Residential Park Site Assessment

Evaluation Criteria	Site Evaluation
Vehicular Accessibility	
Highway connectivity of the site with areas within the driveshed	Excellent
Availability and condition of access roads	Excellent
Transit/Intermodal connectivity	
Proximity to existing bus routes	Excellent
Proximity to existing train service	Good
Availability of intermodal transfer stations	Fair
Frequency/Level of proximate transit service	Good
Pedestrian and Bicycle Access	
Directness of pedestrian/bike routes	Excellent
Quality of pedestrian/bike environment	Excellent
Parking	
Proximity to Parking	Fair
Availability of Adequate Parking Spaces	Poor
Land Use	
Proximity to housing	Excellent
Proximity to jobs	Fair
Proximity to retail/entertainment	Fair
Proximity to parks/open spaces	Good
Demographics and Commute Patterns	
Potential of the site to attract demand	Good

10. PORT RICHMOND, STATEN ISLAND

10.1 Site Summary

Port Richmond is located on Staten Island in Richmond County, New York. The site is located on the northern shore of Staten Island on the bank of the Kill Van Kull just east of the Bayonne Bridge. The FPLAS team ranked the site with a score of 34.87, ranking fifth as an origin site while scoring 18.5 and ranking tenth as a destination site. Factors influencing this site's evaluation are shown in Figure 74. Details on how these factors were derived are given in the Task 2B Deliverable. For the purpose of developing a better perspective, however, on what these factors represent, it is noted here that the walkshed is defined as the area within a 0.75 mile radius, the bikeshed is the area within a 3 mile radius and the driveshed is the area within a 15 minute drive from the site marked with a star in figure 74.

Factors influencing site evaluation	Value
Commuters leaving walkshed	1,407
Commuters entering walkshed	1,759
Number of Manhattan-bound commuters within walkshed	299
Housing units in walkshed	1,363
Average median household income in walkshed	$31,274
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	0.70
Commuters leaving bikeshed	56,088
Number of Manhattan-bound commuters within bikeshed	15,516
Housing units in bikeshed	51,387
Average median household income in bikeshed	$51,727
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	1.25
Commuters leaving driveshed	121,574
Number of Manhattan-bound commuters within driveshed	34,589
Housing units in driveshed	113,209
Average median household income in driveshed	$51,233
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	1.24
Existing parking within walkshed (m^2)	37,945
Potential parking within walkshed (m^2)	29,198
Total length of access roads, class ACC 1-5 in search distance (m)	459
Number of bus stops within walkshed	30
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	0
Non-public land ownership area in walkshed (m^2)	470,389
Public land ownership area in walkshed (m^2)	82,692
Office, retail and industrial space in walkshed (ft^2)	490,663
Percent of land in walkshed known to be vacant	15.7%
Percent of land in walkshed known to be publicly owned	15.0%

Site Name: Port Richmond
Municipality: Borough of Staten Island
County: Richmond

Figure 74: Factors Influencing Site Evaluation

The GIS database was developed based on publicly available databases that were available at the time of this study effort and may not reflect current conditions. For this purpose, the research team searched for updated information through interviews, Internet search and site visits.

Figure 75 shows an overview image of the site. The Port Richmond site is marked in Figure 75 by the number 68, which corresponds to the sites index number in the long list of sites. Port Richmond is located on the northern shore of Staten Island the bank of the Kill Van Kull. Figure 77 shows a close-up aerial satellite image of the site, which is marked by the green balloon.

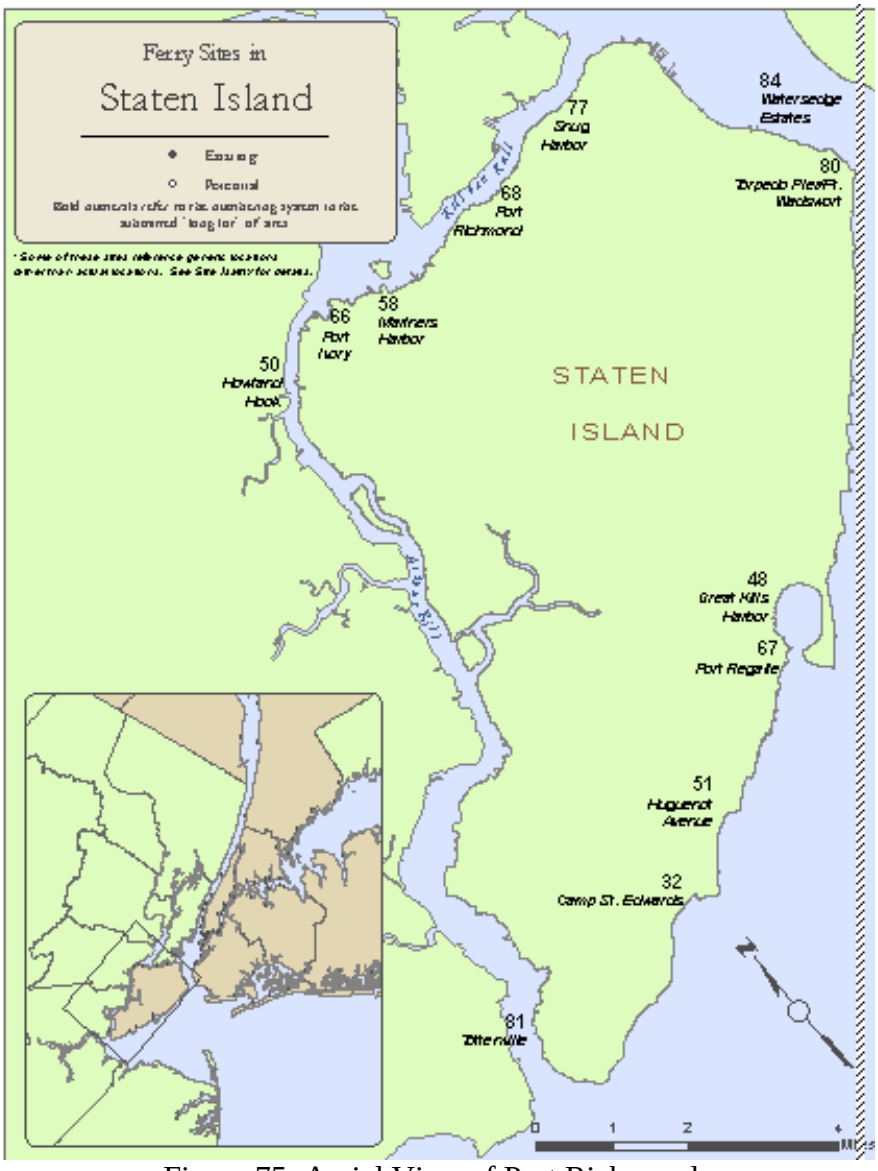


Figure 75: Aerial View of Port Richmond

During the site visits photos were taken to document the sites and their surroundings. Figure 76 shows an aerial view of the Port Richmond site with the locations where photos

3 through 9 below were taken during the site visit. The photo locations are represented by the red balloons in Figure 76. Photos 1pr and 2pr were taken at the St. George Ferry Terminal. St. George can be seen in Figure 75 on the northern tip of Staten Island. The legend in the figure shows which direction each photo faces with respect to the compass in the figure.

Photos 1pr and 2 pr were taken at the St. George Ferry Terminal on Staten Island, as indicated earlier. Commuters are provided with a free trip to Manhattan from this ferry terminal. More information on this terminal is discussed in the Current Conditions section. Photo 3 pr was taken at the corner of Clove Road and Richmond Terrance. This photo shows that there is no place to access the waterfront in this area. The area is occupied by all privately owned, fenced off land. Photo 4pr shows Richmond Terrace, the road that runs along the waterfront from Richmond to St. George Ferry Terminal. The s40 bus route is on Richmond Terrace and ends at the existing Ferry Terminal. Photo 5 pr shows one of the s40 bus stops on Richmond Terrace and Clove Road. Photos 6pr and 7pr were taken at the one area the waterfront could be accessed at Port Richmond Ave and Richmond Terrace. There is currently a broken down tug boat and a torn down dock. Substantial construction would be needed to adequately redevelop that landing for a proposed ferry service. Photos 8pr and 9pr show Port Richmond Ave which is the access road to the waterfront at this point. There is no available parking around this area.

Photo 9pr

Photo8pr

Photo7pr

Photo 6pr

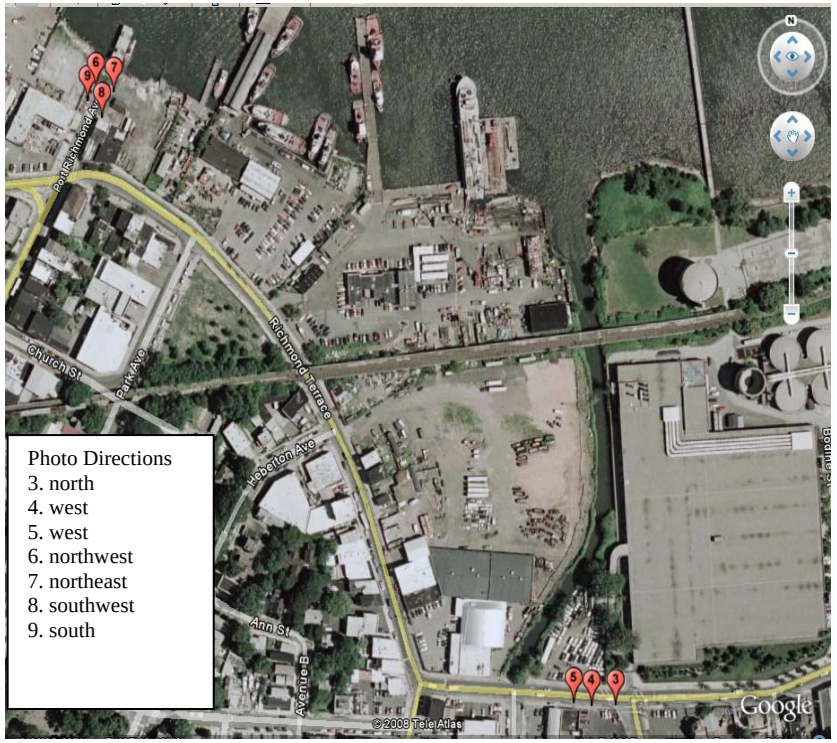


Figure 76: Port Richmond Site (Source: Google Earth)

Photo 5pr

Photo 4pr

Photo 1pr

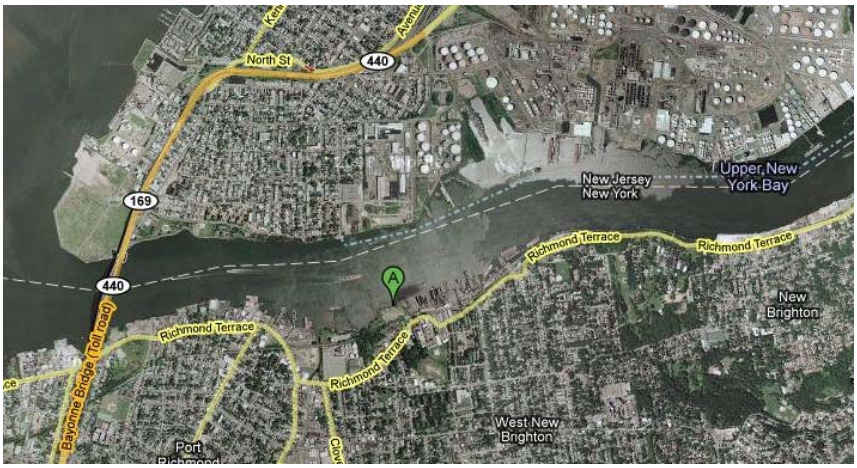
Photo 2pr

Photo 3pr

10.2 Current Conditions

Interviews with local officials indicated that heavy marine traffic goes through the Kill Van Kull, and the channel is relatively narrow. Also, this part of Staten Island is not very far from the Staten Island Ferry which is free. If many of the buses provide a one-seat ride to the Staten Island Ferry then putting a service that charges a fare at Port Richmond might not make economic sense. There is talk of putting in service on the New Jersey side at Bayonne. If this were to happen, then a service at Port Richmond might make sense.

Currently a major ferry terminal exists on Staten Island at Saint George. This ferry service is free. The ferry goes from St. George to Whitehall Ferry Terminal at South Street in Lower Manhattan and provides service 24 hours a day, seven days a week. The typical weekday schedule runs five boats and transports 65,000 passengers on 110 trips daily. During rush peak hours, four boats leave for Manhattan every hour. There is also sufficient parking for the St. George Ferry Terminal. There are two DOT operated municipal lots at the terminal which cost $5.50 a day or $300.00 a quarter. The DOT provides another lot on Hyatt Street that is $165.00 per quarter and privately operated lots cost $6.00 per day.



Source: Google Maps

Figure 77: Close-up Aerial View of Port Richmond

10.2.1 Vehicular Accessibility

The Port Richmond site can be accessed easily from Port Richmond Terrace which runs along the Kill Van Kull in northern Staten Island. The site is next to the Bayonne Bridge that connects to the Willowbrook Expressway (440). I-278 can also be easily accessed. I-278 runs from New Jersey over the Goethals Bridge and into Long Island over the Verrazano Narrows Bridge.

10.2.2 Transit Accessibility

There is currently a successful ferry service running out of Staten Island to Manhattan from the St. George Ferry Terminal shown in Figure 79. This terminal is relatively close to the proposed site at Port Richmond. The St. George Terminal would be easily

accessed from within the Port Richmond walkshed. There are no NYC subway stops or commuter rail stops within the walkshed of the Port Richmond Site. In figure 74 FPLAS reports that there are 30 bus stops within the .75 miles walkshed. Port Richmond is well connected via the Staten Island Bus Service. There are a number of express buses into Manhattan that have stops within the walkshed (x10, x13, x14 and x16). Also a number of buses pass through Port Richmond and head to the St. George Ferry Terminal (s40, s44, s46, s90, s94). Staten Island has one rail line that runs through the island. The line shown in Figure 80 runs from the southern tip of Staten Island north to St. George Terminal. This line is not within close proximity to Port Richmond. Figure 78 shows the number of bus stops and the bus routes that serve the Port Richmond site. The red star represents the actual site. The red line shows the .75 mile walkshed around the site and the blue routes show the bus routes. Figure 79 shows a more detailed layout of the bus routes through Port Richmond and Figure 80 shows the MTA rail line that run through Long Island.

Figure 78: Bus Stops and Bus Routes within Walkshed

Source: MTA

Figure 79: Port Richmond Bus Routes

Source: MTA

Figure 80: Staten Island Rail Line

10.2.3 Pedestrian/Bicycle Accessibility

The waterfront at the site could not actually be accessed. All the land at the site was privately owned and fenced off, except for the location appearing in Photos 8pr and 9pr. There are available walkways along Port Richmond Terrace that run along the Kill Van Kull. There are no bike paths along this narrow road.

10.2.4 Parking

There were no available parking spaces found at the site.

10.2.5 Demographics/Commute Patterns

The FPLAS Task 2B Deliverable reported figures for the number of total commuters and Manhattan-bound commuters leaving and entering the walkshed, the bikeshed, and the driveshed. There are an average of 1,363 potential Manhattan-bound commuters within the walkshed, 15,516 potential Manhattan-bound commuters within the bikeshed and 34,599 potential Manhattan-bound commuters within the driveshed.

10.2.6 Land Use

The waterfront within the walkshed of the Port Richmond site was also all privately owned land. Businesses such as car dealerships, DOT storage and a marina do not allow access to the water front from Richmond Terrace, in all locations but one. The area seemed to be a mix of residential apartments and small stores and businesses. In the past there was a popular commercial center on Port Richmond Avenue, however after the construction of the Verrazano-Narrows Bridge and the closing of the North Shore Branch of the Staten Island Rail Line the majority of the commercial activity moved inland towards the center of Staten Island.

10.3 Site Assessment

Based on the discussion presented in section 10.2 the evaluation criteria were assessed according to a 4 point ranking scoring system: *Poor, Fair, Good,* and *Excellent*. Rating of the evaluation criteria and the assessment of the site are shown in Table 8 below.

The assessment of the Marina Del Ray site shows that *from a parking and land side access perspective,* the site does not have strong potential for a ferry service. There is an existing,

heavily used ferry terminal (St. George) in Staten Island that provides free trips to Manhattan and back. Bus routes run from the Port Richmond area to St. George's Terminal. The location and schedules of this ferry terminal were previously discussed in section 10.2. There is no parking at the proposed site and the majority of the area within the walkshed of the proposed site is private land. A significant amount of investment would also be needed to construct a new pier for the ferry.

Table 8: Port Richmond Site Assessment

Evaluation Criteria	Site Evaluation
Vehicular Accessibility	
Highway connectivity of the site with areas within the driveshed	Good
Availability and condition of access roads	Fair
Transit/Intermodal connectivity	
Proximity to existing bus routes	Excellent
Proximity to existing train service	Poor
Availability of intermodal transfer stations	Fair
Frequency/Level of proximate transit service	Good
Pedestrian and Bicycle Access	
Directness of pedestrian/bike routes	Fair
Quality of pedestrian/bike environment	Fair
Parking	
Proximity to Parking	Poor
Availability of Adequate Parking Spaces	Poor
Land Use	
Proximity to housing	Fair
Proximity to jobs	Fair
Proximity to retail/entertainment	Fair
Proximity to parks/open spaces	Fair
Demographics and Commute Patterns	
Potential of the site to attract demand	Fair

11. PORT CHESTER, WESTCHESTER COUNTY

11.1 Site Summary

The Port Chester site is located in the Village of Port Chester in Westchester County, New York. The Village of Port Chester is a town located just south of the Connecticut state border on the western side of the Long Island Sound. Potential ferry landing sites evaluated are located within the Village of Port Chester on the western bank of the Byram River. The FPLAS team ranked the site with a score of 37.61, ranking fourth as an origin site while scoring only 6.94 and ranking fifty-second as a destination site. Factors influencing this site's evaluation are shown in Figure 81. Details on how these factors were derived are given in the Task 2B Deliverable. For the purpose of developing a better perspective, however, on what these factors represent, it is noted here that the walkshed is defined as the area within a 0.75 mile radius, the bikeshed is the area within a 3 mile radius and the driveshed is the area within a 15 minute drive from the site marked with a star in figure 81.

