River Road/Hudson Waterfront Circulation Study

Hudson and Bergen Counties

Final Report

June 2009

RIVER ROAD/HUDSON WATERFRONT CIRCULATION STUDY

FINAL REPORT
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TABLE OF CONTENTS

1. Introduction 1

2. Background 2

3. Demographics 2
3.1 Diversity 2
3.2 Journey to Work Data 3
3.3 Housing 4
3.4 Vehicle Availability 4

4. Land Use 4
4.1 Weehawken Township 5
4.2 West New York Town 5
4.3 Guttenberg Town 5
4.4 North Bergen Township 5
4.5 Edgewater Township 5
4.6 Fort Lee Borough 6

5. Environmental 6
5.1 Historic Sites 7
5.2 Section 4(f) Properties 7
5.3 Ecology 7
5.4 Hazardous Waste 8

6. Roadways 8
6.1 Area Network 9
6.2 Vehicular Connections to Uplands 10
6.3 Traffic Operations 10
6.4 Pavement Conditions 13

7. Pedestrian Conditions 13
7.1 Sidewalks 13
7.1.1 Weehawken Township 13
7.1.2 West New York Town 14
7.1.3 Guttenberg Town 14
7.1.4 North Bergen Township 14
7.1.5 Edgewater Township 14
7.1.6 Fort Lee Borough 14
7.2 Pedestrian Uplands Connections 14
7.3 Hudson River Waterfront Walkway 15
7.4 Connections to Transit 16

8. Bicycle Conditions 16

9. Transit 17
9.1 Hudson-Bergen Light Rail 17
9.2 NJ TRANSIT Bus Service 17
9.3 New York Waterway Ferries 19
9.4 New York Waterway Shuttle Buses 19
9.5 Municipal Shuttles 19
9.6 Private Shuttles 20

10. Existing Conditions Summary 20

11. Future Conditions 22

12. Forecasting 2030 Traffic Conditions 22
12.1 Traffic Volume Growth 23
12.2 2030 No Build Traffic Conditions 24

13. Improvement Concepts 27
13.1 Overall Corridor Concepts 27
13.2 Site-Specific Intersection and Pedestrian Concepts 29
13.2.1 River Road at Orchard Street 29
13.2.2 River Road at Sterling Place 29
13.2.3 River Road at Glenwood Avenue 30
13.2.4 Edgewater Central Business District (CBD) 31
13.2.5 River Road at NJ Route 5 32
13.2.6 River Road at Dempsey Avenue 33
13.2.7 River Road at Hilliard Avenue 34
13.2.8 River Road at Garden Place 34
13.2.9 River Road at Russell Avenue 35
13.2.10 River Road at Archer Street 35
13.2.11 River Road at Edgewater Commons 36
13.2.12 River Road at Thompson Lane 38
13.2.13 River Road at Gorge Road 39
13.2.14 River Road at Old River Road/Riverside Plaza 40
13.2.15 River Road at Bulls Ferry Road 40
13.2.16 River Road at Roc Harbour Drive 42
13.2.17 River Road at 77th Street 42
13.2.18 River Road at Palisades Medical Center 42
13.2.19 River Road at Ferry Road 43
13.2.20 River Road/Port Imperial Boulevard at Hillside Road 44
13.2.21 Port Imperial Boulevard at Riverbend Drive 45
13.3 Corridor-wide Bicycle Improvements 46
13.4 New Parallel Roadway Construction 47
13.5 Construction of New Uplands Roadway Connections 48
13.6 Transit Concepts 48
13.6.1 Transit Improvement Strategies 50
13.6.2 Immediate / Short Term Actions to Improve Access to Transit 51
13.6.3 Short Term Bus Operations Improvements 51
13.6.4 Longer Term Bus System Improvements 53
13.6.5 Very Long Term (Visionary) Transit System Improvements 53
13.7 Policy Concepts 60
13.7.1 Access Management and Driveway Consolidation 60
13.7.2 Connectivity 61
13.7.3 Transportation Demand Management (TDM) 64

14. Public Outreach 65

15. Next Steps 66

1. Introduction

The River Road/Hudson Waterfront Circulation Study centered around the "Gold Coast" area, a narrow strip of land in Hudson and Bergen Counties located between the Palisades to the west and Hudson River to the east. To address transportation conditions in this corridor and plan for its future, Hudson and Bergen Counties, in coordination with the North Jersey Transportation Planning Authority, engaged Parsons Brinckerhoff, Inc. to investigate conditions, identify deficiencies within the project area, and develop targeted short and long term improvements.

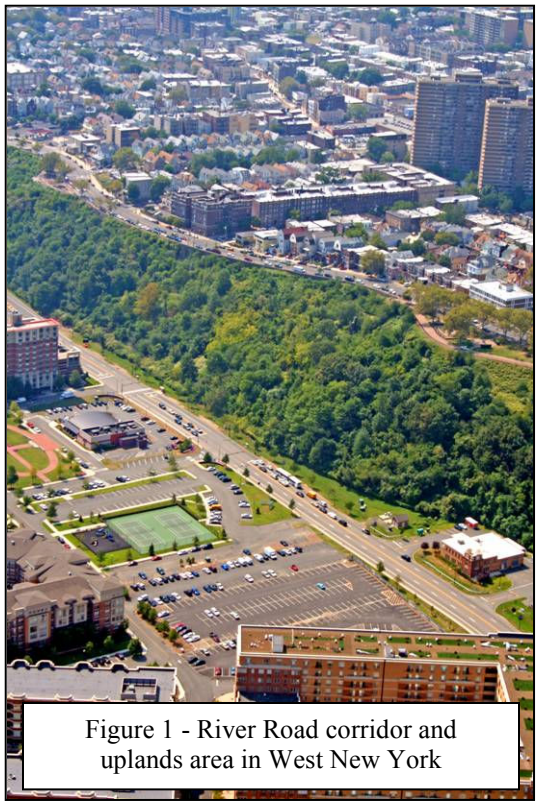


Figure 1 - River Road corridor and uplands area in West New York

The primary thoroughfare within the Gold Coast is River Road (CR 505) and Port Imperial Boulevard. The study area traverses through Fort Lee Borough, Edgewater Borough, North Bergen Township, Guttenberg Town, West New York Town, and Weehawken Township, forming a corridor approximately 7 miles long. This region includes some of the most densely populated areas of New Jersey, and development continues with construction planned or underway in several areas.

While the study was focused primarily on River Road/Port Imperial Boulevard, it also addressed connectivity issues into and out of the study area, and identified opportunities for local guidance on land use, bicycle, and pedestrian issues.

The River Road/Hudson Waterfront Circulation Study included the following activities:

- Stakeholder Involvement – engaged stakeholders public participation, utilizing a locally represented Technical Advisory Committee (TAC), project website (www.hudsonbergencorridor.com), stakeholder interviews, and public open houses.
- Data Collection and Inventory – Investigated pedestrian, bicycle, transit, environmental, and land use conditions within the study area. Collected traffic data from existing studies as well as supplemental traffic counts.
- Project Vision and Goals – Identified key issues that were studied and evaluated as part of the existing conditions analysis and ultimately played a key role in the development of strategies and alternatives as the project progressed.
- Existing Conditions Analysis – Data throughout the study area was analyzed in order to identify key deficient areas.
- Model Development and Growth Forecasting– Involved the use of regional transit and traffic operations models to forecast future conditions as well as assessing the impact of growth and potential improvement strategies.
- Strategies and Alternatives – Developed short and long term recommendations aimed at improving vehicular, pedestrian, and bicycle circulation, connectivity, and access.

- Final Report – Documented the results of the study and the overall study outcomes.

This document serves as the Final Report. It is organized into two main segments: the background and existing conditions in the study area, and the forecasting and assessment of future conditions. The existing condition assessment outlines the existing conditions within the study area based on research, site visits, and feedback from the TAC and the public. It includes an inventory of vehicular, transit, environmental, bicycle, and pedestrian conditions and deficiencies. The future conditions assessment outlines the growth forecasting process and future conditions, and the development of strategies and alternative concepts to address the transportation needs in the corridor. The improvement concepts include roadway, transit, pedestrian, bicycle, and policy recommendations.

2. Background

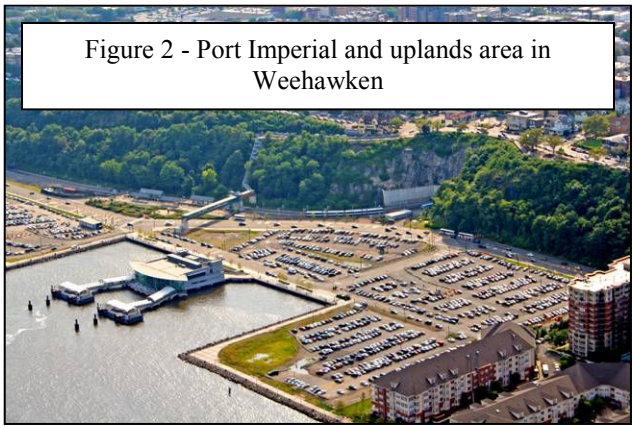


Figure 2 - Port Imperial and uplands area in Weehawken

The topographical limitations in the corridor challenge the ability to move people and goods and provide connectivity and access. Movement between the uplands area and the Gold Coast is difficult due to limited existing connections and the geographic divide. Land use intensity in the Gold Coast is high, creating a strong demand for travel. The diverse mix of land uses and densities creates a strain on the corridor as residential, commercial, industrial, and recreational trips all must use the same roadway to traverse the coastline. The roadway must serve a mix of local and regional trips and provide local access, which adversely impacts its ability to satisfy travel demand at acceptable levels of performance. Pedestrians and bicyclists have limited connections to transit hubs and often strain to cross River Road/Port Imperial Boulevard. Although many trips are made by auto, transit usage in the study area is very high for bus, ferry, and light rail.

Overall, the demands placed on the River Road/Port Imperial corridor to serve the diverse transportation needs, provide access and connectivity, and support continued economic growth are high. Factors that influence transportation demand are discussed in the following sections.

3. Demographics

Year 2000 Census Data was analyzed for each municipality within the study area (Fort Lee, Edgewater, Guttenberg, North Bergen, Weehawken, and West New York). The study area has extremely high population densities, and includes Guttenberg Town, which is the most densely populated municipality in the United States (56,012 persons/square mile). High population densities generally create a strong demand for transportation of people and goods.

3.1 Diversity

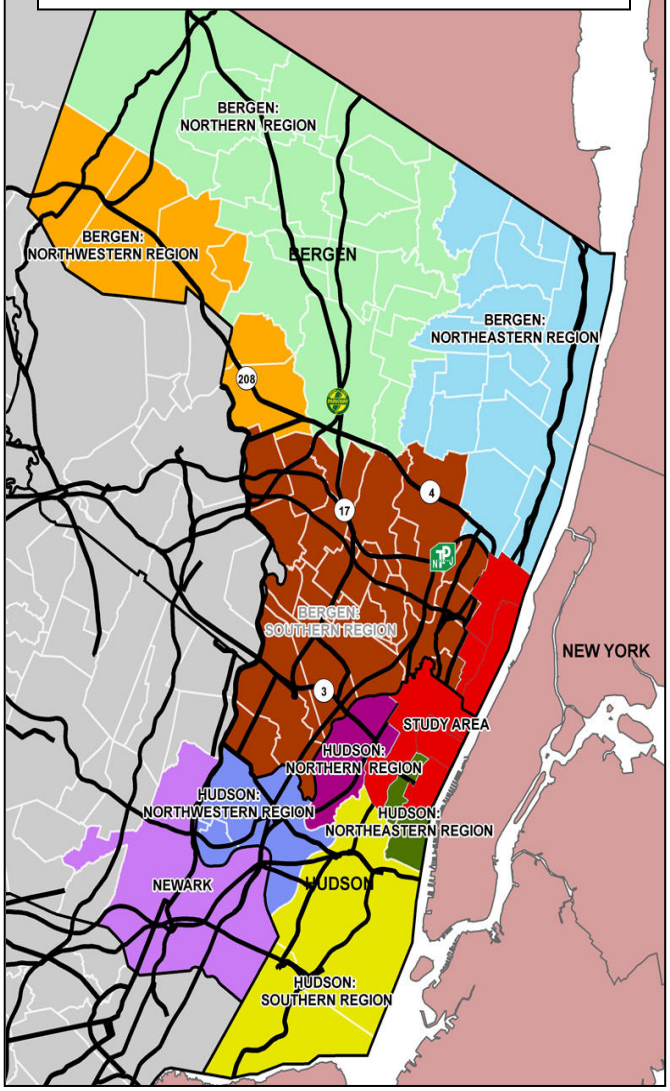
The study area represents a significantly diverse population. Overall, the study area population is 65 percent white, with significant quantities of those listed as “other” (18%), “two or more races” (8%), Asian (6%), and African-American (3%). Each municipality has a unique mix of racial groups, with notable clusters in Edgewater (23% Asian), and West New York (25% other). Further, several municipalities within the study area have a significant Hispanic population. West New York (78%),

North Bergen (55%), and Guttenberg (52%) all have Hispanic populations greater than half of their total municipal population. The need for a multi modal transportation system, offering many choices is reflective of a diverse population.

3.2 Journey to Work Data

Transit usage for commuters within the study area is high, with approximately 30 percent of residents taking some form of public transit as part of their commute, more than three times the statewide average of 9.4 percent. As the Hudson-Bergen Light Rail was opened to users in early 2000, 2000 Census data would not reflect the potential increase in transit usage experienced with the opening of light rail service. Therefore, current transit ridership is likely higher than is reflected in the 2000 Census data. Approximately 8 percent of study area residents walk to work, with the majority of the remaining 62 percent of commuters driving. Overall, commute times within the study area were manageable, with approximately 60 percent of study area residents reporting a commute time of less than 35 minutes. However, approximately 14 percent of residents reported a commute time greater than one hour.

Figure 3 – Project study area and surrounding region



Journey to work data indicated that approximately 30 percent of study area residents commute to New York, 21 percent commute within the study area municipalities, and 11 percent are destined to areas outside New York, Newark, and Hudson or Bergen Counties. Additionally, 19 percent are destined to Bergen County outside the study area, including 11 percent to the southern region of the county (Rt. 208 and Rt. 4 to Hudson county), one percent to the northwest region (surrounding the Rt. 208 corridor), three percent to the northern region (municipalities around Rt. 17 and the GSP), and four percent to the northeastern region (between the Hackensack and Hudson Rivers, and along Rt. 9W, and the Palisades Parkway). Finally, 19 percent of study area residents are destined to Hudson County outside the study area or Newark, including one percent to the western region of the county (west of the Hackensack River and the NJ Turnpike), six percent to the southern region (Pulaski Skyway to Kill Van Kull), four percent to the northwestern region (surrounding the junction of Rt. 3 and the NJ Turnpike), five percent to the northeastern region (between the Lincoln and Holland Tunnels), and two percent to Newark. A map detailing each of the regions is shown in Figure 3.

Commuters to the study area municipalities are comprised of those within the study area municipalities (29 percent), those from Bergen County outside the study area municipalities (24 percent), those from Hudson County outside the study area municipalities and Newark (18 percent), those from outside New York, Newark, and Hudson or Bergen Counties (18 percent), and those from New York (11 percent). Of the non-study area Bergen County commuters, 14 percent originate from the southern region of the county, one percent from the northwestern region, four percent from the northern region, and five percent from the northeastern region. Of the Hudson County commuters from outside of the study area, one percent originated from the western region, eight percent from the southern region, one percent from the northwestern region, and seven percent from the northeastern region. Additionally, one percent of commuters to the study area originated in Newark.

This data indicates that most residents within the study area municipalities commute less than ten miles to their workplace, however most commute to points out of the study area. It also indicates that a significant number of commuters to the study area municipalities travel more than ten miles to the study area for work.

3.3 Housing

In 2000, the study area municipalities included approximately 55,000 housing units, of which nearly 96 percent were occupied, which is higher than the statewide average of 92 percent. The only municipality with a significant vacancy rate is Edgewater, with slightly more than 10 percent of its households vacant. This data shows a significant demand for residential property within the study area.

Only slightly more than 30 percent of households within the study area municipalities are owner-occupied, which is less than half of the statewide average (66 percent). Edgewater has the highest percentage of owner-occupied households (45%), while West New York has the lowest percentage (20%). This shows more potential for turnover and movement within the rental housing market.

3.4 Vehicle Availability

Approximately 90 percent of all households within the study area municipalities have at least one vehicle available. Approximately 55 percent of all households have only a single vehicle available, while approximately 35 percent of all households have two or more vehicles available.

4. Land Use

Land uses within the study area vary widely throughout. Uses include residential, office, commercial, industrial, civic, and recreational. Further, development densities vary greatly as well. Within the southern portion of the study area (south of Bulls Ferry Road), development is constrained to the area east of Port Imperial Boulevard/River Road due to the steep slopes on the area west of the roadway. A brief summary of the major land uses in the study areas municipalities follows:

Figure 4 –Port Imperial Ferry Terminal in Weehawken

4.1 Weehawken Township

Within Weehawken Township, the study area includes numerous residential developments, including multi-family units and townhouse-style properties. Weehawken also has dedicated a large area of open space at Waterfront Park, and has a ferry terminal at Port Imperial. South of the study area, Lincoln Harbor is a high density mixed-use development with office, retail, and residential space, as well as a ferry terminal and light rail station. The Hudson-Bergen Light Rail parallels Port Imperial Boulevard between the southern terminus of the study area and the Port Imperial ferry terminal.

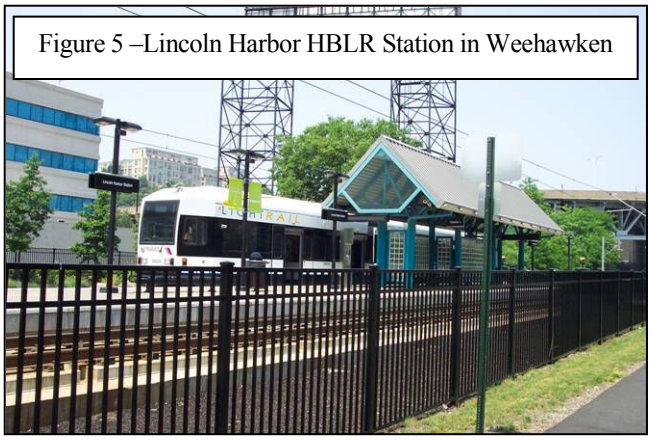


Figure 5 –Lincoln Harbor HBLR Station in Weehawken

4.2 West New York Town

West New York is primarily residential within the study area with many multi-family units and townhouse-style developments, including the Hudson Club, RiverWalk, Riverbend at Port Imperial, and the Landings at Port Imperial. Small commercial/retail developments are scattered throughout these developments.

Figure 6 –Riverbend at Port Imperial in West New York

4.3 Guttenberg Town

Guttenberg is the most densely populated municipality in the United States. Guttenberg is predominantly residential, with the Riverbend at Port Imperial and Galaxy Towers developments. The Galaxy Towers, which contain more than 1,000 housing units, include a limited amount of commercial/retail space that primarily serves its residents.

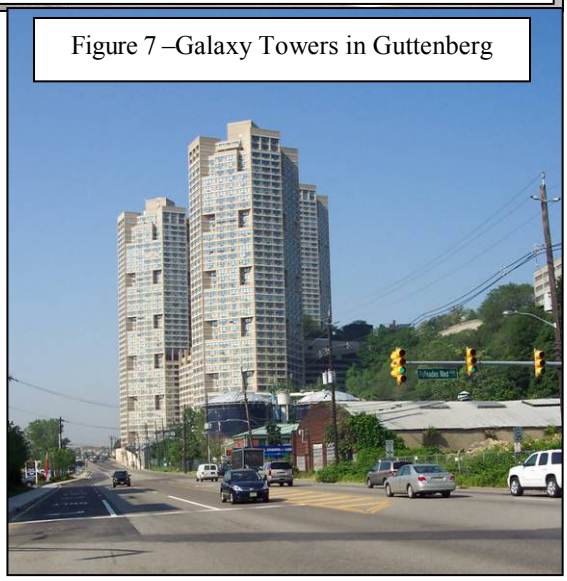


Figure 7 –Galaxy Towers in Guttenberg

4.4 North Bergen Township

Within North Bergen Township, development includes several residential complexes, including Roc Harbour, the Watermark, Bergen Ridge, and the Views at Hudson Pointe. The study area also includes two municipal facilities, the Woodcliff Sewage Treatment Plant, and Palisades Medical Center. Several low-density office developments are located within the vicinity of River Road and 77th Street.

Figure 8 –Palisades Medical Center in North Bergen

4.5 Edgewater Township

Within Edgewater Township, developments and densities are significantly varied. Residential

developments include the Peninsula at City Place, Independence Way, River Club, Avalon, Crown Village, Mariners Landing, Mariners Cove, Admirals Walk, Hudson Cove, and Hudson Harbour. Many of these developments include a mix of multi-family and townhouse-style developments. Further, Edgewater includes many single-family homes, the bulk of which are within neighborhoods west of River Road.

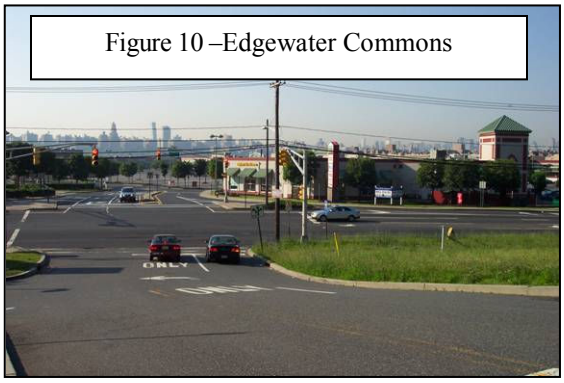


Figure 10 –Edgewater Commons

There are numerous commercial retail/developments within Edgewater, including City Place, the Promenade, Edgewater Commons, Mitsuwa Marketplace, and Binghamton Mall. With the exception of City Place, these developments are low-density strip retail. All of Edgewater's municipal facilities, including Edgewater Municipal Hall, the Edgewater Community Center, Veterans Park, and Van Gelder Elementary School are located along or near River Road. Other uses along River Road in Edgewater include the Von Dohln Marina, Edgewater Ferry Terminal, light industrial uses along Old River Road near Edgewater Commons, and the Hess Edgewater Terminal.

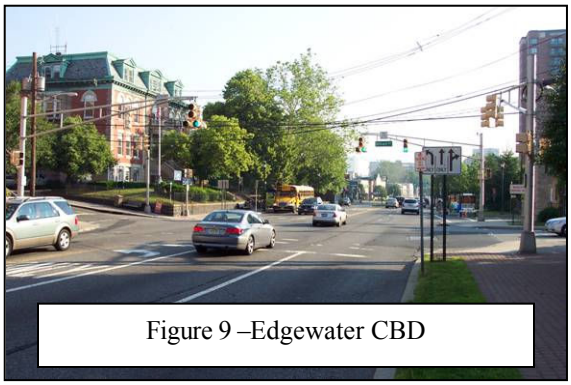


Figure 9 –Edgewater CBD

4.6 Fort Lee Borough

The small portion of the study area in Fort Lee includes several single-family homes and a large residential tower (The Palisades). East of River Road in Fort Lee is completely comprised of the Palisades Interstate Park.

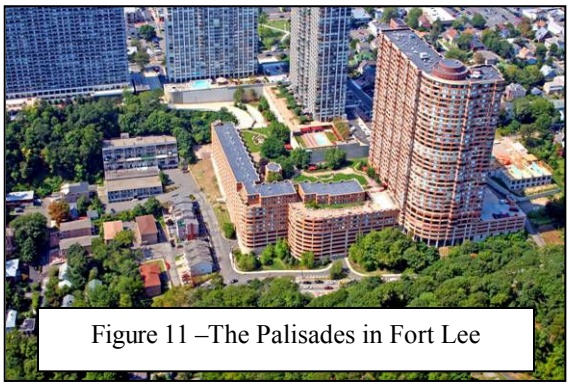


Figure 11 –The Palisades in Fort Lee

5. Environmental

An environmental screening was performed based on existing GIS mapping to identify potential sensitive areas within the study area. These sensitive areas may serve as a barrier to potential concepts and alternatives, but no major environmental barriers have been noted. Some permitting may be necessary depending on the proposed alternatives, depending on the potential impact to sensitive areas. Further, State and Federal Coastal Zone Management Regulations and the State Waterfront Development Law may impact proposed improvements. Specific environmental sensitivities are outlined by type below and are illustrated on the study area maps 1A and 1B contained in Appendix A of this report.

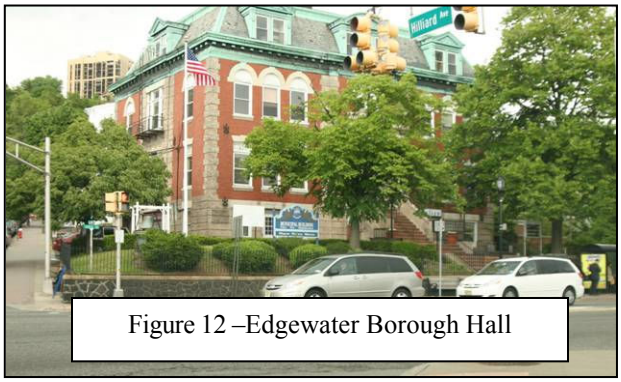


Figure 12 –Edgewater Borough Hall

5.1 Historic Sites

One historic district, the Palisades Interstate Park, is located in the northern end of the study area. Three properties within the study area eligible to be listed on the National Register:

- Edgewater Borough Hall (942-956 River Rd)
- Eleanor Van Gelder Elementary School (251 Undercliff Ave)
- The NYS & W Railroad tunnel.

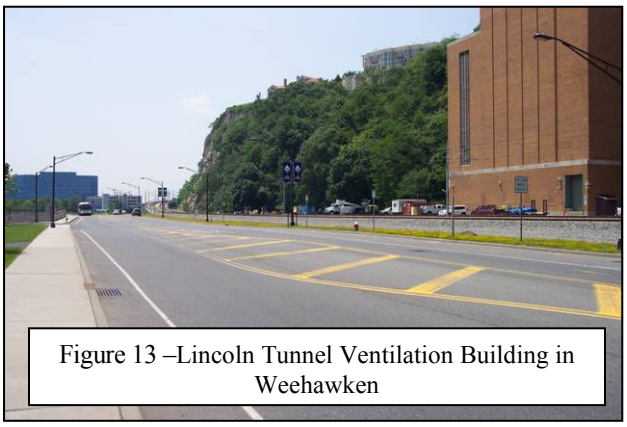


Figure 13 –Lincoln Tunnel Ventilation Building in Weehawken

Two properties within the study area listed on the National Register:

- Ford Motor Company Edgewater Assembly Plant (309 River Rd)
- The Alcoa Edgewater Works (700 River Rd).

Sites listed on the New Jersey Register include:

- The Lincoln Tunnel
- NJ Route 495 (Helix)
- Lincoln Tunnel Entrance and Ventilation Buildings (Rt. 495 at JFK Blvd)
- North (Hudson) River (Railroad) Tunnels (Amtrak NE Corridor)
- Engine Company Firehouse No. 3 (300 River Rd)
- West Shore Railroad Tunnel under Bergen Hill.

5.2 Section 4(f) Properties

Section 4(f) of the Federal DOT Act (1966) limits the use of public parks, recreational areas, wildlife refuges or historic sites unless no other feasible alternative is available, and all steps are taken to limit the impact of a Section 4(f) property.

