

Appendices

- Appendix 1: Technical Memorandum: System Evaluation
- Appendix 2: Existing Conditions Maps
- Appendix 3: Stakeholder Input
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Appendix 1:

TECHNICAL MEMORANDUM: SYSTEM EVALUATION

ECG ESSEX-HUDSON
GREENWAY CONNECTOR
ROUTING PLAN

Task 2: SYSTEM EVALUATION

TECHNICAL MEMORANDUM

Submitted 5/25/2017

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APPENDICES

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- Appendix 3: Related Projects / Developments

Overview

The East Coast Greenway (ECG) is a developing trail system (www.greenway.org) linking the major cities of the Eastern Seaboard between Canada and Key West, Florida. Over 30 percent of the route is already on car-free greenways, creating safe, accessible routes for people of all ages and abilities. NJDOT has supported the development of ECG for over 10 years by conducting routing studies, preparing concepts, construction of trail segments, developing a tour guide for ECG in New Jersey, etc.

The East Coast Greenway is lacking critical connections between the areas of Newark (University Heights area) and Jersey City across the Passaic and Hackensack Rivers. Given the large population of these cities and the redevelopment activity in the surrounding municipalities of Harrison, Kearny, East Newark and Secaucus, providing a convenient off-road shared use path would offer key recreational and utilitarian travel options to a large population. NJDOT has brought in NV5 (formerly the RBA Group) to assist the East Coast Greenway Alliance (ECGA) in developing a routing plan for this project.

The purpose of this System Evaluation Technical Memorandum is to identify the existing conditions and opportunities/constraints within the study area for the Essex-Hudson Greenway Connector Routing Plan. This will inform the development of and help evaluate the potential alignment alternatives for this vital connection between Essex and Hudson Counties.

The study area for this project is shown on **Map 1: Study Area** and is the area between University Heights in Newark and Exchange Place in Jersey City. The northern limits include the southern portion of the meadowlands and the southern limit is Kearny Point in Kearny, New Jersey.



Photo: Access roads to the Boonton and Newark Industrial Tract

The information in this technical memorandum is based on a review of related plans and surrounding projects, mapping utilizing GIS data available from various sources, and input from the Steering Committee meetings and discussions.

Data Collection

NV5 reviewed available reports, resources and mapping provided by NJDOT and the Steering Committee to better understand the study area, the history, and proposed/planned related projects. A bibliography of data and reports reviewed is included at the end of this technical memorandum.