Commuters leaving walkshed	974
Commuters entering walkshed	1,596
Number of Manhattan-bound commuters within walkshed	20
Housing units in walkshed	705
Average median household income in walkshed	$31,902
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	0.98
Commuters leaving bikeshed	19,920
Number of Manhattan-bound commuters within bikeshed	2,388
Housing units in bikeshed	15,857
Average median household income in bikeshed	$67,792
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	1.52
Commuters leaving driveshed	505,763
Number of Manhattan-bound commuters within driveshed	132,827
Housing units in driveshed	478,350
Average median household income in driveshed	$55,773
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	1.12
Existing parking within walkshed (m^2)	0
Potential parking within walkshed (m^2)	24,677
Total length of access roads, class ACC 1-5 in search distance (m)	517
Number of bus stops within walkshed	8
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	1
Non-public land ownership area in walkshed (m^2)	437,247
Public land ownership area in walkshed (m^2)	26,091
Office, retail and industrial space in walkshed (ft^2)	0
Percent of land in walkshed known to be vacant	13.3%
Percent of land in walkshed known to be publicly owned	5.6%

Site Name: Port Chester

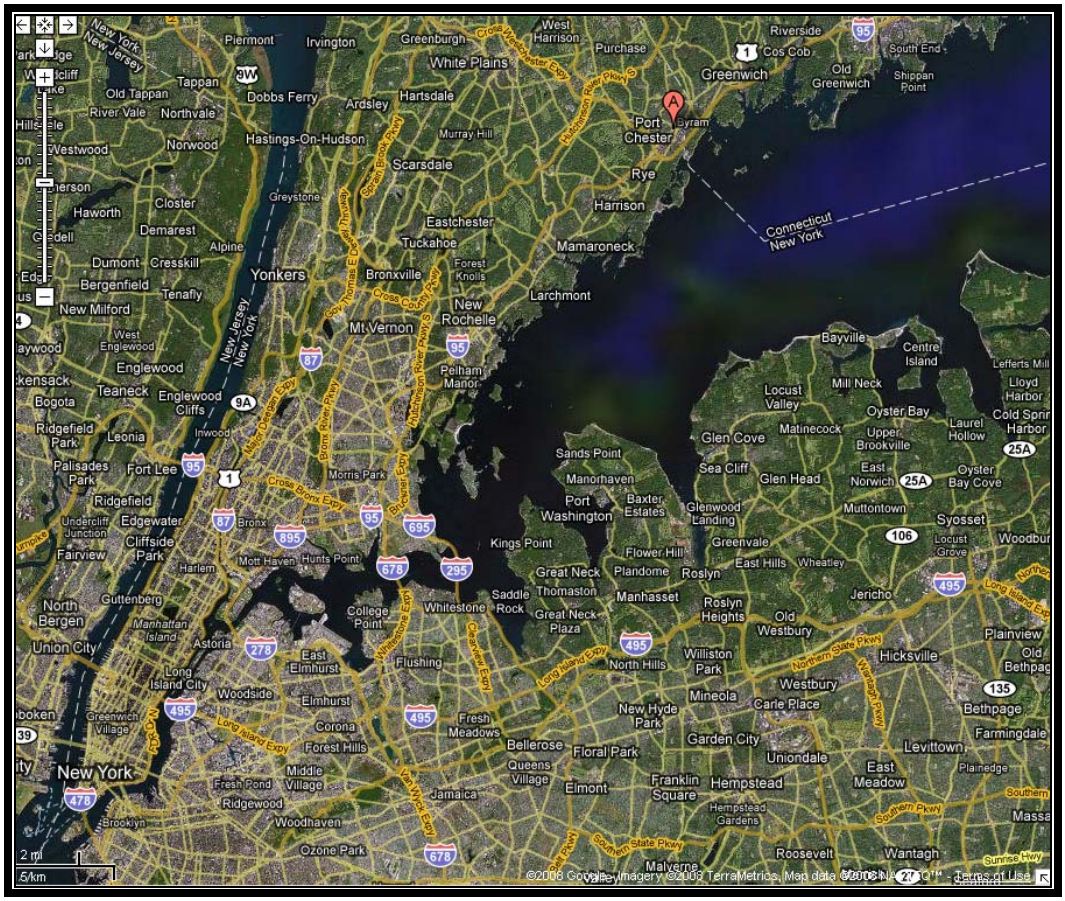
Municipality: Village of Port Chester

County: Westchester

Figure 81: Factors Influencing Site Evaluation

The GIS database was developed based on publicly available databases that were available at the time of this study effort and may not reflect current conditions. For this purpose, the research team searched for updated information through interviews, Internet search and site visits.

Port Chester has recently added a significant amount of retail stores and has been seeing a trend in a growing service economy. Downtown Port Chester's 'Restaurant Row' draws in good business with its many top-rated restaurants providing a large variety of cultural cusines. Recent development in the area has added a significant amount of new commercial uses, including retail, cinema and a wholesale membership warehouse club. Figure 82 shows the geographic relationship of the Village of Port Chester, New York, to New York City. Port Chester is approximately 32 miles north of lower Manhattan. The main route by vehicle from Port Chester into Manhattan is Interstate 95 south (approximately 16 miles) to I-278 west for 5 miles to FDR Drive south for another 5 miles. The red balloon in Figure 82 represents the Village of Port Chester.

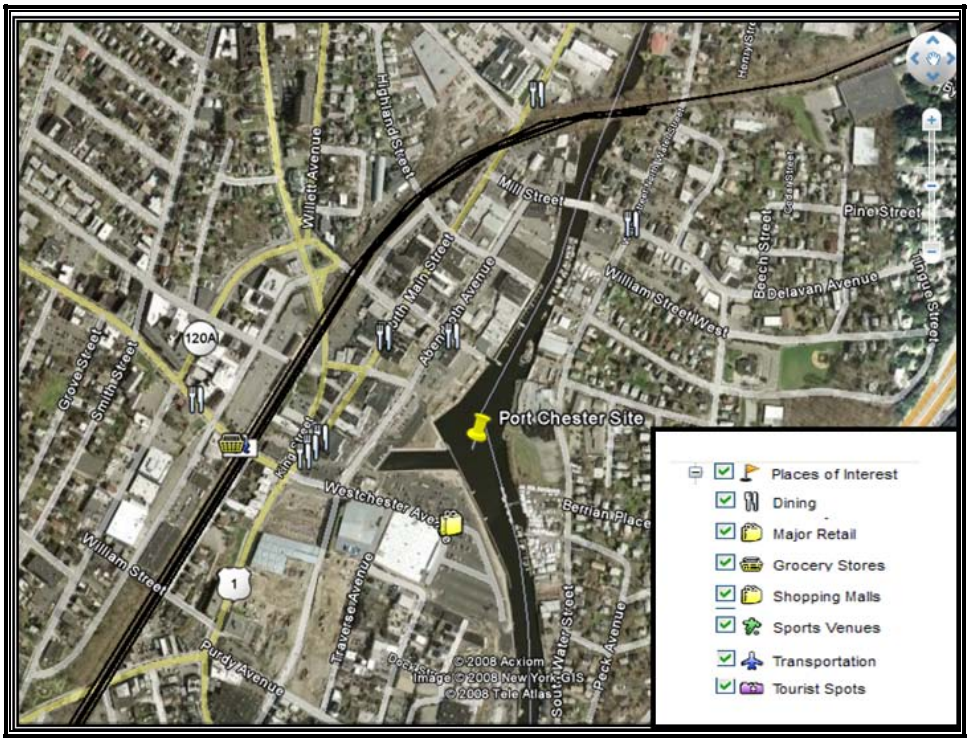


Source: Google Maps

Figure 82: Location of Port Chester and Proximity to New York City

The first potential ferry landing site evaluated is located at the end of Westchester Avenue on the western bank of the Byram River in downtown Port Chester. Figure 83 shows an aerial view of the first potential site. The figure also shows the relationship of the site to places of interest

within the Village. The second potential site shown in 84, is south of downtown Port Chester at the mouth of the Byram River. Figure 85 shows an aerial view of the two sites, in relation to each other.



Source: Google Earth

Figure 83: Port Chester-Site 1 Aerial View

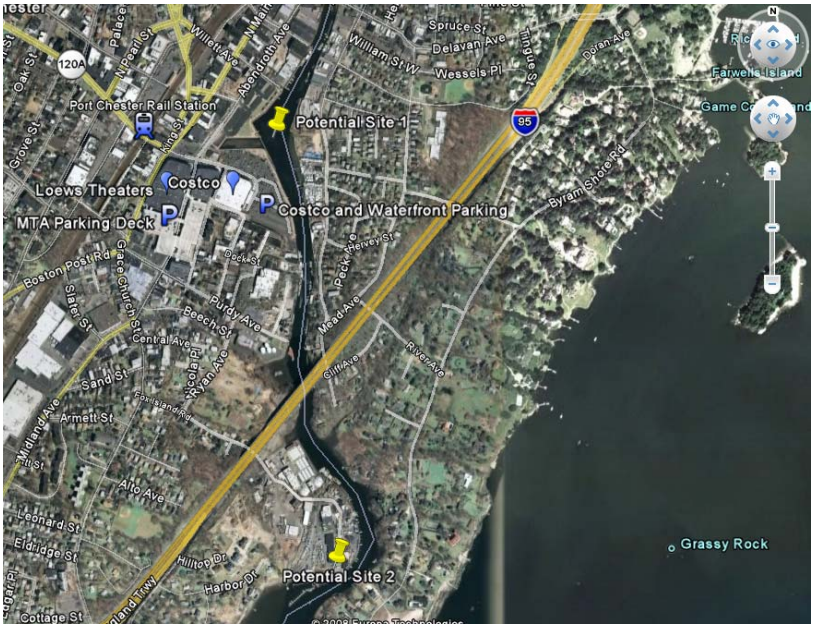
During the site visits photos were taken to document the sites and their surroundings. Figure 86 shows an aerial view of the Port Chester potential site 1 with the locations where photos 1 through 9 below were taken during the site visit. The photo locations are represented by the red balloons in Figure 86. The legend in the figure shows which direction each photo faces with respect to the compass in the figure. Figure 86 also shows the relationship of the Port Chester Rail Station and adjacent parking, to the site. Figure 87 shows an aerial view of site 2 and the relation to photos 10 through 13.

Photo 1pc was taken from the walkway that runs along the Byram River at the far end of the Costco parking lot (figure 86). The photo shows the entrance by river to the Port Chester Waterfront area. The eastern bank of the river is lined with docks for smaller fishing boats operated by the marina. From this photo, one can also get an idea of the width of the river at the site. Photo 2pc was taken a few yards north of Photo 1 and gives a better view of the marina and docks at the entrance of the Port Chester Waterfront area. Photo 3pc was also taken from the walkway at the far end of the Costco parking lot. This photo shows the other end of the marina shown in Photo 2pc. Photo 4pc shows the newly developed condominiums at that area. There are more small docks for fishing and leisure boats outside of the condos. Photos 5pc and 6pc show the actual waterfront of Port Chester on the western bank of the Byram River. The western bank is lined with small fishing and leisure boats. There is potentially room for ferry service along this side of the river, assuming that several boats that are currently docked there could be moved. At

the far end of the docks, shown in photo 6pc, a larger boat called the "Showboat" was berthed at the time of the visit. Photo 7pc faces away from the river and shows the main intersection (Main Street and Westchester Avenue) that leads to the waterfront area. To the right of this intersection is 'Restaurant Row' on Main Street. Through the intersection is the Port Chester Rail Station which is only 2 blocks away from the waterfront. Photo 8pc shows the "Waterfront at Port Chester" shopping center and the Loews' Theaters. This photo was taken from another major intersection in the area (Westchester Avenue and Waterfront Place). Photo 9pc shows the MTA's 3-level parking deck that is located between Waterfront Place and Main Street. The parking deck is about one block away from both the waterfront and the train station.

Source: Google Earth

Figure 84: Port Chester-Site 2 Aerial View



Source: Google Maps

Figure 85: Aerial View of Potential Site 1 and Potential Site 2

Photo 10pc shows an aerial view of the second potential site in Port Chester which is located at the end of Fox Island Road at the mouth of the Byram River. The photo shows the existing docks. Photo 11pc shows the only access road to the site. Many slow moving construction trucks and heavy utility vehicles are present on this narrow road due to the marina and the Department of Public Works located at the end of Fox Island Road at the proposed site. Photo 12pc shows another picture of the access road, Fox Island Road closer to the proposed site. The road remains narrow all the way to the site and eventually runs into the storage yards of the marina and the Department of Public Works. Photo 13pc shows the area just inland of the site. There is no available parking space and the stored vehicles and boats currently take up most of the area at this site.

11.2 Current Conditions

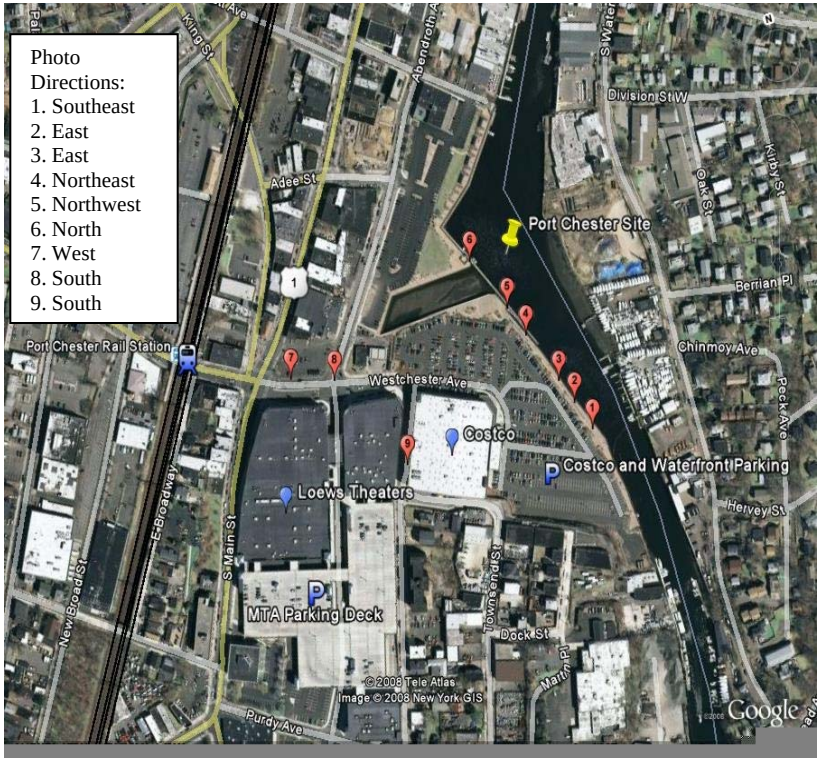
The first potential site to place the ferry dock is at the Port Chester waterfront area between Westchester Ave and Irving Ave on the bank of the Byram River shown in Figure 82. The major advantage of this location is the proximity of the site to downtown Port Chester and the main train station. Also, there is a 3 tier parking deck by the Costco and Loews Movie theaters adjacent to the site, where parking for the ferry service may become available. One drawback of this location is that the channel is rather narrow and shallow and ferries will need to move slowly in and out. Dredging would possibly be required, along with environmental analysis. This may make the site expensive to develop. Besides that, the wake effect of the vessels may be considerable and may result in complaints from waterfront residents. Ferry speed limitation and low wake design of the ferry vessels may be necessary. Another drawback of this location is the traffic of the interior roads within the Village.

The second potential site to place the ferry dock is a 7-acre lot at the mouth of the Byram River at the end of Fox Island Road shown in Figure 83. Currently the site houses the Department of Public Works (DPW) and the Port Chester Yacht Club. An advantage to this site is that it is at

the mouth of the river allowing the ferry to access the site easier, avoiding the shallow and narrow channel, meaning faster access to destinations that could potentially be accessed by the proposed ferry service. However, this site is further away from the train station and the central business district, restricting its connection to other inland services and destinations. There is also no existing parking for this site. One option would be to run shuttles from the Port Chester station and the central business district to the proposed site. There is a plan for the development of a significant amount of residential condos by this site, which would increase demand for the ferry. This demand however is not adequate by itself to support ferry service, thus access to other inland demand areas is critical. Even if the shuttle service were to be implemented, it is questionable that it will attract significant demand, as it will increase the number of transfers for the potential transit users, which typically results in reduced demand.

Photo 9pc

Photo 8pc



Source: Google Earth

Figure 86: Port Chester Site 1

Photo 1 pc

Photo 2 pc

Photo 3 pc

Photo 7pc

Photo 6 pc

Photo 5 pc

Photo 4 pc

Photo 12 pc (Source: Google Earth)

Photo 13 pc (Source: Google Earth)

Source: Google Earth

Photo 10 pc (Source: Google Earth)

Photo 11 pc (Source: Google Earth)

Figure 87: Port Chester Site 2

11.2.1 Vehicular Accessibility

The major highways that run by Port Chester include Interstate 95 (New England Thruway) and US Route 1. Port Chester can be accessed by using the exit on Interstate 95 just north of the site and then connecting to US Route 1. 287 (Cross Westchester Expressway) also runs just south of the site. Although these highways provide good connection of the village to the broader area, they become very congested during certain hours of the day. Commuters in other areas of Westchester County may access the site using the Cross Westchester Expressway.

Westchester Avenue and Irving Avenue are the two main streets that run down to the waterfront at the first potential site (figure 88). Westchester Avenue already has a low Level of Service (LOS) during peak hours and experiences very heavy traffic. Irving Avenue also experiences fairly heavy traffic. At certain times, the public roads in the vicinity of the terminal will become more congested as the ferry will (un)load the passengers and as vehicles arrive. A terminal in an urban area is clearly going to increase traffic radically at times, and limited or over-utilized road access will cause traffic jams and considerable resistance from those who live or drive through the area. Traffic mitigation strategies will need to be implemented.