Two sites within the study are designated open space, which qualifies as Section 4(f) properties. These are the Palisades Interstate Park and the region adjacent to River Rd between 66th and 50th streets.

Two additional park sites have been funded by the Hudson County Open Space Trust Fund. These are Weehawken's waterfront pavilion along Port Imperial Boulevard near Baldwin Avenue, and Guttenberg's future municipal park adjacent to Jacobs Ferry on River Road.

Finally, a deed restricted bird sanctuary exists in North Bergen between River Road and JFK Boulevard.

5.3 Ecology

There is one area of disturbed wetlands located within the southern section of the study area. Forested areas exist throughout, and the northern section of the study area contains an Eastern box turtle habitat. Some portions of River Road are located within the 100 year floodplain. Claimed tidelands are also located within the study area. A Waterfront Development Permit, Flood Hazard Permit, or Tidelands Grant may be required depending on the type and location of the activity within the study area.

5.4 Hazardous Waste

The initial screening identified 13 sites within the study area as a known contaminated site. These sites include those which may have been partially or wholly cleaned up, as well as those where contaminants still exist. For any planned improvements in the vicinity of these locations, further investigation may be necessary. The 13 sites include:

- Douglas Holding Corporation (Baldwin Avenue)
- Guttenberg Acquisition Parcel (River Rd)
- Transcontinental Gas Pipeline valve (72nd Street/River Rd)
- Kingston Pointe (7700 Marine Rd)
- Extra space of North Bergen LLC (8201 River Rd)
- Quanta Resources Corp. (163 River Rd)
- Octagon Process Inc. (596 River Rd)
- North River Mews (Russell Ave/River Rd)
- 7000-7400 River Rd
- Mobil 57727 (955 River Rd)
- Tower at Mariners Cove (943 River Rd)
- Transcontinental Pipeline Hudson River (River Rd)
- Lower Main Street Pumping Station (Lower Main St/ Old Palisade Rd)

One site within the study area, Willow Branch Industries (799 River Rd), has been identified as having groundwater contamination. As with the contaminated sites, this location may have been partially or wholly cleaned up.

Figure 14 –Typical four-lane cross section of Port Imperial Boulevard/River Road near RiverWalk in West New York

6. Roadways

The primary focus of the River Road/Hudson Waterfront Circulation Study centered on River Road and Port Imperial Boulevard. Port Imperial Boulevard is classified as an Urban Local Roadway and is under private jurisdiction to Roseland Properties. Within the study area, River Road is classified as Hudson and Bergen County Route 505, and its functional class is an Urban Minor Arterial south of State Route 5 and Urban Principal Arterial north of State Route 5. Principal Arterials are, by definition, classified as serving primarily mobility needs, regional travel, and providing a moderate degree of land access, with a minor arterial characterized as carrying more of a mix of local and regional volumes than a principal arterial and providing a higher degree of local access.

Within the study area, River Road/Port Imperial Boulevard is primarily a two, four or five lane cross-section with several variations of lane configurations to accommodate various turning movements at intersections and driveways. Shoulder widths vary from zero to fourteen feet. A significant portion of the study area includes a painted median, and a short section in the vicinity of Gorge Road has a raised median curb. The speed limit within the study area is 35 mph throughout.

The average weekday daily traffic on River Road ranges from approximately 37,000 AADT north of Old River Road, to 34,000 AADT south of Bulls Ferry Road, and 25,000 AADT north of North Street. Local stakeholders have noted that weekend congestion primarily consisting of traffic destined for shopping centers within the study area is a major concern for residents and visitors.

There are several ”stub developments”, which are developments that have a single access point to River Road/Port Imperial Boulevard and do not connect to adjacent uses, forcing traffic to use River Road/Port Imperial Boulevard as their only thoroughfare.

Study Area maps 2A and 2B included in Appendix A of this report illustrate the existing traffic conditions and deficiencies along River Road and Port Imperial Boulevard.

6.1 Area Network

An important issue within the study area is the lack of parallel north-south routes to River Road/Port Imperial Boulevard. This condition provides little to no choice in balancing traffic to an alternative route – River Road/Port Imperial Boulevard must carry the load. Further, there is a significant lack of connectivity between many developments within the study area. Improving connectivity between adjacent uses and providing alternatives to River Road/Port Imperial Boulevard has the potential for positive impact by removing shorter local trips from the River Road/Port Imperial Boulevard.

While the north-south roadway network is limited, there are some roadways parallel to River Road/Port Imperial Boulevard:

- Avenue at Port Imperial, which provides connectivity between several riverfront developments in Weehawken
- Undercliff Avenue, also provides limited north-south movement parallel to River Road in Edgewater, as well as vehicular access into the study area.

East-west connectivity is comprised of many roadways between River Road/Port Imperial Boulevard and Undercliff Avenue or Avenue at Port Imperial. Also, there are several east-west roadways which dead-end either at the foot of the Palisades or the Hudson River and do not provide any circulation within the study area. Furthermore, eight roadways which provide vehicular access into the study area (Old Palisades Road in Fort Lee, State Route 5 and Gorge Road in Edgewater, Bulls Ferry Road in North Bergen, Ferry Road in Guttenberg, Hillside Road in West New York, and Pershing Road and Baldwin Avenue in Weehawken) also provide east-west connectivity between River Road/Port Imperial Boulevard and the uplands area. Study area maps 2A and 2B in Appendix A of this report display roadways which provide parallel access to the River Road/Port Imperial Boulevard corridor.

6.2 Vehicular Connections to Uplands

Due to the topography of the area, transportation between the uplands and River Road/Hudson Waterfront area is a challenge. There are a limited number of connections between the uplands and study area for vehicles. Existing vehicular connections are illustrated on the study area maps 2A and 2B in Appendix A of this report.

Vehicular connections into the study area are available via nine routes:

- Baldwin Avenue
- Pershing Road
- Hillside Road
- Ferry Road
- Bulls Ferry Road
- Gorge Road
- Undercliff Avenue
- State Route 5
- Old Palisades Road

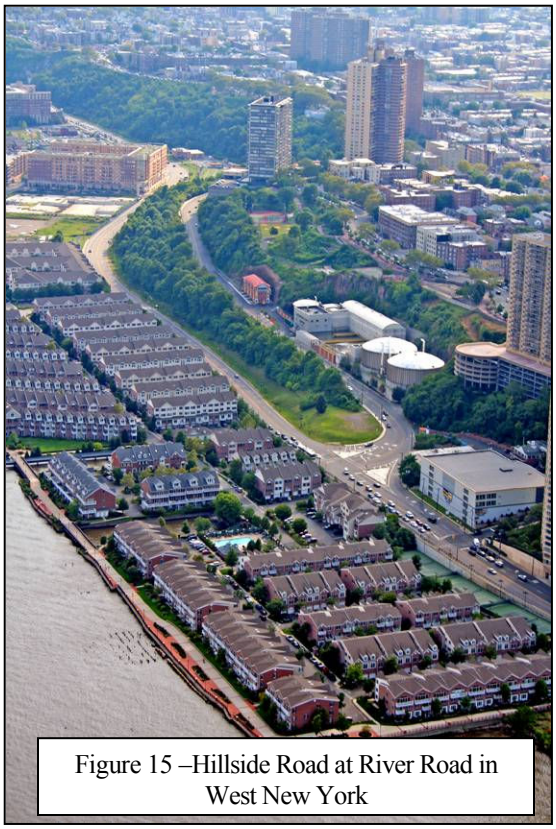


Figure 15 –Hillside Road at River Road in West New York

6.3 Traffic Operations

Traffic operations were analyzed at 16 intersections (14 signalized, 2 unsignalized) within the study area using Synchro Version 6, a computer model that estimates the performance of the intersections. Traffic counts are needed as input to the analysis software, and these were assembled from several previous studies, and through counts performed as part of this study. The base year for the traffic analysis was set at 2008. The intersections analyzed as part of this study are noted below and are highlighted on maps 2A and 2B located in Appendix A of this report. Intersections that were counted as part of this study are indicated in **bold**.

- Baldwin Avenue/Harbor Boulevard/Port Imperial Boulevard
- Ferry Terminal Road "F"/Port Imperial Boulevard
- Riverbend Drive (South)/Port Imperial Boulevard
- Riverbend Drive (North)/Port Imperial Boulevard
- Hillside Road/River Road
- Ferry Road/River Road
- **Palisades Medical Center/River Road**
- Roc Harbour Drive/River Road
- Bulls Ferry Road/River Road
- City Place/Gorge Road/River Road
- Edgewater Commons/River Road
- **Archer Street/River Road**
- **Hilliard Avenue/River Road**
- **Dempsey Avenue/River Road**
- **State Route 5/River Road**
- **Hudson Cove/River Road**

The standard performance measure for roadways is the Level of Service (LOS) criteria. LOS is defined in the *Highway Capacity Manual* as a "qualitative measure describing conditions within a traffic stream, and their perception by motorists and/or passengers". LOS is divided into six categories, ranging from LOS A (free-flow traffic) to LOS F (traffic flows break down, over capacity volume conditions). LOS E is generally considered an unacceptable condition, or failure, with LOS D being defined as approaching an unacceptable condition. The performance measures used to determine level of service are speed, average delay, and density. Average delay is used to assess the traffic conditions at signalized and unsignalized intersections. Density and speed are measured or calculated to test the conditions in the mid-block analyses.

The 2008 operational performance is illustrated on the study area maps 2A and 2B contained in Appendix A of this report. Overall in the AM and PM peak hours, while the mainline along River Road and Port Imperial Boulevard tend to operate acceptably, motorists on a number of the side street approaches of the intersections are experiencing delays as summarized below in Tables 1 and 2.

The analysis indicate that during the AM peak hour (8:00a-9:00a), 12 of 14 signalized intersections operate at an acceptable level of service (LOS C or better). Two intersections (River Road at Hillside Road, River Road at State Route 5) operate at LOS D. Further, several approaches operate at LOS D or E, as detailed in Table 1. The approaches of several uplands connections (Hillside Road, Ferry Road, Gorge Road) are nearing unacceptable conditions, operating at a LOS D or E. Additionally, the westbound approaches to River Road from Palisades Medical Center and City Place operate at LOS D. River Road northbound at State Route 5 operates at LOS E due to its heavy left turn movement.

Table 1 – 2008 AM Peak Hour

Intersection	Overall LOS	Critical Approach(es)
Harbor Blvd/Baldwin Ave/Port Imperial	n/a*	Harbor Blvd WB (LOS F)
Ferry Terminal Road/Port Imperial Blvd	A	None
Riverbend Drive South/Port Imperial Blvd	A	None
Riverbend Drive North/Port Imperial Blvd	A	None
Hillside Road/River Road	B	Hillside Road EB (LOS E)
Ferry Road/River Road	C	Ferry Road EB (LOS D)
Palisades Medical Center/River Road	A	Palisades Med Ctr WB (LOS D)
Roc Harbour Drive/River Road	A	None
Bulls Ferry Road/River Road	B	None
Gorge Road/City Place/River Road	B	Gorge Rd. EB (LOS D), City Place WB (LOS D)
Edgewater Commons/River Road	B	None
Archer Street/River Road	A	None
Hilliard Avenue/River Road	B	None
Dempsey Avenue/River Road	A	None
State Route 5/River Road	D	River Road NB (LOS E)
Hudson Cove/River Road	n/a*	Hudson Cove WB (LOS F)

* - Overall LOS not computed for unsignalized intersections

During the PM peak hour (5:00p-6:00p), the intersection of River Road and Edgewater Commons, operates at LOS E. Three approaches within the study area, River Road northbound at State Route 5, Ferry Road eastbound at River Road, and Edgewater Commons westbound at River

Road, operate at LOS F. Three approaches within the study area, Gorge Road eastbound at River Road, Edgewater Commons eastbound at River Road, and River Road northbound at Edgewater Commons, operate at LOS E. Additionally, six approaches within the study area operate at LOS D, as detailed in Table 2.

Table 2 – 2008 PM Peak Hour

Intersection	Overall LOS	Critical Approach(es)
Harbor Blvd/Baldwin Ave/Port Imperial	n/a*	Harbor Blvd WB (LOS F)
Ferry Terminal Road/Port Imperial Blvd	B	Ferry Terminal Rd WB (LOS D)
Riverbend Drive South/Port Imperial Blvd	A	None
Riverbend Drive North/Port Imperial Blvd	A	None
Hillside Road/River Road	B	Hillside Road EB (LOS D)
Ferry Road/River Road	B	Ferry Road EB (LOS F)
Palisades Medical Center/River Road	B	None
Roc Harbour Drive/River Road	A	None
Bulls Ferry Road/River Road	B	Bulls Ferry Rd. EB (LOS D)
Gorge Road/River Road	C	Gorge Rd. EB (LOS E), Gorge Rd. WB (LOS D)
Edgewater Commons/River Road	E	Edgewater Comm. EB (LOS E), Edgewater Comm. WB (LOS F), River Rd. NB (LOS E), River Rd. SB (LOS D)
Archer Street/River Road	B	None
Hilliard Avenue/River Road	A	None
Dempsey Avenue/River Road	A	None
State Route 5/River Road	D	River Road NB (LOS D)
Hudson Cove/River Road	n/a*	Hudson Cove WB (LOS F)

* - Overall LOS not computed for unsignalized intersections

The stop-controlled approach at the unsignalized intersections analyzed, Baldwin Avenue/Port Imperial Boulevard/Harbor Boulevard and River Road/Hudson Cove, operates at LOS F during both the AM and PM peak hour. An improvement project for the intersection of Baldwin Avenue/Port Imperial Boulevard/Harbor Boulevard that involves signalization and reconfiguration is currently in the final design phase.

Bus and truck percentages are generally consistent throughout the study area. During the AM peak period (7:00a-9:00a), the truck percentage for traffic on River Road is approximately two percent, while the bus percentage ranged between two and three percent. During the PM peak period (4:00p-6:00p), the truck and bus percentage for traffic on River Road is approximately one percent each.

While these overall percentages are not high, truck and bus operations can have an adverse impact in flow in the corridor, particularly buses making stops to board and un-board passengers.

A concern identified during field visits and further noted by local stakeholders was the impact that stopped buses had on traffic flows along River Road and Port Imperial Boulevard. The lack of pull-off or shoulder areas at bus stops impedes through traffic and creates conditions where traffic must merge around stopped buses.

PB completed several travel time speed and delay runs which showed traffic moving at or near posted speed limits with minor congestion. Average travel times to traverse the study area were approximately 16 minutes southbound and 15 minutes northbound, on the approximately 7 mile long corridor.

Overall, the analysis indicated that the roadway is operating at or near capacity at several locations, particularly in the PM peak period. The ability to absorb traffic growth may be limited, and could lead to failure at several locations in the future.

6.4 Pavement Conditions

Several areas with deficient pavement were identified during field visits to the study area. The northern portion of the study area had many areas which had poor pavement. In particular, River Road between State Route 5 and Hudson Terrace had consistently poor pavement throughout both northbound and southbound. Further, River Road southbound between State Route 5 and Edgewater Commons had several areas which had poor pavement.

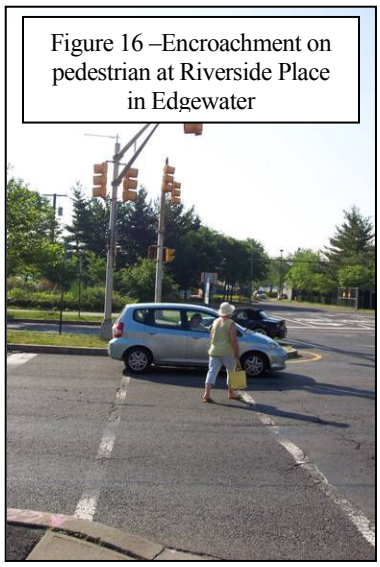


Figure 16 –Encroachment on pedestrian at Riverside Place in Edgewater

7. Pedestrian Conditions

Pedestrian conditions vary throughout the study area. While existing sidewalk conditions are generally good, a number of gaps in the network were identified. Several worn paths indicating unmet pedestrian demand were observed, most commonly in the southern portion of the study area. A lengthy section of sidewalk in North Bergen was unusable due to significantly overgrown brush. Other gaps in the sidewalk network were identified sporadically throughout the study area, and are detailed by municipality below. Study area maps 3A and 3B included in Appendix A of this report illustrate existing sidewalk gaps and pedestrian connections to the uplands.

Local stakeholders indicated that crossing River Road/Port Imperial Boulevard is difficult throughout the study area. While crosswalks are provided at signalized intersections, crossing River Road/Port Imperial Boulevard in midblock locations, especially those near bus stops, is difficult. Further, stakeholders noted difficulties in crossing at signalized intersections due to inadequate crossing times. However, an analysis of signal timing plans provided indicated that those intersections had adequate crossing phases (when actuated) based on an average walking speed of 3.0 feet per second.

Figure 17 –Worn path adjacent to Baldwin Avenue/ Port Imperial Boulevard intersection

7.1 Sidewalks

7.1.1 Weehawken Township

Within the study area, no sidewalk is present along Port Imperial Boulevard southbound. Northbound, a gap was noted in the vicinity of Baldwin Avenue and Waterfront Park. A worn path exists along River Road northbound in this area. However, that gap will be eliminated as part of the intersection improvement at Baldwin Avenue/Harbor Boulevard/Port Imperial

Figure 18 –Blocked sidewalk adjacent to Old River Road intersection in North Bergen

Boulevard which is tentatively slated for completion in late 2009.

7.1.2 West New York Town

A sidewalk gap exists along Port Imperial Boulevard southbound between Hillside Road and the boundary with Weehawken. A worn path was observed sporadically between Riverwalk Place and Hillside Road. Northbound, a small gap exists north of Riverwalk Place that is likely due to the adjacent construction site.

Figure 19 –Worn path along Port Imperial Boulevard in West New York

7.1.3 Guttenberg Town

No gaps exist in Guttenberg.

7.1.4 North Bergen Township

No gaps exist in North Bergen, however an area along River Road southbound in the vicinity of the Palisades Medical Center is impassible due to overgrown brush. Also, at the southwestern corner of Old River Road and River Road, the sidewalk was impassible due to a business using that area to display its goods.

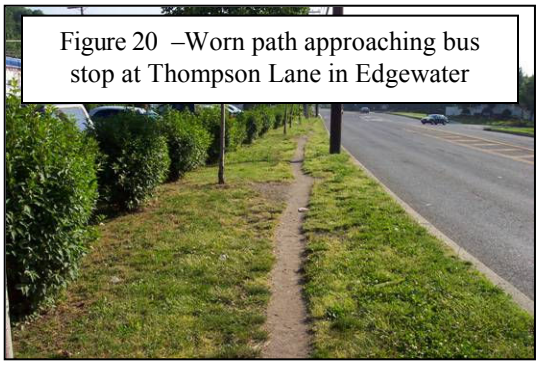


Figure 20 –Worn path approaching bus stop at Thompson Lane in Edgewater

7.1.5 Edgewater Township

Along River Road southbound, a gap was noted between the Edgewater Commons traffic signal and Thompson Lane. A worn path was identified southbound approaching the bus stop at Thompson Lane. Northbound, gaps were identified north of Russell Avenue, and several disconnected areas between Veterans Park and the boundary with Fort Lee.

The area adjacent to the Unilever Site, along River Road northbound south of City Place, is difficult for pedestrians to navigate, as the existing brick path has several dips and areas where water appeared to pond.

7.1.6 Fort Lee Borough

No sidewalk is present along River Road northbound within the study area in Fort Lee.

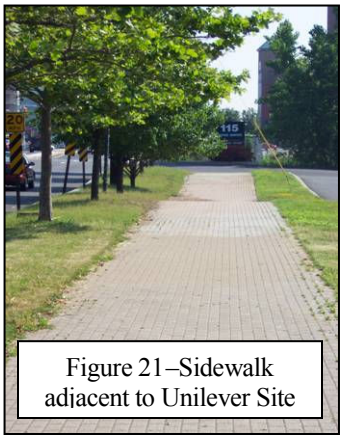


Figure 21–Sidewalk adjacent to Unilever Site

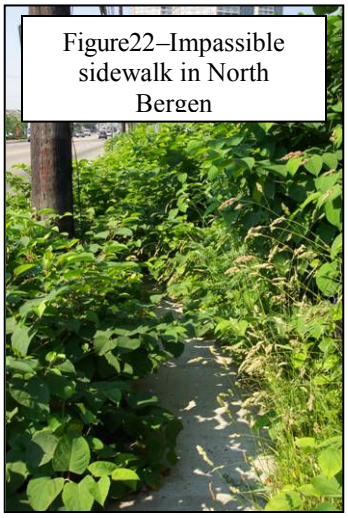


Figure22–Impassible sidewalk in North Bergen

7.2 Pedestrian Uplands Connections

Pedestrian movement between the uplands and River Road/Port Imperial Boulevard area was consistently noted as a major concern by project stakeholders. Since there are numerous major transit hubs within the study area (Lincoln Harbor, Port Imperial, Edgewater Ferry Terminal), it is essential to move traffic from the uplands area to those transit hubs to provide adequate connections to the Hudson

Bergen Light Rail and trans-Hudson crossings. Currently however, the limited number of connections for vehicular and pedestrian traffic makes it difficult for uplands residents to take advantage of their proximity to those transit centers. Further discussion of specific connections to the uplands from the study area is noted in Section 6.2 (Connections to Uplands).

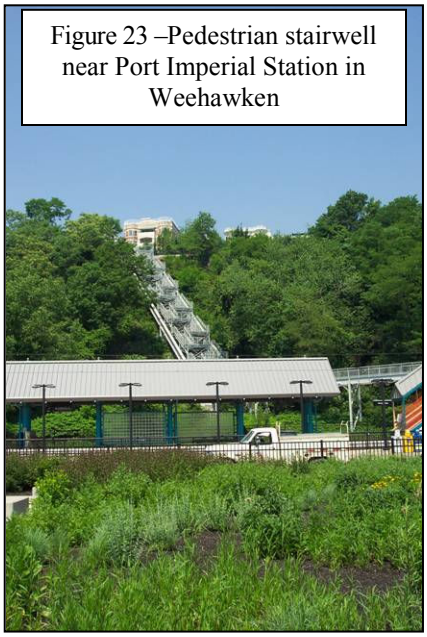


Figure 23 –Pedestrian stairwell near Port Imperial Station in Weehawken

Pedestrian connections into the study area are available via seven routes:

- Carlyle/Pershing Road (via roadway/stairwell)
- Port Imperial Station (via stairwell)
- Near Riverwalk Place (via pathway)
- Hillside Road (via sidewalk)
- Bulls Ferry Road (via sidewalk)
- Gorge Road (via sidewalk)
- Edgewater Road (via roadway)

With the exception of the crossing near Riverwalk Place, the existing pedestrian connections require an extended trip along a steep sidewalk or roadway. The connection at Port Imperial Station is still under construction, and a completion date is not currently available. The connection at Pershing Road is currently under rehabilitation. As noted in the Pedestrian Conditions section, pedestrian movement from the uplands area to transit hubs along the waterfront is a key issue. The limited number and difficulty in using the connections is a barrier to accessing those transit hubs from the communities along the uplands, as well as those commuting to jobs within the study area from the uplands.

7.3 Hudson River Waterfront Walkway

The Hudson River Waterfront Walkway is an urban linear park (a park which is long and narrow) whose goal is to link the municipalities between the Bayonne Bridge and George Washington Bridge. It includes numerous parks, plazas, recreational areas, and open space and extends throughout the study area, with several gaps located sporadically. In areas where the walkway exists there are several locations with limited access to the public. Within Weehawken, the only existing walkway gap noted is in the vicinity of Baldwin Avenue at Port Imperial Boulevard. As improvements are planned at this intersection, it is expected that this gap would be alleviated as part of that project, which will improve vehicular and pedestrian conditions at the intersection. Within West New York, the Walkway is complete. It was noted in the *Hudson County Waterfront Walkway Implementation Study,* completed by Heyer, Gruel & Associates in September, 2004, that access to the Walkway is difficult because of the density of development. A large gap exists within Guttenberg and extends north into North Bergen. Further, within North Bergen, other gaps were noted between 77th Street and Roc Harbour, as well as an approximately 0.6 mile gap between the Watermark development extending north to City Place in

Figure 24 –Trailblazer for Waterfront Walkway

Edgewater. Within Edgewater, several other gaps were identified. These include an approximately one-half mile section between Mariners Cove and Hudson Cove, the area between Hudson Harbour and Van Dohln Marina, and the area between Washington Lane and the Palisades Interstate Park. A gap also exists at the Hess Terminal, but connections are provided to the existing sidewalk along River Road on both ends of the terminal property.

7.4 Connections to Transit

Pedestrian connections to transit stops were a repeated concern of local stakeholders. These included not only connections to bus stops within the study area, but connections between the uplands and major transit hubs and ferry terminals along River Road/Port Imperial Boulevard as well. In the northern portion of the study area, pedestrian conditions at transit stops along River Road northbound are very poor due to the lack of sidewalks, narrow roadway width, lack of shoulders, and topographical concerns.

8. Bicycle Conditions

The majority of the study corridor is not bicycle compatible. The NJDOT's Bicycle Compatible Roadways and Bikeways *Planning and Design Guidelines* recommends a minimum four foot shoulder for roadways with the characteristics of River Road/Port Imperial Boulevard (primarily <10,000 average annual daily traffic, urban without parking, 31-40mph speed limit). Given these characteristics, only select disconnected sections of the study corridor are bicycle compatible. Areas which are bicycle compatible are:

Figure 25 –Bicyclist on Pershing Road in Weehawken

River Road SB:

- Between Veterans Way and south of Maple Street (Edgewater - urban section with parking – requires 14-foot shared lane)
- Between North Street and north of Glenwood Avenue (Edgewater)
- In vicinity of Admirals Walk (Edgewater - urban section with parking – requires 14-foot shared lane)
- Between Ferry Terminal and Waterfront Park (Weehawken)

River Road NB:

- Between Waterfront Park and Ferry Terminal Road F (Weehawken)
- Between Riverwalk Place and south of Hillside Road (West New York)
- In vicinity of Binghamton Mall (Edgewater)
- In vicinity of Admirals Walk (Edgewater - urban section with parking – requires 14-foot shared lane)
- Between south of Maple Street and Veterans Way (Edgewater - urban section with parking – requires 14-foot shared lane)
- Between Leary Lane and Burdette Court (Edgewater - urban section with parking – requires 14-foot shared lane)

Bicycle usage is not actively prohibited along most of the Hudson River Waterfront Walkway, but some areas may not be appropriate for bicycle use because of narrow widths. Also, in some areas which are under private ownership, bicycle usage may be deemed inappropriate by those that have jurisdiction over the Walkway.

9. Transit

Numerous transit routes are available along and into the River Road/Port Imperial Boulevard study area. Access is available via several modes, including bus, light rail, and ferry and are available for local trips within New Jersey and regional trips into Manhattan. Weehawken and Cliffside Park offer ferry shuttle service to their residents. Further, several shuttle routes are available to individual residential and commercial developments. Operators within the study area include NJ TRANSIT, New York Waterways, and private shuttle buses. Transit access, including transit routes, ferry terminal locations, bus stops, and shuttle connections are detailed in maps 4A and 4B located at the end of the document.