Westchester Avenue

Irving Avenue

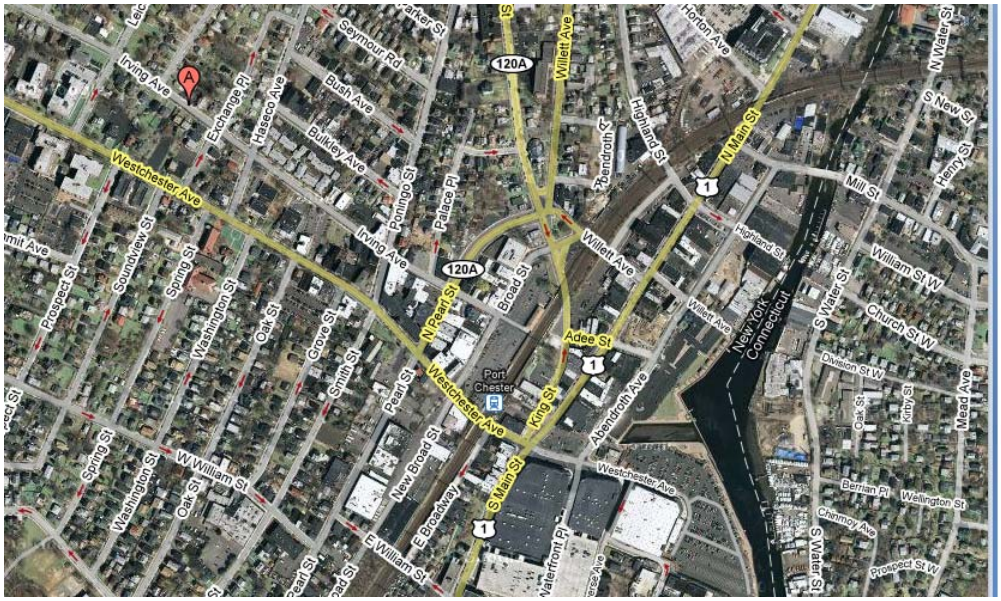


Figure 88: Westchester and Irving Avenues Leading to the Ferry Site

Potential site 2 at the mouth of the Byram River has only one access road, Fox Island Road. The Department of Public Works and the Port Chester Yacht Club are located at the end of Fox Island Road, therefore heavy utility vehicles and construction trucks are often on this road. The implementation of a ferry service at this site would significantly increase traffic, especially during specific times of the day, and may cause traffic jams on this access road.

11.2.2 Transit Accessibility

Port Chester is very accessible via public transit. There are a total of 8 bus stops within the walkshed of the main site that are represented by the yellow buses in figure 89. The blue routes are the corresponding bus routes for these stops. The red circle around the site represents the walkshed. Figure 90 shows a more precise layout of the separate bus routes that are provided by the Westchester County bus service (Bee-Line Bus Service). Three bus routes serve the Port Chester Station. Route 61 runs between Port Chester and the Bronx. It arrives in Port Chester around every 30 minutes during peak hours and around every hour during the middle of the day. Route 76 runs a loop from Port Chester to Rye throughout the day. It arrives at the Port Chester Station starting at 10:30 am every hour until 7:30 pm. Route 13 runs from Ossining to Port Chester from west to east and also stops at the train station. There is also one commuter rail connection within the walkshed. The commuter rail connection that serves the Village of Port Chester is the Metropolitan Transportation Authority's Metro-North Railroad. The New Haven line runs along the Long Island Sound from New York City north to New Haven, Connecticut shown in figure 91. There is an existing stop in Port Chester within walking distance from the first proposed site (figure 92). The train arrives at maximum intervals of 20 minutes during peak hours and around 30 to 45 minutes during off peak hours. The Port Chester Rail Station is located 2 blocks (less than 5 minutes) from the first potential site at the waterfront. According to Metro-North during the AM peak period there is an average of 1,288 commuters that access the rail station. Table 9 shows the mode split for commuters accessing the station during the AM peak period for each of the four proposed Westchester County Sites.

Table 9: Port Chester Rail Station Access
Source: Metro North Railroad

	Mode of Travel							
STATION	**Drove alone & parked**	**Carpooled**	**Dropped off**	**Walked**	**Taxi**	**Bus**	**Other**	**Total**
Tarrytown	733 40%	93 5%	205 11%	325 18%	28 2%	420 23%	16 1%	1,820
Peekskill	434 45%	61 6%	258 27%	86 9%	69 7%	50 5%	9 1%	967
New Rochelle	886 39%	141 6%	306 13%	791 35%	77 3%	80 4%	8 0%	2,288
Port Chester	616 48%	112 9%	227 18%	270 21%	21 2%	14 1%	28 2%	1,288

The walk is a very short distance and there are sidewalks to walk from the waterfront to the rail station. The first potential site is very easily accessed through public transit. On the other hand, the second potential site is located south of downtown Port Chester and is not accessible via public transit. A shuttle service would have to be implemented to link the site to the downtown area, possibly at the train station.

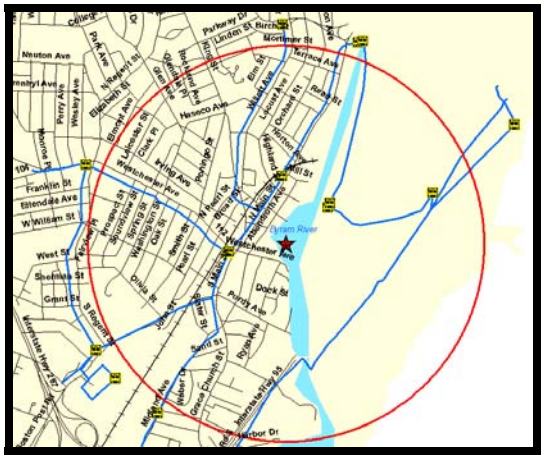
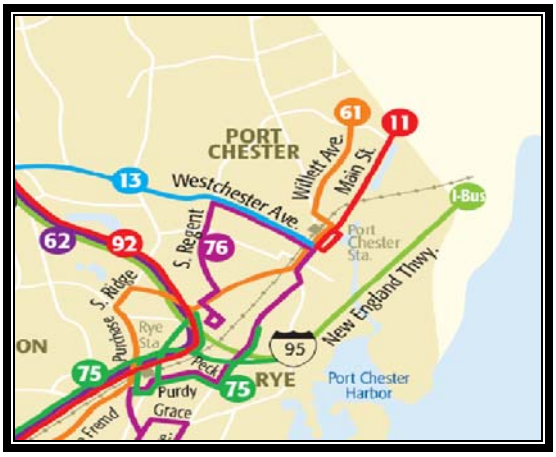


Figure 89: Port Chester Site Bus Stops and Bus Routes

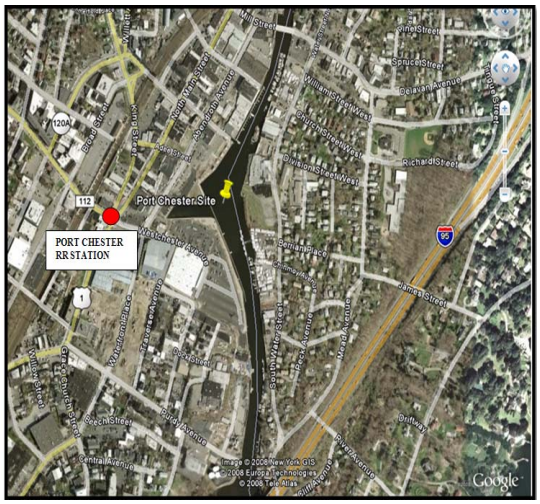


Source: Bee-Line Bus Service

Figure 90: Bus Service Routes

Source: MTA

Figure 91: Metro-North Railroad (New Haven Line is Red)



Source: Google Earth

Figure 92: Port Chester Site and Rail Road Station Aerial View

Development of an intermodal hub is under consideration, to link bus services to the train station and build a pedestrian overpass to improve station access. This will increase the accessibility of the bus and train services and potentially the coordination of their services.

11.2.3 Pedestrian and Bicycle Accessibility

The main roads leading to the ferry site are pedestrian accessible with signalized intersection and pedestrian crossings. Currently there are no designated bike paths to and from the proposed site and there is heavy on-street parking activity on the sides of the road in both directions (from and to the site) on Irving Avenue.

The second potential site at the end of Fox Island Road is not pedestrian or bicycle friendly. As discussed previously, Fox Island Road is rather narrow and almost appears to be a utility road. There is no room for bicycles to travel and there are only walkways for pedestrians on some sections of the road.

11.2.4 Parking

The approaches to the terminal must take into account passengers arriving and departing with their own and other than their own vehicles. This requires access to the proposed site by private vehicles that would require daily, short term, and drop-off parking. One block from potential site 1 of the Port Chester area there is a 3 tier parking deck by the Costco and Loews Movie theaters. The middle tier of this deck has 150 spots that are owned by the Metropolitan Transportation Authority for commuters to park and ride the New Haven Line at the Port Chester Railroad Station. These parking spaces are currently being underutilized. This might be an opportunity to allocate parking spaces for the ferry site if these spaces can be obtained from the MTA. There is an option of 355 spots that can be bought and used from MTA for parking closer to the rail station.

There is no room for potential parking near potential site 2. Most of the area by the site is occupied by the Department of Public Works vehicles and the marina boats. Vehicles, however, could be parked at the MTA parking deck downtown if the shuttle mentioned previously was implemented.

11.2.5 Demographics/Commute Patterns

The FPLAS Task 2B Deliverable reported figures for the number of total potential commuters and Manhattan-bound commuters leaving and entering the walkshed, the bikeshed, and the driveshed. There are an average of 20 potential Manhattan-bound commuters within the walkshed, 2,388 potential Manhattan-bound commuters within the bikeshed and 132,827 potential Manhattan-bound commuters within the driveshed. These figures can be used to create a rough estimate of the demand that will coincide with the proposed site. Port Chester averages around 2,400 commuters using the Port Chester Station daily. Many commuters take the 37-minute train ride into New York City. The approximately 35 mile ferry trip into Manhattan could take about 1 hour, although the type of ferry to be used would affect this estimate. There is also a significant number of commuters that head north from Port Chester on the New Haven Line to Stanford, Connecticut and Greenwich, Connecticut. The site has been examined as an origin for destinations such as Long Island and La Guardia Airport. The site has potential for being a destination site as well. Port Chester is the restaurant capitol of Westchester County, which attracts people from all over the region. The current new and planned development of the waterfront area and the central business district has the potential to attract more people to the area.

11.2.6 Land Use

Port Chester is currently evaluating and updating a comprehensive master plan for the development of the village, part of which is the development of the waterfront. Port Chester is looking to add low-density residential areas to the waterfront. They are also looking to create a second "Main Street" by adding first level retail to the area, along with more restaurants. Main Street, which is the center of the central business district currently, has certain restrictions on residential development, however, some of the existing policies are under review. Port Chester is considering residential development above the retail stores on Main Street and increase of the height allowance by 2 stories in order to provide more residential space in the central business district. Another proposed development is that of an intermodal transportation hub at the current Port Chester Station. A $688,000 FTA grant has been approved to help with the development of this intermodal hub. Metro North also has a plan to build a pedestrian overpass at the train station, as part of the overall plan for the station area, to make the station more pedestrian friendly. In 1999 Port Chester entered a land development contract with a private developer for certain areas within Port Chester. This 20 year contract will cause constraints with some areas that could be beneficial to develop for the ferry project.

Figure 93 shows the land use for the area within the Port Chester walkshed. The legend in the map shows the different categories of land use: nonresidential, open, residential and undeveloped. This site is located in downtown Port Chester. The majority of the land adjacent to the site is nonresidential. The area is filled with stores, entertainment and restaurants. The residential area of Port Chester is shown in Figure 93 towards the northwestern portion of the walkshed.

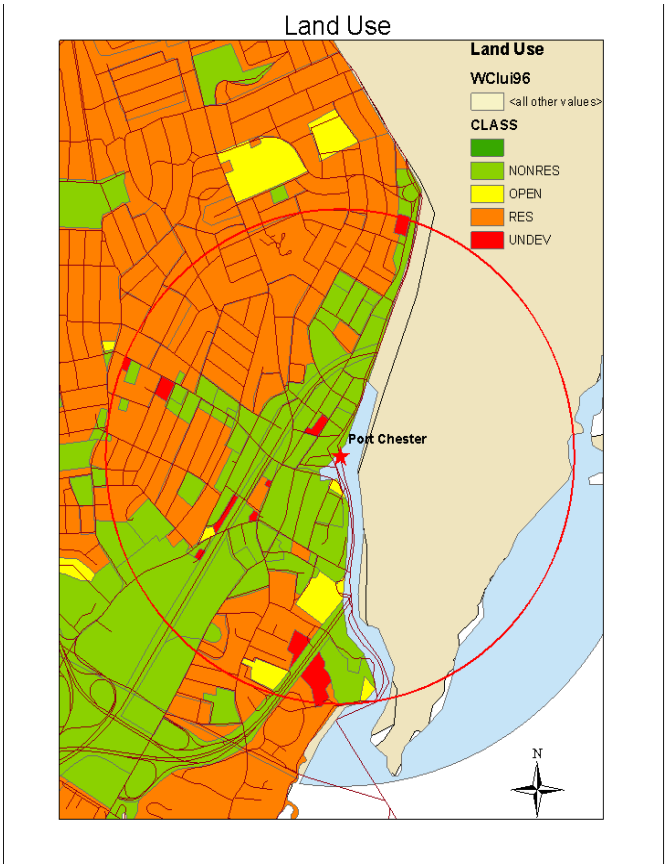


Figure 93: Port Chester Land Use

11.3 Site Assessment

Based on the discussion presented in section 11.2 the evaluation criteria were assessed according to a 4 point ranking scoring system: *Poor*, *Fair*, *Good*, and *Excellent*. Rating of the evaluation criteria and the assessment of each site are shown in Table 10 below.

The site assessment for the two potential sites at Port Chester shows that *from a parking and land side access perspective*, potential site one clearly presents a better option compared to potential site two. Site one is ranking higher or at least as good as site two in all criteria. The site has better access by car, transit, or on foot and there is potential parking available within proximity of one block. According to their plan, the village seems to be developing following a transit oriented development concept, clustering residences, offices, shops and services around a proposed transit hub and by the proposed ferry site. A new ferry service is well within the context of such development, providing a viable, from the perspective of this study, new transit option to the area. It should be noted here, that once the proposed development plans materialize, current conditions will be improved upon with respect to several of the above criteria, including availability of intermodal transfer stations, quality of pedestrian/bike environment, availability of adequate parking spaces, proximity to housing, jobs, retail and entertainment, and the overall potential of the site to attract demand.

Table 10: Port Chester Site Assessment

Evaluation Criteria	Site 1 Evaluation	Site 2 Evaluation
Vehicular Accessibility		
Highway connectivity of the site with areas within the driveshed	Good	Good
Availability and condition of access roads	Good	Poor
Transit/Intermodal connectivity		
Proximity to existing bus routes	Excellent	Poor
Proximity to existing train service	Excellent	Poor
Availability of intermodal transfer stations	Poor	Poor
Frequency/Level of proximate transit service	Fair	Fair
Pedestrian and Bicycle Access		
Directness of pedestrian/bike routes	Excellent	Poor
Quality of pedestrian/bike environment	Good	Poor
Parking		
Proximity to Parking	Excellent	Poor
Availability of Adequate Parking Spaces	Fair	Poor
Land Use		
Proximity to housing	Good	Poor
Proximity to jobs	Fair	Poor
Proximity to retail/entertainment	Good	Poor
Proximity to parks/open spaces	Fair	Poor
Demographics and Commute Patterns		
Potential of the site to attract demand	Good	Poor

12. FORT SLOCUM ROAD, WESTCHESTER COUNTY

12.1 Site Summary

The Fort Slocum Road Site is located in the city of New Rochelle in Westchester County, New York. The site is located on the western end of the Long Island Sound on Neptune Island. The FPLAS team ranked the site with a score of 18.43, ranking sixtieth as an origin site while scoring 7.47 and ranking fifty-first as a destination site.

Commuters leaving walkshed	619
Commuters entering walkshed	185
Number of Manhattan-bound commuters within walkshed	99
Housing units in walkshed	525
Average median household income in walkshed	$53,420
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	1.40
Commuters leaving bikeshed	28,815
Number of Manhattan-bound commuters within bikeshed	4,703
Housing units in bikeshed	24,642
Average median household income in bikeshed	$55,979
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	1.31
Commuters leaving driveshed	222,262
Number of Manhattan-bound commuters within driveshed	63,827
Housing units in driveshed	216,360
Average median household income in driveshed	$50,251
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	1.03
Existing parking within walkshed (m^2)	0
Potential parking within walkshed (m^2)	10,046
Total length of access roads, class ACC 1-5 in search distance (m)	24
Number of bus stops within walkshed	7
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	0
Non-public land ownership area in walkshed (m^2)	205,378
Public land ownership area in walkshed (m^2)	14,536
Office, retail and industrial space in walkshed (ft^2)	0
Percent of land in walkshed known to be vacant	5.4%
Percent of land in walkshed known to be publicly owned	6.6%

Site Name:	Ft. Slocum Rd.
Municipality:	New Rochelle
County:	Westchester

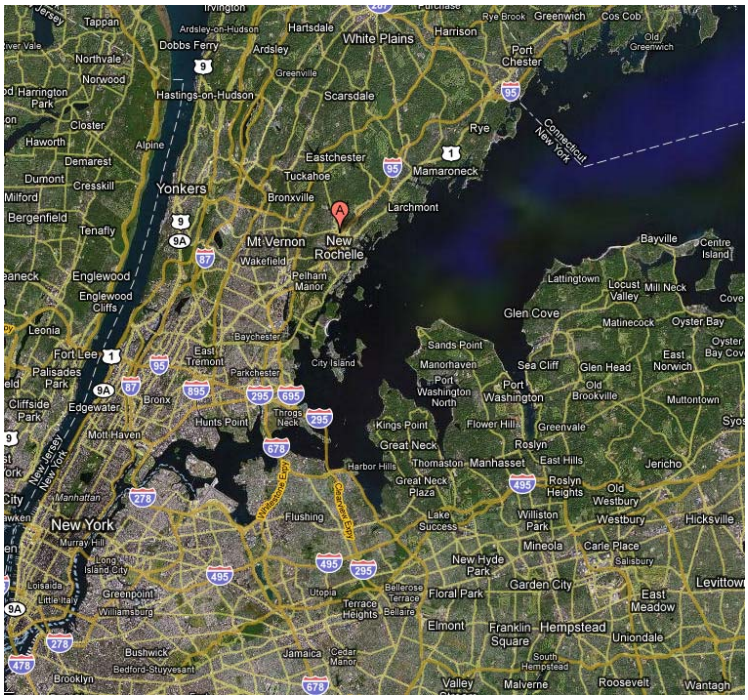
Figure 94: Factors Influencing Site Evaluation

Factors influencing this site's evaluation are shown in Figure 94. Details on how these factors were derived are given in the Task 2B Deliverable. For the purpose of developing a better perspective, however, on what these factors represent, it is noted here that the walkshed is defined as the area within a 0.75 mile radius, the bikeshed is the area within a 3 mile radius and the driveshed is the area within a 15 minute drive from the site marked with a star in Figure 94.

The GIS database was developed based on publicly available databases that were available at the time of this study effort and may not reflect current conditions. For this purpose, the research team searched for updated information through interviews, Internet search and site visits.

New Rochelle has been revitalizing itself with growing development within the city limits. In 1999, part of downtown New Rochelle near the New Rochelle Transit Center was rebuilt.

Figure 95 shows the geographic relationship of the City of New Rochelle, New York to New York City. New Rochelle is 20 miles from central Manhattan. The main route from New Rochelle into Manhattan is Interstate 95 south (approximately 8 miles) to I-278 west (approximately 6 miles) to FDR Drive south (for another 5 miles). The red balloon in Figure 95 represents New Rochelle.

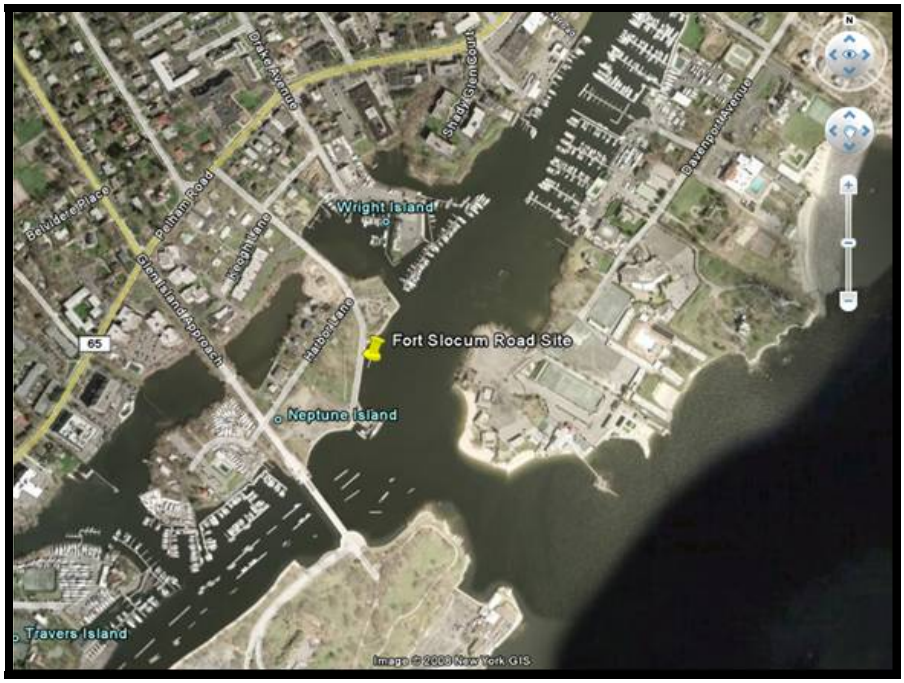


Source: Google Maps

Figure 95: New Rochelle in Comparison to New York City

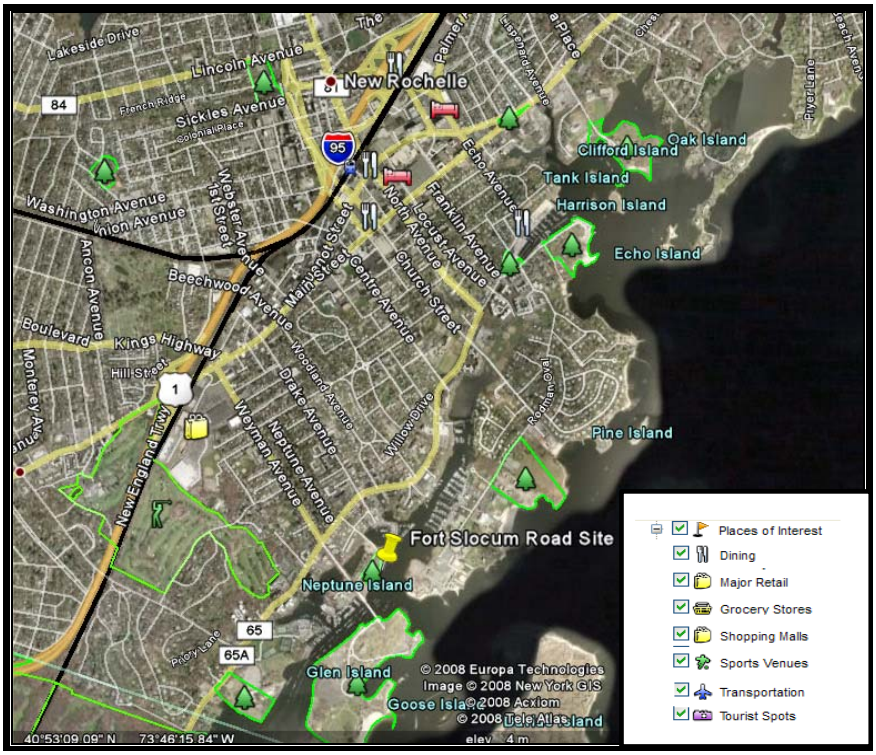
The site that is being evaluated in this study is located at the end of Fort Slocum Road next to Glen Island, on Neptune Island. Figure 96 shows an aerial view of this site. This site has basic landing dockage that may need to be expanded to accommodate potential ferry service. Figure 97 is an aerial view of New Rochelle that shows where the site is located within the city.

During the site visits photos were taken to document the sites and their surroundings. Figure 98 shows an aerial view of the Fort Slocum Road site and the locations of photos that were taken during the site visit. The photos are represented by the red balloons in Figure 98. The legend in the figure shows which direction each photo faces with respect to the compass in the figure. Figure 98 also shows the relationship of the Glen Island Park parking lot to the site.



Source: Google Earth

Figure 96: Fort Slocum Road (Aerial Close-up of Site)

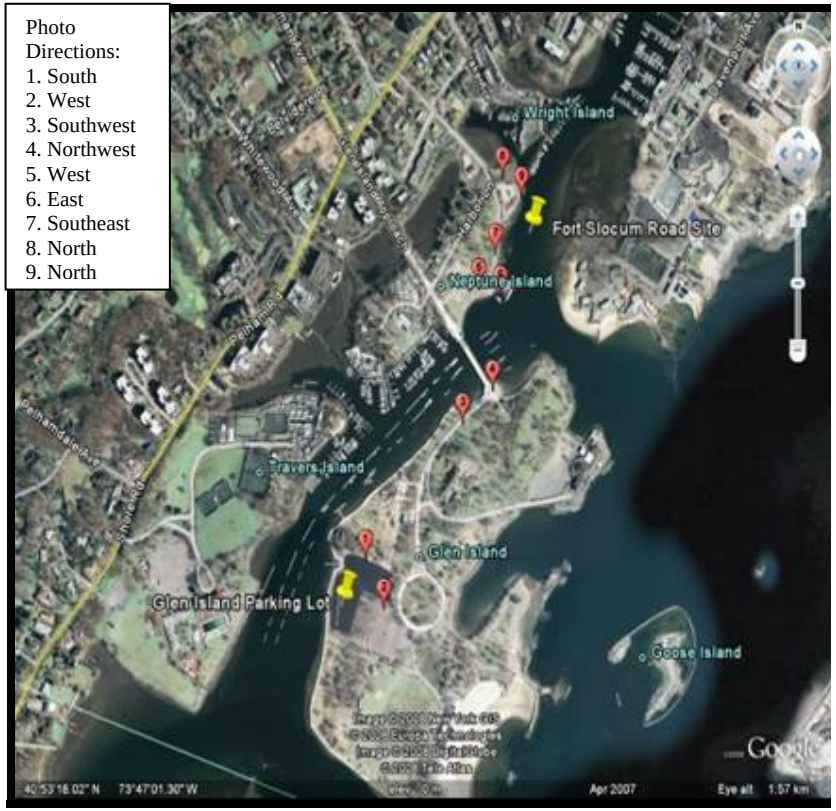


Source: Google Earth

Figure 97: Fort Slocum Road (Aerial View-Places of Interest)

Photo 9f

Photo
Directions:
1. South
2. West
3. Southwest
4. Northwest
5. West
6. East
7. Southeast
8. North
9. North



Source: Google Earth

Figure 98: Fort Slocum Road Site

Photo 1f

Photo 2f

Photo 8f

Photo 3f

Photo 7f

Photo 6f

Photo 5f

Photo 4f

Photos 1f and 2f show a parking lot on Glen Island Park. This parking lot is currently underutilized the majority of the time. The picture was taken on a weekday and almost all of the 500 available spots were not being used. According to local officials, this lot, although currently part of the park land, could potentially be utilized for ferry parking, in which case it could provide adequate parking spaces for the ferry service. It is a 10 minute walk from the proposed ferry landing site (less than .5 miles).

Photo 3f shows the walkway from the Glen Island Park parking lot to the Fort Slocum Road site. The walk is very pedestrian and bicycle friendly. The picture shows the wide walkway that exists for the majority of the distance. Photo 4f shows the Glen Island Approach Bridge. Commuters must walk over this bridge to leave Glen Island and arrive at the Fort Slocum Road site. The bridge is also very pedestrian friendly, providing walkways to cross the bridge. The 10 minute, .5 mile walk to the site from the parking lot is a not a difficult commute, however some problems may arise during unfavorable weather.

Photo 5f shows another underutilized parking lot that has approximately 50 spots and is located at the base of the Glen Island Approach Bridge on the side close to the site. Currently this parking lot is resident permit only, however, it could provide some closer and more convenient parking if it became available to the ferry commuters. It could also provide space for drop-off service as discussed in a later section. Photo 6f shows an existing dock at the Fort Slocum Road site. The dock currently serves small cruise ships like that shown in the figure and could potentially accommodate similar size ferry vessels.

Photo 7f is another picture of the dock that houses the cruise ships. The picture at this angle shows the relative size of the boat. Photo 8f shows more docks at the Fort Slocum Road site, however these docks are for smaller fishing and leisure boats.

Photo 9f shows two older, abandoned docks across the harbor from the Fort Slocum Road site on Wright Island, which could potentially be revitalized to accommodate the ferry service.

12.2 Current Conditions

New Rochelle has expressed interest in a ferry service both for recreational use and commuting use. The city has been involved in the Long Island Sound Waterborne Study that evaluated sites within New Rochelle. The study showed that the Fort Slocum Road site ranks favorably compared to other options examined for the ferry service. There are currently cruise boat docks and landing facilities at the site that could possibly be used for the ferry service. The Fort Slocum Road dock was used as the mainland terminal for boats destined to Davids Island and also for boats destined to New York City's Fulton Fish Market and other Long Island Sound coastal communities. There is also potential parking on Glen Island County Park that is a short distance (approximately .5 miles) from the site. The Glen Island County Park parking lot is used for park and beach visitors. The parking lot can accommodate around 500 cars and it is currently underutilized. The lot is used mostly during the summer months and on weekends leaving it very underutilized during the week.

12.2.1 Vehicular Accessibility

Major highways providing access to New Rochelle include Interstate 95, Hutchinson River Parkway, and Rt. 1, the Boston Post Rd. Interstate 95 serves as the main route through New Rochelle with four exits directly serving the city. The Hutchinson River Parkway carries heavy passenger vehicle traffic and experiences substantial congestion in both directions during the morning and evening rush-hour. The Boston Post Road, also known as Main Street in downtown New Rochelle, is used as a major artery during the morning and evening commute. Most traffic via the Post Road is short distance or fairly local, yet vehicles utilize this road during times of heavy congestion on I-95 as a re-route.

Weyman Avenue/Glen Island Approach and Pelham Road are the two main roads that provide access to Glen Island where the potential parking lot for the ferry service is located. Both roads are in residential areas with very low speed limits and on street parking. These roads are on the outskirts of New Rochelle and do not carry heavy traffic. However a terminal in the area is clearly going to increase traffic radically at times and limited or over-utilized road access may cause traffic jams in these residential areas and considerable resistance from those who live or drive through the area. Another issue that may arise is the significant increase in traffic through Glen Island Park where the potential parking lot exists. Glen Island is a well-maintained park that provides recreation and sight-seeing to residents of New Rochelle. This issue may cause a significant amount of resident resistance to the potential ferry service. Figure 99 shows the location of the parking lot along with the Glen Island Approach Road and the actual proposed site. Traffic through Weyman Avenue would avoid the downtown area where there are current traffic problems during peak hours and although traffic on the residential streets will leading to the parking lot will increase substantially, the road capacity will most likely not be exceeded.

Glen Island Approach

Pelham Road

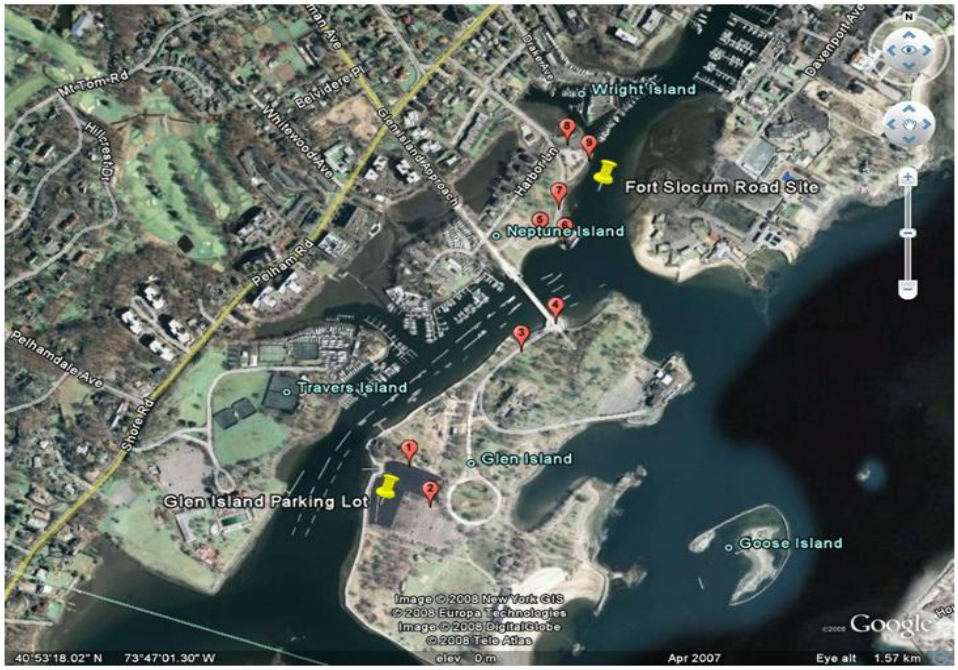


Figure 99: Access Roads and Parking in Relation to the Site (Source: Google Earth)

12.2.2 Transit Accessibility

The Fort Slocum Road site is fairly accessible via public transit. There are a total of 3 bus stops within the walkshed that are represented by the yellow buses in Figure 100. The blue routes are the corresponding bus routes for these stops. The red circle in Figure 100 represents the walkshed. Figure 101 shows a more precise layout of the separate bus routes that are provided by the Westchester County bus service (Bee-Line Bus Service). A number of bus routes serve the city of New Rochelle at the New Rochelle Transit Center, which is an intermodal transportation hub. Buses arrive fairly frequently, on average around every 15-30 minutes during peak hours of operation. Bus route 45 is the only route that has stops within the site's walkshed. This route runs from downtown, along Pelham Road through the wallkshed and ends at the Pelham Bay Subway station.

The commuter rail connection that serves New Rochelle is the Metropolitan Transportation Authority's Metro-North Railroad. The New Haven line (figure 102) runs along the Long Island Sound from New York City north to New Haven, Connecticut. There is an existing stop (figure 103) in New Rochelle at the New Rochelle Transit Center. The train arrives at maximum intervals of 20 minutes during peak hours and around 30 to 45 minutes during off peak hours. According to Metro-North during the AM peak period there is an average of 2,288 commuters that access the rail station. Table 11 shows the mode split for commuters accessing the station during the AM peak period for each of the four proposed Westchester County Sites.

Table 11: New Rochelle Rail Station Access
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STATION	Mode of Travel							
	Drove alone & parked	Carpooled	Dropped off	Walked	Taxi	Bus	Other	Total
Tarrytown	733	93	205	325	28	420	16	1,820
	40%	5%	11%	18%	2%	23%	1%	
Peekskill	434	61	258	86	69	50	9	967
	45%	6%	27%	9%	7%	5%	1%	
New Rochelle	886	141	306	791	77	80	8	2,288
	39%	6%	13%	35%	3%	4%	0%	
Port Chester	616	112	227	270	21	14	28	1,288
	48%	9%	18%	21%	2%	1%	2%	

Amtrak service between Boston and Philadelphia also stops at this station. The New Rochelle Transit Center is located approximately 2.3 miles from the Fort Slocum Road site. Commuters walking from the site to the transit center face a 2.3 mile uphill walk. Most commuters would most likely choose not to walk that distance. A potential shuttle service could link the two locations, possibly via North Avenue and Pelham Road. The shuttle would make the 2.3 mile commute to and from the site much more practical and make the Fort Slocum Road site more accessible to people arriving at the transit center on foot, by bus, or train (although Manhattan bound train commuters are not likely to use this transfer connection). The option of providing parking for the ferry users near by the transit center could be considered for those accessing the site by car. This option would provide connection for car users to the ferry service, without increasing local traffic on roads near by the Glenn Island parking lot, although it will increase the number of transfers commuters have to make to use ferry, which would typically decrease demand for this service. The connection between I-95 and the transit station is good, providing good access to the station, although it should be noted that Thruway Authority will be replacing bridges near the train station over the I-95 on North Avenue, which is expected to create more congestion and change the access patterns over the period of the construction project.