9.1 Hudson-Bergen Light Rail

The study area includes two stops on the NJ TRANSIT's Hudson-Bergen Light Rail (HBLR), which provides service between North Bergen and Bayonne. Stops within the study area are Port Imperial, on Port Imperial Boulevard north of Pershing Road, and Lincoln Harbor, on Waterfront Terrace at 19th Street. The HBLR provides connections to NJ TRANSIT's commuter rail lines in Hoboken, PATH trains at Hoboken, Exchange Place, and Pavonia-Newport, ferry service in Jersey City, and numerous NJ TRANSIT bus lines.

Figure 26 –Port Imperial HBLR Station in Weehawken

Light rail service operates every 10-15 minutes on each service route on weekdays, with shorter headways during peak periods. Weekend services typically operate every 15 minutes.

9.2 NJ TRANSIT Bus Service

NJ TRANSIT operates eight bus routes which traverse a portion of the study area. These routes include local bus service within the study area and regional service to points in New York. A summary of each of the routes is below.

23 – Operates between Hoboken Terminal and Bergenline Avenue in North Bergen. It does not operate along River Road or Port Imperial Boulevard but provides a connection between the uplands and gold coast via Pershing Road at the Port Imperial Ferry Terminal. This route provides free connections for New York Waterway monthly and ten-pass holders as a connection to its ferry service at Port Imperial.

The number 23 service operates on frequencies of 15-20 minutes but only with three trips to Hoboken in the morning peak period and two trips from Hoboken in the afternoon peak.

68 – Operates between Old Bridge and Lincoln Harbor in Weehawken. It does not operate along River Road or Port Imperial Boulevard but provides a connection into the study area to the Lincoln Harbor area via 19th Street. It provides connecting service from Old Bridge, East Brunswick, and other points south.

This service operates on weekdays and holidays during the peak period/direction (toward Weehawken in the morning), with frequencies ranging between 15 and 45 minutes. Median weekday ridership for the entire route is a relatively low 834 daily passengers on weekdays. [1]

156 – Provides service between Englewood Cliffs and the Port Authority Bus Terminal in New York via the Lincoln Tunnel. Within the study area in makes multiple stops along River Road in Edgewater south of Gorge Road to Weehawken north of Lincoln Harbor. It provides a connection between the uplands and gold coast via Gorge Road.

This service operates only in the peak direction and hours (to New York during the morning peak and from New York during the evening peak), with headways as short as 10-12 minutes toward New York in the morning peak and outbound in the evening peak. The median weekday ridership on this route is 5,039 passengers, with 1,684 and 789 passengers on Saturdays and Sundays, respectively. These totals include ridership outside of the River Road corridor.

158 – Operates between the George Washington Bridge Plaza in Fort Lee and Port Authority Bus Terminal in New York via the Lincoln Tunnel. It makes numerous stops within the study area between Fort Lee and Lincoln Harbor.

This is an all-day service throughout the corridor on weekdays, Saturdays and Sundays. Frequencies are as high as 4-6 minutes in the peak periods, with off-peak frequencies of approximately 30 minutes. The median weekday, Saturday and Sunday ridership numbers for this route- the majority of which applies to the study corridor- are 5,635 passengers, 2,084 passengers, and 1,499 passengers, respectively.

159 – Provides service between Fort Lee and the Port Authority Bus Terminal in New York via the Lincoln Tunnel. Within the study area it makes numerous stops along River Road in Edgewater and Weehawken. It provides a connection between the uplands and gold coast via Gorge Road.

The 159 service operates in the peak periods and peak directions as an express service along River Road, with express and local service in the uplands as well. Total ridership on the 159 is quite high, much of which comes from commuter services in the River Road corridor. The median ridership on weekdays is 10,016 passengers, with 4,926 on Saturdays and 4,431 on Sundays.

Figure 27 –Buses stopped at Thompson Lane in Edgewater

188 – Operates between West New York and the George Washington Bridge bus station in New York via the George Washington Bridge. Within the study area it makes stops along River Road between Guttenberg and Fort Lee. Service operates every 30 minutes on weekdays and every 90 minutes on Saturdays

[1] November 2008 median ridership for entire bus routes. Source: NJ TRANSIT.

and Sundays. Ridership is modest on this route, with a weekday median of 933 passengers and roughly one third that total on Saturdays (338) and a quarter on Sundays (240).

751 – Provides service between Bergen Community College in Paramus and Edgewater Commons. It provides a connection between the uplands and gold coast via Gorge Road and operates north along River Road to Edgewater Commons.

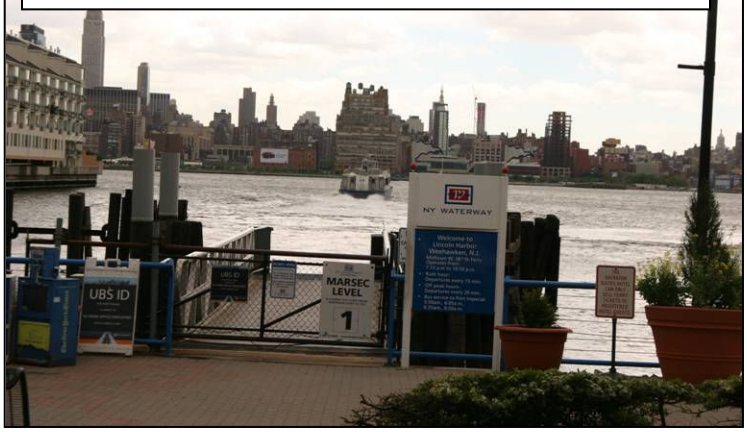
755 – Operates between Bergen Community College in Paramus and Edgewater Commons. It provides service along River Road into the study area south of Fort Lee to Edgewater Commons.

The 751 and 755 each operate on 90 minute headways, which provides a combined 45 minute headway for passengers traveling from Edgewater to Paramus. Combined, these routes show a median weekday ridership of 1,209 passengers and 723 on Saturdays. Only the Edgewater endpoint falls within the study area.

9.3 New York Waterway Ferries

Three ferry terminals are located within the study area. Lincoln Harbor Terminal in Weehawken offers service to the Midtown/West 39th Street terminal in New York. The Port Imperial terminal in Weehawken, owned by NJ TRANSIT but operated by NY Waterway, provides service to the Midtown/West 39th Street terminal, World Financial Center terminal, and Pier 11/Wall Street terminal. The Edgewater Landing terminal provides service to the Midtown/West 39th Street terminal.

Figure 28 –Lincoln Harbor Ferry Terminal in Weehawken



9.4 New York Waterway Shuttle Buses

New York Waterway monthly and ten-pass holders are provided free shuttle service on NJ TRANSIT's Route 23. The Jacobs Ferry bus route makes stops along the Avenue at Port Imperial, within the Riverbend, Riverwalk, and Hudson Club developments and links to the Port Imperial Ferry Terminal.

9.5 Municipal Shuttles

Weehawken Township operates weekday shuttles within the study area along Port Imperial Boulevard between the Port Imperial Ferry terminal and Lincoln Harbor Ferry terminal. It provides connections between the uplands and gold coast via Pershing Road and 19th Street.

The Borough of Cliffside Park and Fort Lee Parking Authority currently operates a pilot program shuttle for residents of both boroughs. It does not operate on River Road but provides a connection between the uplands and gold coast via County Route 5.

The Edgewater Ferry Landing Shuttle bus route operated by Edgewater Borough makes eastbound stops on River Road at signed NJ TRANSIT stops between City Place and Hilliard Avenue, and westbound stops on River Road at signed NJ TRANSIT stops between Maple Street and Edgehill.

9.6 Private Shuttles

Several residential communities within the study area provide shuttle service to its residents. Further, many communities outside of the study area provide shuttle service to the ferry terminals located within the study area. Shuttle services currently available include:

- Korman Communities (Edgewater) – Operates 2 shuttles during AM and PM peak hour to/from Edgewater Ferry Terminal
- River Club – Offers shuttle service to ferry for its residents
- Jacobs Ferry (West New York) – Operates shuttle service to Port Imperial Ferry Terminal during peak hours
- Views of Hudson Pointe (North Bergen) – Operates shuttle service to ferry for its residents
- Peninsula at City Place – Operates shuttle service to ferry for its residents
- Galaxy Towers – Offers shuttle service for residents to Manhattan

The Mitsuwa Marketplace located at River Road and Archer Street provides shuttle service for its customers to and from the Port Authority Bus Terminal in New York.

Private Jitney service provides mobility for a significant number of users in the uplands of Hudson County, as detailed in the *Hudson County Bus Circulation and Infrastructure Study*. However, limited Jitney service is currently available within the study area.

10. Existing Conditions Summary

The River Road/Port Imperial Boulevard corridor is a vital transportation artery serving 25,000 to 37,000 trips on an average weekday. Geographic constraints require the roadway to carry the vast majority of trips generated, attracted, and passing through the Gold Coast area, an area that is highly developed, has high population density, and continues to grow. The ability of the River Road/Port Imperial Boulevard corridor to satisfy travel demand while providing an acceptable level of service is very important both locally and regionally.

The River Road/Port Imperial Boulevard corridor has several deficiencies that need to be addressed. The connections to the uplands are limited, and during peak periods are nearing unacceptable conditions at the intersection with River Road. The existing four lane cross-section forces vehicles to make turning movements from a live lane of traffic not only at unsignalized intersections and driveways, but at several signalized intersections as well An assessment of the key intersections in the corridor indicates that during the AM peak hour (8:00a-9:00a), 12 of 14 signalized intersections operate at an acceptable level of service (LOS C or better). Two intersections (River Road at Hillside Road, River Road at State Route 5) operate at LOS D, while several approaches operate at LOS D or E. During the PM peak hour (5:00p-6:00p), the intersection of River Road and Edgewater Commons, operates at LOS E. Three approaches within the study area, River Road northbound at State Route 5, Ferry Road eastbound at River Road, and Edgewater Commons westbound at River Road, operate at LOS F. Three approaches within the study area, Gorge Road eastbound at River Road, Edgewater Commons eastbound at River Road, and River Road northbound at Edgewater Commons, operate at LOS E. Additionally, six approaches within the study area operate at LOS D.

Bus and truck percentages are generally in the one to two percent range. While these overall percentages are not high, truck and bus operations can have an adverse impact in flow in the corridor, particularly buses making stops to board and de-board passengers. During field investigations, it was noted that buses stopping in the roadway impacted traffic flow, causing vehicles to queue.

An important issue is the general lack of connectivity between adjacent land uses, and parallel movements off the study corridor are infrequent due to barriers between land uses. This forces most vehicles to use River Road/Port Imperial Boulevard for local trips. The roadway's current performance is marginal, and given its important role of providing mobility and access in the region, measures must be taken to address existing deficiencies and accommodate future growth.

Examining the environmental conditions in the area indicate that while there are sensitive areas that may limit the ability to accommodate potential physical improvement concepts, no major environmental barriers were identified. The physical constraints of the existing roadway corridor and ROW limitation does limit the amount of feasible areas that may be available to accommodate improvements, and this should be considered during the design phase of any proposed alternative that may move forward toward implementation.

Pedestrian access and connectivity is a major concern and was mentioned several times by the TAC and other stakeholders as a significant problem. Sidewalk gaps were noted throughout the study area and several areas showed worn paths which indicate unmet pedestrian demand. TAC members also noted difficulties in crossing River Road/Port Imperial Boulevard to access transit and retail uses adjacent to the riverfront. Bicycle compatibility within the study area is limited due to the lack of shoulders throughout most of the study area.

Improved connectivity between the uplands and riverfront area was expressed as a key issue for the study area. Limited vehicular and pedestrian connections make it difficult for those in the uplands area to access transit hubs and other points of interest on the waterfront.

Existing transit service is fairly extensive and offers multiple modes and service to New York, Newark, Jersey City, and other points. In order for transit to serve more demand both today and into the future, the service needs to be improved to offer enhanced services as well as improved access, connections and coordination. Existing observations and deficiencies detailed within this document are illustrated on maps 1A through 4B in Appendix A of this report.

11. Future Conditions

This segment of the Final Report outlines the growth forecasting process, future conditions, and the development of strategies and alternative concepts to address the transportation needs in the corridor. The improvement concepts include roadway, transit, pedestrian, bicycle, and policy recommendations.

12. Forecasting 2030 Traffic Conditions

The year 2030 was selected as the future year for analysis, based on the accepted planning horizon of looking at least 20 years into the future. The year 2030 traffic volumes were forecast using the New Jersey Transit Demand Forecasting Model (NJTDFM) that covers the study area and all of New Jersey and the surrounding region. The model has the ability to generate both highway and transit travel demand estimates. Considerable detail on both the highway and transit network is included in the model in the study area, and the information was supplemented to gain a better focus on travel conditions in the corridor.

The NJTDFM was updated with regional demographic forecasts of population and employment for 2030 generated by the North Jersey Transportation Planning Authority (NJTPA) and supplemented with readily available development projections within the study area. These included the following:

- Weehawken
  - Lincoln Harbor Phase III (430 Residential Units)
- North Bergen
  - Bulls Ferry Road (250 Residential Units)
  - JGP Development (300 residential Units)
  - Appleview Development (140 residential Units)
- Edgewater
  - Unilever Site (Residential/Retail/Office/Community)
  - Octagon (184 Residential Units)
  - Orchard Street (37 Units)
  - Moorings on the Hudson (20 Units)
  - Glenwood West (178 Units)
  - Hudson View Hotel (140 Rooms)

These estimates of planned development help to better define the travel demand in the corridor, but are subject to changing economic conditions. Therefore, while it is important to capture the overall magnitude of expected development, the actual composition and individual numbers may vary without significant impact on the growth forecasts.

In addition to planned development, the model was updated to reflect planned improvements in the transportation system for roadways included in the regional model. This included the planned improvements in the study area for the Baldwin Avenue/Port Imperial Boulevard intersection, which will increase the capacity of the intersection by widening the approaches to provide turn lanes and signalizing the intersection.

The NJTDFM was run to forecast 2030 traffic growth. The 2030 No Build scenario represents the condition in which it is assumed that no changes, other than committed projects, will be

implemented. This scenario forms the baseline future condition, which is used to later test proposed conceptual traffic-related improvements.

The following sections detail the traffic volume growth and the 2030 No Build capacity analysis.

12.1 Traffic Volume Growth

The existing and future year (2008 and 2030) vehicular traffic along the River Road corridor were estimated by utilizing the NJTDFM, incorporated with enhanced modeling details and socioeconomic assumptions for the study area. The traffic growth rates for individual road sections along River Road were derived by comparing the 2030 traffic projections with the existing year estimates, respectively for AM and PM peak periods shown in Figure 29 below.

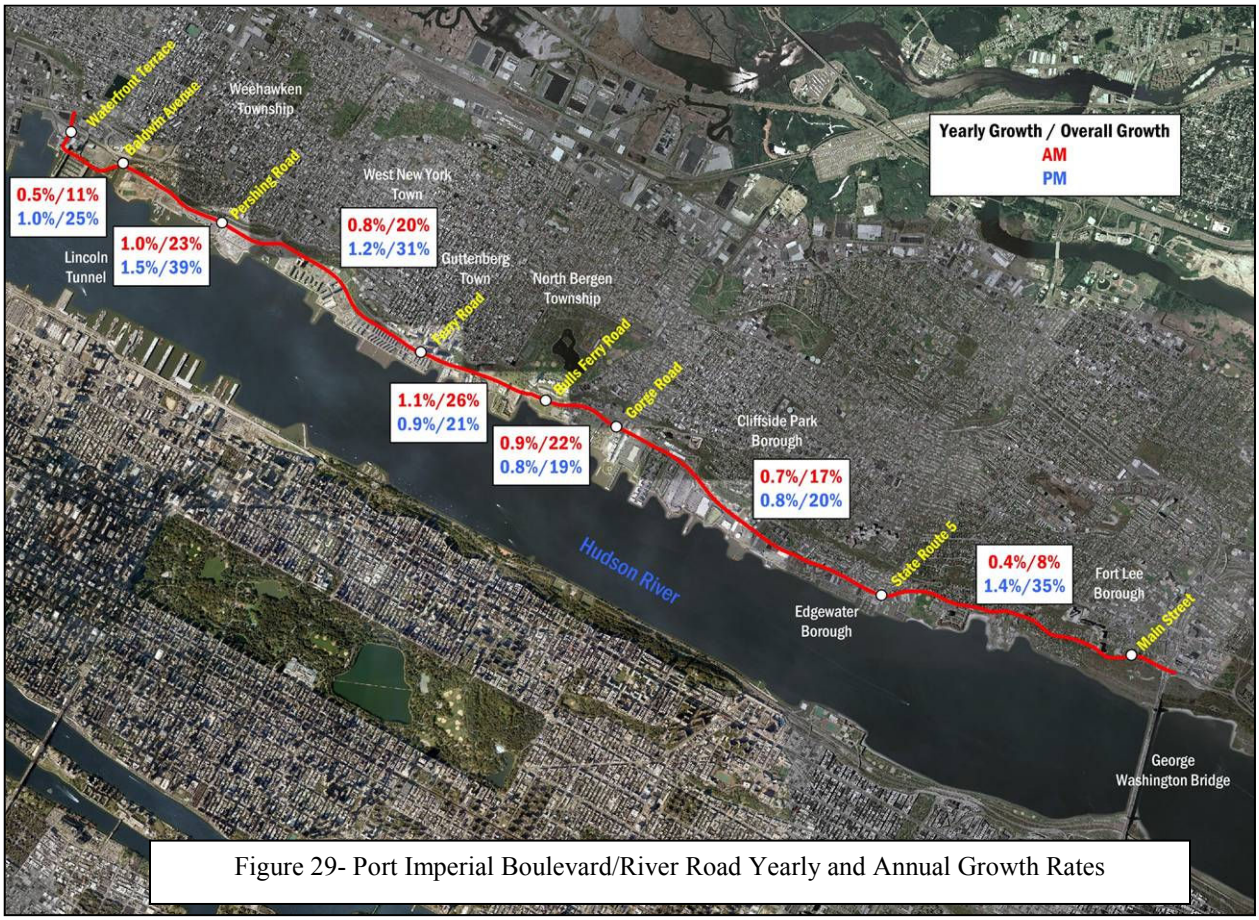


Figure 29- Port Imperial Boulevard/River Road Yearly and Annual Growth Rates

Based on these growth rates the resultant forecasted traffic flows during the AM and PM peak hour traffic on River Road northbound and southbound are noted in Table 3.

Table 3 – 2030 Peak Hour Traffic Flows (Northbound/Southbound)

Location	AM Peak Hour	PM Peak Hour
North of Orchard Street	800 / 800	900 / 1,100
North of Old River Road	1,200 / 1,100	1,700 / 1,300
South of Bulls Ferry Road	1,100 / 900	1,700 / 1,200

To translate the growth forecast for the corridor into growth at individual intersection locations, existing year traffic counts were factored based on the growth rates derived from the NJTDFM. Growth rates on River Road/Port Imperial Boulevard were applied based on the approach destination and direction, while an average growth rate was applied to cross traffic on the minor approaches.

12.2 2030 No Build Traffic Conditions

As in the existing conditions analysis, traffic operations for the future conditions were analyzed at 16 intersections (14 signalized, two unsignalized) within the study area using Synchro Version 6, a computer model that estimates the performance of the intersections. Similar to the existing conditions analysis, two peak periods (AM peak, 8-9am and PM peak, 5-6pm) were analyzed. Growth rates developed from the regional model were applied to corridor existing volumes to establish the future No Build volumes. Additionally, one planned transportation improvement, at the intersection of Baldwin Avenue/Harbor Boulevard and Waterfront Terrace/Port Imperial Boulevard, was included in the 2030 No Build Synchro model, as it is assumed that construction of the intersection improvement will be complete by 2011. Maps 5A and 5B in Appendix A depict the 2030 No Build level of service at the key intersections.

As defined earlier in this report, the performance measure for roadways is the LOS criteria. LOS is divided into six categories, ranging from LOS A (free-flow traffic) to LOS F (traffic flows break down, over capacity volume conditions). LOS E is generally considered an unacceptable condition, or failure, with LOS D being defined as approaching an unacceptable condition.

The analysis indicates that during the AM peak hour four intersections will either operate at LOS F or will have approaches operating at an unacceptable level of service (LOS E or F), including three signalized and one unsignalized intersection, as detailed below in Table 4. While not depicted in the table, all intersections suffer degradation in overall delay due to the future growth; however most operate at an acceptable level of service.

Table 4 - Future 2030 No-Build Conditions AM Peak Hour Level of Service			
Intersection	Existing 2008 Overall LOS	Future 2030 No Build Overall LOS	Critical Movement(s) 2030 No Build
Harbor Blvd/Waterfront Terrace/Port Imperial Blvd.	N/A	C	None
Ferry Terminal/Port Imperial Blvd	A	A	None
Riverbend Drive North/Port Imperial Blvd	A	A	None
Riverbend Drive South/Port Imperial Blvd	A	A	None
Hillside Road/River Road	B	C	Hillside Rd EB (LOS E)[2]
Ferry Road/River Road	C	F	River Rd SB (LOS F) River Rd NB (LOS E) Ferry Road EB (LOS E)[3]
Palisades Med. Center/River Road	A	B	None
Roc Harbour Drive/River Road	A	A	None
Bulls Ferry Road/River Road	B	D	None
Gorge Road/River Road	B	C	None
Thompson Lane/River Road	A	A	None
Edgewater Commons /River Road	B	B	None
Archer Street/River Road	A	A	None
Russell Ave/River Road	B	B	None
Hilliard Avenue/River Road	B	B	None
Dempsey Avenue/River Road	A	A	None
State Route 5/River Road	D	E	River Rd NB (LOS F)[4]
Glenwood Ave/River Road	A	A	None
Hudson Cove/River Road	N/A	N/A	Hudson Cove WB (LOS F)[5]
Orchard St	A	A	None

N.B. - Overall LOS not computed for unsignalized intersections

As shown in Table 5, during the PM peak period six signalized and one unsignalized intersection will operate at unacceptable conditions (LOS E or F). Most intersections show degradation in level of service in the future year versus the existing year. While not depicted in the table, all intersections suffer degradation in overall delay due to the future growth; however most operate at an acceptable level of service.

[2] The intersection of Hillside Road at River Road will operate at an acceptable overall LOS C; the eastbound approach will operate at LOS E.
[3] The intersection of River Road at Ferry Road will operate at LOS F; the southbound, northbound, and eastbound approaches will operate at LOS F, LOS E, and LOS E respectively.
[4] The intersection of River Road at State Route 5 will operate at an overall LOS E; the northbound approach will operate at LOS F.
[5] The westbound approach of the unsignalized Hudson Cove at River Road intersection will operate at LOS F.

Table 5 - Future 2030 No-Build Conditions PM Peak Hour Level of Service			
Intersection	Existing 2008 Overall LOS	Future 2030 No Build Overall LOS	Critical Movement(s) 2030 No Build
Harbor Blvd/Waterfront Terr/Port Imperial Blvd.	N/A	C	None
Ferry Terminal/Port Imperial Blvd	B	B	None
Riverbend Drive North/Port Imperial Blvd	A	A	None
Riverbend Drive South/Port Imperial Blvd	A	B	None
Hillside Road/River Road	B	C	None
Ferry Road/River Road	B	C	Ferry Rd EB (LOS F)[6]
Palisades Med. Center/River Road	B	B	None
Roc Harbour Drive/River Road	A	B	None
Bulls Ferry Road/River Road	B	C	River Rd NB left (LOS E)[7]
Gorge Road/River Road	C	D	Gorge Rd. EB (LOS E) River Rd NB left (LOS F)[8]
Thompson Lane/River Road	B	B	None
Edgewater Commons /River Road	E	F	Edgewater Comm. WB (LOS F) River Rd NB (LOS F) River Rd SB (LOS E)[9]
Archer Street/River Road	B	B	None
Russell Ave/River Road	A	B	None
Hilliard Avenue/River Road	B	B	None
Dempsey Avenue/River Road	A	B	None
State Route 5/River Road	D	F	River Rd NB (LOS F)[10]
Glenwood Ave/River Road	A	E	River Rd SB (LOS F)[11]
Hudson Cove/River Road	N/A	N/A	Hudson Cove WB (LOS F)[12]
Orchard St	A	B	None

N.B. - Overall LOS not computed for unsignalized intersections

[6] The Ferry Road at River Road intersection will operate at LOS C; the Ferry Road eastbound approach will operate at LOS F.
[7] The Bulls Ferry Road at River Road intersection will operate at an acceptable overall LOS C; the northbound left-turn movement of River Road will operate at LOS E.
[8] The River Road at Gorge Road intersection will operate at an overall LOS D; the Gorge Road eastbound approach will operated at LOS E; the River Road northbound movement will operate at LOS F.
[9] The Edgewater Commons at River Road intersection will operate at LOS F; the northbound and westbound approaches will operate at LOS F; the southbound approach will operate at LOS E.
[10] The State Route 5 at River Road intersection will operate at LOS F; the northbound approach will operate at LOS F.
[11] The Glenwood Avenue at River Road intersection will operate at LOS E; the southbound approach will operate at LOS F.
[12] The westbound approach of the unsignalized intersection of Hudson Cove at River Road will operate at LOS F.

13. Improvement Concepts

In the analysis of the existing and future conditions in the corridor, several deficiencies that impact local and regional traffic conditions and mobility and accessibility were identified. As such, there is a need to make targeted improvements to the corridor to improve circulation, increase roadway efficiencies, increase transit connections and efficiency, and improve traffic flows while also providing adequate connectivity and access to surrounding areas.

Improvement concepts covering both the short- and long-term, for both physical infrastructure and policy alternatives, have been developed and grouped into the categories of overall corridor and site specific concepts further discussed relative to Roadway, Pedestrian, Bicycle, Transit, and Policy initiatives. These initiatives seek to improve existing and future deficiencies in capacity, operations, and connectivity while conforming to land use, topographical, and environmental constraints.

It must be noted that this study performed a preliminary look at improvement concepts, and the advancement of any concept through design to construction would require several steps beyond this study, including an assessment of feasibility, impacts, and costs.

13.1 Overall Corridor Concepts

There are a number of physical improvement concepts that apply to the overall corridor. These include improvements to address pedestrian deficiencies, pavement deficiencies, and operational deficiencies throughout the corridor. This section provides details on the recommended improvements to address those needs, while overall policy concepts are discussed later in this document.

Overall, the corridor is in need of improved pedestrian accommodations. This area is heavily utilized by transit users, and access to transit for pedestrians is critical. Additionally, the corridor is densely developed with many different land uses. This condition is conducive to pedestrian trips. To better accommodate these trips, there are several deficiencies in the pedestrian system to be addressed.

An issue raised by members of the TAC and the public was the adequacy of the crossing time at many corridor intersections. PB completed a field investigation to check the crossing times at the 15 key corridor intersections. The standard required crossing time is 4 feet per second according to the 2003 edition of the Manual on Uniform Traffic Control Devices from the Federal Highway Administration (FHWA). When the pedestrian phase is actuated, meaning the pedestrian pushes the cross button, there is adequate crossing time at each of the 15 key corridor signalized intersections. However, when the button is not activated most of these intersections do not provide sufficient protected pedestrian crossing times. Since there is a perception that the crossing time is too short, increased awareness of available time will help mitigate the concern. Therefore, at each signalized intersection, countdown style pedestrian signal heads should be installed. The installation can be done as signals are upgraded, with priority locations given to the Edgewater central business district (CBD) and wider intersections that require longer crossing times.