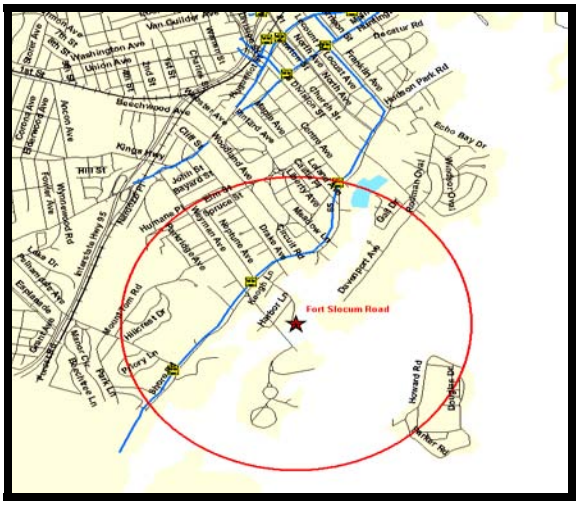


Figure 100: New Rochelle Bus Stops and Bus Routes

Figure 101: Bus Service Routes (Source: Bee-Line Bus Service)

Figure 102: Metro-North Railroad, New Haven Line is Red (Source: MTA)

Figure 103: Ft Slocum Rd Site and Rail Road Station Aerial View (Source: Google Earth)

12.2.3 Pedestrian and Bicycle Accessibility

The majority of the area within the walkshed of the site is low-density residential housing. Therefore there will be a small amount of commuters walking to the ferry site from within the walkshed. The main roads that are in close proximity to the ferry site are pedestrian and bicycle accessible. These roads are residential streets with low speed limits and sidewalks for pedestrians. Although the streets do not have assigned bicycle lanes, they are not narrow and not too many cars are typically parked on them, which in combination with the low speed limit would allow some bicycle traffic. For those who will potentially park at the Glen Island Park

parking lot the ferry landing site is very accessible, as walkways are present over the entire 10 minute, .5 mile walk from the parking lot to the site.

For commuters coming to and from the site via the New Rochelle Transit Center, the site is much less accessible via bicycle or walking. The New Rochelle Transit Center is located 2.3 miles from the site. Although the walk from the station to the site is possible, it is very unlikely many commuters would decide to walk. Furthermore, walking from the ferry site to the transit center is uphill, which is an additional impediment to walking the 2.3 mile distance. Streets in the downtown area are much less bicycle friendly due to the heavier traffic and narrower roadways.

12.2.4 Parking

The approaches to the terminal must take into account passengers arriving and departing with their own and other than their own vehicles. This requires access to the proposed site by private vehicles that would require daily, short term, and drop-off parking. The Glen Island Park parking lot is a viable option as potential parking area for commuters accessing the ferry service via car, based on its proximity to the site and its capacity. The location of the parking lot is shown in Figure 99. The lot is approximately .5 miles away from the Fort Slocum Road site. Commuters would have to cross the Glen Island Approach bridge, park in the lot and then walk back across the bridge to the site. The lot can accommodate around 500 cars and is currently underutilized. It is used mostly during the summer months and on weekends leaving it very underutilized during the week. Although there could be issues using designated parkland for a commuter ferry service, if the lot was obtained for the ferry service parking, as it was suggested during the interview with local officials, it would provide a sufficient amount of parking spaces. There is also a small site near by the proposed ferry landing site, shown in photo 5f, which could be used to accommodate ferry user dropping-off and the potential shuttle service.

12.2.5 Demographics/Commute Patterns

The FPLAS Task 2B Deliverable reported figures for the number of total commuters and Manhattan-bound commuters leaving and entering the walkshed, the bikeshed and the driveshed. There are an average of 99 potential Manhattan-bound commuters within the walkshed, 4,703 potential Manhattan-bound commuters within the bikeshed and 63,827 potential Manhattan-bound commuters within the driveshed. These figures can be used to create a rough estimate for the demand that will coincide with the proposed site. As stated previously the majority of the area within the walkshed is low-density residential housing, producing only 99 potential Manhattan-bound commuters. The majority of the demand will come from the driveshed which produces 63,827 potential Manhattan-bound commuters. Most of the commuters that will choose to use the ferry to commute to Manhattan will be leaving from the driveshed and will either take the bus (and possibly train, to a lesser extend) to the New Rochelle Transit Center or drive and park. For this site to be successful it would be essential that a shuttle service from and to the site from the transit center be implemented. Also, the 500 parking spots at on Glen Island would have to be available for those accessing ferry by car.

12.2.6 Land Use

The city of New Rochelle is the seventh largest city in New York state with a population of 72,967. In 1999 the construction of an entertainment complex in the downtown area near the New Rochelle Transit Center was completed. The entertainment complex includes a 19-screen

movie theater, an IMAX theater, an indoor ice-hockey arena, mini-golf, go karts, an arcade, a health club, restaurants, a hotel, loft-apartments and a supermarket. Two new luxury residences were also recently developed. Avalon on the Sound East, a luxury apartment complex was finished in 2007. Trump Plaza, a 40-story luxury residence was also recently completed. Properties along 'main street' which had been empty for years have been transformed into condominiums and rental apartments. Also development on Pelham Road near Echo Bay is under review. A senior housing project and town house development are two possibilities that were discussed. A 26-acre site around Echo Bay is being considered for future development as well. The plan is just entering the environmental review. Local waterfront revitalization plans and harbor management plans are also part of New Rochelle's development.

Figure 104 shows the land use for the area within the Fort Slocum Road walkshed. The legend in the map shows the different categories of land use: nonresidential, open, residential and undeveloped. The open space (yellow) within the walkshed represents the parks just off the coast of New Rochelle. The remainder of the land is mainly residential. North of the walkshed is downtown New Rochelle and Figure shows the land use become more nonresidential.

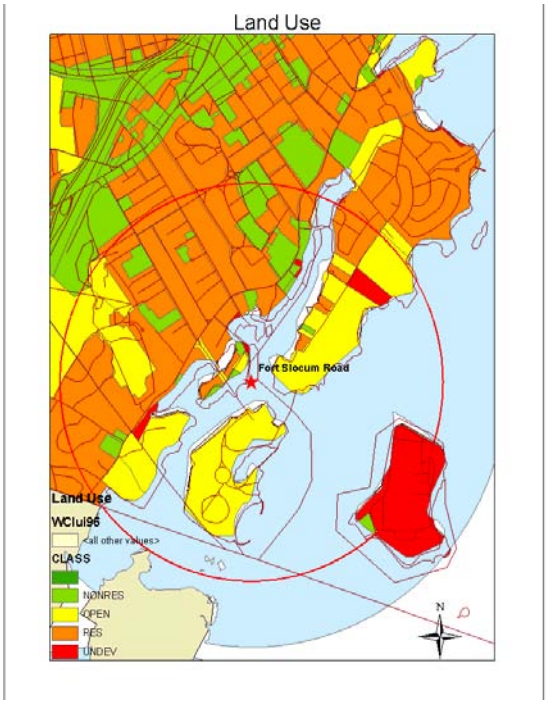


Figure 104: New Rochelle Land Use

12.3 Site Assessment

Based on the discussion presented in section 12.2 the evaluation criteria were assessed according to a 4 point ranking scoring system: *Poor, Fair, Good,* and *Excellent*. Rating of the evaluation criteria and the assessment of the site are shown in Table 12 below.

The assessment of the Fort Slocum road site shows that *from a parking and land side access perspective*, the site has some potential to accommodate ferry service. Major impediments

include the distance of the site from the down town area and the intermodal transit center, the number of transfers that would be required to access the site by transit for most commuters, the low density residential area within the walkshed, and the limited road connectivity by low speed access roads. On the other hand, the greater region generates substantial Manhattan-bound commuter demand and New Rochelle's development plans would generate additional demand in the future. A new ferry service would provide another commute option for the region. Once the proposed development plans materialize, proximity to housing will improve. Accessibility to the transit center is also expected to improve. However, this by itself will not substantially affect the potential of the ferry service. Providing frequent and convenient connection between the transit center (and potentially a near the transit center ferry parking facility) and the ferry site would improve the potential of the ferry service.

Table 12: Fort Slocum Road Site Assessment

Evaluation Criteria	Site Evaluation
Vehicular Accessibility	
Highway connectivity of the site with areas within the driveshed	Good
Availability and condition of access roads	Fair
Transit/Intermodal connectivity	
Proximity to existing bus routes	Fair
Proximity to existing train service	Poor
Availability of intermodal transfer stations	Good
Frequency/Level of proximate transit service	Good
Pedestrian and Bicycle Access	
Directness of pedestrian/bike routes	Fair
Quality of pedestrian/bike environment	Good
Parking	
Proximity to Parking	Excellent
Availability of Adequate Parking Spaces	Fair
Land Use	
Proximity to housing	Good
Proximity to jobs	Poor
Proximity to retail/entertainment	Poor
Proximity to parks/open spaces	Excellent
Demographics and Commute Patterns	
Potential of the site to attract demand	Fair

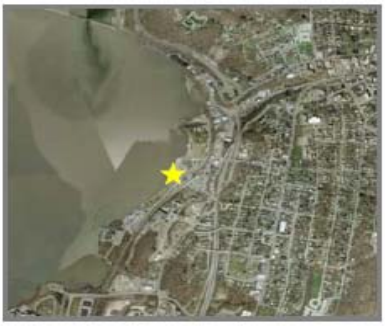
13. PEEKSKILL, WESTCHESTER COUNTY

13.1 Site Summary

The Peekskill site is located in the City of Peekskill in Westchester County, New York. The City of Peekskill is located on the eastern bank of the Hudson River just south of the New York State Military Reservation. The site received a score of 33.90, ranking sixth for being an origin site while only scoring 5.83 and ranking fifty-seventh for being a destination site.

Factors influencing this site's evaluation are shown in Figure 105. Details on how these factors were derived are given in the Task 2B Deliverable. For the purpose of developing a better perspective, however, on what these factors represent, it is noted here that the walkshed is defined as the area within a 0.75 mile radius, the bikeshed is the area within a 3 mile radius and the driveshed is the area within a 15 minute drive from the site marked with a star in figure 105.

Commuters leaving walkshed	662
Commuters entering walkshed	482
Number of Manhattan-bound commuters within walkshed	26
Housing units in walkshed	548
Average median household income in walkshed	$42,037
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	1.35
Commuters leaving bikeshed	12,878
Number of Manhattan-bound commuters within bikeshed	1,116
Housing units in bikeshed	10,934
Average median household income in bikeshed	$53,191
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	1.45
Commuters leaving driveshed	335,672
Number of Manhattan-bound commuters within driveshed	47,009
Housing units in driveshed	258,203
Average median household income in driveshed	$74,340
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	1.73
Existing parking within walkshed (m^2)	0
Potential parking within walkshed (m^2)	0
Total length of access roads, class ACC 1-5 in search distance (m)	405
Number of bus stops within walkshed	5
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	1
Non-public land ownership area in walkshed (m^2)	440,074
Public land ownership area in walkshed (m^2)	0
Office, retail and industrial space in walkshed (ft^2)	0
Percent of land in walkshed known to be vacant	0.0%
Percent of land in walkshed known to be publicly owned	19.2%



Site Name:	Peekskill
Municipality:	City of Peekskill
County:	Westchester

Figure 105: Factors Influencing Site Evaluation

The GIS database was developed based on publicly available databases that were available at the time of this study effort and may not reflect current conditions. For this purpose, the research team searched for updated information through interviews, Internet search and site visits.

Peekskill has a large artists' district in the downtown area and a newly revitalized central business district. Restaurants, galleries and a weekly farmers' market attract both residents and visitors. Perhaps the most famous attraction in the Village is the Paramount Center for the Arts which hosts live acts and shows art movies frequently. Figure 106 shows the geographic relationship of the City of Peekskill, New York to New York City. Peekskill is approximately 45 miles north of Manhattan. The main route by vehicle from Peekskill into Manhattan is Route 9A south (approximately 15 miles) to I-87 south for 16 miles to the Henry Hudson Parkway(9A) south for another 12 miles. The red balloon in Figure 106 represents Peekskill.

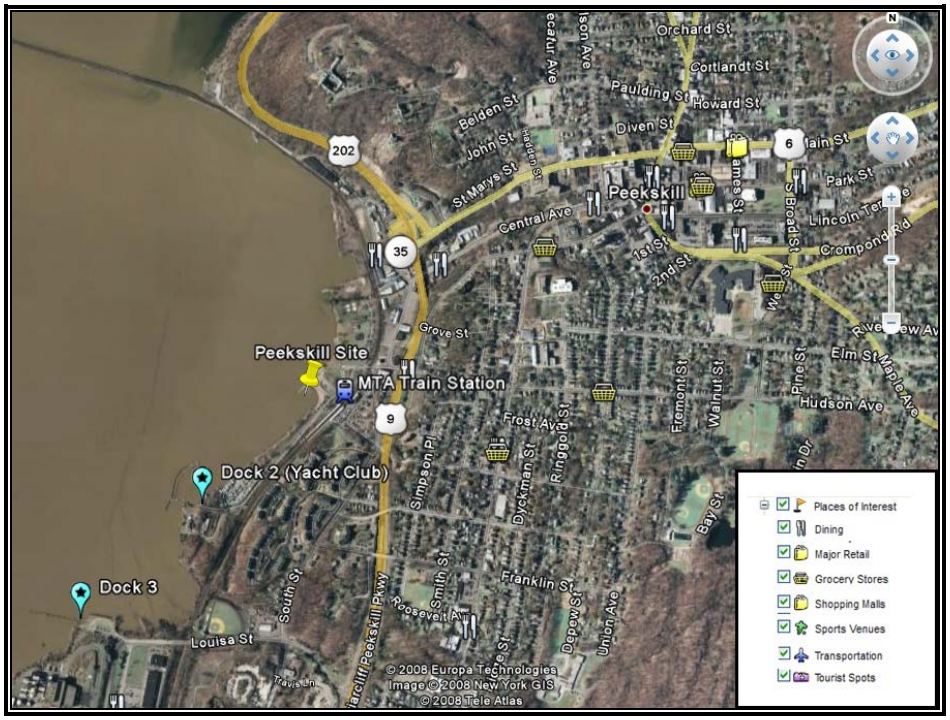
The site that is being evaluated is on the eastern bank of the Hudson River in the City of Peekskill along Riverfront Green Park Road. Figure 107 shows an aerial view of the main site that is being evaluated. Figure 108 is an aerial view of Peekskill that shows where potential sites are located within the city.

Source: Google Maps
Figure 106: Peekskill in Comparison to New York City

During the site visits photos were taken to document the sites and their surroundings. Figure 109 shows an aerial view of the Peekskill site and the locations of photos that were taken during the site visit. The photos are represented by the red balloons in Figure 109. The legend in the figure shows which direction each photo faces with respect to the compass in the figure.

Source: Google Earth

Figure 107: Peekskill-Aerial Close-Up of Site



Source: Google Earth

Figure 108: Peekskill (Aerial View-Places of Interest)

Photo 10p

Photo 9p

Photo 8p

Photo 7p

Source: Google Earth

Figure 109: Peekskill Site

Photo 6p

Photo 5p

Photo 1p

Photo 2p (Source: Google Earth)

Photo 3p

Photo 4p

Photos 1p and 2p show the Peekskill Station adjacent to the proposed site. The MTA's Hudson Line runs services through the city of Peekskill. There is limited parking outside the train station and most of the available parking is permit only. The platforms are sheltered on the northbound and southbound sides and there is a small office connected to the station to buy tickets.

Photo 3p shows one of the existing docks that are located at the proposed site. The water at this site is very shallow and the depth would not be adequate to accommodate a ferry vessel. This dock is currently a launching dock for residents to move their boats in and out of the river.

Photos 4p and 5p are the newly developed River Bend condominiums which are adjacent to the site right across the rail tracks. Around 200 units have been put up since 2005. The condos are easily within walking distance of either dock at the proposed site. These condos increase the potential demand within the walkshed compared to that reported in the the Task 2B Deliverable report.

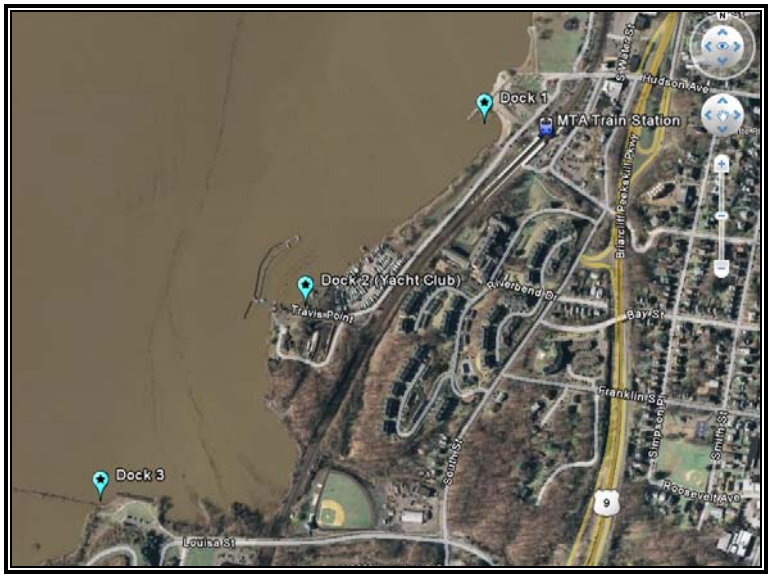
Photo 6p was taken from the Peekskill Yacht Club and shows another potential dock at the site (identified as dock 3 in figure 108). This dock is at the end of Louisa Street less than .5 miles away from the dock shown in Photo 2p and the train station. This dock is more suitable for a larger ferry however it is a little farther away from the train station and downtown Peekskill.

Photo 7p shows the existing docks at the Peekskill Yacht Club (identified as dock 2 in figure 108). There are many slots for smaller fishing boats and yachts. There is potential for a ferry dock to be placed here. The opposite side of these docks has a large slot that could accommodate a ferry however that side of the dock needs repairs.

Photo 8p shows the MTA permit parking lot across from the train station. During the week this lot is completely occupied with the vehicles of those using the train. This photo also shows there are available walkways for pedestrians around the train station and designated cross walks to the station are already in place. Photo 9p shows additional parking spaces across the tracks closer to the river. There are approximately 100 spaces at this site and during the week the majority of these spaces are occupied with the vehicles of those using the train. Photo 10p is taken directly outside the train station. It shows the available meter parking on the street outside the station.

13.2 Current Conditions

The City of Peekskill has an interest in a ferry service for commuting purposes and has conducted three public meetings on this matter where no public objection was shown. Throughout the year the city participates in festivals and other coordinated events where ferries bring visitors to several of the historic Hudson River towns. During these events the ferry lands at the pier at the end of the Louisa Street about .5 miles south of the train station. Shuttles are used during the festival to take people from the pier to downtown which works quite efficiently. This pier along with the other possible docks is shown in Figure 110. The construction of a 500 space parking garage next to the train station has been proposed and would be essential to a ferry service. The city is also planning to develop a large amount of residential complexes around the site which would significantly affect the demand for ferry.

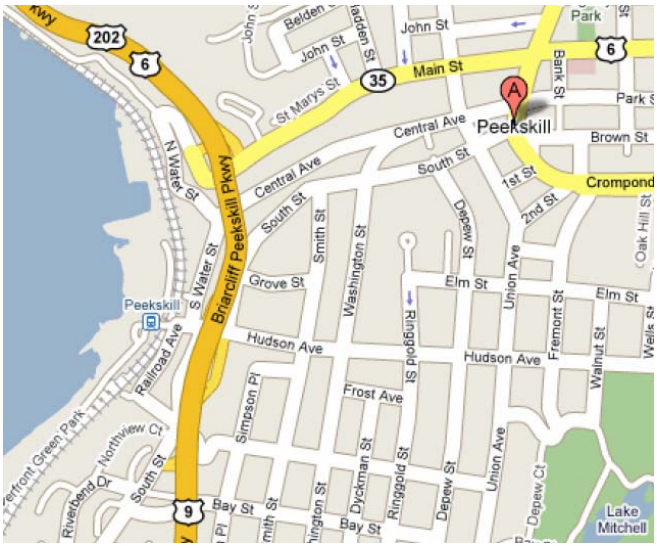


Source: Google Earth

Figure 110: Potential Docks for Peekskill Site

13.2.1 Vehicular Accessibility

The major highways that run by Peekskill include US Route 9, US Route 202, New York State Route 35 and US Route 6, shown in figure 111. These roads come together in Peekskill just north of the proposed site, through the downtown area (with the exception of Rt. 9) from the west. From that point, the roads connect to the train station and the proposed ferry site via local roads, over a short distance. Hudson Avenue is the main exit to the train station and the adjacent proposed site from Route 9. Hudson Avenue, Central Avenue and South Street are local roads that connect the site to downtown, through residential areas. A ferry terminal on the waterfront will increase the traffic on these roads and may cause slight traffic backups. Vehicles accessing the site through the downtown area traveling on 202 or 35 will encounter more traffic while commuting to the site. The downtown roads are narrow, with one lane in each direction and on street parking. The travel time for vehicles commuting through downtown will be significantly longer at times than the travel time for those vehicles exiting the highway directly to Water Street or Hudson Avenue. Construction of the proposed 500 space parking garage will be necessary to accommodate commuters accessing the ferry by car. This is the only potential location for ferry parking and any of the three potential sites shown in figure



Source: Google Maps

Figure 111: Highway Access to Peekskill Sites

110 will have to be served by this parking facility. Potential site 3 is 0.5 mile away from the train station and proposed parking facility site.

13.2.2 Transit Accessibility

The Peekskill site is very accessible via public transit. There are a total of 4 bus stops within the walkshed that are represented by the yellow buses in Figure 112. The blue routes are the corresponding bus routes for these stops. The red circle in Figure 112 represents the walkshed. Figure 113 shows a more precise layout of the separate bus routes that are provided by the Westchester County bus service (Bee-Line Bus Service). Routes 14, 15, 16, 17 and 18 all begin their route in Peekskill. Route 16 and Route 18 both serve the Peekskill train station which is adjacent to the first proposed ferry site. Route 16 begins its route at the train station and runs to Jefferson Valley. Route 18 is the Peekskill commuter route and runs into New York City. Buses arrive around every half hour during the peak hours of the day and around every hour during off peak hours. There is also one commuter rail connection within the walkshed. The commuter rail connection that serves the City of Peekskill is the Metropolitan Transportation Authority's Metro-North Railroad. The Hudson Line runs along the Hudson River from New York City north to Poughkeepsie, New York (figure 114). There is an existing stop (figure 115) in Peekskill and is adjacent to proposed site 1 and within walking distance from the other two proposed sites. According to Metro-North during the AM peak period there is an average of 967 commuters that access the rail station. Table 13 shows the mode split for commuters accessing the station during the AM peak period for each of the four proposed Westchester County Sites.

Table 13: Peekskill Rail Station Access
Source: Metro North Railroad

	Mode of Travel							
STATION	**Drove alone & parked**	**Carpooled**	**Dropped off**	**Walked**	**Taxi**	**Bus**	**Other**	**Total**
Tarrytown	733	93	205	325	28	420	16	1,820
	40%	5%	11%	18%	2%	23%	1%	
Peekskill	434	61	258	86	69	50	9	967
	45%	6%	27%	9%	7%	5%	1%	
New Rochelle	886	141	306	791	77	80	8	2,288
	39%	6%	13%	35%	3%	4%	0%	
Port Chester	616	112	227	270	21	14	28	1,288
	48%	9%	18%	21%	2%	1%	2%	

Dock 2 shown in picture 4p is a few hundred yards away from the station and dock 3 is within 0.5 miles of the station. The Hudson Line stops at this station every 30 minutes during peak hours and every hour during off peak hours. The city is planning to create a walk-path from the train station along the waterfront so commuters can walk to the docks. For those not using the train, the Bee-Line Bus Service currently runs through downtown Peekskill and then stops at the Peekskill train station. Commuters can easily get on the bus at any of the 4 downtown stops and get off at the train station which practically puts you at, or within a short walk from the ferry sites.

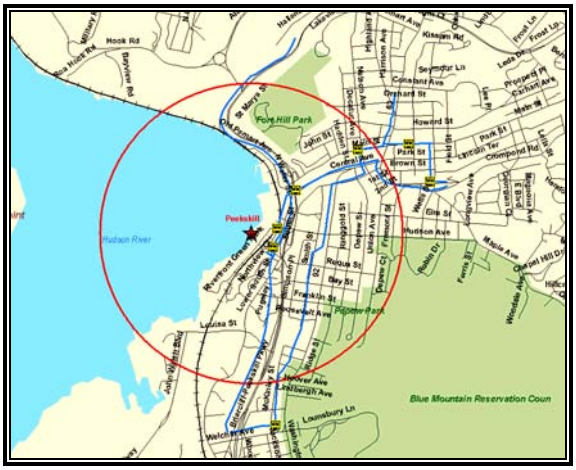
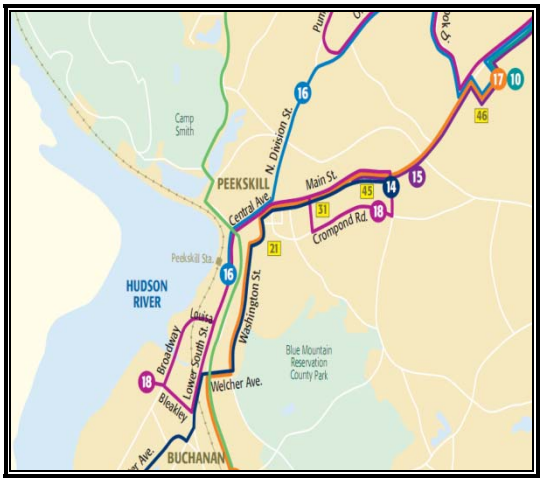
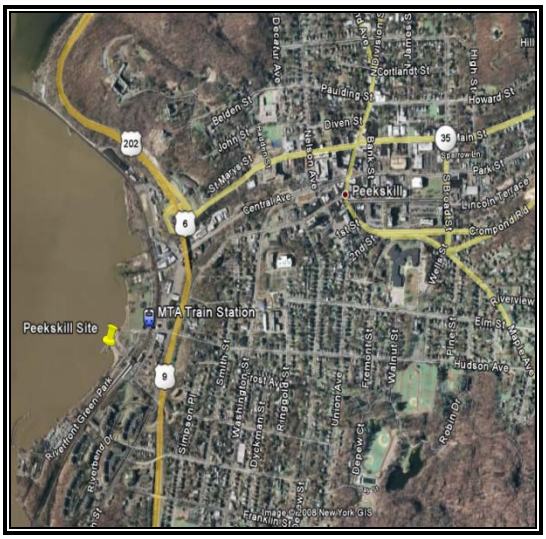


Figure 112: Peekskill Bus Stops and Bus Routes



Source: Bee-Line Bus Service
Figure 113: Bus Service Routes

Source: MTA
Figure 114: Metro-North Railroad (Hudson Line is Green)



Source: Google Earth
Figure 115: Peekskill Station Aerial View

13.2.3 Pedestrian and Bicycle Accessibility

The City of Peekskill is planning a significant amount of residential development within the walkshed and the bikeshed which would increase the potential demand for the ferry service in these two areas. Peekskill is very pedestrian and bicycle friendly with the majority of the residential and downtown roadways having walkways. However the approximately 0.5 mile, uphill walk from the station and the proposed sites to downtown may not seem too appealing to many pedestrians. The train station and the proposed sites are located on the western side of the train tracks which runs along the waterfront. The majority of the residential areas including the

new condos are located on the eastern side of the tracks and they can only be crossed at certain points. Although the condos are very close to the site, the walk becomes somewhat longer since one will have to cross the tracks by walking to the train station crosswalk or to Louisa Street to get to the site. A new shuttle service has been proposed, that would run from the residential areas and downtown to the sites. A walkway along the waterfront on the western side of the tracks to serve the Yacht Club (dock 2) and the pier at the end of Louisa Street (dock 3) is also under consideration.

13.2.4 Parking

The approaches to the terminal must take into account passengers arriving and departing with their own and other than their own vehicles. This requires access to the proposed site by private vehicles that would require daily, short term, and drop-off parking. Currently there is no available parking for the site at any of the docks within the Peekskill walkshed, which would be a major problem for a ferry service. The lots that are next to the train station are completely occupied during the week and are currently reserved for MTA permits. A 500 space parking facility, however, is being proposed to be developed adjacent to the train station and next to the first proposed site. If this plan is implemented there would be ample parking for the ferry service.

13.2.5 Demographics/Commute Patterns

The FPLAS Task 2B Deliverable reported figures for the number of total commuters and Manhattan-bound commuters leaving and entering the walkshed, the bikeshed and the driveshed. There are an average of 26 potential Manhattan-bound commuters within the walkshed, 1,116 potential Manhattan-bound commuters within the bikeshed and 47,009 potential Manhattan-bound commuters within the driveshed. These figures can be used to create a rough estimate for the demand that will coincide with the proposed site. The residential development within the city should increase the potential demand within the walkshed and the bikeshed. If the shuttle service from the residential areas is implemented the commute to the ferry service would seem much more appealing. The largest number of potential commuters, however, will most likely come from the driveshed. Construction of the parking garage near the train station would be necessary to provide the required parking space.

13.2.6 Land Use

Peekskill is a historic Hudson River town and has a large artists' district in the downtown area and a newly revitalized central business district. Restaurants, galleries and a weekly farmers' market attract both residents and visitors. One of the more notable attractions is the Paramount Center for the Arts which is usually showing live acts and art movies most days of the week. The city is also planning significant amount of new development. About 200 new housing units, adjacent to the site have been put up since 2005. Another large condominium, Chapels Hill, about 1.5 miles from the train station is being constructed and will have about 200-250 units. Another complex 2 miles from the site has been approved not yet constructed and will provide another 50 units. 'The Abby' which was recently proposed but not yet approved would be located one mile from the site and will house 130 units. The downtown area is also looking to add another 113 units and a large waterfront complex of 500 units both of which have been proposed and are under review. The large amount of residential development within the town could dramatically increase the demand for the ferry service into Manhattan if the proposed projects are approved.

Figure 116 shows the land use for the area within the Peekskill walkshed. The legend in the map shows the different categories of land use: nonresidential, open, residential and undeveloped. The majority of the waterfront within the walkshed is considered to be open land. This is the area that the ferry landing would be constructed. The area on the eastern side of the rail tracks is nonresidential. This is where the rail station is located along with some small businesses just off the waterfront. Figure 116 also shows a significant amount of land within the walkshed taken by residential use.

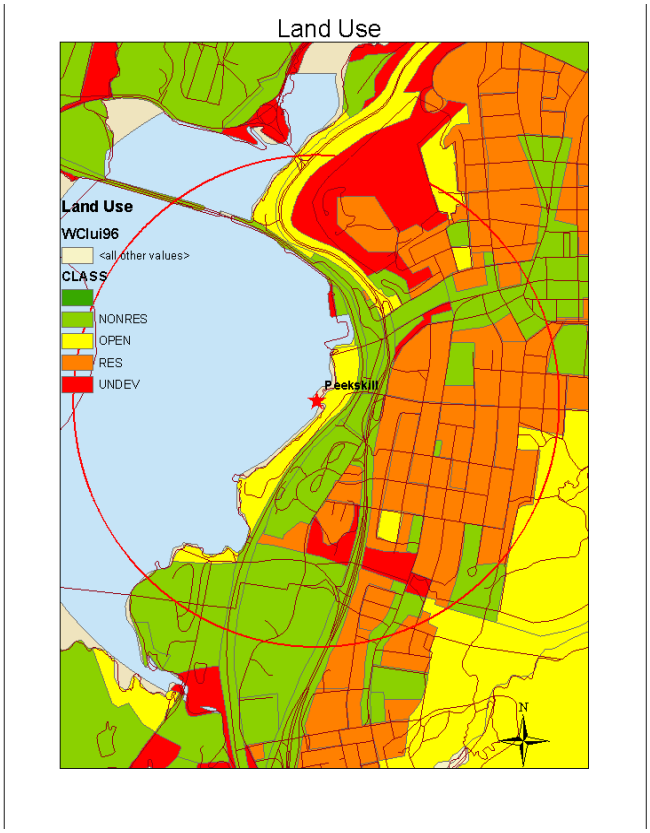


Figure 116: Peekskill Land Use

13.3 Site Assessment

Based on the discussion presented in section 13.2 the evaluation criteria were assessed according to a 4 point ranking scoring system: *Poor, Fair, Good,* and *Excellent*. Rating of the evaluation criteria and the assessment of each site are shown in Table 14 below.

The site assessment for the three potential sites at Peekskill shows that *from a parking and land side access perspective*, all three sites present viable options. The first site is more conveniently located next to the train station and the proposed parking facility. However, the water at this site is rather shallow which would increase the cost of the docking facility. The second site is within a short walk from the proposed parking facility but is not directly accessible from the other side of the rail tracks. The third site is further away from the proposed parking facility, but still with walking distance. It should be noted that once the proposed development plans materialize, current conditions will be improved upon with respect to several of the above criteria, including frequency and level of proximate transit service as a result of a shuttle service implementation;

proximity to parking and availability of adequate parking spaces as a result of a new parking facility development; proximity to housing as a result of the proposed new residential development.

Table 14: Peekskill Site Assessment

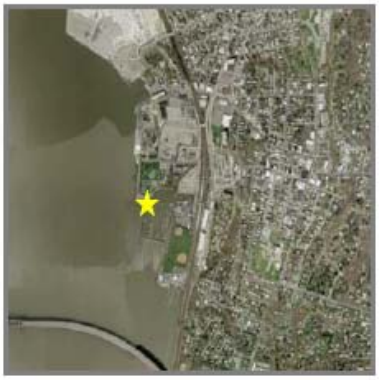
Evaluation Criteria	Site 1 Evaluation	Site 2 Evaluation	Site 3 Evaluation
Vehicular Accessibility			
Highway connectivity of the site with areas within the driveshed	Fair	Fair	Fair
Availability and condition of access roads	Fair	Fair	Fair
Transit/Intermodal connectivity			
Proximity to existing bus routes	Good	Good	Fair
Proximity to existing train service	Excellent	Excellent	Good
Availability of intermodal transfer stations	Poor	Poor	Poor
Frequency/Level of proximate transit service	Fair	Fair	Fair
Pedestrian and Bicycle Access			
Directness of pedestrian/bike routes	Poor	Poor	Poor
Quality of pedestrian/bike environment	Fair	Fair	Fair
Parking			
Proximity to Parking	Excellent	Excellent	Good
Availability of Adequate Parking Spaces	Poor	Poor	Poor
Land Use			
Proximity to housing	Good	Good	Good
Proximity to jobs	Fair	Fair	Fair
Proximity to retail/entertainment	Good	Good	Good
Proximity to parks/open spaces	Good	Good	Good
Demographics and Commute Patterns			
Potential of the site to attract demand	Fair	Fair	Fair

14. TARRYTOWN, WESTCHESTER COUNTY

14.1 Site Summary

The Tarrytown site is located in the Village of Tarrytown in Westchester County, New York. This site received a score of 29.69, ranking seventeenth for being an origin site while only scoring 6.24 and ranking fifty-fifth for being a destination site.

Commuters leaving walkshed	176
Commuters entering walkshed	346
Number of Manhattan-bound commuters within walkshed	33
Housing units in walkshed	155
Average median household income in walkshed	$59,493
Vehicle ownership rate in walkshed (vehicles/occupied housing unit)	1.18
Commuters leaving bikeshed	9,338
Number of Manhattan-bound commuters within bikeshed	1,790
Housing units in bikeshed	7,405
Average median household income in bikeshed	$66,675
Vehicle ownership rate in bikeshed (vehicles/occupied housing unit)	1.46
Commuters leaving driveshed	176,152
Number of Manhattan-bound commuters within driveshed	29,922
Housing units in driveshed	135,650
Average median household income in driveshed	$76,289
Vehicle ownership rate in driveshed (vehicles/occupied housing unit)	1.61
Existing parking within walkshed (m^2)	0
Potential parking within walkshed (m^2)	284
Total length of access roads, class ACC 1-5 in search distance (m)	196
Number of bus stops within walkshed	4
Number of NYC subways stops within walkshed	0
Number of commuter rail connections within walkshed	1
Non-public land ownership area in walkshed (m^2)	157,473
Public land ownership area in walkshed (m^2)	0
Office, retail and industrial space in walkshed (ft^2)	0
Percent of land in walkshed known to be vacant	0.2%
Percent of land in walkshed known to be publicly owned	0%



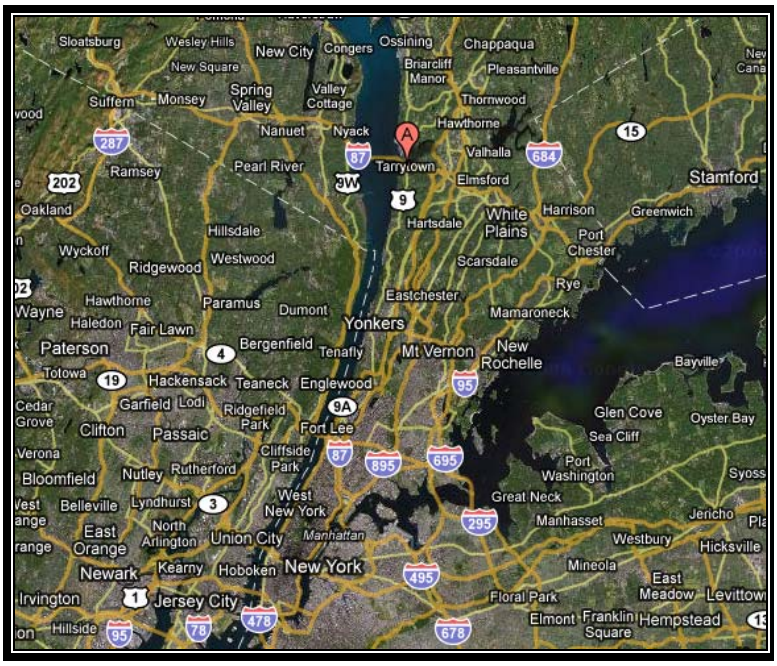
Site Name:	Tarrytown
Municipality:	Village of Tarrytown
County:	Westchester

Figure 117: Factors Influencing Site Evaluation

Factors influencing this site's evaluation are shown in Figure 117. Details on how these factors were derived are given in the Task 2B Deliverable. For the purpose of developing a better perspective, however, on what these factors represent, it is noted here that the walkshed is defined as the area within a 0.75 mile radius, the bikeshed is the area within a 3 mile radius and the driveshed is the area within a 15 minute drive from the site marked with a star in figure 117.