The crosswalks at many intersections are severely faded and should be should be restriped. The intersections of River Road at State Route 5, Hilliard Avenue and Russell Avenue, will be

addressed shortly, as they will be restriped when the roadway is resurfaced at the end of 2009. In the Edgewater CBD area, treatments to provide greater awareness and visibility of the crosswalk should be considered. In Bergen County, the design width of the crosswalks has increased from past design to 8' from the inner stripe edges (formerly 6') and to a 1' stripe (formerly 6") for a total crosswalk width of 10'. This change in the designs and restriping schemes was to increase the visibility of the crosswalks.

Throughout the study area, curb ramps at intersections should be retrofitted to include ADA compliant truncated domes as shown in Figure 30. As noted in the existing conditions report, truncated domes were not installed at the signalized and unsignalized intersections inventoried within the study area. It should be noted that Bergen County is in the process of retrofitting all county routes with truncated domes. This will be done in conjunction with the resurfacing of the roadway in 2009.

Figure 30 – ADA-Compliant and non ADA-compliant curb ramps

North of State Route 5 the corridor pavement is in very poor condition. This area should be resurfaced. It should be noted that Bergen County is currently resurfacing this section of River Road north of State Route 5 to Glenwood Avenue and will resurface the remainder of River Road in Bergen County at the end of 2009.

In order to improve efficiency throughout the corridor, the signal timing at each intersection should be optimized to maximize capacity at the intersections. Additionally, in the Edgewater CBD area there are signals that are closely spaced that could benefit from signal coordination to allow for better flow. The intersections of Ferry Road at River Road and Hillside Road at River Road could also benefit from signal coordination.

Finally, it has been noted that there are limited access points into and out of the corridor. When an incident occurs along the corridor or at the Lincoln Tunnel or George Washington Bridge the River Road corridor becomes overly congested very quickly. By utilizing basic ITS systems, motorists along the corridor can be informed of issues and delays and make alternate plans or exit the corridor at one of the limited access points. First, the New Jersey 511 system can be more actively advertised to corridor residents through the Hudson Transportation Management Association (TMA), the local municipalities and the counties. The 511 system allows users to call in using their cell phones and name a route, city, hotspot, bridge or tunnel and get real time information on incidents. Second, further investigation should be done on adding signage in advance of the limited access points that flash when there is an incident and direct motorists to a local Highway Advisory Radio that will provide information on incidents and alternate routes.

13.2 Site-Specific Intersection and Pedestrian Concepts

In addition to the overall corridor improvement concepts noted in the previous section, location-specific recommendations for the key intersections were developed. Improvement concepts are detailed by intersection and annotated on an aerial graphic in the following sections. Figure 31 is an example of the concept diagram with callouts to describe the recommended improvement legend. Where capacity-related improvements have been recommended, a capacity analysis of the concept is detailed.

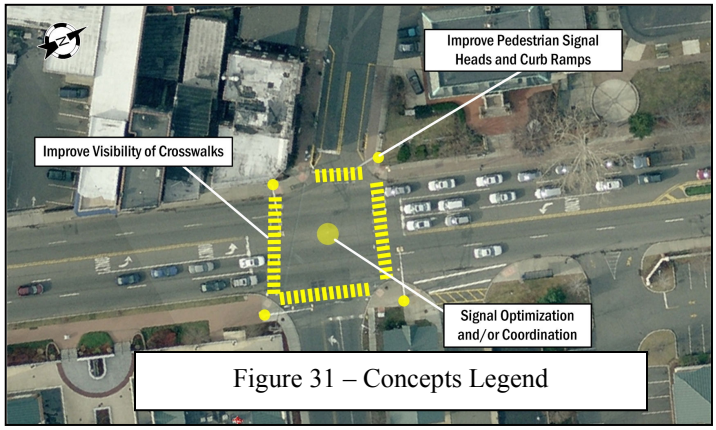


Figure 31 – Concepts Legend

13.2.1 River Road at Orchard Street (Figure 32)

The intersection of River Road at Orchard Street is adjacent to the Caribbean House residential complex with approximately 75 units. An existing bus stop on the northbound side of River Road lacks adequate access to connecting driveways from the east along Orchard Street and Washington Lane. Further, several crosswalks at the intersection are worn and faded.

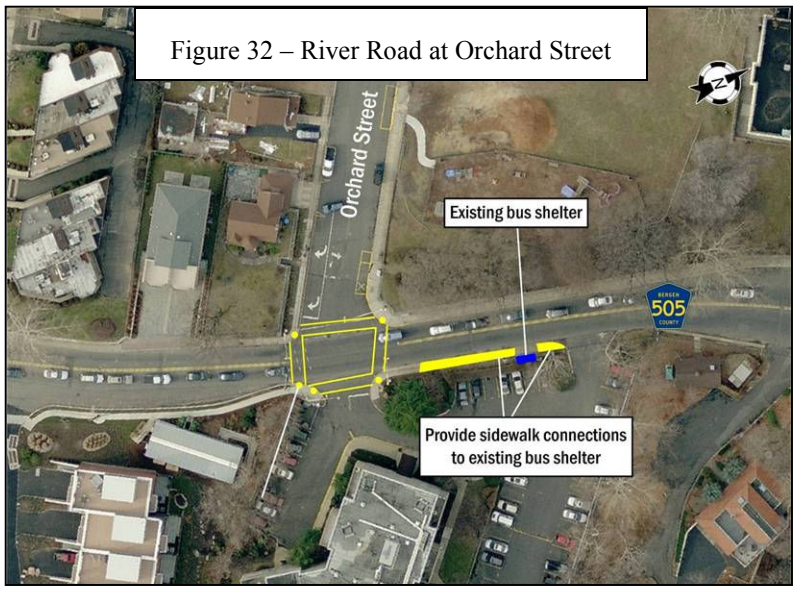


Figure 32 – River Road at Orchard Street

In order to address these deficient conditions, improvements are recommended to improve pedestrian mobility in the vicinity of the intersection. First, additional sidewalks should be installed connecting the existing NJ Transit bus shelter on River Road northbound to the driveways adjacent to the Caribbean House. Second, the crosswalks on all four approaches should be restriped. Finally, ADA detectable warnings should be installed on all curb ramps.

13.2.2 River Road at Sterling Place (Figure 33)

The intersection of River Road at Sterling Place is an unsignalized intersection located in the northern portion of the study area. The adjacent neighborhood primarily consists of single-family homes. A NJ Transit bus shelter is located along River Road northbound approaching the intersection but is isolated due to a lack of sidewalk access to the shelter, and the lack of crossing opportunities along this portion of River Road. Currently, the nearest crosswalks are

approximately 850 feet to the north (Orchard Street) and approximately 1400 feet to the south (Glenwood Avenue).

In order to address these concerns, sidewalk should be installed along River Road northbound approaching the existing shelter from the north and south. While no sight distance concerns were noted at this location, Bergen County and Edgewater should investigate the feasibility of a crosswalk across River Road at the unsignalized intersection with Sterling Place.

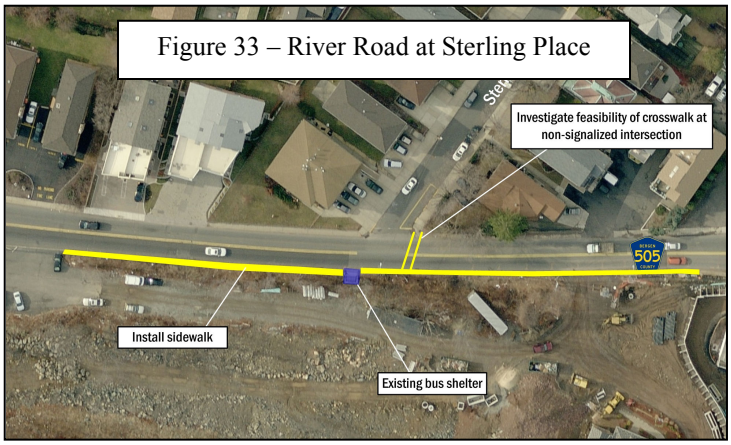


Figure 33 – River Road at Sterling Place

13.2.3 River Road at Glenwood Avenue (Figure 34)

The intersection of River Road at Glenwood Avenue is adjacent to the Edgewater Community Center, and located just south of the Hudson Cove residential complex. Existing year traffic analyses for the unsignalized intersection at River Road and Hudson Cove resulted in a LOS F for the left-turn movement from Hudson Cove onto River Road southbound. Further, crosswalks on all approaches are worn and faded. Pedestrian movements at this intersection will be improved based on an existing plan to install sidewalks along River Road northbound adjacent to Veterans Park.

To address these deficient conditions, three improvements are recommended to improve pedestrian

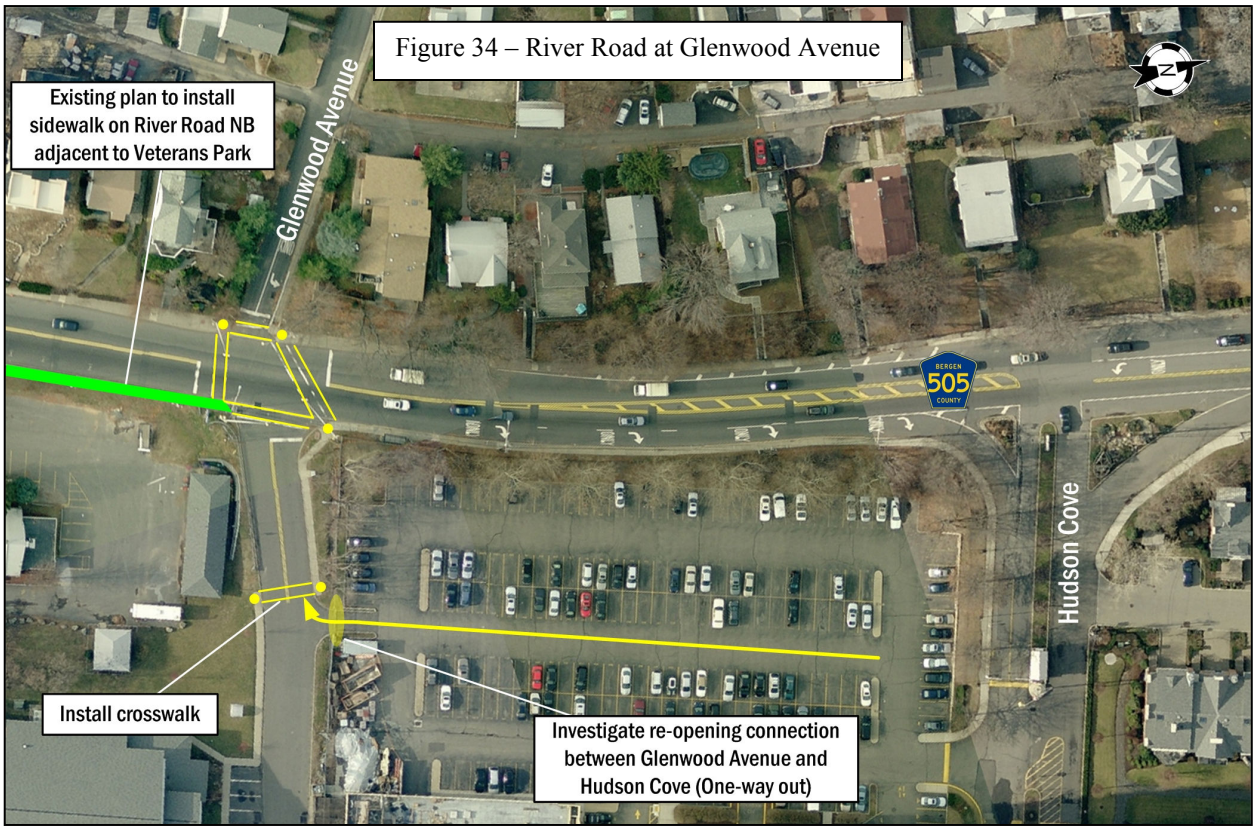


Figure 34 – River Road at Glenwood Avenue

and vehicular mobility. First, the Borough of Edgewater, in cooperation with Hudson Cove, should investigate the re-opening of the existing connection between Glenwood Avenue and Hudson Cove one-way exiting Hudson Cove to Glenwood Avenue. This connection would provide vehicles from Hudson Cove destined to points south the ability to make this turn at the signalized intersection with Glenwood Avenue. Next, to improve pedestrian mobility to the Edgewater Community Center, a crosswalk should be installed between the existing curb ramps along Glenwood Avenue adjacent to the Community Center. At the intersection, crosswalks on all four approaches should restriped (this will be done as part of the Bergen County resurfacing project). Lastly, ADA detectable warnings should be installed on all curb ramps (this will be completed as part of the Bergen County resurfacing project). To improve the operational deficiency at the signalized intersection, a signal optimization is recommended to provide sufficient clearance time for left-turning vehicles on River Road southbound.

According to the Bergen County Department of Public Works there is a planned improvement to provide a southbound left turn slot along River Road. This planned improvement will allow the intersection to operate at acceptable levels of service in the future.

The recommended improvements at this intersection provide an improved level of service on the critical movement at this intersection (River Road southbound) from LOS E in the PM peak hour in the no build scenario to LOS D in the build scenario as detailed in Table 6.

Table 6 - 2030 Build Scenario LOS – River Road at Glenwood Avenue

	Peak Hour	No Build	Bergen County Planned Improvements	Signal Optimization Only
Overall Intersection	PM	E	B	D
River Road SB	PM	F	A	D

13.2.4 Edgewater Central Business District (CBD)

Several intersections within Edgewater's CBD were evaluated including NJ Route 5, Dempsey Avenue, Hilliard Avenue, Garden Place, Russell Avenue, and Archer Street. Since observed pedestrian activity was most evident in Edgewater's central business district, improvements to pedestrian conditions at these intersections are recommended. All crosswalks at each intersection should be restriped and methods to provide higher visibility and serve as a reminder to drivers that increased pedestrian activity is likely in this area should be considered.

At signalized intersections, the existing pedestrian signal heads should be upgraded to include countdown timers, which are effective in making pedestrians aware of the signal phase. ADA-compliant detectable warnings should be installed on all curb ramps at each intersection. Finally, Edgewater should work with Bergen County to consider reducing the speed limit in the CBD from 35 mph to 25 mph to improve pedestrian safety in the CBD.

To optimize traffic flow within the CBD the existing signals at State Route 5, Dempsey Avenue, Hilliard Avenue, and Archer Street should be optimized and coordinated with one another.

The following is a brief description of the intersections in the CBD and the expected LOS results from the optimization as well as additional intersection-specific improvements needed for each.

13.2.5 River Road at NJ Route 5 (Figure 36)

Figure 35 – River Road NB approaching State Route 5

The intersection of River Road at NJ Route 5 is the northern end of Edgewater's CBD. NJ Route 5 is a major connection to Cliffside Park and the uplands area. Further, this intersection is adjacent to the Edgewater Ferry Terminal and is the main access point for the terminal's "kiss and ride" area.

In addition to the pedestrian improvements detailed for Edgewater's CBD, pedestrian circulation improvements are recommended along River Road northbound adjacent to the gas station south of State Route 5. This area, as shown in Figure 35, lacks sidewalks and is difficult for pedestrians to traverse. Future year traffic volumes indicate a failing LOS for the northbound left-turn movement at this intersection.

Potential improvements may include the installation of sidewalk adjacent to River Road northbound or a pathway connecting River Road and the Edgewater Ferry Terminal. The recommended signal coordination and signal optimization will improve overall operations but will not provide an acceptable level of service (LOS) through year 2030.

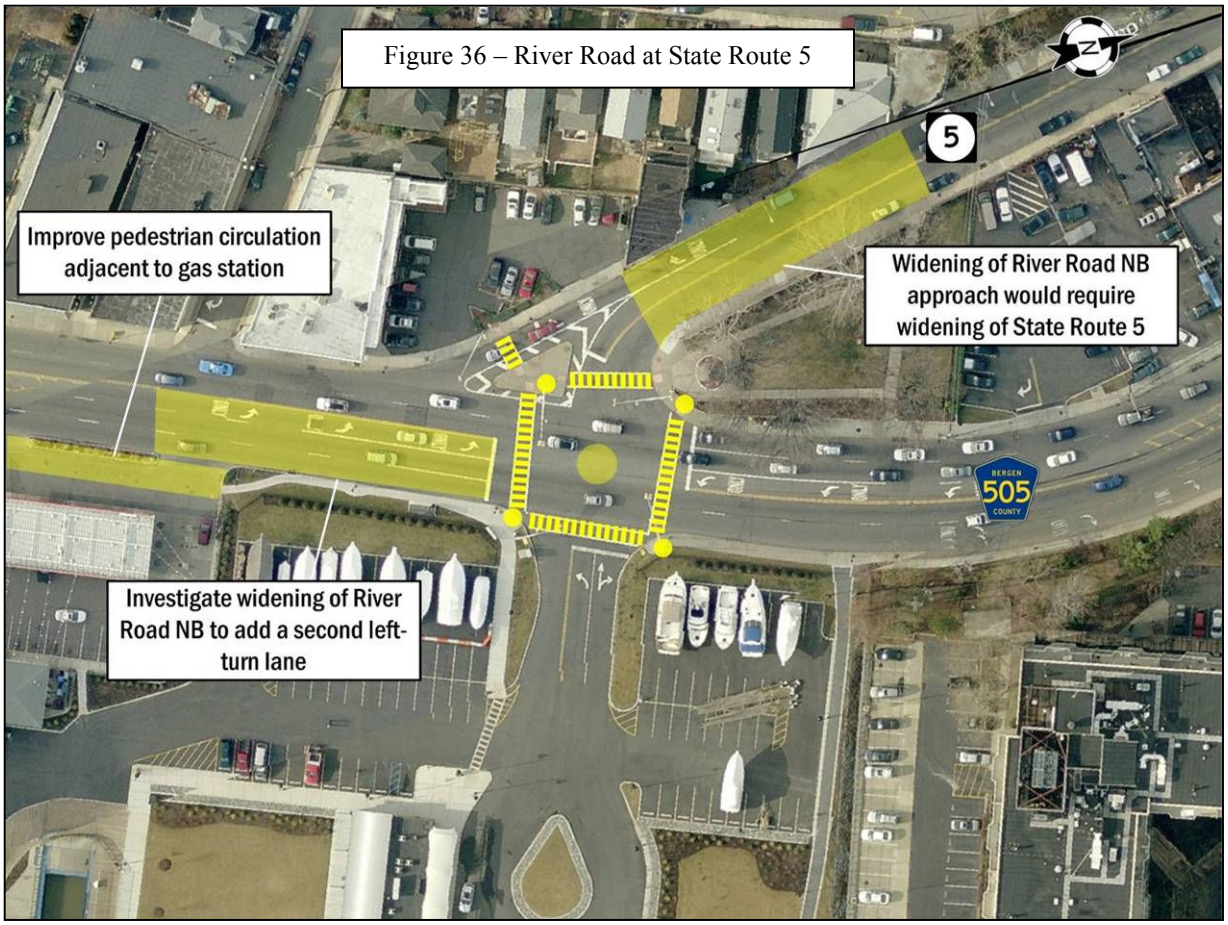


Figure 36 – River Road at State Route 5

In order to address this failing movement, significant additional improvements to the intersection would be necessary. To provide a double left-turn for River Road northbound, right-of-way would need to be acquired from parcels alongside River Road northbound between State Route 5 and Dempsey Avenue as well as along River Road northbound extending north beyond State Route 5. Further, to provide two receiving lanes on State Route 5 westbound, existing on-street parking along State Route 5 would need to be removed to allow for two lanes westbound. In order to off-set the loss of on-street parking spaces, Bergen County and the Borough of Edgewater should consider developing a parking garage on the existing borough-owned lot adjacent to the intersection.

These improvements would provide an acceptable level of service (LOS D or better) for all movements at the intersection. Table 7 details the build scenario resultant levels of service for each concept when compared to the no build scenario.

Table 7 - 2030 Build Scenario LOS – River Road at NJ Route 5

	Peak Hour	No Build	Build – Signal Optimization Only	Build -River Road NB Double Left
Overall Intersection	AM	E	D	C
River Road NB left-turn	AM	F	E	D
Overall Intersection	PM	F	D	C
River Road NB	PM	F	D	C
River Road NB left-turn	PM	F	F	D
River Road SB	PM	C	F	D

13.2.6 River Road at Dempsey Avenue (Figure 37)

The intersection of River Road at Dempsey Avenue is located in the middle of Edgewater's CBD. This intersection is adjacent to several residential complexes located on the riverfront, and several residential complexes west of the intersection as well.

The recommended coordination with other signalized intersections within the CBD will assist in improving traffic flow through the area.

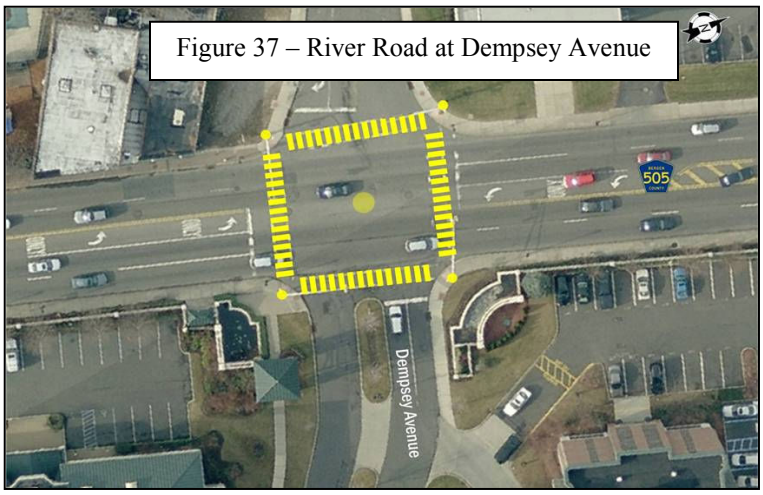


Figure 37 – River Road at Dempsey Avenue

13.2.7 River Road at Hilliard Avenue (Figure 38)

The intersection of River Road at Hilliard Avenue is located in the middle of Edgewater's CBD. This intersection is adjacent to the existing Edgewater Borough Hall, Edgewater Fire Station, and is the main access point for the Edgewater Town Centre shopping center. Further, an Edgewater municipal parking lot is located adjacent to the Edgewater Fire Station, east of the intersection along Hilliard Avenue.

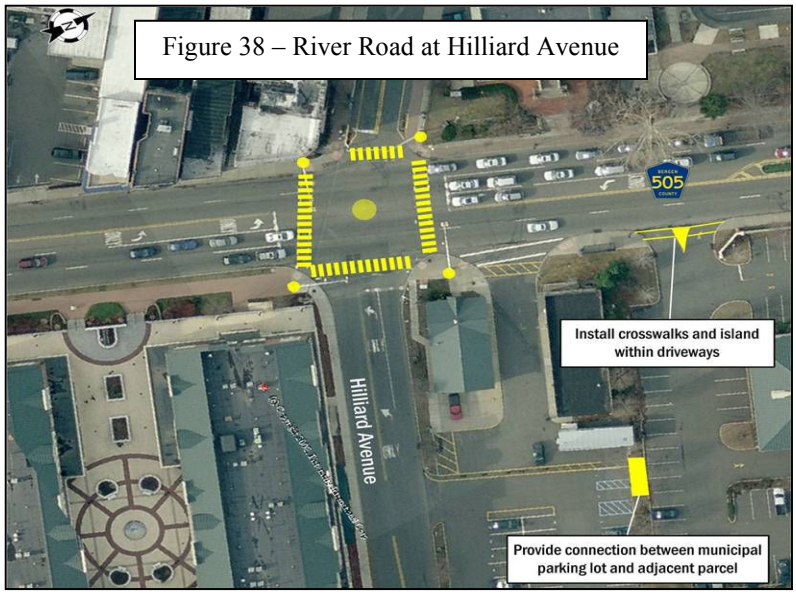


Figure 38 – River Road at Hilliard Avenue

The recommended coordination with other signalized intersections within the CBD will assist in improving traffic flow through the area.

To improve connectivity in this area, the Borough of Edgewater should investigate providing a connection between the municipal parking lot adjacent to Hilliard Avenue and the Mariners Bank building located at 935 River Road. This connection would allow Mariners Cove residents to access the Edgewater Town Centre without using River Road.

13.2.8 River Road at Garden Place (Figure 39)

The intersection of River Road at Garden Place is an unsignalized intersection located within Edgewater's central business district. Garden Place is a one-way road eastbound that serves as a connection to River Road for Undercliff Avenue and the Crown Court Condominium complex. The existing crosswalk at the intersection is faded and the curb ramps lack ADA detectable warnings.

Figure 39 – River Road at Garden Place

To improve pedestrian movements at this intersection, the crosswalk should be restriped and the curb ramps should be upgraded to be ADA-compliant.

13.2.9 River Road at Russell Avenue (Figure 40)

Figure 40 – River Road at Russell Avenue

The intersection of River Road at Russell Avenue is near the southern end the Edgewater CBD. Several major traffic generators are located adjacent to the intersection, including the Binghamton Mall, and Korman residential complex.

In order to improve pedestrian circulation in the vicinity of this intersection, a sidewalk along River Road northbound should be installed adjacent to the Binghamton Mall approaching the intersection with Russell Avenue.

13.2.10 River Road at Archer Street (Figure 41)

The intersection of River Road at Archer Street is located south of Edgewater's central business district. Archer Street provides access to the Mitsuwa Marketplace located on the riverfront, and also serves as a connection to the uplands via Undercliff Avenue.

In order to improve pedestrian circulation approaching this intersection, a sidewalk along River Road northbound should be installed adjacent to the Mitsuwa Marketplace parking lot approaching the intersection with Archer Street. Further, crosswalks should be installed at two driveways along River Road northbound, at Edgewater Golf, and at the Mitsuwa Marketplace.

Improvements to this intersection are recommended to improve the flow of traffic to the uplands area. In addition to a signal optimization, signage should be installed along River Road northbound directing traffic destined for the uplands area to use Archer Street as an alternate connection to Cliffside Park. The recommended coordination with other signalized intersections within the CBD will assist in improving traffic flow through the area.

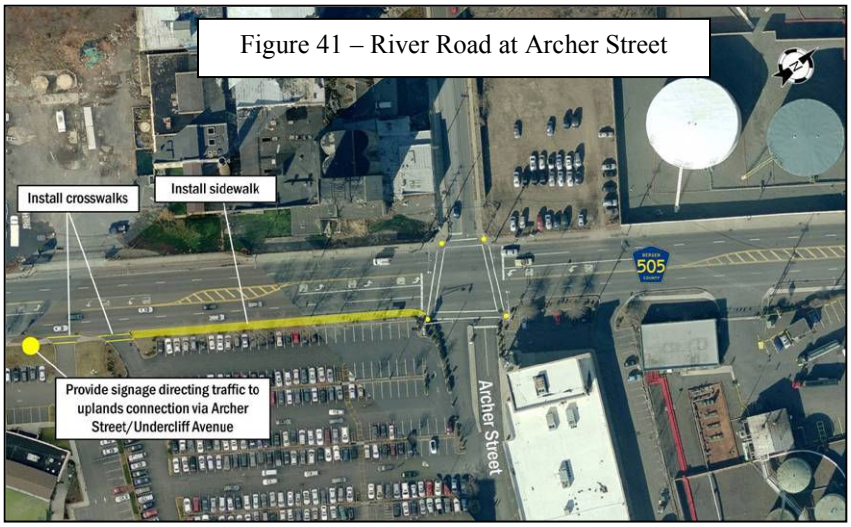


Figure 41 – River Road at Archer Street

13.2.11 River Road at Edgewater Commons (Figure 42)

The intersection of River Road at Edgewater Commons is the primary access point for the Edgewater Commons shopping center. It is the largest retail center within the study area, and future capacity analyses indicated a deficient LOS for the overall intersection and several movements.