The GIS database was developed based on publicly available databases that were available at the time of this study effort and may not reflect current conditions. For this purpose, the research team searched for updated information through interviews, Internet search and site visits.

The Village of Tarrytown is located on the eastern bank of the Hudson River about 28 miles north of midtown Manhattan. The main route by vehicle from Tarrytown into Manhattan is I-87 south (approximately 17 miles) to Route 9A south for another 7 miles. Figure 118 shows the geographic relationship of the Village of Tarrytown, New York to New York City. The red balloon in Figure 118 represents the Village of Tarrytown.

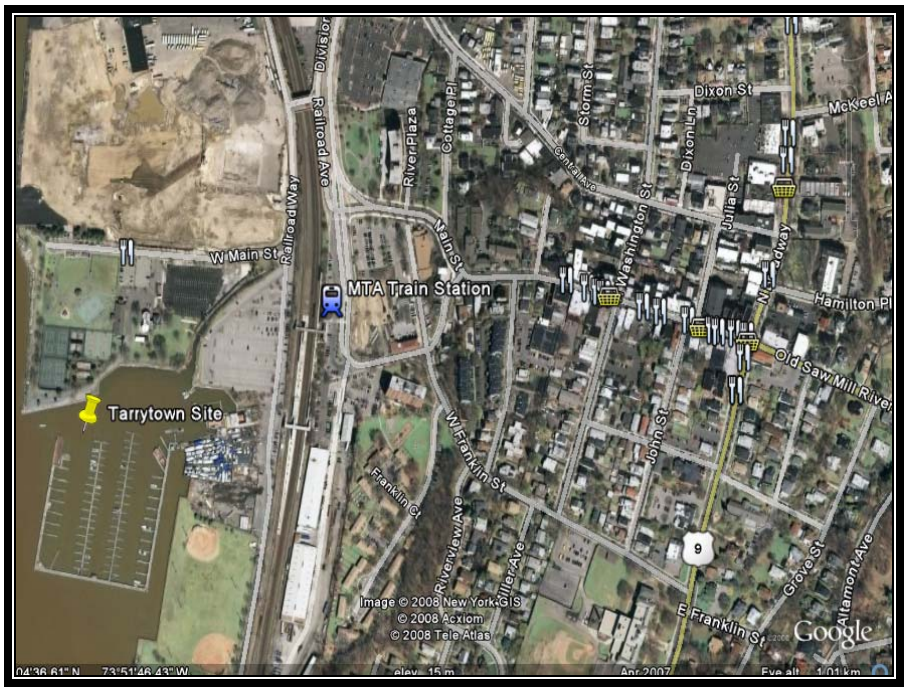


Source: Google Maps

Figure 118: Tarrytown in Comparison to New York City

The actual site being evaluated is located on the eastern bank of the Hudson River just north of the Tappan Zee Bridge in Tarrytown. Figure 119 shows an aerial view of the site that is being evaluated. Figure 119 also shows the relationship of the site to places of interest within the Village. Figure 120 is an aerial view of Tarrytown that shows where the site is located within the village.

During the site visits photos were taken to document the sites and their surroundings. Figure 121 shows an aerial view of the Tarrytown site and the locations of photos that were taken during the site visit. The photos are represented by the red balloons in Figure 121. The legend in the figure shows which direction each photo faces with respect to the compass in the figure. Due to the amount of construction around the site certain areas were not accessible during the site visit



Source: Google Earth
Figure 119: Tarrytown Site (Aerial View-Close Up Places of Interest)

Source: Google Earth
Figure 120: Tarrytown (Aerial View-Places of Interest)

Photo 8t

Photo 7t

Photo 6t

Photo 5t

Source: Google Earth

Figure 121: Tarrytown Site

Photo 1t

Photo 2t

Photo 3t

Photo 4t

Photo 1t shows the parking lot adjacent to Tarrytown's MTA train station. The lot is also adjacent to the proposed site. All of the spaces in the parking lot are occupied on weekdays and are for parking permit only. This lot will not provide any parking for a ferry service. Photo 2t shows some of the docks at the marina. This section of the marina houses larger boats and may be a spot for the ferry to load and unload passengers. Photo 3t is another shot of the marina. There are 6 rows of slots that house smaller fishing and leisure boats. The outside perimeter of this marina may also be a place to house a ferry with some small modifications. Photo 4t shows the land opposite the marina which currently has no docks but has the space to build if a plan is approved. The photo also shows the relative location of the Tarrytown site with respect to the Tappan Zee Bridge. The site is just north of the bridge on the eastern bank of the Hudson River.

Photos 5t and 6t show the newly developed residential units on the waterfront. This development was part of the waterfront plan. When complete the buildings will house approximately 250 units. This will increase the demand for the ferry service within the walkshed. These units are just a few hundred yards away from the proposed site. Photo 7t shows another picture of the marina discussed previously taken from another angle. This photo shows the outer perimeter of the marina and the types of boats that are currently docked there. Photo 8t shows another parking lot adjacent to the site. This lot is also completely occupied during the week and cannot accommodate any parking for the ferry service.

14.2 Current Conditions

Tarrytown is interested in a ferry service for commuting purposes into Manhattan. The site has ample space to house the ferry at the marina on the Hudson River. The site is also adjacent (less than 5 minute walk) to the MTA rail station which would help commuters easily connect to the ferry service via public transit. Tarrytown has run a ferry service in the past but not for commuting purposes. The ferry was used to take tourists to the different historic Westchester County Hudson River towns. The ferry landing was at the end of West Main Street but it no longer exists due to the development of the new residential housing in the area. The Village of Tarrytown community has no interest in increasing the amount of parking at the waterfront, which would be a problem for commuters willing to access the potential ferry service by car. According to MTA statistics however, a large percent of commuters accessing Tarrytown's train station arrives by bus (23% of MTA's commuters). This, along with the new residential development taking place in the area, indicates that there could be a good level of demand for commuters walking to, or accessing the potential ferry site by bus.

Source: Google Maps

Figure 122: Highway Access to Tarrytown

14.2.1 Vehicular Accessibility

Tarrytown has access to highways I-87 and I-287 and is at the site of the eastern end of the Tappan Zee Bridge (figure 122). I-87 continues south to New York City and I-287 heads east across Westchester which links to the Saw Mill River Parkway, the Taconic State Parkway, the

Sprain Brook Parkway and I-95. The main road that runs through the town is US-9 which all vehicles trying to access the site will most likely use. From US-9 vehicles need to travel to the waterfront via Franklin Street, Main Street or Central Avenue. Franklin Street and Central Street run to the waterfront through the residential areas of Tarrytown while Main Street runs to the waterfront through downtown Tarrytown. Since the Village, however, is not planning to develop any additional waterfront parking, it is not anticipated that many commuters will plan to access the potential new ferry site by car.

14.2.2 Transit Accessibility

There are a total of 14 bus stops within the walkshed that are represented by the yellow buses in Figure 123. The blue routes are the corresponding bus routes for these stops. The red circle in Figure 123 represents the walkshed. Figure 124 shows a more precise layout of the separate bus routes that are provided by the Westchester County bus service (Bee-Line Bus Service). Three bus routes serve the Tarrytown Station including routes 13, TZX and 1T. All three routes service the train station and downtown Tarrytown. Route 13 runs from Tarrytown to White Plains. The 1T route heads from Tarrytown all the way to the Bronx and the TZX leaves Westchester County and crosses the Tappan Zee Bridge. The buses arrive in Tarrytown around every 30 minutes during peak hours and around every hour during the middle of the day.

Figure 123: Tarrytown Bus Stops and Bus Routes

Source: Bee-Line Bus Service

Figure 124: Bus Service Routes

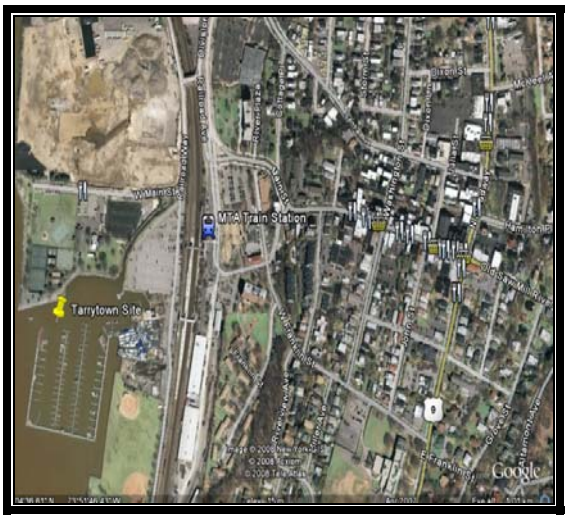
There is also one commuter rail connection within the walkshed (FPLAS). The commuter rail connection that serves the Village of Tarrytown is the Metropolitan Transportation Authority's Metro-North Railroad (figure 125). The Hudson Line runs along the Hudson River from New York City north to Poughkeepsie, New York. There is an existing stop in Tarrytown and is walking distance from the proposed site. The Hudson Line stops at this station every 30 minutes during peak hours and every hour during off peak hours. The MTA train station (location shown in figure 126) is directly adjacent to the site, within 5 minutes walking distance. According to Metro-North during the AM peak period there is an average of 1,820 commuters that access the rail station. Table 15 shows the mode split for commuters accessing the station during the AM peak period for each of the four proposed Westchester County Sites.

Table 15: Tarrytown Rail Station Access
Source: Metro North Railroad

STATION	Mode of Travel							
	Drove alone & parked	Carpooled	Dropped off	Walked	Taxi	Bus	Other	Total
Tarrytown	733	93	205	325	28	420	16	1,820
	40%	5%	11%	18%	2%	23%	1%	
Peekskill	434	61	258	86	69	50	9	967
	45%	6%	27%	9%	7%	5%	1%	
New Rochelle	886	141	306	791	77	80	8	2,288
	39%	6%	13%	35%	3%	4%	0%	
Port Chester	616	112	227	270	21	14	28	1,288
	48%	9%	18%	21%	2%	1%	2%	

Accessing the ferry site by rail will be very efficient since the train stops practically at the site. Buses also run through downtown and stop at the train station. Therefore commuters leaving the residential areas and downtown can access the ferry by bus. Tarrytown has the largest percent of commuters accessing the train station by bus, which is an indication that a large percent of potential ferry commuters will use the same access mode.

Source: MTA
Figure 125: Metro-North Railroad View (Hudson Line is Green)



Source: Google Earth
Figure 126: Tarrytown Station Aerial

14.2.3 Pedestrian and Bicycle Accessibility

The recent development of 250 residential units adjacent to the site will increase the potential demand for ferry services within the walkshed and the bikeshed. These residential units are on the western side of the rail tracks, thus access to the site does not require crossing the tracks. Any commuter leaving from the new residential units only has to walk a few hundred yards to the ferry site. However, for the rest of the walking or biking commuters the site is not very

accessible. Although the town is pedestrian friendly and has sidewalks on the majority of the roads, commuters face large hills trying to walk or bike from the site to the downtown area which is less than a half mile. Also commuters must cross the tracks at certain points and they can cross by using the train station walkway or by walking north to Beekman Street which is a half mile north of the train station. Although the site is not very pedestrian accessible, MTA statistics indicate that 18% of the commuters walk to the train station, which indicates that there is potential for walk access to a ferry service. Furthermore, there are buses that run through the downtown area and along Route 9 and stop at the train station.

14.2.4 Parking

The approaches to the terminal must take into account passengers arriving and departing with their own and other than their own vehicles. This requires access to the proposed site by private vehicles that would require daily, short term, and drop-off parking. Currently there is no existing parking at the site for the ferry service. There are two large parking lots at the train station next to the site (figure 121) but both are completely occupied during the week. These lots are used for the MTA train station parking and the new residential housing parking. No accommodation is being planned for the ferry service parking, which indicates that a demand analysis for the potential ferry service should focus on access by other modes. If parking near by the ferry site is not an option, the possibility of providing ferry parking somewhere in the downtown area and connecting it to the ferry landing site with a frequent and efficient shuttle service should be examined.

14.2.5 Demographics/Commute Patterns

The FPLAS Task 2B Deliverable reported figures for the number of total commuters and Manhattan-bound commuters leaving and entering the walkshed, the bikeshed and the driveshed. There are an average of 33 potential Manhattan-bound commuters within the walkshed, 1,790 potential Manhattan-bound commuters within the bikeshed and 29,922 potential Manhattan-bound commuters within the driveshed. These figures can be used to create a rough estimate for the demand that will coincide with the proposed site. The residential development within the city should increase the demand within the walkshed and the bikeshed. Since the development is so close to the ferry service it may seem appealing to many of the new residents in the 250 units. A large amount of the demand however will most likely come from the driveshed.

14.2.6 Land Use

Tarrytown is a historic river town of Westchester County. Many of the attractions in Tarrytown are historic sites. The Village also offers plenty of fine dining, and a number of interesting shops in the downtown area. One of the country's oldest theaters, Tarrytown's historic Music Hall attracts visitors from around the region with its various acts. The majority of these attractions are located on Main Street. Their proximity to the site is shown in Figure 119. New development next to the proposed ferry service is currently under way. 250 new residential housing units are being constructed a few hundred yards away from the site.

Figure 127 shows the land use for the area within the Tarrytown walkshed. The legend in the map shows the different categories of land use: nonresidential, open, residential and undeveloped. Tarrytown’s land use is a mix between nonresidential (commercial and retail) area

and residential area. There is a Main Street that runs through downtown Tarrytown where many small shops and restaurants are located.

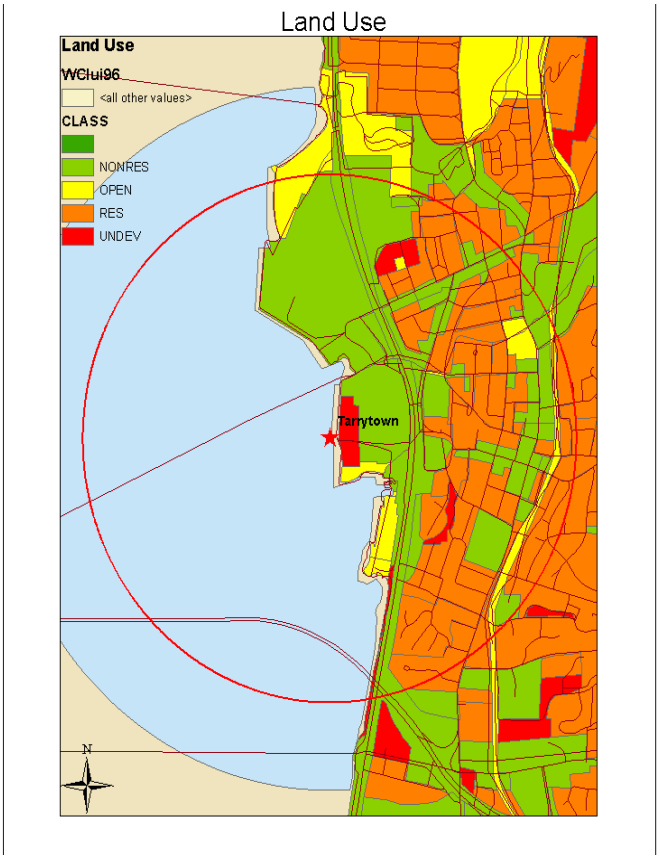


Figure 127: Tarrytown Land Use

14.3 Site Assessment

Based on the discussion presented in section 14.2 the evaluation criteria were assessed according to a 4 point ranking scoring system: *Poor, Fair, Good,* and *Excellent*. Rating of the evaluation criteria and the assessment of the site are shown in Table 16 below.

The assessment of the Tarrytown site shows that *from a parking and land side access perspective*, emphasis should be given to the bus and possible new shuttle service connections to the proposed ferry site, to overcome the lack of ferry parking. The new waterfront development would benefit from a ferry service. The possibility of Tarrytown becoming part of a ferry service serving more locations could be examined.

Table 16: Tarrytown Site Assessment

Evaluation Criteria	Site Evaluation
Vehicular Accessibility	
Highway connectivity of the site with areas within the driveshed	Good
Availability and condition of access roads	Fair
Transit/Intermodal connectivity	
Proximity to existing bus routes	Excellent
Proximity to existing train service	Excellent
Availability of intermodal transfer stations	Poor
Frequency/Level of proximate transit service	Fair
Pedestrian and Bicycle Access	
Directness of pedestrian/bike routes	Fair
Quality of pedestrian/bike environment	Fair
Parking	
Proximity to Parking	Excellent
Availability of Adequate Parking Spaces	Poor
Land Use	
Proximity to housing	Good
Proximity to jobs	Fair
Proximity to retail/entertainment	Good
Proximity to parks/open spaces	Good
Demographics and Commute Patterns	
Potential of the site to attract demand	Fair

15. ADDITIONAL CONSIDERATIONS

The parking and landside access considerations presented above provide the preliminary analysis for the proposed sites, to determine their viability in terms of providing good transit alternatives or complementary services in a region, their connectivity with other existing systems and accessibility to areas of potential demand. To further evaluate these sites, several steps should be taken next, including water-side site evaluation, detailed demand and network wide analysis from a ferry system point of view, operational, cost benefit, and environmental impact analyses.

Additional considerations in determining the viability of a site deal primarily with the waterside access and conditions evaluation. This evaluation falls beyond the core scope of the project, but the criteria are briefly analyzed and some potential issues to be addressed in site specific analyses are indicated. The relevant criteria can be summarized in the following:

- Adequacy of water depth to accommodate the draft of the design ferry vessel (docking facility)
- Ease of navigation and access to the area of the docking facility, including water traffic interference, channel configuration (e.g. bends), danger spots and marks etc.
- Adequacy of vessel maneuvering area
- Protected berthing in relation to wind climate and wave conditions
- Tidal and current conditions
- Wake generation and propagation and impact to the adjacent waterfront uses and to the shoreline – Vessel speed limitations
- Need for dredging and conditions of littoral transport, including evaluation of beach profiles
- Waterside conditions for construction of the docking facilities

Different vessel types could be considered to address issues that may arise based on the above considerations. These would affect sailing speed, water depth required, docking facility design, wake generation. Both multi-hull (e.g. catamaran) and mono-hull ferries may be evaluated. Loaded drafts for carrying capacities below 149 passengers (limit of Class II passenger vessels) are typically 3.3 ft (jets) and 6.0 ft (hull) for the catamaran vessel and 6.0 ft for mono-hull vessel. Therefore, a water depth of at least 7.0 ft is required. Several of the sites considered may need dredging to accommodate these vessels. Typical Length Over All (LOA indicates the maximum hull length of a vessel) of a catamaran vessel of this capacity is around 70.0 – 75.0 ft and of a mono-hull around 95.0 ft. Beam is around 28.0-29.0 ft for catamaran design and 22.0 ft for the mono-hull. Docking facilities may be available at a site, constructed, or can be provided by floating loading platforms that are able to accommodate safely the vessel's LOA. Wake generation may be a serious problem for narrow channels. Typically, a vessel of the capacity indicated above generates 1.3 ft of wake, if it is of catamaran type and up to 2.0 ft, if it is of mono-hull type. These wake generation figures correspond to a cruising speed, which is around 30 knots. In narrow channels wake is not possible to dissipate before reaching the banks and therefore speed limitation is required. Wave conditions and how they would affect a site depend on the site's location and geometry, shoreline configuration, and the prevailing wind direction.

Littoral transport at each site need to be evaluated as well and will depend on wave and currents nearshore. Aerial views may provide some indications regarding material accumulation.

Once a viability of a site has been established both from land and water side, a thorough demand analysis would be required, to develop estimates of potential demand for new services and resulting service frequencies. Demand analysis for new services typically requires advanced methods, which may include a regional travel simulation or mode choice modeling techniques, and extensive data to be collected, including stated intentions of potential users of the transit service. The traffic and transit services in the overall region should be looked as a system. Ferry services should be considered within the context of this system and the option of a network of services with established origins and destinations should be considered. Estimates of potential demand may then provide input into an operations model for the ferry service, and subsequently into environmental and economic analysis models to determine the environmental impacts and the fiscal viability of the proposed service.

Task 4

Site Assessment and Prioritization

Table of Contents

List of Tables

1. INTRODUCTION

The goal of the Ferry Parking and Landside Access Study (FPLAS) is to assist the New York Metropolitan Transportation Council (NYMTC) in the assessment and evaluation of both current and future potential sites suitable for the development of facilities to support waterborne transportation. Specifically, the study focuses on the development of assessment criteria to optimize underutilized waterborne transportation resources and services through the following:

- Review previous research about waterborne transportation needs of the region;
- Develop criteria to assess the viability of existing and potential sites that can be used for the development of facilities and infrastructure to support waterborne transportation; and
- Evaluate and prioritize sites for development.

In previous tasks, the consultant team developed a comprehensive research report (Task 1 report) that summarizes previous research in the area, including a detailed discussion of the major factors and components of growth, which were used in guiding the selection of alternative sites for development. Task 2 involved expert interviews, the development of a Geographic Information System (GIS) database, and a long list of existing and potential ferry sites. This work is summarized in the Task 2 report. Following the submittal of the Task 2 report, a GIS-based site comparison tool was developed and a workshop was conducted for the purpose of developing numerical ranking of various site evaluation criteria. Based on this ranking, as well as meetings with NYMTC staff, FPLAS Steering Committee members, county officials and staff from individual municipalities, a short list of twelve potential ferry sites was determined as outlined in Task 2B report. In Task 3, a detailed evaluation of the twelve sites was performed. This evaluation was based on findings from the previous tasks and data collected from various sources for the purpose of this task, interviews with local officials, and site visits and inspections. A set of criteria was developed against which each site was evaluated. Individual reports were produced, detailing the conditions at each site and a qualitative assessment of the criteria. The assessment of individual sites was summarized in the Task 3 report.

The work performed under Task 4 is the subject of this report, the Task 4 Deliverable.

2. QUANTITATIVE SITE ASSESSMENT

The objective of this task is to produce a ranking and comparison of the sites. For this purpose, numerical values were assigned to the individual site assessments that were included at the end of each site evaluation in Task 3 Report. The criteria used in these assessments include the following:

Vehicular Accessibility

1. Highway connectivity of the site with areas within the driveshed

2. Availability and condition of access roads

Transit/Intermodal connectivity

1 Proximity to existing bus routes
2 Proximity to existing rail service
3 Availability of intermodal transfer stations
4 Frequency/Level of proximate transit service

Pedestrian and Bicycle Access

1 Directness of pedestrian/bike routes
2 Quality of pedestrian/bike environment

Parking

1. Proximity to Parking
2. Availability of Adequate Parking Spaces

Land Use

1 Proximity to housing
2 Proximity to jobs
3 Proximity to retail/entertainment
4 Proximity to parks/open spaces

Demographics and Commute Patterns

1. Potential of the site to attract demand

A score of Poor, Fair, Good and Excellent was assigned to each of the above criteria. In this report, a numerical score is used, with values of 1, 2, 3 and 4 corresponding to Poor, Fair, Good, and Excellent. Based on this scoring system and the number of criteria, there is a maximum of 60 possible points to be scored for each site.

A short summary of each site assessment is provided along with a short explanation of the site rankings. For each site the number of points is totaled to prioritize the sites numerically. The average for each site represents the arithmetic mean which was determined by dividing the total points for the site by the number of criteria (15). The median was obtained by taking the middle of the distribution where half the scores are above the median and half are below the median. Table 1 shows the site codes assigned to each site and Table 2 provides a summary of the total points scored for each site along with the average points and the median points the site scored on all assessment criteria.

Table 1: Site Codes

Site Name	Site Code
Fordham Landing, Bronx	**1**
Marina Del Ray, Bronx	**2**
Trump City, Manhattan	**3**
East River Landing, Manhattan	**4**
East 63rd Street, Manhattan	**5**
Pier 40, Manhattan	**6**
Beechhurst Residential Park, Queens	**7**
Port Richmond, Staten Island	**8**
Port Chester, Westchester County (Site 1)	**9a**
Port Chester, Westchester County (Site 2)	**9b**
Fort Slocum Road, Westchester County	**10**
Peekskill, Westchester County (Site 1)	**11a**
Peekskill, Westchester County (Site 2)	**11b**
Peekskill, Westchester County (Site 3)	**11c**
Tarrytown, Westchester County	**12**

Table 2: Site Scoring (Numerical)

Evaluation Criteria	1	2	3	4	5	6	7	8	9a	9b	10	11a	11b	11c	12
Vehicular Accessibility															
Highway connectivity of the site with areas within the driveshed	3	4	3	4	4	4	4	3	3	3	3	2	2	2	3
Availability and condition of access roads	1	4	2	3	3	3	4	2	3	1	2	2	2	2	2
Transit/Intermodal connectivity															
Proximity to existing bus routes	4	4	4	4	4	4	4	4	4	1	2	3	3	2	4
Proximity to existing train service	4	1	4	4	4	4	3	1	4	1	1	4	4	3	4
Availability of intermodal transfer stations	2	1	3	4	4	4	2	2	1	1	3	1	1	1	1
Frequency/Level of proximate transit service	3	2	4	4	4	4	3	3	2	2	3	2	2	2	2
Pedestrian and Bicycle Access															
Directness of pedestrian/bike routes	2	4	4	4	4	4	4	2	4	1	2	1	1	1	2
Quality of pedestrian/bike environment	1	4	4	4	4	4	4	2	3	1	3	2	2	2	2
Parking															
Proximity to Parking	2	3	3	4	4	4	2	1	4	1	4	4	4	3	4
Availability of Adequate Parking Spaces	1	2	2	3	2	4	1	1	2	1	2	1	1	1	1
Land Use															
Proximity to housing	4	4	4	3	4	3	4	2	3	1	3	3	3	3	3
Proximity to jobs	2	3	3	4	4	4	2	2	2	1	1	2	2	2	2
Proximity to retail/entertainment	1	2	4	4	4	3	2	2	3	1	1	3	3	3	3
Proximity to parks/open spaces	2	3	4	3	4	2	3	2	2	1	4	3	3	3	3
Demographics and Commute Patterns															
Potential of the site to attract demand	3	3	4	4	4	4	3	2	3	1	2	2	2	2	2
TOTAL POINTS	35	44	52	56	57	55	45	31	43	18	36	35	35	32	38
Average	2.3	2.9	3.5	3.7	3.8	3.7	3.0	2.1	2.9	1.2	2.4	2.3	2.3	2.1	2.5
Median	2	3	4	4	4	4	3	2	3	1	2	2	2	2	2

3. ADDITIONAL COMMENTS

The *Fordham Landing*, Bronx site scored a total of 35 points with an average score of 2.3 and a median score of 2 for all criteria. This site would need a significant amount of improvement to implement a ferry service. The pier at the site is torn down and hard to access. The land at the site would need to be cleared of trees and trash and a new pier would need to be constructed. The site is well connected to the highways in the area however direct access to the site is limited. Located in the Bronx, the site has excellent connectivity to bus routes and train service. There is a limited amount of parking available for the commuters choosing to drive to the site.

The *Marina Del Ray* site scored a total of 44 points with an average score of 2.9 and a median score of 3 for all criteria. This site has a very strong potential as an originator of trips, however the fact that the majority of the waterfront land in Throgs Neck is privately owned makes the site questionable as a good location to implement the ferry service. Although this site ranks fairly high in the majority of assessment criteria, a future ferry service in this location depends upon the availability of land to build and run the service.

The *Trump City*, Manhattan site scored a total of 52 points with an average score of 3.5 and a median score of 4 for all criteria. This site scored very high in the majority of assessment criteria and has great potential to support a ferry service. There is currently an existing pier that could accommodate heavy demand from a ferry service with some minor improvements. The site is very accessible to pedestrians and has a great potential to attract demand with a large, dense residential neighborhood just north of the site. As with all the Manhattan sites, there is parking however it is very expensive and very unlikely that a commuter would drive and park to access the site. However this is not an issue because the site is so accessible via public transit and there is a large number of potential users within the walkshed.

The *East River Landing*, Manhattan site scored a total of 56 points with an average score of 3.7 and a median score of 4 for all criteria. This site ranks very high in almost every assessment criterion but it is located directly between two of the most heavily used ferry terminals in Manhattan (Whitehall Manhattan Terminal and Pier 11 Terminal). It seems that constructing a new ferry service in this area would not make sense and further investigation would require a ferry service network and demand analysis.

The *East 63rd Street*, Manhattan site scored a total of 57 points with an average score of 3.8 and a median score of 4 for all criteria. This Manhattan site also has great potential to support a ferry service. This site has strong characteristics to be both an origin and a destination site due to the major attractions and dense residential space within the walkshed. One impediment the site has is that there is no existing landside structure to berth the ferry. A large investment would be needed to construct a new ferry landing here.

The *Pier 40*, Manhattan site scored a total of 55 points with an average score of 3.7 and a median score of 4 for all criteria. The site shows strong characteristics to be both an origin and destination site due to the major attractions (recreational activities) and dense residential space within the walkshed. The site has an existing structure that could accommodate heavy demand from a ferry service with some small improvements. The only obstacle with this site would be the plans for future development for the site. The Hudson River Parks Trust owns pier 40 and the future of the pier is ultimately in their hands.

The *Beechhurst Residential Park*, Queens site scored a total of 45 points with an average score of 3.0 and a median score of 3 for all criteria. The site has strong potential as an originator of trips, however the fact that the majority of the waterfront land in Beechhurst is privately owned makes it questionable that this site would be a good location to implement the ferry service. Although the ranking for this site is fairly high, a future ferry service in this location depends upon availability of land to build and run a ferry service.

The *Port Richmond*, Staten Island site scored a total of 31 points with an average score of 2.1 and a median score of 2 for all criteria. The site does not have strong potential for a ferry service. There is an existing, heavily used ferry terminal (St. George) in Staten Island that provides free trips to Manhattan and back. Bus routes run from the Port Richmond area to St. George's Terminal. The location and schedules of this ferry terminal were previously discussed in section 10.2. There is no parking at the proposed site and the majority of the area within the walkshed of the proposed site is private land. A significant amount of investment would also be needed to construct a new pier for the ferry.

The *Port Chester*, Westchester County site one scored a total of 43 points with an average score of 2.9 and a median score of 3 for all criteria. Potential site two scored a total of 18 points with an average score of 1.2 and a median score of 1 for all criteria. The site does not have strong potential for a ferry service. Potential site one clearly presents a better option compared to potential site two. Site one is ranking higher or at least as good as site two in all criteria. The site has better access by car, transit, or on foot and there is potential parking available within proximity of one block. According to their plan, the village seems to be developing following a transit oriented development concept, clustering residences, offices, shops and services around a proposed transit hub and by the proposed ferry site. A new ferry service is well within the context of such development, providing a viable, from the perspective of this study, new transit option to the area. It should be noted here, that once the proposed development plans materialize, current conditions will be improved upon with respect to several of the above criteria, including availability of intermodal transfer stations, quality of pedestrian/bike environment, availability of adequate parking spaces, proximity to housing, jobs, retail and entertainment, and the overall potential of the site to attract demand.

The *Fort Slocum Road*, Westchester County site scored a total of 36 points with an average score of 2.4 and a median score of 2 for all criteria. The site has some potential

to accommodate ferry service. Major impediments include the distance of the site from the down town area and the intermodal transit center, the number of transfers that would be required to access the site by transit for most commuters, the low density residential area within the walkshed, and the limited road connectivity by low speed access roads. On the other hand, the greater region generates substantial Manhattan-bound commuter demand and New Rochelle's development plans would generate additional demand in the future. A new ferry service would provide another commute option for the region. Once the proposed development plans materialize, proximity to housing will improve. Accessibility to the transit center is also expected to improve. However, this by itself will not substantially affect the potential of the ferry service. Providing frequent and convenient connection between the transit center (and potentially a near the transit center ferry parking facility) and the ferry site would improve the potential of the ferry service.

The *Peekskill*, Westchester County site one scored a total of 35 points with an average score of 35 and a median score of 2.3 for all criteria. Potential site two scored a total of 35 points with an average score of 2.3 and a median score of 2 for all criteria. And potential site three scored a total of 32 point with an average score of 2.1 and a median score of 2. All three sites present viable options. The first site is more conveniently located next to the train station and the proposed parking facility. However, the water at this site is rather shallow which would increase the cost of the docking facility. The second site is within a short walk from the proposed parking facility but is not directly accessible from the other side of the rail tracks. The third site is further away from the proposed parking facility, but still with walking distance. It should be noted that once the proposed development plans materialize, current conditions will be improved upon with respect to several of the above criteria, including frequency and level of proximate transit service as a result of a shuttle service implementation; proximity to parking and availability of adequate parking spaces as a result of a new parking facility development; proximity to housing as a result of the proposed new residential development.

The *Tarrytown*, Westchester County site one scored a total of 38 points with an average score of 2.5 and a median score of 2 for all criteria. For this site emphasis should be given to the bus and possible new shuttle service connections to the proposed ferry site, to overcome the lack of ferry parking. The new waterfront development would benefit from a ferry service. The possibility of Tarrytown becoming part of a ferry service serving more locations could be examined.

4. SUMMARY

Based on the numerical scoring and the evaluation provided above, a ranking of the sites is shown in Table 3 below. This table lists the sites in order from higher to lower score.

Table 3: Site Ranking based on Parking and Landside Access Considerations

Site Name	Site Code	Total	Average	Median
East 63rd Street, Manhattan	5	57	3.8	4
East River Landing, Manhattan	4	56	3.7	4
Pier 40, Manhattan	6	55	3.7	4
Trump City, Manhattan	3	52	3.5	4
Beechhurst Residential Park, Queens	7	45	3.0	3
Marina Del Ray, Bronx	2	44	2.9	3
Port Chester, Westchester County (Site 1)	9a	43	2.9	3
Tarrytown, Westchester County	12	38	2.5	2
Fort Slocum Road, Westchester County	10	36	2.4	2
Fordham Landing, Bronx	1	35	2.3	2
Peekskill, Westchester County (Site 1)	11a	35	2.3	2
Peekskill, Westchester County (Site 2)	11b	35	2.3	2
Peekskill, Westchester County (Site 3)	11c	32	2.1	2
Port Richmond, Staten Island	8	31	2.1	2
Port Chester, Westchester County (Site 2)	9b	18	1.2	1

The top scoring sites according to this ranking, with an overall score above 50 points and median of 4 points, are the four Manhattan sites (East 63rd Street, East River Landing, Pier 40, Trump City). Beechhurst Residential Park, Queens; Marina Del Ray, Bronx; and Port Chester-Site 1, Westchester County have an overall score between 40 and 50, and a median of 3. All other sites besides Port Chester-Site 2, Westchester County have an overall score between 30 and 40 with a median of 2. Port Chester-Site 2 has a low overall score of 18 points with a median of 1.

It should be noted again, that this ranking is based solely on the list of criteria mentioned above, which focus primarily on the parking and land side access assessment and should

not be used to make decisions in priority development of the sites. To provide a complete site assessment, additional criteria need to be considered and evaluated and a more thorough analysis of the sites within the context of a regional ferry network should be performed. Additional considerations for the complete site assessment are discussed in the last section of Task 3 Report.