Pedestrian activity at this intersection appears to be more infrequent than other locations within

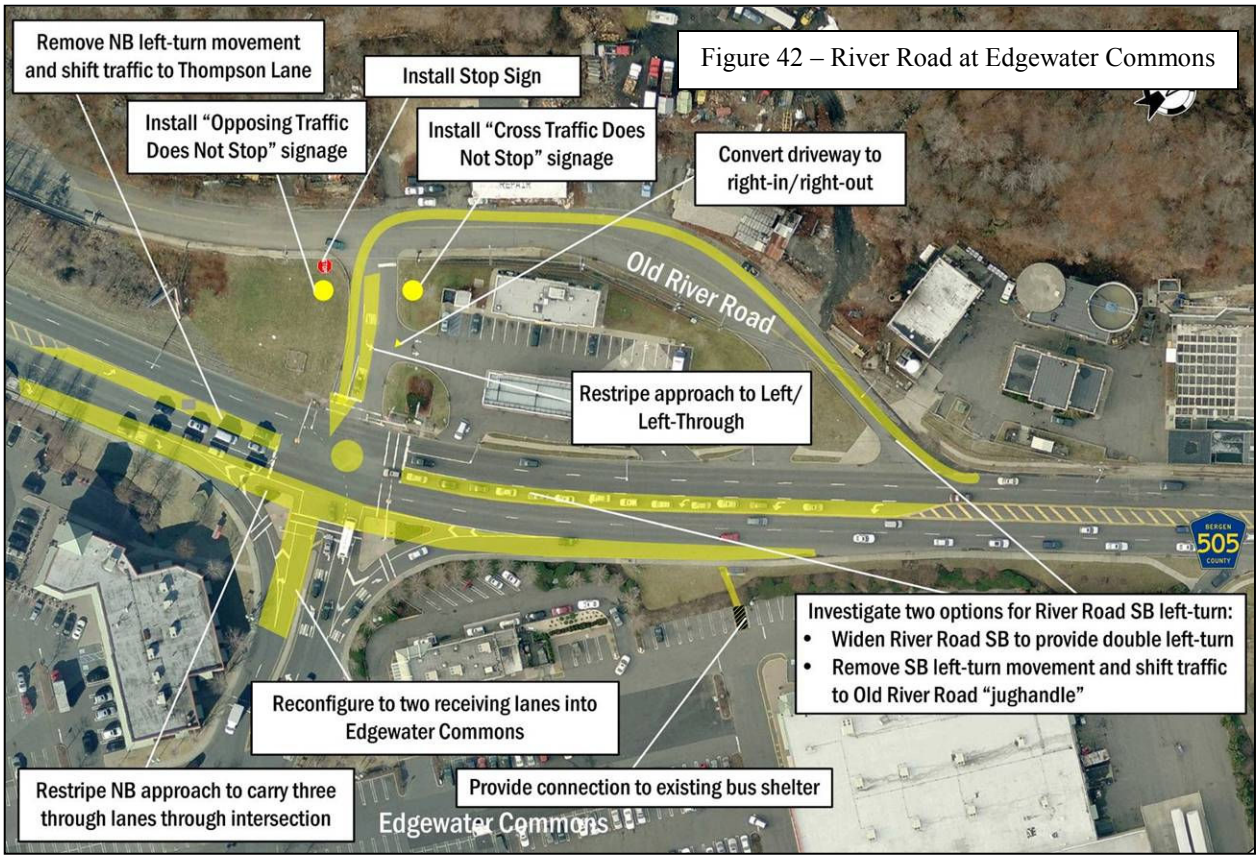


Figure 42 – River Road at Edgewater Commons

the study area, however the existing crosswalks on the southbound, eastbound, and westbound approaches at the intersection appear to be faded.

Crosswalks should be restriped.

Two capacity-related improvements were reviewed at the intersection at Edgewater Commons. These include:

- Widen River Road southbound to provide a double left-turn into Edgewater Commons and reconfiguring the intersection to provide two through lanes and a shared through right northbound. This concept includes widening River Road southbound to provide a double left turn lane into Edgewater Commons. This also includes providing additional through capacity to the northbound movements by providing two through lanes and a shared through-right lane. Additionally this option would include converting the channelized westbound right turn lane to a permitted right turn lane and adding an eastbound right turn lane. This option provides an overall LOS D, however the southbound left turn will operate at LOS F.

- Convert Old River Road to a jughandle to access Edgewater Commons from the north. This option would require a major modification to traffic flow in the area. For traffic wishing to turn left to Old River Road from River Road northbound, the existing left turn lane would be removed and left turns would be prohibited at the intersection. Traffic wishing to access businesses on Old River Road would do so via Thompson Lane, located approximately 0.4 miles south of the intersection at Edgewater Commons. This results in a minor diversion of approximately 0.1 miles due to the circuitous nature of Old River Road.

  For traffic wishing to turn left into Edgewater Commons from River Road southbound, the existing left turn lane would be removed and left turns would be prohibited at the intersection. This traffic would be diverted to Old River Road north of the intersection at Edgewater Commons and would function similar to a forward jughandle. This would require a modification to the existing unsignalized intersection at Old River Road and Edgewater Commons access road. This intersection currently functions as a two-way stop controlled intersection with Old River Road serving as the primary uncontrolled roadway. To manage the increased traffic destined to Edgewater Commons, it is recommended that the northbound approach of Old River Road become stop controlled in addition to the existing stop control on the westbound approach. This would allow traffic destined to Edgewater Commons to move uncontrolled and reduce the potential for queuing onto River Road. Appropriate signage on the northbound and westbound approaches indicating that southbound traffic does not stop should be installed as well. Alternatively, this intersection could be signalized and coordinated with the intersection of Edgewater Commons and River Road to provide increased gaps for traffic destined to Old River Road from Edgewater Commons. To prevent cut through traffic within the existing gas station on the northwest corner of the intersection, the existing driveway on the eastbound approach of the intersection would be converted to a right-in/right-out configuration.

  This option may impact the residential areas north of Thompson Lane to Old River Road as they will no longer be able to utilize the left at Edgewater Commons to access Old River Road. Further investigation of this issue will be required.

  This option would also include the reconfiguration of northbound River Road to a three lane approach with three through lanes in addition to the existing channelized right-turn lane. The

three through lanes would carry through the intersection before transitioning to the existing two lane cross section north of the intersection. River Road southbound would continue to be a two lane cross section; however it would be shifted to provide an adequate deceleration lane for traffic destined to Old River Road and ultimately Edgewater Commons. The eastbound approach at the intersection would be restriped from its existing left/through-right configuration to a left-through/through-right configuration to provide more capacity for traffic destined to Edgewater Commons. This would require a modification to the entrance to Edgewater Commons, which would be widened to allow two receiving lanes from the eastbound approach.

Results for each concept are detailed in Table 8.

Table 8 - 2030 Build Scenario LOS – River Road at Edgewater Commons

	Peak Hour	No Build	Build – Double Left	Build - Jughandle
Overall Intersection	PM	F	D	D
River Road NB	PM	F	E	D
River Road SB	PM	E	E	C
Edgewater Commons WB	PM	F	D	D
Old River Road EB	PM	E	D	D

13.2.12 River Road at Thompson Lane (Figure 43)

The intersection of River Road at Thompson Lane is adjacent to the Promenade, a retail development and several newly built office/residential buildings on the southwest corner of the intersection. A noticeable worn path was observed along River Road southbound leading towards the NJ Transit bus shelter on the northwest corner of the intersection.

To address these issues, several improvements are recommended. As pedestrian activity was observed in this area, existing pedestrian signal heads should be upgraded to include countdown timers. Sidewalk alongside River Road southbound between Edgewater Commons and Thompson Lane is recommended, as a worn path indicates unmet pedestrian demand, specifically for pedestrians destined to the NJ

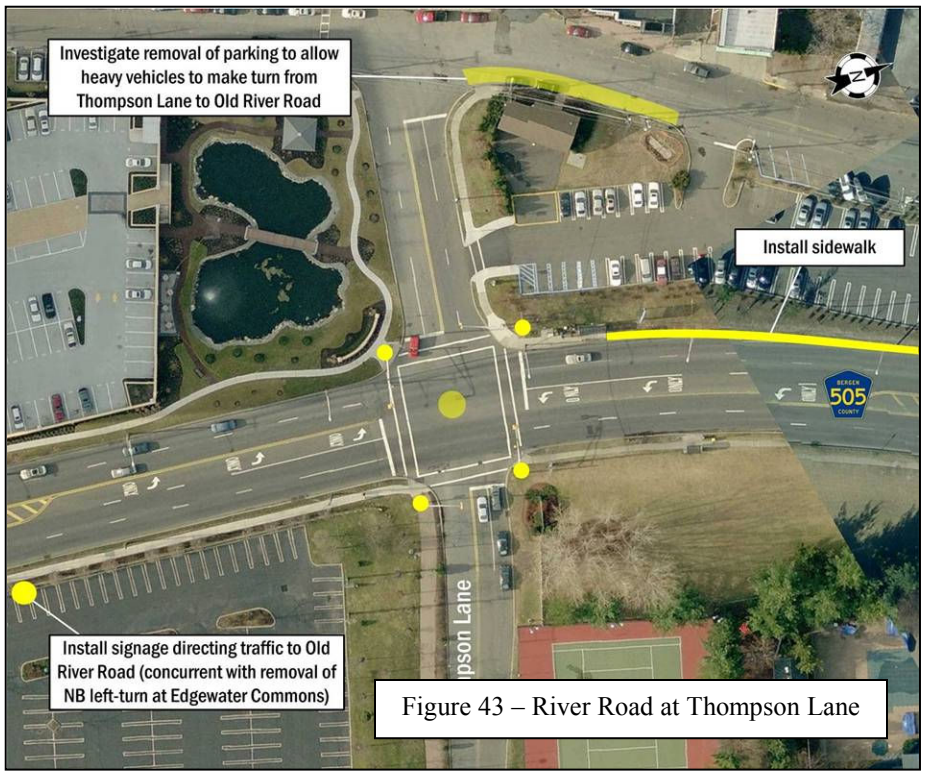


Figure 43 – River Road at Thompson Lane

Transit bus shelter on the northwest corner of the intersection. Further, ADA detectable warnings should be installed at all curb ramps at the intersection.

In coordination with the proposed improvements at the intersection of River Road and Edgewater Commons, advance signage should be installed on River Road northbound directing traffic destined to points on Old River Road to use Thompson Lane. This is in lieu of the left-turn movement at Edgewater Commons, which would be removed as part of the improvement concept detailed above. Further, if this improvement concept is advanced, parking along Old River Road northbound north of Thompson Lane should be reconfigured to allow heavy vehicles to easily navigate a right turn through the intersection at Thompson Lane and Old River Road.

Finally, the overall signal timing should be optimized to maximize vehicle flow at the intersection and reflect an increase in traffic using the northbound left turn movement.

13.2.13 River Road at Gorge Road (Figure 44)

The intersection of River Road at Gorge Road currently operates as a three-phase signal with a lead (protected) phase for the northbound and southbound double left turns. Gorge Road is a major connection to the uplands, and provides a direct link to City Place on the northeast corner of the intersection. Further, a sidewalk gap was noted along Gorge Road westbound adjacent to the Saint Moritz building.

Figure 44 – River Road at Gorge Road

In order to address operational deficiencies, the signal should be optimized to allow the intersection to operate as efficiently as possible. The sidewalk gap should be addressed as pedestrian activity was noted during field investigations and Gorge Road serves as a major pedestrian connection between the uplands and riverfront area. Further, to improve pedestrian conditions at the intersection, ADA detectable warnings should be installed on all curb ramps.

The optimization of the signal phase at this intersection provides a significant improvement to deficient approaches in the no build scenario. Under the build scenario, all approaches at the intersection are improved to an acceptable level of service (LOS D or better) as shown in Table 9.

Table 9 - 2030 Build Scenario LOS – River Road at Gorge Road

	Peak Hour	No Build	Signal Optimization
Overall Intersection	PM	D	C
River Road NB	PM	F	C
Gorge Road EB	PM	E	D

13.2.14 River Road at Old River Road/Riverside Plaza (Figure 45)

The intersection at River Road and Old River Road/Riverside Plaza is adjacent to the proposed redevelopment at the former Unilever Site. Pedestrian activity would likely increase significantly if the Unilever Site is developed as a mixed use development as currently planned, and several improvements at this intersection would improve pedestrian mobility significantly.

Field investigations identified that all crosswalks at the intersection were worn and the southwest corner of the intersection, lacks a curb ramp. Additionally, a planter is located within the crosswalk on the River Road northbound approach and a business on the southwest corner has goods displayed within the sidewalk and crosswalk landing on that corner, which obstruct safe pedestrian flows.

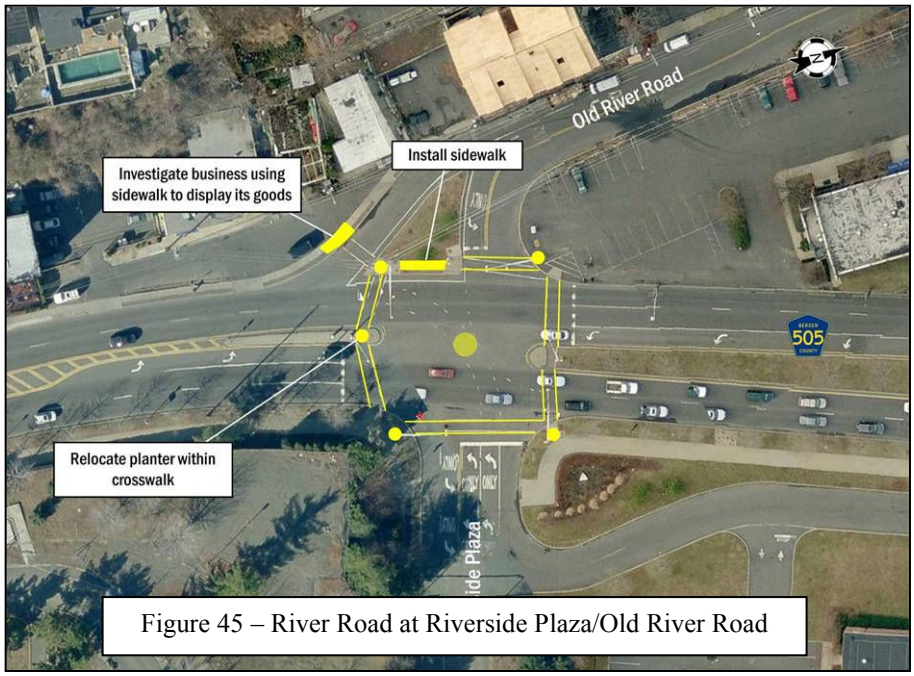


Figure 45 – River Road at Riverside Plaza/Old River Road

To address the deficiencies, the intersection crosswalks should be restriped, the planter in the crosswalk should be relocated, and the business should be prohibited from displaying its goods within the sidewalk and crosswalk. Further, a sidewalk should be installed connecting the crosswalks to the island within the eastbound approach of Old River Road. Additionally, pedestrian signal heads at the intersection should be upgraded to include countdown timers and ADA detectable warnings should be installed at all curb ramps at the intersection. The southwest corner of the intersection should be upgraded to include an ADA-compliant ramp.

13.2.15 River Road at Bulls Ferry Road (Figure 46)

The intersection of River Road and Bulls Ferry Road provides a connection to the uplands and is adjacent to a proposed redevelopment site that would include approximately 250 residential apartment and townhouse units.

Existing crosswalks on the southbound and eastbound approaches are worn. Further, an area of sidewalk along Bulls Ferry Road westbound is impassible due to debris and soil runoff from an adjacent parcel located on the northwest corner of the intersection.

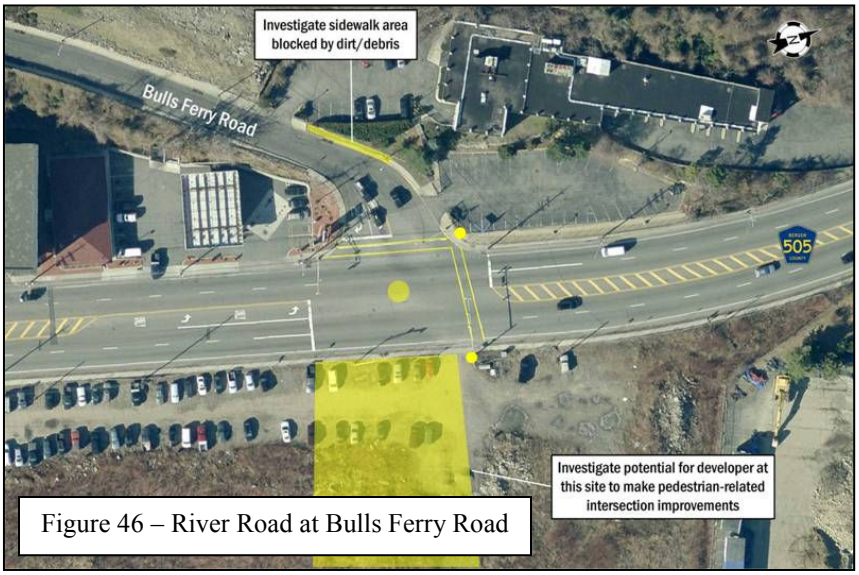


Figure 46 – River Road at Bulls Ferry Road

In order to improve pedestrian mobility at this intersection, the existing pedestrian signal heads should be upgraded to include countdown timers. Existing crosswalks on the southbound and eastbound approaches should be restriped. North Bergen Township and Hudson County should work with the parcel owner that has runoff impacting the sidewalk to alleviate the situation and prevent future runoff from affecting pedestrian movement within the area.

Any potential redevelopment of the parcel located to the east of the intersection would require a significant modification to the existing intersection, including the provision of a left-turn lane for the River Road southbound approach and construction of a new westbound approach. If this development occurs, Hudson County and North Bergen Township should investigate the potential for the site developer to make the recommended improvements at this intersection, including pedestrian improvements detailed above.

In order to address the deficient northbound left-turn movement, which will operate at LOS E during the 2030 no build PM peak hour, a signal optimization is recommended at this intersection. This optimization will allow the intersection to operate at an acceptable level of service through 2030 as detailed in Table 10.

Table 10 - 2030 Build Scenario LOS – River Road at Bulls Ferry Road

	Peak Hour	No Build	Signal Optimization
Overall Intersection	PM	C	B
River Road NB left-turn	PM	E	D

13.2.16 River Road at Roc Harbour Drive (Figure 47)

Figure 47 – River Road at Roc Harbour Drive

The intersection of River Road and Roc Harbour Drive provides the only access point for three residential developments along the riverfront. Existing crosswalks on the southbound and westbound approaches are worn. The curb ramps do not have ADA detectable warnings.

In order to improve pedestrian mobility at this intersection, the existing pedestrian signal heads should be upgraded to include countdown timers. Existing crosswalks should be restriped. Further, ADA detectable warnings should be installed on all curb ramps at the intersection.

13.2.17 River Road at 77th Street (Figure 48)

The intersection of River Road at 77th Street is an unsignalized intersection which provides access to numerous residential and office developments adjacent to the Palisades Medical Center. Crosswalks are faded and ADA detectable warnings are not present on the curb ramps at this location.

To improve pedestrian mobility in this area, the crosswalk on the 77th Street approach should be restriped. ADA detectable warnings should be installed on both curb ramps at this intersection.

Figure 48 – River Road at 77th Street

13.2.18 River Road at Palisades Medical Center (Figure 49)

The intersection of River Road and Palisades Medical Center provides the primary access point for the regional hospital. Existing crosswalks on the southbound and westbound approaches are worn. A sidewalk gap exists on the northeast corner of the intersection and a section of sidewalk on the southbound side, south of the intersection is impassible due to overgrown brush.

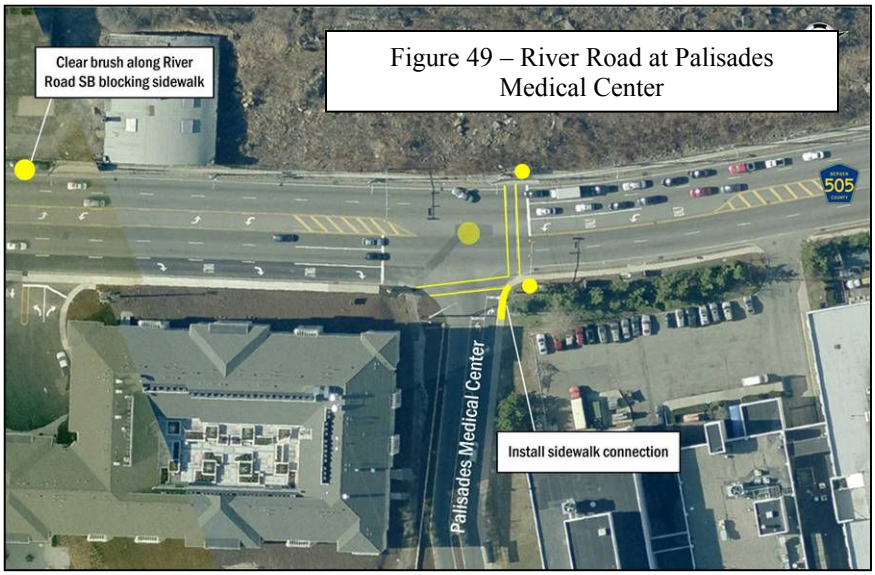


Figure 49 – River Road at Palisades Medical Center

In order to improve pedestrian mobility at this intersection, the existing pedestrian signal heads should be upgraded to include countdown timers. Existing crosswalks on the southbound and westbound approaches should be restriped. A sidewalk connection should be installed for the short sidewalk gap identified on the northeast corner of the intersection. Hudson County and North Bergen Township along with the adjacent land owner should work together to ensure that the overgrown brush is cleared and remains passable in the future. Further, ADA detectable warnings should be installed on all curb ramps at the intersection.

13.2.19 River Road at Ferry Road (Figure 50)

The intersection of River Road at Ferry Road is a signalized intersection that provides access between the uplands and riverfront in Guttenberg. Further, it serves as a primary access point for residents of the Galaxy Towers complex wishing to access the riverfront.

In order to improve pedestrian movements at the intersection, the existing worn crosswalk on the southbound approach should be restriped, and ADA detectable warnings should be installed on both curb ramps at the intersection.

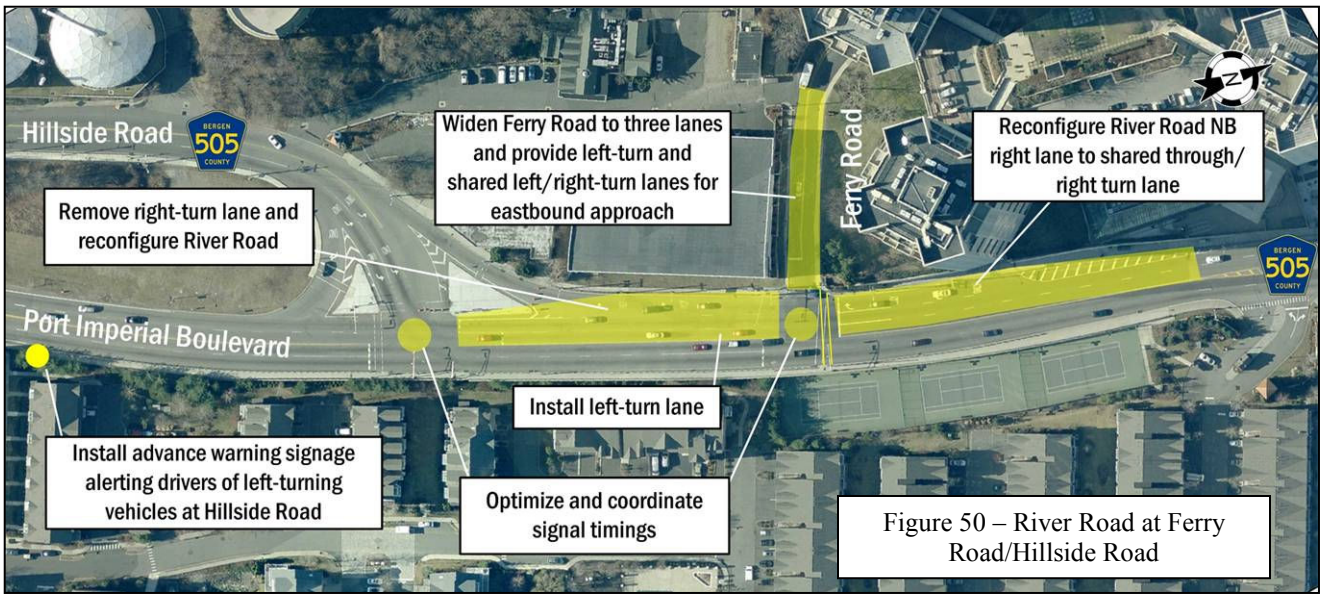


Figure 50 – River Road at Ferry Road/Hillside Road

In order to improve operations through 2030, several major modifications to all three approaches are recommended for this intersection. The River Road southbound approach currently is a three lane approach consisting of a dedicated right-turn lane and two through lanes. This approach would be narrowed to two lanes with shared right-turn/through and through lanes. River Road northbound would be widened from its current left-turn/through and through lane configuration to a three lane approach with a dedicated left-turn lane and two through lanes. This modification would require the removal of the dedicated right-turn lane at the adjacent intersection with Hillside Road to the south of the intersection with Ferry Road. The Ferry Road eastbound approach will not operate at an acceptable LOS in the future year condition as a shared left-turn/right-turn approach. In order to accommodate a two-lane approach with shared right-turn/left-turn and dedicated left-turn lanes, Ferry Road would be widened. Given the topography of the area, further study would be required to assess the feasibility of such a widening given the proximity of the Galaxy Towers.

With the initial improvement concept (without a widening of Ferry Road), the resultant level of service indicates a failure condition for River Road southbound and Ferry Road eastbound during the AM peak hour, with an overall LOS E for the intersection. With the widening of the Ferry Road eastbound approach, the overall intersection improves to LOS D. However, the southbound approach of River Road and eastbound left turn movement of Ferry Boulevard will both operate at LOS E. Given the topographical and developmental constraints at this intersection, further widening is not likely feasible, as it would encroach on the Galaxy Towers or the recently constructed townhomes along Avenue at Port Imperial. The resultant levels of service for both build scenarios are detailed in Table 11.

Table 11 - 2030 Build Scenario LOS – River Road at Ferry Road

	Peak Hour	No Build	Build – without Ferry Road widening	Build – with Ferry Road widening
Overall Intersection	AM	F	E	D
River Road SB	AM	F	F	E
River Road NB	AM	E	A	A
Ferry Road EB	AM	E	F	D
Overall Intersection	PM	C	B	B
Ferry Road EB	PM	F	D	C

13.2.20 River Road/Port Imperial Boulevard at Hillside Road (Figure 50)

The intersection of River Road/Port Imperial Boulevard and Hillside Road is a signalized intersection, which provides access between the uplands and riverfront in West New York.

No significant pedestrian related improvements were noted at the intersection of River Road/Port Imperial Boulevard and Hillside Road.

The only significant recommendation to this intersection stems from the proposed concept for the adjacent intersection at Ferry Road discussed above. In order to allow for the provision of a dedicated left-turn lane on River Road northbound at the intersection with Ferry Road, the existing right-turn lane at the intersection with Hillside Road must be removed. Further, the two

southbound through lanes would be shifted to the west to allow a transition back to the existing four-lane cross section of Port Imperial Boulevard south of the intersection with Hillside Road.

Given the intersection reconfiguration necessitated by the recommended improvements at River Road and Ferry Road, a signal optimization is recommended at this intersection. Even with the removal of the dedicated right-turn lane on the southbound approach, the resultant level of service is improved from the no build scenario to an acceptable level of service for all approaches as detailed in Table 12.

Table 12 - 2030 Build Scenario LOS – River Road at Hillside Road

	Peak Hour	No Build	Build(Reconfiguration and Signal Optimization)
Overall Intersection	AM	C	C
Hillside Road EB	AM	E	D

A dedicated left turn lane on the northbound approach of Port Imperial Boulevard would be a potential improvement at this intersection. However, it would be difficult to construct. There is a steep slope on the southbound side of the roadway, and the townhomes on the northbound side of the roadway are very close to the road and built well below the roadway grade. A retaining wall separates the townhomes from River Road. This configuration would likely not allow the installation of a dedicated left-turn lane on the northbound approach of Port Imperial Boulevard. Therefore, advance warning signage indicating the presence of left-turning vehicles should be installed south of the intersection along Port Imperial Boulevard northbound.

13.2.21 Port Imperial Boulevard at Riverbend Drive (Figure 51)

The intersection of Port Imperial Boulevard and Riverbend Drive consists of two signals that operate jointly at a one-way entrance and exit to the Riverbend complex. They are the primary access point to a large residential and several smaller commercial developments. The intersections operate at an acceptable level of service today and in the future.

In order to improve pedestrian mobility, numerous recommendations are proposed at the two signals. Crosswalks should be installed on the westbound approaches at both signals and the southbound approach at the northern intersection. "Yield to Pedestrians in Crosswalk" signage should be installed on the westbound approach of Riverbend Drive at

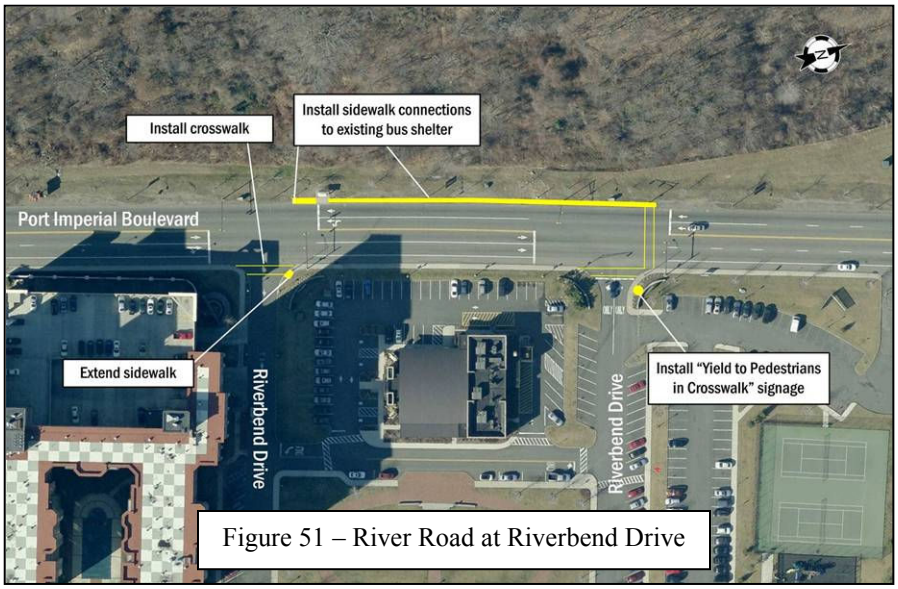


Figure 51 – River Road at Riverbend Drive

the northern signal. ADA detectable warnings should be installed on all curb ramps at the signals. Finally, sidewalks should be constructed on Port Imperial Boulevard southbound between the two signals, as well as a short section along Port Imperial Boulevard northbound north of the southern signal.

13.3 Corridor-wide Bicycle Improvements

A concern noted by the technical advisory committee and the general public was the lack of bicycle compatibility within the study area. A significant portion of the study area does not meet NJDOT's bicycle planning guidelines for compatibility due to the relatively high roadway volumes, speed limit, and lack of shoulders within most of the study area.

As noted in the existing conditions section of this report, while bicycle use is not prohibited along the Hudson River Waterfront Walkway, some areas may not be appropriate for bicycle usage, and other areas lack easy access between River Road/Port Imperial Boulevard and the walkway. Another ongoing study in the area is investigating methods of improving access and signage to the Hudson River Waterfront Walkway (HRWW). This will improve bicycle travel for some recreational users, however there are impediments that should be considered: access to various uses along River Road is not available from the HRWW; the HRWW is primarily designed for pedestrians (not cyclists); and access to transit is not available along the HRWW. Therefore, bicycle compatibility improvements should focus on the River Road corridor.

The NJDOT straight line diagram (SLD) indicates that lane widths along the four and five lane section of River Road are primarily 12 feet. Within the two lane section of River Road north of State Route 5, lane widths vary between 15 and 18 feet. Based on the existing condition within the study area, the NJDOT bicycle planning guidelines recommend a 4 foot shoulder for urban roadways without parking, with annual average daily traffic (AADT) greater than 10,000, and a speed limit of 35 mph.

During field observations, cyclists were observed utilizing this corridor. Additionally several cyclists and a cycling advocacy group participated in the public outreach for this study and noted the need for better accommodations along the corridor. Based on this input, it is assumed that there are cyclists utilizing this corridor for commuter and recreational trips. Throughout the corridor Share the Road signage should be installed to remind motorists and cyclists that the roadway is for all users and both need to be aware of one another's presence.

Additionally the installation of Shared Lane Marking (Sharrows) along River Road should be investigated. Shared Lane Markings (see Figure 52) can be an effective low-impact treatment to improve conditions for bicyclists by letting cyclist know where they should be positioned in the travel lane, alert drivers to the potential presence and position of cyclists, and encourage safe passing of cyclist by motorist. Further, they can help to discourage wrong-way bicycle riding by denoting the proper travel direction. However, they are not currently included within the Manual on

Figure 52 – Example of a Shared Lane Marking (Sharrow)

Uniform Traffic Control Devices (MUTCD), and have not been widely accepted for use in New Jersey thus far. Shared Lane Markings are expected to be included in the pending revision of the MUTCD and therefore could be considered in the future to improve conditions for bicyclists along River Road.

A possible method of improving bicycle compatibility North of State Route 5 would be to provide a 6 foot bike lane in this segment, and a possible method south of State Route 5 would be to install a 4 foot bicycle compatible shoulder. Further study would needed to determine the feasibility and best method for providing this compatibility. In some sections restriping would be sufficient as the pavement width is already there, while in other areas widening may be required.

One means of providing improved bicycle compatibility is through new development applications. Along Port Imperial Boulevard in Weehawken Township, the municipality has required as part of the development agreement that the developer provide for the installation of a 4 foot bicycle compatible shoulder.

There are several means to improving bicycle compatibility along the corridor to be considered in further study, but these must be carefully weighed against the overall corridor goals. These include:

- Widening;
- Lowering the speed limit to 30mph, which would reduce the need for a 4 foot shoulder to a 14 foot outside shared lane;
- Narrowing lane widths to allow for restriping as opposed to widening (which may negatively impact capacity and transit flows).

13.4 New Parallel Roadway Construction

The project area lacks concurrent north/south routes that parallel River Road/Port Imperial Boulevard, forcing traffic to use River Road/Port Imperial Boulevard for all trips within the study area. Topography limits opportunities to construct new roadways to the west of River Road, while the density of development to the east of River Road serves as a barrier to construction.

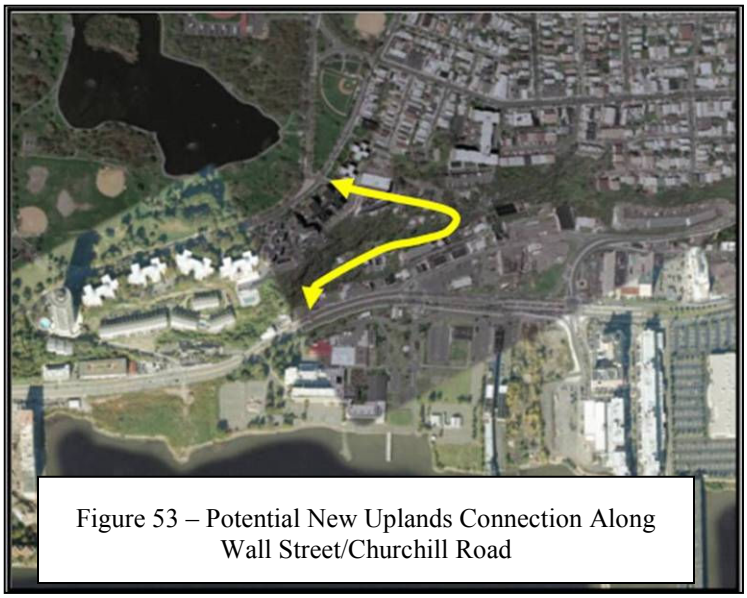


Figure 53 – Potential New Uplands Connection Along Wall Street/Churchill Road

One location was noted in the public meeting as a potential location for a new north/south roadway. The feasibility for a connection between Undercliff Avenue at Archer Street and Old River Road near Edgewater Commons should be investigated by Bergen County and the Borough of Edgewater. This connection would provide a significant benefit as it would allow for a nearly two mile,

continuous parallel route for local traffic between Thompson Lane and the Edgewater CBD. Further investigation of this concept should be done in conjunction with the feasibility assessment for the River Road at Edgewater Commons intersection concepts (see section 3.2.5). The two alternatives suggested for this location could be impacted by the location of this new connection.

13.5 Construction of New Uplands Roadway Connections

Topographical and developmental concerns similarly limit the number of existing roadway connections between the uplands and riverfront area, and likewise limit opportunities for new roadway connections to be constructed.

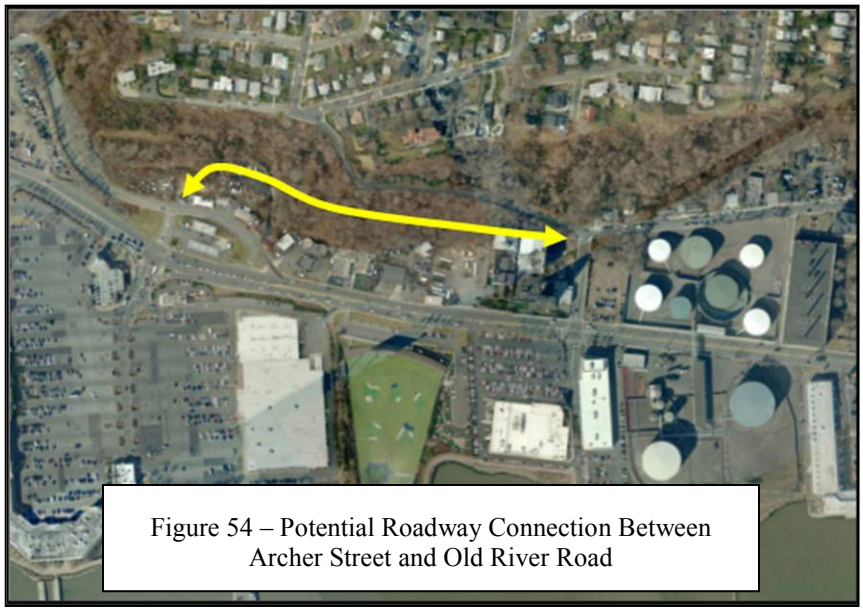


Figure 54 – Potential Roadway Connection Between Archer Street and Old River Road

One location was discussed at the public meeting as a potential improved connection between River Road and JFK Boulevard in North Bergen Township. A limited connection along Churchill Road and Wall Street currently links the uplands and River Road. The feasibility of improving this roadway to provide another connection between the uplands and waterfront should be investigated. This improvement could coincide with the potential signalization of the intersection of Churchill Road and River Road. Since this intersection lies on both a county and municipal boundary, any potential improvement at this location would require the involvement of Hudson and Bergen Counties, as well as North Bergen Township and Edgewater Borough.

13.6 Transit Concepts

The River Road corridor is a transit-rich environment, with an extensive and varied transit system that serves the corridor's mobility needs. The existing transit resources in the corridor are diverse, including the Hudson Bergen Light Rail, New York Waterway Ferries, numerous NJ Transit local and New York-bound bus routes, and municipal/private shuttle buses.

Manhattan is by far the primary destination for commuters on River Road. Very frequent bus service (effectively less than 3-minute headways) goes to PABT, and that extensive bus service is complemented by ferry services to West 39th, Pier 11, and World Financial Center terminals with connecting New York Waterways shuttles. In addition, shuttle buses provide cost-effective, tailored service to the ferries. These services are in many ways more convenient than NJ Transit fixed route services, provide extended hours, and allow to-the-door pickup.

By contrast, the transit linkage between the upper and lower Palisades is poor or non-existent. There are nine roadways that traverse the cliff in the study area plus several stairways, but bus

service is light. Except for principal roadways (Gorge Road, NJ Route 5) steep grades make crossing the Palisades by bus prohibitive. Shuttle services are sponsored by municipalities and private residential communities to connect their residents to ferry terminals in Edgewater and Weehawken, as well as other destinations including Manhattan.

In addition, walk access to bus stops along River Road is difficult in many areas. A lack of sidewalks and crosswalks, insufficient shelters and amenities, and poor signage all contribute to difficulties in accessing the bus service along River Road. There are numerous locations where

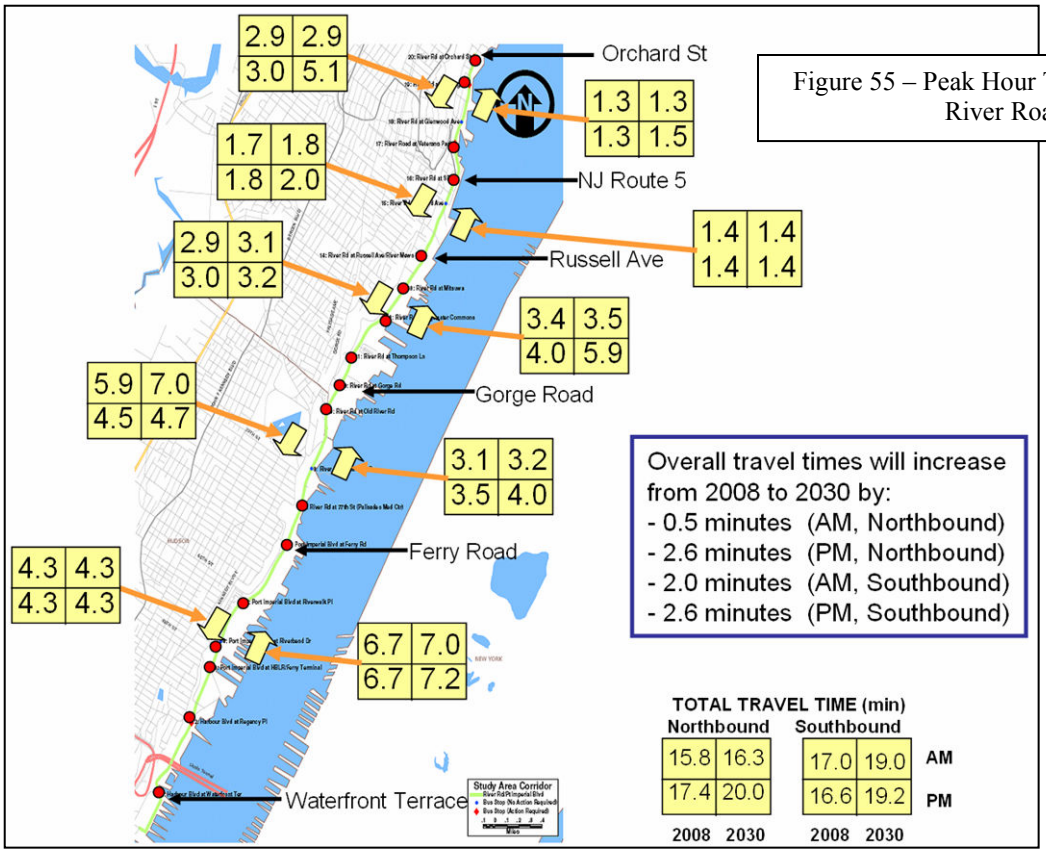


Figure 55 – Peak Hour Travel Times on River Road

sidewalks are not continuous or missing entirely despite the number of pedestrians who would use them. Crossing River Road is also difficult due to the volume of traffic and lack of controlled crossing locations. These shortcomings are discussed and improvements are suggested above in Sections 3.1 and 3.2.

Bus operations on River Road both effect and are effected by traffic conditions. Traffic counts, travel time studies, and traffic models were used to determine current and future travel times in the corridor: Overall travel speeds along the length of the 6.5-mile corridor range from 22 to 24 mph during the peak hours, equaling approximately 16 minutes to traverse the length of the corridor from Orchard Street on the north to Waterfront Terrace on the south (see Figure 55). Traffic simulation modeling indicates that through the year 2030, those travel times will increase by as much as 2.6 minutes during the evening peak hour.

Within these overall average times and speeds, congestion in the corridor is concentrated at a few specific locations: the two-lane section of River Road north of NJ Route 5; the downtown area

of Edgewater in the vicinity of Hilliard Avenue; and specific intersections at Gorge Road and Ferry Road.

Bus operations on River Road are generally not constrained by traffic flow except at those congested locations. However, at those spots, buses must wait through intersection congestion along with general traffic; and because no shoulders or pullouts are provided, buses stopped to board/alight passengers do obstruct traffic.

Mitigation at these specific locations is impractical. Widening to provide additional traffic lanes through the congested locations is not possible due to the proximity of abutting buildings and topography; and, conversely, taking a lane for bus-only operations is also not practical due to the negative effect it would have on corridor roadway operations and resultant congestion.

13.6.1 Transit Improvement Strategies

NJ Transit has developed a method for guiding areas in their consideration of possible transit improvements. The Transit Score is a tool that relates population, employment, and related activity density measures to transit service. The Transit Score indicates the *relative likelihood for different types of transit usage* in a geographic area. It is used to identify where different types of transit investments may be appropriate, subject to available resources, provided certain criteria and conditions are met.

The Transit Score for Edgewater is indicative of the River Road corridor's characteristics (the

	Applicability to Medium-High
1. Fixed Guideway by Type	
Rapid Transit	-----
High Capital Cost Electric Light Rail (LRT)	-----
Medium-Low Capital Cost Electric LRT	C
Commuter Rail Terminal	-----
Commuter Rail/Diesel LRT	**Y**
Monorail/Personal Rapid Transit (PRT)	SPECIAL
Ferry	C
Recreational Transit	C
Bus Lanes-Limited Access Roads	C
Bus Lanes-Arterials	------
Bus Priority Treatment	C
2. Bus Service Potential / Other Transit	
Express Bus as a Destination /Terminus	-----
Express Bus-Walk Only Access	**Y**
Express Bus- Park/Ride Access	**Y**
High Intensity Local Bus Service	-----
Medium Intensity Local Bus Service	**Y**
Minimum Intensity Local Bus Service	**Y**
Local Circulator Bus-Rural Center	**Y**
Local Social Service/Paratransit	**Y**
Mini-Bus w/Line Haul Transit	**Y**
Mini-Bus Express Suburban Service	C
Vanpools & Vanpool Subsidy	**Y**
3. Intermodal/Access to Transit	
Shuttle Bus to Line-Haul Transit (Walk Access)	C
Shuttle Bus to Line-Haul Transit (Remote Parking)	-----
Structured Park/Ride	C
Surface Park/Ride for Rail/LRT/ Ferry	**Y**
Multimodal Terminals	C

Figure 56 - Transit Score for Edgewater

Legend:
Y Yes, applicable with no conditions
C Conditionally applicable
--- Not applicable or warranted

score for other towns in the corridor are less applicable because they include areas west of the Palisades that have different characteristics and therefore dilute the finding). The Score for Edgewater indicates ***Medium-High*** applicability. As shown in Figure 56, this score would indicate that the full range of bus service types would be applicable in the River Road corridor – which is what is provided now. Fixed guideway services could be conditionally applicable if certain conditions apply. Existing HBLR service to high density areas to the south (Hoboken and Jersey City) and west (West New York and North Bergen) as well as connections to ferries at Port Imperial and Edgewater all could augment fixed guideway services and cause them to be applicable. By contrast, further extension of light rail to serve only specific River Road activities would be less applicable because, while residential densities along River Road are high, they would not be sufficiently active to support light rail service by themselves.

Within that context, in seeking to identify needed improvements to this system, this study analyzed opportunities in four time frames:

- Immediate / short term actions to improve access to transit (0-5 years)
- Short term bus operational improvements (5-10 years)
- Longer term bus system improvements (10-20 years)
- Very long term (visionary) system improvements (More than 20 years)

13.6.2 Immediate / Short Term Actions to Improve Access to Transit

A number of needs and actions were identified that could be implemented in an immediate to short-term time frame (0 to 5 years) and that could measurably improve access to existing transit services. Pedestrian-related improvements, including sidewalks and crosswalks, are detailed in Section 13.2. Further transit-related improvements include:

- **Bus Stop Amenities** such as improved or expanded shelters, signage, and lighting should be provided as needed to accommodate patrons waiting for their bus.
- **Schedules** should be posted prominently at each stop, and in a clear and understandable format that would provide needed and useful travel information to potential patrons.

13.6.3 Short Term Bus Operations Improvements

Short term improvements that would improve bus operations were identified and evaluated. These improvements could typically be implemented in a five- to ten-year timeframe.

13.6.3.1 Roadway and Traffic Operations

Actions that would modify or improve the roadway and traffic signal conditions in which the buses operate include bus pullouts, bus lanes, and traffic signal prioritization. As a general proposition, this category of improvements could improve traffic flow. However, as discussed in the following sections, it was found that at congested locations where the greatest benefit could be obtained from these types of improvements, it is not practical to implement them due to the constraints of available roadway and right-of-way widths and the proximity of buildings on abutting properties. Therefore most types of roadway and traffic operations cannot be recommended for this corridor.

Bus Pullouts would allow buses to remove themselves from the general traffic lanes at bus stops, thereby lessening the potential for traffic congestion. Bus operations and pedestrian / rider safety do not generally benefit; rather, it is traffic flow that is improved. However, in the River Road corridor

there are two general types of roadway conditions: First, many locations have four moving lanes for traffic and are generally free flowing. Second, at a limited number of locations such as the two-lane section north of NJ Route 5 and at a few intersections including Hilliard Avenue, Gorge Road and Ferry Road, traffic flow is congested. Observations of traffic conditions indicate that in the four-lane sections, buses stopped to pick up / discharge passengers do not unduly impede traffic. They do block one lane momentarily and vehicles do need to either wait or change lanes, but these conditions are not severe. At the congested locations widening for pullouts would not be possible due to abutting buildings and right-of-way constraints. Further, the process of maneuvering into and out of pullouts can be as unsafe for buses as blocking the traffic lane. Therefore it was determined that pullouts would not be an appropriate strategy for this corridor.

Traffic Signal Prioritization is a method that allows the signal system to detect the arrival of a bus and to force an earlier green indication to that intersection approach. The detection is typically by means of a transponder mounted on the bus. To be effective, traffic signal prioritization is coupled with a "queue-jumper" lane through the intersection, which would allow the bus to bypass stopped traffic, thereby accomplishing the objective of the prioritization. However, in the River Road corridor the peak period bus volumes are very high, with average headways less than three minutes. Therefore prioritization for buses would affect nearly every signal cycle, which would effectively amount to no prioritization at all but an effective retiming of the signal, with significant adverse impacts on cross-street flows. In addition, the prioritization would be needed only at those highly congested locations previously cited. Widening to allow a queue jumper lane would not be possible, and impacts on cross-street traffic would be particularly severe at these locations. Due to these constraints, it was concluded that traffic signal prioritization is a less applicable strategy for the River Road corridor and is not recommended.

13.6.3.2 Zone Express Operation

Zone express operation is a scheduling and stop technique in which buses stop to pick up / discharge passengers in one or more areas (zones), then run express for the remainder of the route. In a corridor with the intensity of service that the River Road corridor offers, zone express is difficult to implement effectively. With several routes using the same street, zones can be confusing across routes, and the whole structure must still be underlaid by local service for those wishing to board and alight within the corridor. It was concluded that zone express service would not be an effective action for this corridor.

13.6.3.3 Vehicle Enhancements

Some treatments of the bus vehicles themselves can result in improvements to the passengers' experience, or to improved flow and service conditions. NJ Transit continually seeks to optimize the mix of bus vehicles and bus stop amenities so that customer needs are met in the most cost effective manner. Therefore the applicable forms of vehicle enhancement have already been implemented in the corridor, and others are not recommended, as described in the following:

Off-Vehicle Fare Collection reduces the amount of time a bus is stopped for boarding passengers. This action requires consistent provision of fare collection machinery at each stop. Its effectiveness is offset by the need to provide enforcement personnel on a sampling of buses, and by the fact that most riders in the corridor pay by monthly pass. It was concluded that costs of this strategy would outweigh its benefits, and it is not recommended.

"Time to Next Bus" Signs involve complex technology to tell the amount of time until the next bus arrives. With the 3-minute headways that prevail during the peak period, this information is not a high need in the corridor; the next bus is typically in view of the waiting passenger. However, a benefit may be realized in off peak periods. Implementing this technology in the River Road corridor will be complex and expensive due to the number of potential bus vehicles that NJ Transit operates in Bergen County and this corridor. Therefore it is not recommended at this time.

Low Floor and Articulated Buses would ease access for the physically disadvantaged, and would provide greater passenger capacity. In general NJ Transit evaluates and implements such vehicle improvement strategies as part of its overall program, so special intervention through this study is not needed.

Branding such as the "GO-Bus" project is a marketing strategy that emphasizes the availability and enhanced service characteristics of bus operations in a corridor. It has less applicability to the River Road corridor because riders are already well aware of the high quality service to New York.

13.6.4 Longer Term Bus System Improvements

Reflecting the intensity of activities and high demand for bus transit services in southeastern Bergen County and northeastern Hudson County, the concept of Bus Rapid Transit (BRT) services in the longer term is suggested. The River Road corridor could be one candidate for a BRT system comprising one or more corridors that would complement or replace existing traditional bus service.

13.6.4.1 Bus Rapid Transit (BRT) System Development Study

Bus Rapid Transit (BRT) strategies have several elements which aim to improve the overall experience and service for transit users without the major capital expense that fixed-guideway systems like light rail require. BRT generally includes various unique elements, including vehicle and station design, traffic prioritization, and real-time passenger information. Further, BRT often includes a significant branding campaign, which advertises BRT as a distinctive transit option compared to traditional bus service.

It is suggested that a BRT system in southeast Bergen County and northeastern Hudson County could provide enhanced mobility and connectivity to the region. A thorough evaluation will be needed to identify one or more candidate corridors, to develop BRT systems that are appropriately integrated with existing and proposed transit facilities in the corridor, including light rail, commuter rail, PATH, ferries and buses. Determination of needs, identification of alternatives, and screening of appropriate solutions will be a complex process, reflecting the complexity of the region. Nonetheless, such a study and development of a BRT system may significantly enhance the region's transportation system.

13.6.5 Very Long Term (Visionary) Transit System Improvements

There are a number of currently planned transit initiatives in North Jersey which will increase trans-Hudson transit capacity. These include the new Hudson River Mass Transit Tunnel (formerly known as Access to the Region's Core (ARC), which will provide a new commuter rail tunnel from New Jersey to Penn Station in Manhattan as well as accompanying service changes); the Northern Branch Rail Line (providing either light rail or diesel multiple unit (DMU) service from Teaneck to North Bergen); the Bergen-Passaic Line (providing DMU service from Hawthorne to Hackensack); and possible expansion of the Lincoln Tunnel Express

Bus Lanes. These will all contribute to a transit system for the region that, within the next 20 years, will dramatically transform travel into and through the southeastern Bergen County/ Northeastern Hudson County region.

However, these large projects will have a finite capacity, and further integration of their disparate parts will be needed to provide an even stronger transit system serving trans-Hudson trips into the 21st century. A "next generation" of transit services in the River Road corridor is proposed to provide further integration of transit services on both sides of the Hudson River. The proposal consists of three separate components – extension of the Bergen-Passaic Line to the Hudson waterfront, enhanced ferry service from Edgewater to Manhattan that could include a relocated and expanded Edgewater ferry terminal, and a possible tramway / cablecar connection between the upper and lower Palisades. As is discussed below, these components could be implemented separately or in combination. This initiative will involve a major capital investment, and lengthy planning / implementation times will be required.

13.6.5.1 Bergen-Passaic Rail Line Extension

The first proposed very long-term improvement consists of an extension of the Bergen-Passaic rail line eastward to Edgewater. The Bergen-Passaic Line is currently being planned to run on NYS&W trackage from Hawthorne through Paterson to downtown Hackensack. The equipment to be used on the line will be DMUs, which meet Federal Railroad Administration (FRA) standards for joint use of freight tracks without electrification. The proposed extension of the Bergen-Passaic Line would continue the line eastward from Hackensack, still following NYS&W tracks and continuing through Bogota and Ridgefield Park, and past the Vince Lombardi park-and-ride (see Figure 57). It would then cross the currently proposed Northern Branch Line at a new station in the vicinity of the proposed 91st Street station.

Using an existing unused NYS&W freight tunnel, the line would cross under the Palisades to the Waterfront in the vicinity of River Road at Edgewater Commons or further to the north in the vicinity of the Edgewater Ferry Terminal. This Extension would provide one-seat service from Bergen and Passaic County origins to the Hudson waterfront, at which point it could link to ferry and tramway facilities described below.

The proposed Bergen-Passaic Line Extension would cross the proposed Northern Branch in the vicinity of the proposed 91st Street station, allowing integrated operation of the two lines. It is proposed that an additional station be provided at that crossing point, to be either integrated with or replace the 91st Street station. At that point passengers could transfer from the Bergen-Passaic Line to continue south on the Northern Branch and then transfer to the Hudson Bergen Light Rail at North Bergen. At the same point passengers traveling on the Northern Branch could transfer to the Bergen Passaic Line and continue their trip either westward toward Hackensack and Paterson, or eastward to the Hudson Waterfront.

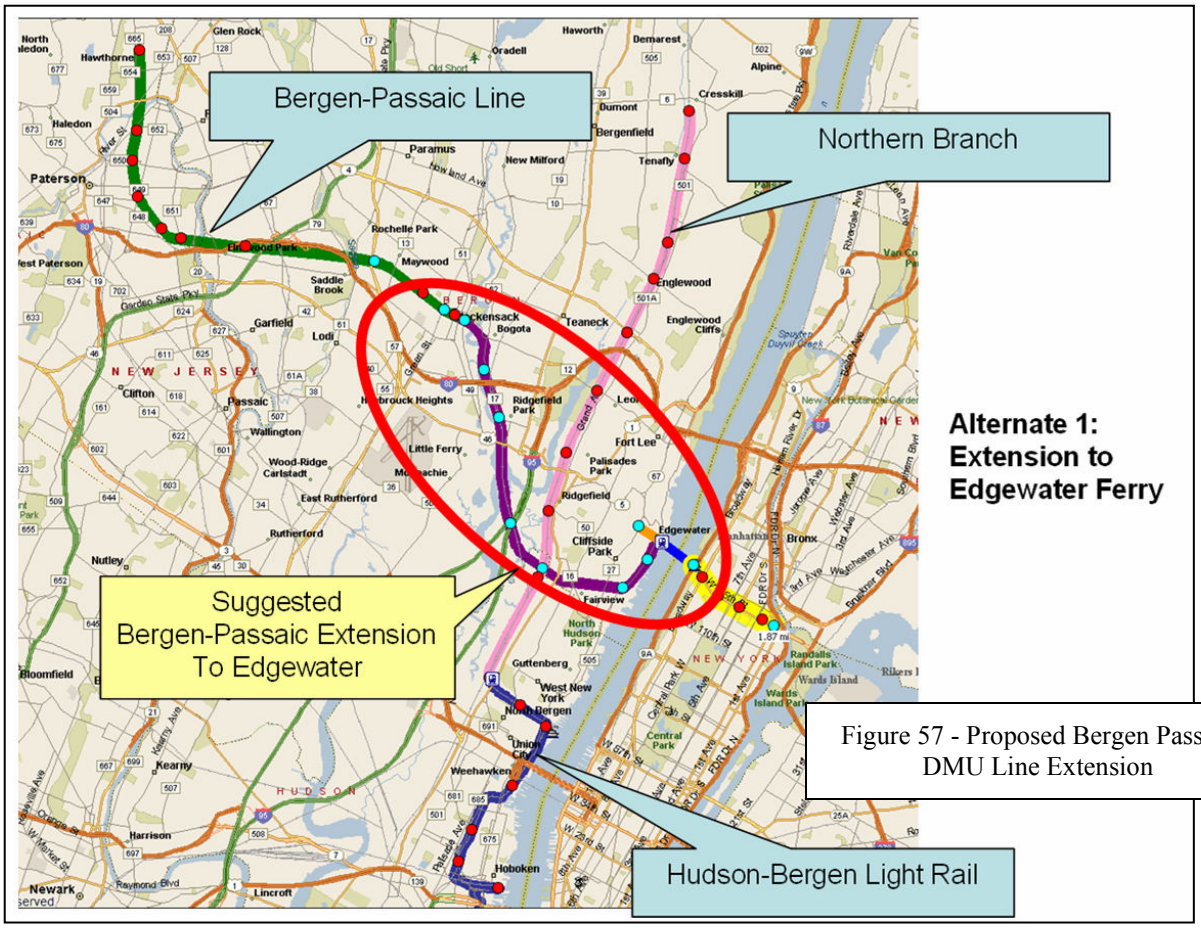


Figure 57 - Proposed Bergen Passaic DMU Line Extension

The unused NYS&W freight tunnel is a key to the success of the project. If it can be captured for passenger transportation purposes, it could support access from planned transit projects west of the Palisades to the waterfront. However, there are a number of challenges that would need to be surmounted in order to use the existing NYS&W right-of-way and/or trackage, and the freight tunnel for this purpose:

- Extension of the Line eastward from Hackensack will require either joint use of the existing freight line or construction of a second track within the NYS&W right of way.

Depending on which, the second span of the bridge over the Hackensack River might need to be reconstructed. The structural condition of the second span is unknown at this time.

- Following the NYS&W trackage southward and eastward, it traverses existing industrial and rail facilities including the Underhill Yard. Special considerations and cooperation from NYS&W would be needed to obtain or construct the necessary trackage and support passenger operations through these facilities.
- In order to support passenger service, use of the unused freight tunnel would require an alternative technology to DMU, likely in some form of electrification. Dual-mode DMUs have not been developed to date, but in the long time frame associated with this project could perhaps provide the answer.
- The Edgewater Sewer Authority and a consortium of PSE&G and ConEd are considering using the tunnel for a sewer main and/or a major electrical grid connection, respectively. It is unknown whether the passenger line could cohabit with one or both of these, or whether those projects are advancing in such a way that the passenger line would be precluded.

Once through the tunnel, two alternatives are proposed that would take the Line to the Hudson waterfront (See Figure 58). The first alternative would place the Extension's track on River Road, from its touchdown point near Edgewater Commons northward to Hilliard Avenue, which is the northernmost major activity center along River Road south of its ascent up the Palisades to Fort Lee. This alternative would require the Bergen-Passaic Line Extension to run on River Road from Edgewater Commons to Hilliard Avenue, a distance of about 1.2 miles. River Road is the only available location for the rail line due to the extent of existing development which otherwise blocks the way. However this alignment within the River Road right of way would present significant problems in terms of right-of-way width and intrusion into the abutting land uses.

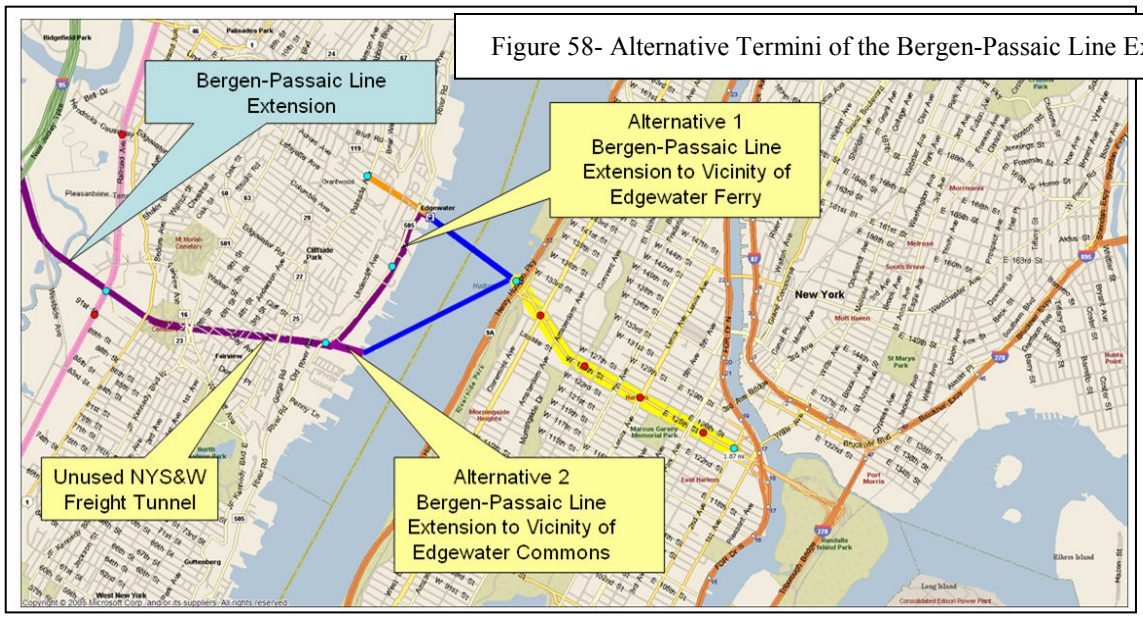


Figure 58- Alternative Termini of the Bergen-Passaic Line Extension

An alternative location for the terminus of the Bergen-Passaic Line would be at the Edgewater Commons shopping center (see Figure 58, Alternative 2). This alternative terminus would be

located adjacent to the freight tunnel and would not require the Bergen-Passaic Line to run on River Road. Instead, the Alternative proposes that the rail line extension would cross River Road just to the east of the tunnel portal, and cross the Edgewater Commons property to reach the Hudson Waterfront.

13.6.5.2 Tramway Concept

A cable-car tramway is also proposed to connect the Edgewater Ferry to Cliffside Park on top of the Palisades. This tramway would provide a new connection between the upper and lower Palisades areas, and in particular would give transit access to the Hudson ferry service that is presently unavailable to Cliffside Park residents. The tramway would also allow access to the retail establishments along River Road that is currently unavailable but desired by Cliffside Park residents.

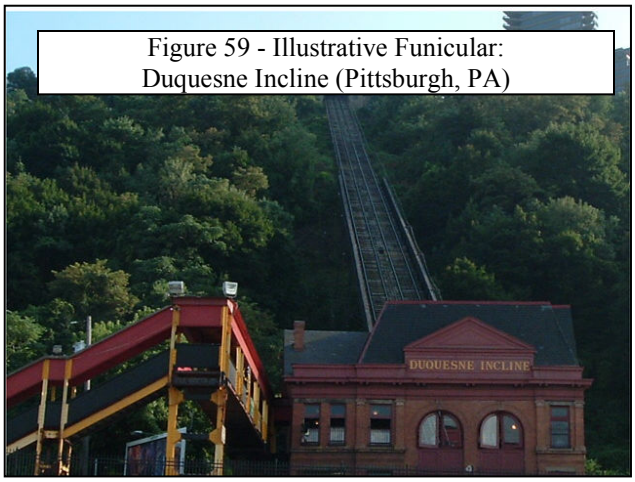


Figure 59 - Illustrative Funicular: Duquesne Incline (Pittsburgh, PA)

Two alternative corridors were identified that could support such a tramway: First, at Hilliard Avenue, a cable-car tramway could follow over the street below the Palisades, and over the upper Palisades it could follow Tower Drive beside the Winston residential tower, terminating at Palisades Avenue. The second alignment could be located in the vicinity of Edgewater Commons, from which it would follow over the upper Palisades to vacant property near Gorge Road or Adolphus Avenue. The northerly location at Hilliard Avenue would connect to higher-activity residential areas on the upper Palisades, whereas the southerly location at Edgewater Commons would connect to less dense residential areas on the upper Palisades.

Figure 60 – Illustrative Tramway: Roosevelt Island Tram (New York)

Alternative technologies were investigated to provide this connection:

- **Fixed guideway alternatives such as a funicular or incline** require a trackway, typically with steel rail and supporting structures (see Figure 59). A funicular would require clear access to the toe of the Palisades and to the top edge of the cliff, with a station to be located at each end. Depending on the design, the physical footprint of such a facility could be expansive.
- **Cable-car tramways** are suspended from cables supported by a limited number of pylons with long spans between (see Figure 60). The resulting footprint is limited and not so obtrusive as the funicular, allowing more flexibility for siting of stations and supports.

A tramway alignment that follows Hilliard Drive in Edgewater and Tower Drive in Cliffside Park would be one of the few feasible straight-line corridors from the upper to the lower Palisades (see Figure 61). The location of this alternative at Hilliard Avenue appears to have the advantage of easier ferry access to 125th Street in Manhattan, as discussed below, and also access to more intense residential population by the Tramway in Cliffside Park

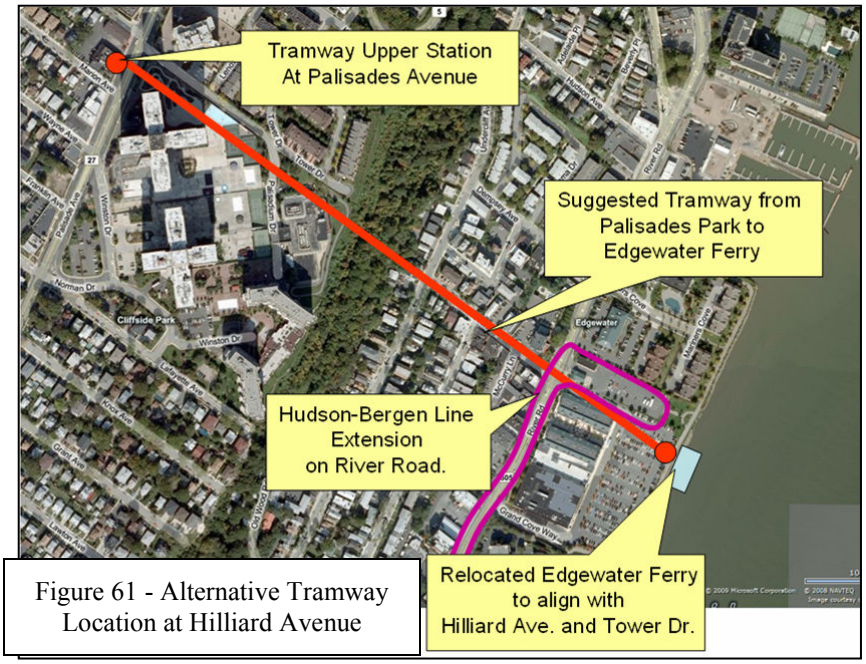


Figure 61 - Alternative Tramway Location at Hilliard Avenue

An alternative Tramway alignment is proposed that would connect the Edgewater Commons to the upper Palisades in the vicinity of Gorge Road (see Figure 62). This alternative alignment would traverse vacant land, and has flexibility for placement of both the upper and lower termini that is not available with the Alternative 1 alignment at Hilliard Avenue. Because the alignment would traverse mainly vacant land, a funicular technology could be used instead of a cable-car tramway. Engineering studies will be needed to evaluate these alternative technologies.

This alternative presents opportunities for redevelopment of the Edgewater Commons and adjacent properties as a mixed-use Transit Oriented Development (TOD) incorporating both residential, office and retail uses in a form that will complement the extensive transit service that would be available.

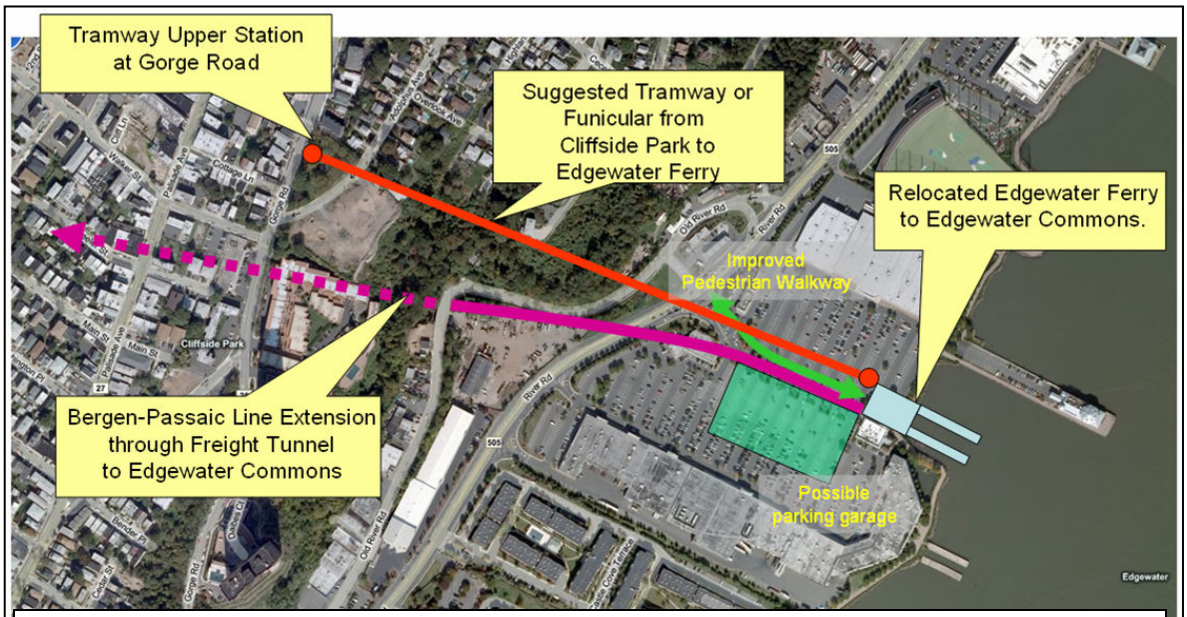


Figure 62 - Alternative Tramway or Funicular Location at Edgewater Commons

13.6.5.3 Potential Transit Hub

The above describes rail and tramway facilities that could link the upper Palisades and areas of Bergen County to the west with the Hudson Waterfront. If implemented, these improvements could generate the opportunity to create a transit hub at the Hudson waterfront in Edgewater, either at Hilliard Avenue or at Edgewater Commons. It is suggested that the existing Edgewater Ferry terminal could be relocated to either Hilliard Avenue or Edgewater Commons, parking and terminal facilities could be developed, ferry service to Manhattan could be expanded, and a multi-modal transit hub would result.

An important aspect of these transit hub proposals is the potential linkage from Edgewater to Manhattan at 125th Street via new ferry service. The 125th Street corridor is receiving attention by New York planners as a potential cross-town connection that could link extensive redevelopment by Columbia University on the west side, to all of the north-south subway lines in Manhattan including the new Second Avenue Subway, and New York MTA's Metro North to Yankee Stadium , Westchester County and beyond. Ferry linkage from Edgewater to this 125th Street corridor could provide a new transit entry to Manhattan that is presently unavailable, particularly to Manhattan's east side.

Travel time studies indicate that the above improvements serving an Edgewater Transit Hub would significantly improve travel times from Northern New Jersey to Manhattan destinations. Table 13 compares travel times from Hackensack (Main Street at Mercer Street) via transit today with travel times that will be possible with the proposed transit improvements and ferry service to 125th Street (but without new crosstown transit service). As is shown in the table, travel times to Jersey City and Weehawken destinations could be reduced by about 25 minutes with the new services. Travel times to Manhattan destinations will generally be 20 to 30 minutes faster than current service provides, although travel times to Midtown destinations (Madison Square Garden and Rockefeller Center) will be slightly longer than current times. In particular, access to northern Manhattan, an emerging employment destination, could be as much as 25 minutes faster. This new service could be of benefit not only to commuters but to non-work trip makers seeking access to northern Manhattan.

Table 13 - Travel Time Comparison with Proposed Transit Improvements

	Travel Time (Minutes)		
	No-Build	Build	Change
From Hackensack (Main Street at Mercer Street)			
To:			
- Jersey City, Exchange Place	86	60	-26
- Weehawken, Lincoln Harbor	70	45	-25
- Manhattan, 125th St / Malcolm X	82	52	-30
- Manhattan, Madison Sq Garden	56	60	+4
- Manhattan, Rockefeller center	61	63	+2
- Manhattan, Columbus Circle	81	58	-23
- Manhattan, City Hall	87	65	-22

In summary, the proposed transit improvements consisting of the Bergen-Passaic Line Extension, a tramway to the upper Palisades, enhanced ferry service, and a new transit hub would be major capital projects containing at this point many unknowns. It does appear, however, that these improvements could fill some significant gaps in transit service in southeastern Bergen County, and that they could provide a useful connection to Manhattan destinations. It is suggested that initial planning studies be undertaken to further identify the

need for such a connection, and to explore physical and planning designs for the project as a first step toward advancing the project.

13.7 Policy Concepts

In order to address the many needs along this constrained corridor, it is clear that the solution is not in infrastructure alone. How the corridor continues to develop over time is a critical component in its long term sustainability. The counties, municipalities, and development community must work together along with statewide agencies to manage growth and access along the corridor and provide for improved circulation and connectivity for all modes of travel.

An effective tool for managing growth and access, providing better circulation and connectivity, and consolidating driveways and parking along the corridor is through local zoning ordinances. To further enhance the recommended operational and safety improvements, Hudson and Bergen Counties should work with the local municipalities to provide code recommendations to help local communities implement Smart Growth principles. A "Model" set of zoning ordinances containing specific code language in order to facilitate modification of conventional zoning codes to meet Smart Growth objectives can be developed for corridor municipalities to enact or revise as needed and enact. The "Model" zoning ordinances can include strategies such as:

- Cluster zoning
- Improving land use planning including site requirements that encourage pedestrian usage, shared parking, transit shelters, etc.
- Providing connections between adjacent land uses via shared parking agreements, frontage roadways, and rear access to local street network.
- Requirements for Complete Streets provisions so that new developments are required to provide facilities or easements for all modes of travel

Additionally, "Model" Cross Access Agreements and a site plan review checklist can be developed to be utilized by each municipal review board as well as the counties when completing site plan and subdivision reviews.

13.7.1 Access Management and Driveway Consolidation

Traffic flow and safety can be significantly improved through the systematic control of the spacing and design of driveways, curb cuts, medians/auxiliary lanes, and signalized street connections along principal roadways. Access management methods can be used to direct turning movements to intersections, instead of providing numerous mid-block driveways that impede the flow of through traffic. This can help strengthen and support the integrity of an existing street network.

Access management achieves a variety of benefits:

- Improving public safety through more efficient design of connections to/from the principal roadway;
- Avoiding frequently spaced driveways that interrupt sidewalks and create conflict points for cyclists and pedestrians;
- Improving the appearance and quality of the built environment by discouraging erratic strip development, which tends to produce turning traffic at many points (and thus impedes traffic flow on the principal roadway)/ and an over-reliance on a single roadway
- Extending the lifecycle of the principal roadway without a widening.

Municipalities along the River Road/Port Imperial Boulevard corridor should encourage future developers to provide access points into their sites along side streets rather than from the main arterial. This will help to limit the need to perform turning maneuvers from live traffic lanes, a condition that occurs at several locations within the corridor. For example, a westbound vehicle must wait for a gap in eastbound traffic in order to turn into a driveway on the eastbound side. The waiting westbound vehicle interferes with the flow of traffic in the westbound direction, potentially causing congestion and safety concerns.

The use of side street access would also facilitate shared access points into adjacent sites. Moreover, instead of each separate building or store having its own isolated parking lot, adjacent and contiguous structures should be encouraged to share driveways and parking areas through improved site design, building placement, and internal site circulation.

13.7.2 Connectivity

There is a lack of significant north-south roadways in the study area that can provide an alternative to River Road/Port Imperial Boulevard. Without alternate routes to traverse, most drivers must use River Road/Port Imperial Boulevard for both local and through trips. In most cases, adjacent parcels of land often lack connections that would allow users to make short, local trips without utilizing River Road or their automobiles.

Ultimately, improved connectivity will provide multiple and more direct routes between destinations. A key goal of providing these connections is to reduce traffic on the main arterial (River Road/Port Imperial Boulevard), which currently is forced to handle through and local trips. Isolated cul-de-sac/stub developments such as Independence Harbor and Roc Harbour force all traffic to access those developments via a single access point. Therefore, residents at Independence Harbor who want to shop at City Place must travel through two signalized and one unsignalized intersection to access the adjacent shopping plaza. Providing a connection between the two would not only give Independence Harbor residents improved access to City Place, but would reduce traffic and congestion on River Road. Further, this connection would serve as a secondary access way for bicyclists and pedestrians, who may currently use the Waterfront Walkway to move between Independence Harbor and City Place.

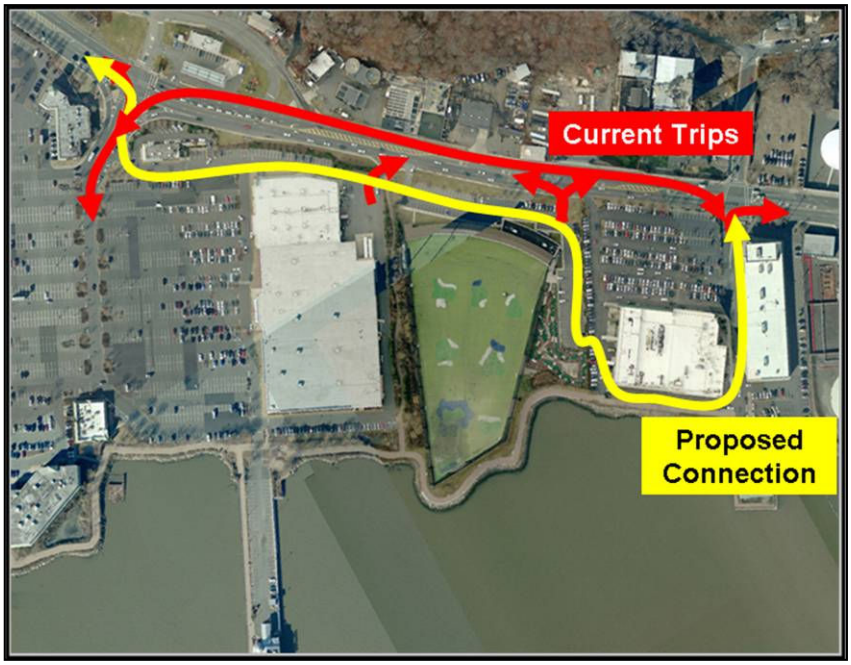
A common misconception about providing local connections between adjacent sites is that they will encourage cut through traffic and increase traffic within previously “private” developments. Properly designed, connections allow local trips to occur, while discouraging through traffic. Traffic calming treatments like speed humps, textured pavement, or chicanes are effective in keeping travel speeds low and making the route less attractive for through trips. The goal for local connections between land uses is to allow short distance local trips to occur between sites, removing those trips from River Road/Port Imperial Boulevard, and thus benefit longer distance trips in the corridor.

There are several opportunities to provide connections between land uses within the study area. However, providing these connections will require coordination among the local municipality, county, and land owners. Two connections (between Hudson Cove and Glenwood Avenue, and between Dempsey and Hilliard Avenues), are detailed in the Roadway Concepts section of this report, as they will directly affect traffic flow at signalized intersections. Several other locations where potential connections exist are detailed in the following sections.

13.7.2.1 Connection Between Independence Way/Thompson Lane

In order to provide an alternate access point between Independence Harbor and the Promenade/City Place shopping centers, a connection between Thompson Lane and Independence Lane South should be investigated. This could potentially eliminate a portion of left turns from Independence Harbor onto River Road, and reduce left turns from River Road to City Place by allowing those short distance trips to occur on local streets rather than River Road. This would also require a reconfiguration of the existing driveway from Thompson Lane to the Promenade development, which does not currently allow access to or from the Promenade from the westbound approach of Thompson Lane. The currently vacant riverfront lot located between Independence Way and the Promenade was identified as being a potential location for a connection during Public Meeting #2.

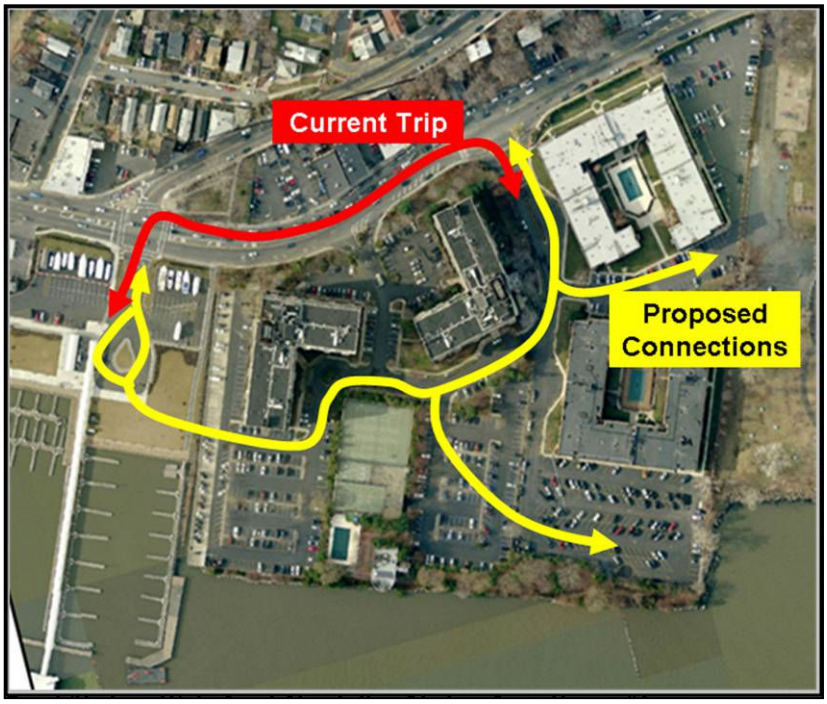
13.7.2.2 Connection Between Mitsuwa Marketplace/Edgewater Golf/Edgewater Commons



Currently the Mitsuwa Marketplace (via Archer Street) and Edgewater Commons are each primarily served by a single signalized intersection. However, individuals who seek to access both shopping centers must use River Road to traverse between the two sites. The Edgewater Golf facility is located between the two shopping centers and lacks a connection to either plaza. A potential concept to improve connectivity could include providing connections between Edgewater Golf and both plazas, while providing

circulation to Archer Street behind the Mitsuwa Marketplace building. This concept could also involve the consolidation of existing unsignalized driveways into each of the three sites.

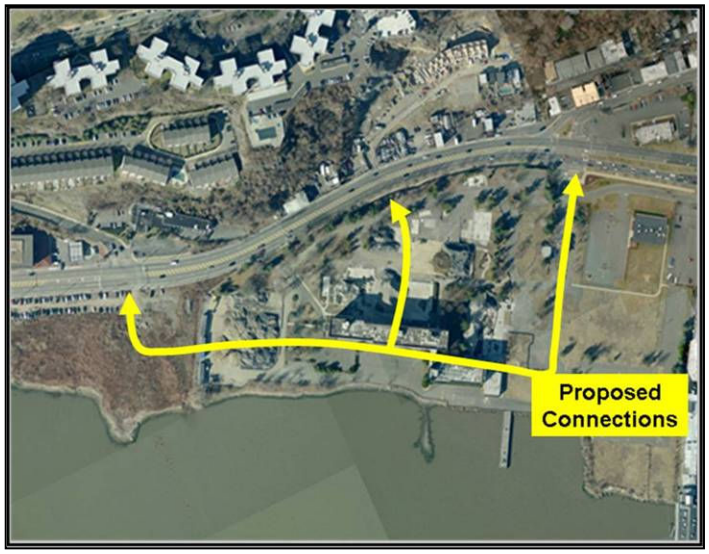
13.7.2.3 Connection Between Admirals Walk and Edgewater Ferry Terminal



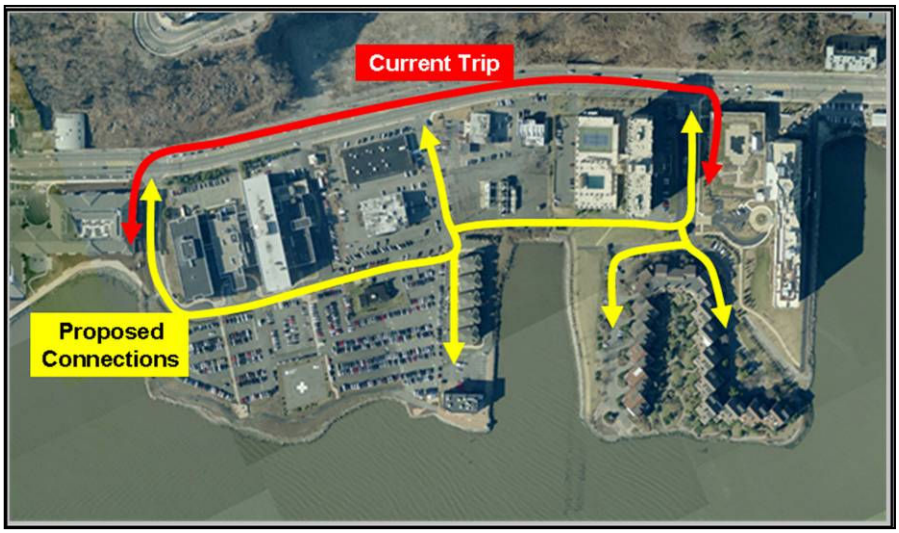
The Admirals Walk complex contains several high-density residential buildings that access River Road via a newly constructed signalized intersection at the Waterside and an unsignalized intersection at Admiral's Walk. While the Edgewater Ferry Terminal is adjacent to Admiral's Walk, there is no direct access between the two parcels. With the density of residences at Admiral's Walk, a direct connection to the Edgewater Ferry Terminal would not only provide traffic relief for River Road and the signalized intersection at State Route 5, but would also serve as a positive selling point for Admiral's Walk, which could boast direct vehicular and pedestrian access to a major transit node. One major consideration in making this connection will be the enforcement of parking regulations at Admiral's Walk as users of the Edgewater Ferry Terminal may begin to park illegally in Admiral's Walk if the connection is made.

13.7.2.4 Unilever Site

While a final plan for a reuse of the Unilever Site is still currently being developed, Edgewater Borough and Bergen County should request that the site have sufficient connections to Riverside Place to the north, and potentially to the proposed development adjacent to the intersection of River Road and Bulls Ferry Road. In order to provide a connection to the Bulls Ferry Road site, coordination between Edgewater Borough, North Bergen Township, Hudson and Bergen Counties, and the relevant developers would be necessary.



13.7.2.5 Connection Between Palisades Medical Center, 77th Street, and Roc Harbour Drive



Currently, the Palisades Medical Center and adjacent low-density office buildings are connected via driveways within their surface parking lots. However, traversing in between the sites is difficult and confusing. Roc Harbour Drive, to the north of 77th Street and Palisades Medical Center, has no connections to adjacent parcels, forcing all residents to use River Road to access the site. A potential concept would be to reconfigure the surface parking adjacent to 77th Street and extend the Palisades Medical Center roadway north providing a connection to the adjacent office buildings, extending north to Roc Harbour Drive. Providing this through route would provide an opportunity to eliminate some or all of the four driveway access points that exist between the Palisades Medical Center and Roc Harbour Drive.

13.7.3 Transportation Demand Management (TDM)

Transportation Demand Management (TDM) is the use of transportation policies and strategies as a way of reducing demand, focused on single occupant vehicles (SOVs), thereby reducing congestion and improving air quality. TDM encourages alternative travel modes, including carpooling, public transit, bicycling, and walking as methods to reduce SOVs. This section focuses on TDM strategies that are either already in use or should be investigated for future use within the study area municipalities and counties.

A local transportation management association (TMA) like the Hudson TMA or Meadowlink Commuter Services can be key advocates of TDM programs. A TMA provides invaluable transportation information and opportunities for local commuters and employers. Information provided by the Hudson TMA includes traffic alerts, transit schedules, and maps. They also provide incentives for carpooling and ridesharing, operate park and ride lots within Hudson County, and provide classes on safe bicycling for commuters. Ultimately, a TMA can serve as a single source for information on multiple modes of transportation for residents with an eventual goal of reducing congestion and lowering auto emissions by encouraging commuters to carpool, use public transportation, or alternate modes of travel including walking and bicycling. Likewise, Meadowlink Commuter Services provide similar services for Bergen County residents.

A TMA can provide educational information to employers on the benefits of telecommuting, alternate work weeks, and compressed work weeks. The Hudson TMA currently provides a significant amount of information regarding ridesharing and carpooling on their website (www.hudsontma.org). This includes a rideshare database which can match potential carpoolers based on several criteria, including home, workplace, and commuting times. Further, they offer

incentives such as access to vanpools, and free gas cards for those that participate in their programs. The Hudson TMA should continue to advertise these programs, while stressing the benefits they provide to overall congestion, air quality, and commuter stress levels.

A common concern for carpool users is what to do when they need to return home for an emergency or when their employer requires them to work later than their normal schedule. A TDM strategy currently in use by the Hudson TMA is the Emergency Ride Home program, which guarantees transportation home for registered carpool users up to three times per year for these instances. The Hudson TMA can enhance this program by advertising it alongside its rideshare/carpooling programs within the project area.

In order to further enhance the existing TDM strategies in the project area, the Hudson TMA and the Meadowlink Commuter Services, along with local municipalities, should work to further promote these strategies with the major employers and residential centers in the corridor.

14. Public Outreach

A Technical Advisory Committee (TAC) composed of representative from Bergen and Hudson Counties; the North Jersey Transportation Planning Authority; local municipalities; transportation providers, agencies, authorities and commissions; and business and commerce representatives meet throughout the study and provided feedback and guidance. At the first meeting of the TAC, the locally represented members made many comments based on draft study area maps of existing conditions. In general, comments focused on the lack of good pedestrian crossings and linkage to the uplands, need for additional bus coordination (but difficulties to do so), need and opportunities for better connectivity between uses, opportunities for BRT or other non-traditional transit methods such as the Pittsburgh Incline System, and pedestrian connections to ferry and light rail. Other comments included those which identified future developments, the need for bus pulloffs throughout the study area, a need for pedestrian-scale lighting where demand is greatest, and traffic congestion at specific locations, including Edgewater Commons, Independence Way, Ferry Road, and the River Club.

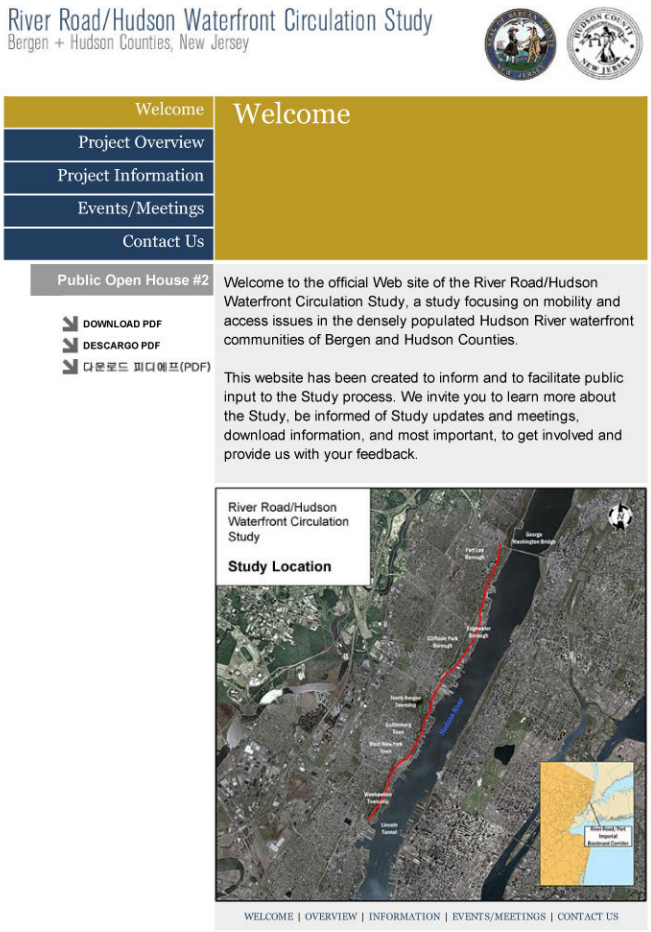
The TAC was also utilized to gain input on the future conditions and concepts. Comments and recommendations on the corridor-wide concepts and strategies and on the site-specific concepts were incorporated throughout the report.

Two public open houses were held and the project website (hudsonbergencorridor.com) was used to gain input from the general public. The first public open house was held in April 2009 and several comments from local residents were helpful in formulating the final recommendations within this plan. They included comments regarding existing and future ferry service, a light rail extension, and vehicular, bicycle, and pedestrian improvements throughout the corridor. Site specific comments included improvements to pedestrian circulation near City Place, signalization changes at Gorge Road and Edgewater Commons, and the potential for new roadway construction near Edgewater Commons and Churchill Road.

At the second public open house comments were received on the proposed improvement concepts. Concerns were raised as to the impact and ability to implement the changes. Support for pedestrian and bicycle enhancements were noted. Operational improvements proposed at a few intersections were discussed, and these comments and considerations will be utilized in subsequent phases of the improvement program should they advance to the design phase.

Summaries of the outreach meetings are included in Appendix B of this report.

A project website was developed as a resource to share information with the stakeholders and the public. The site was directly accessible from the URL: http://hudsonbergencorridor.com. It contained sections that provided a project overview, project information, events and meetings, and contact information. A screen shot of the home page of the website is included for reference, and screen captures of the entire website are included at the end of Appendix B.



15. Next Steps

The concepts identified in the River Road/Hudson Waterfront Circulation Study aim to improve the circulation of vehicles, pedestrians, bicyclists, and transit into and within New Jersey's Gold Coast. To achieve these goals, a collaborative effort between Hudson/Bergen Counties, local municipalities, state agencies, transit operators, and land owners/developers is necessary. While some short-term improvements can be implemented quickly, many longer-term solutions will require further study to determine their feasibility.

A summary matrix detailing each recommendation, responsible party (ies), proposed next phase, an order of magnitude cost, and timeline indicating Ongoing (work is planned within 2009), Short (0-5 years), Mid (5-10 years) and Long (More than 10 years) term implementation periods is presented in the following table. The counties and municipalities can utilize this matrix to open dialogue on the policy concepts and on the process of advancing project concepts for further study along this corridor.

IMPLEMENTATION MATRIX **RIVER ROAD/HUDSON WATERFRONT CIRCULATION STUDY**

Location	Concept	Responsible Parties	Proposed Next Phase	Order of Magnitude Cost (<$200k Low, $200k-$1M Moderate, >$1M High)	Implementation Timeline (<5yr Short, 5-10yr Mid, >10yr Long)
Corridor-Wide	Roadway Resurfacing north of State Route 5	Bergen County	Design/Implementation	Moderate	Ongoing
	ITS Solutions	Bergen County/Hudson County/NJDOT	Feasibility	Moderate	Mid-Term
	Bicycle Compatible Shoulders	Bergen County/Hudson County/Municipalities	Feasibility	Moderate	Mid-Term
	Share The Road Signage	Bergen County/Hudson County/Municipalities	Design/Implementation	Low	Short-Term
	Connectivity/Circulation Improvements	Bergen County/Hudson County/Municipalities	Feasibility	Low	Mid-Term/Long-Term
	Zoning Ordinances & Cross Access Agreements	Bergen County/Hudson County/Municipalities	Study and Development	Low	Short-Term
	Access Management/Driveway Consolidation	Municipalities	Implementation	Low	Short-Term
	Travel Demand Management Strategy Promotion	Hudson TMA/Meadowlink	Implementation	Low	Short-Term
Transit	Improve/Expand Shelters & Schedule Posting	NJTransit/Municipalities	Design/Implementation	Low	Short-Term
	Time to Next Bus	NJTransit/Bergen County/Hudson County	Study and Development	Moderate	Mid-Term
	BRT Study	Bergen County/NJTransit	Study and Development	High	Long-Term
	Bergen - Passaic Rail Line Extension	NJTransit	Study and Development	High	Long-Term
	Tranportation Center (relocation of Ferry Terminal)	Explore Public/Private Partnerships	Study and Development	High	Long-Term
	Tramway	Bergen County	Study and Development	High	Long-Term
River Road at Orchard Street	Install Sidewalk	Bergen County/Edgewater Twp	Design/Implementation	Moderate	Short-Term
	Re-stripe Crosswalks	Bergen County	Design/Implementation	Low	Ongoing
	Install ADA Curb Ramps	Bergen County	Design/Implementation	Low	Ongoing
River Road at Sterling Place	Install Sidewalk	Bergen County/Edgewater Twp	Design/Implementation	Moderate	Short-Term
	Investigate Crosswalk Installation	Bergen County/Edgewater Twp	Feasibility	Low	Mid-Term
River Road at Glenwood Avenue	Re-stripe Crosswalks	Bergen County	Design/Implementation	Low	Ongoing
	Install ADA Curb Ramps	Bergen County	Design/Implementation	Low	Ongoing
	Install Crosswalk adjacent to Community Center	Edgewater Twp	Design/Implementation	Low	Short-Term
	Install ADA Curb Ramps adjacent to Community Center	Edgewater Twp	Design/Implementation	Low	Short-Term
	Signal Optimization	Bergen County	Design/Implementation	Low	Short-Term
	Investigate Connection from Hudson Cove	Edgewater Twp/Bergen Cove	Feasibility	Low	Mid-Term
River Road - Edgewater CBD	Signal Coordination	Bergen County	Feasibility	Low	Mid-Term
	Speed Limit Investigation	Bergen County/Edgewater Township	Feasibility	Low	Short-Term
River Road at State Route 5	Re-stripe Crosswalks	Bergen County/NJDOT	Design/Implementation	Low	Ongoing
	Install ADA Curb Ramps	Bergen County/NJDOT	Design/Implementation	Low	Ongoing
	Upgrade Pedestrian Signals	Bergen County/NJDOT	Design/Implementation	Low	Mid-Term
	Signal Optimization	Bergen County/NJDOT	Design/Implementation	Low	Short-Term
	Improve Pedestrian Circulation south of intersection	Bergen County/NJDOT/Edgewater Twp	Feasibility	Low	Mid-Term
	Intersection Upgrade/Widening	Bergen County/NJDOT	Feasibility	High	Mid-Term/Long-Term
River Road at Dempsey Avenue	Re-stripe Crosswalks	Bergen County	Design/Implementation	Low	Ongoing
	Install ADA Curb Ramps	Bergen County	Design/Implementation	Low	Ongoing
	Upgrade Pedestrian Signals	Bergen County	Design/Implementation	Low	Mid-Term
	Signal Optimization	Bergen County	Design/Implementation	Low	Short-Term
River Road at Hilliard Avenue	Re-stripe Crosswalks	Bergen County	Design/Implementation	Low	Ongoing
	Install ADA Curb Ramps	Bergen County	Design/Implementation	Low	Ongoing
	Upgrade Pedestrian Signals	Bergen County	Design/Implementation	Low	Mid-Term
	Signal Optimization	Bergen County	Design/Implementation	Low	Short-Term
	Investigate Connection - Municipal Parking Lot/Adjacent Parcel	Edgewater Twp/Developer	Feasibility	Low	Mid-Term
	Install Crosswalks/Island within driveway	Edgewater Twp/Developer	Design/Implementation	Low	Short-Term
River Road at Garden Place	Re-stripe Crosswalks	Bergen County	Design/Implementation	Low	Ongoing
	Install ADA Curb Ramps	Bergen County	Design/Implementation	Low	Ongoing
River Road at Russell Avenue	Re-stripe Crosswalks	Bergen County	Design/Implementation	Low	Ongoing
	Install ADA Curb Ramps	Bergen County	Design/Implementation	Low	Ongoing
	Upgrade Pedestrian Signals	Bergen County	Design/Implementation	Low	Mid-Term
	Install sidewalk adjacent to mall	Bergen County/Edgewater Twp	Design/Implementation	Moderate	Short-Term

Location	Concept	Responsible Parties	Proposed Next Phase	Order of Magnitude Cost (<$200k Low, $200k-$1M Moderate, >$1M High)	Implementation Timeline (<5yr Short, 5-10yr Mid, >10yr Long)
River Road at Archer Street	Install ADA Curb Ramps	Bergen County	Design/Implementation	Low	Ongoing
	Upgrade Pedestrian Signals	Bergen County	Design/Implementation	Low	Mid-Term
	Install sidewalk south of intersection	Bergen County/Edgewater Twp	Design/Implementation	Moderate	Short-Term
	Install crosswalks within driveways	Edgewater Twp/Developer	Design/Implementation	Low	Short-Term
River Road at Edgewater Commons	Provide connection to existing bus shelter	Bergen County/Edgewater Twp/Developer	Design/Implementation	Moderate	Short-Term
	Investigate Intersection Improvements (Double Left/Jughandle)	Bergen County	Feasibility	High	Long-Term
River Road at Thompson Lane	Install Sidewalk north of intersection	Bergen County/Edgewater Twp	Design/Implementation	Moderate	Short-Term
	Install ADA Curb Ramps	Bergen County	Design/Implementation	Low	Ongoing
	Upgrade Pedestrian Signals	Bergen County	Design/Implementation	Low	Mid-Term
	Signal Optimization	Bergen County	Design/Implementation	Low	Short-Term
	Improvements related to Edgewater Commons intersection	Bergen County	Feasibility	Moderate	Long-Term
River Road at Gorge Road	Signal Optimization	Bergen County	Design/Implementation	Low	Short-Term
	Investigate Sidewalk Gap adjacent to Saint Moritz	Edgewater Twp/Cliffside Park Twp	Feasibility	Moderate	Mid-Term
River Road at Old River Road/Riverside Plaza	Re-stripe Crosswalks	Hudson County/Bergen County	Design/Implementation	Low	Short-Term
	Install ADA Curb Ramps	Hudson County/Bergen County	Design/Implementation	Low	Short-Term
	Upgrade Pedestrian Signals	Hudson County/Bergen County	Design/Implementation	Low	Mid-Term
	Signal Optimization	Hudson County/Bergen County	Design/Implementation	Low	Short-Term
	Relocate Planter Within Crosswalk	Hudson County/Bergen County	Design/Implementation	Low	Short-Term
	Install sidewalk within island	Hudson County	Design/Implementation	Low	Short-Term
	Prohibit Business Using Sidewalk from Blocking Access	Hudson County/North Bergen Twp	Design/Implementation	Low	Short-Term
River Road at Bulls Ferry Road	Re-stripe Crosswalks	Hudson County	Design/Implementation	Low	Short-Term
	Install ADA Curb Ramps	Hudson County	Design/Implementation	Low	Short-Term
	Upgrade Pedestrian Signals	Hudson County	Design/Implementation	Low	Mid-Term
	Signal Optimization	Hudson County	Design/Implementation	Low	Short-Term
	Clear sidewalk area blocked by debris	North Bergen Twp	Design/Implementation	Low	Short-Term
	Investigate Developer Led Improvements	Hudson County/North Bergen Twp/Developer	Feasibility	High	Mid-Term
River Road at Roc Harbour Drive	Re-stripe Crosswalks	Hudson County	Design/Implementation	Low	Short-Term
	Install ADA Curb Ramps	Hudson County	Design/Implementation	Low	Short-Term
	Upgrade Pedestrian Signals	Hudson County	Design/Implementation	Low	Mid-Term
	Signal Optimization	Hudson County	Design/Implementation	Low	Short-Term
River Road at 77th Street	Re-stripe Crosswalks	Hudson County	Design/Implementation	Low	Short-Term
	Install ADA Curb Ramps	Hudson County	Design/Implementation	Low	Short-Term
River Road at Palisades Medical Center	Re-stripe Crosswalks	Hudson County	Design/Implementation	Low	Short-Term
	Install ADA Curb Ramps	Hudson County	Design/Implementation	Low	Short-Term
	Upgrade Pedestrian Signals	Hudson County	Design/Implementation	Low	Mid-Term
	Signal Optimization	Hudson County	Design/Implementation	Low	Short-Term
	Install Sidewalk adjacent to intersection	Hudson County/North Bergen Twp	Design/Implementation	Moderate	Short-Term
	Clear brush along sidewalk south of intersection	Hudson County/North Bergen Twp	Design/Implementation	Low	Short-Term
River Road at Ferry Road	Investigate Intersection Improvements	Hudson County	Feasibility	High	Long-Term
	Re-stripe Crosswalks	Hudson County	Design/Implementation	Low	Short-Term
River Road at Hillside Road	Install advance signage denoting left-turning vehicles	Hudson County	Design/Implementation	Low	Short-Term
	Investigate Intersection Improvements (along with Ferry Road)	Hudson County	Feasibility	Moderate	Long-Term
River Road at Ferry Road/Hillside Road	Signal Optimization and Coordination	Hudson County	Feasibility	Low	Mid-Term
Port Imperial Boulevard at Riverbend Drive	Install Crosswalks	Roseland	Design/Implementation	Low	Short-Term
	Install sidewalk between intersections	Roseland	Design/Implementation	Moderate	Short-Term
	Extend sidewalk at southern intersection	Roseland	Design/Implementation	Moderate	Short-Term
	Install Yield to Pedestrians signage	Roseland	Design/Implementation	Low	Short-Term
New Roadway Connections	Investigate Parallel and Uplands Connections	Bergen County	Feasibility	High	Long-Term