Existing Condition Maps

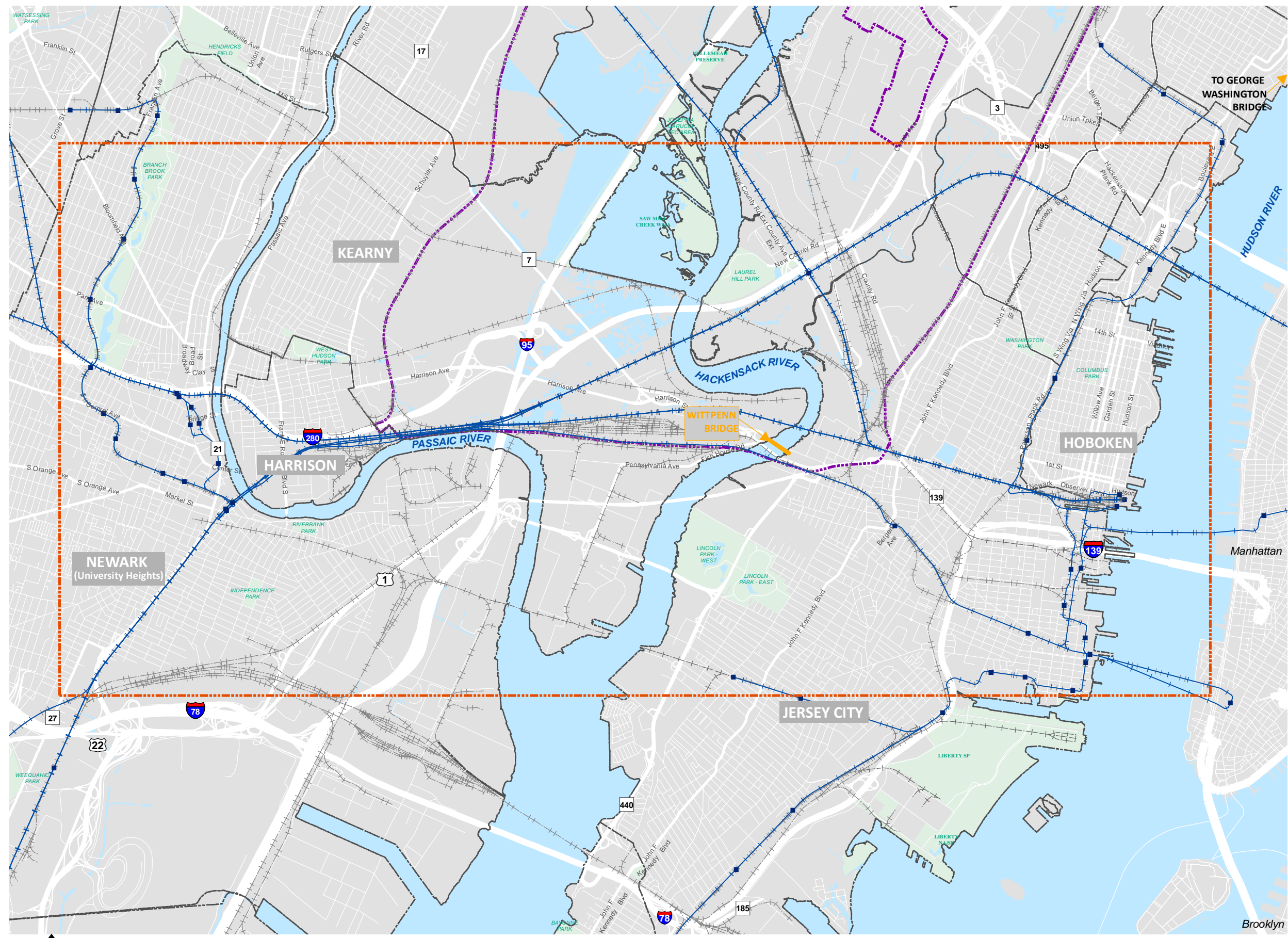
NV5 collected and developed several maps detailing the study area and the surroundings. These include street maps, straight-line diagrams of state and county roads, aerial map, tax maps and other maps. The tax maps were collected on the potential roadways and rail corridors based on the feedback of the Steering Committee and data collection efforts. These maps are located in the **Appendix 1: Existing Condition Maps**.



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**ECG ESSEX-HUDSON
GREENWAY CONNECTOR
ROUTING PLAN**

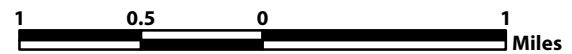
**Map 1
Study Area**



- Legend**
- NJ Meadowlands
 - Municipalities
 - Counties
 - Train Station
 - Railroad
 - Other Railroad

Study Area Boundary

Source: NJDEP, NJDOT, ARCGIS, Plan4Safety



Existing / Planned / Proposed Trails

There are number of trails (planned and existing) within the study area that will benefit with the development of this ECG connector. These trails are shown on **Map 2: Existing / Planned Trails** and include the following key trails/routes:

1. East Coast Greenway (ECG)

As per the ECGA, of the 93 miles of the ECG in New Jersey between Pennsylvania and New York about 54% is on car-free paths. The current ECG route within the study area is shown on the cue maps on the following pages. The East Coast Greenway has a phased implementation plan that will evolve along its entire 3,000 mile alignment to eventually achieve a continuous off-road facility. This approach is reflected in the Essex-Hudson Greenway Connector study area. The ‘Current Travel Route’ uses a sidewalk along Truck Route 1&9 across Kearny, including both the Passaic River and Hackensack River crossings. Bicyclists are told to walk along this segment that uses a narrow, but continuous, sidewalk along the busy truck route roadway.

The currently proposed ‘Long Term Route’ uses the Newark Industrial Track, Wittpenn Bridge, and the Bergen Arches corridor to traverse the area. This routing is one of the options being investigated as part of this Routing Plan. Like the Appalachian Trail, the East Coast Greenway route will continue to evolve, taking advantage of improvements as they occur.

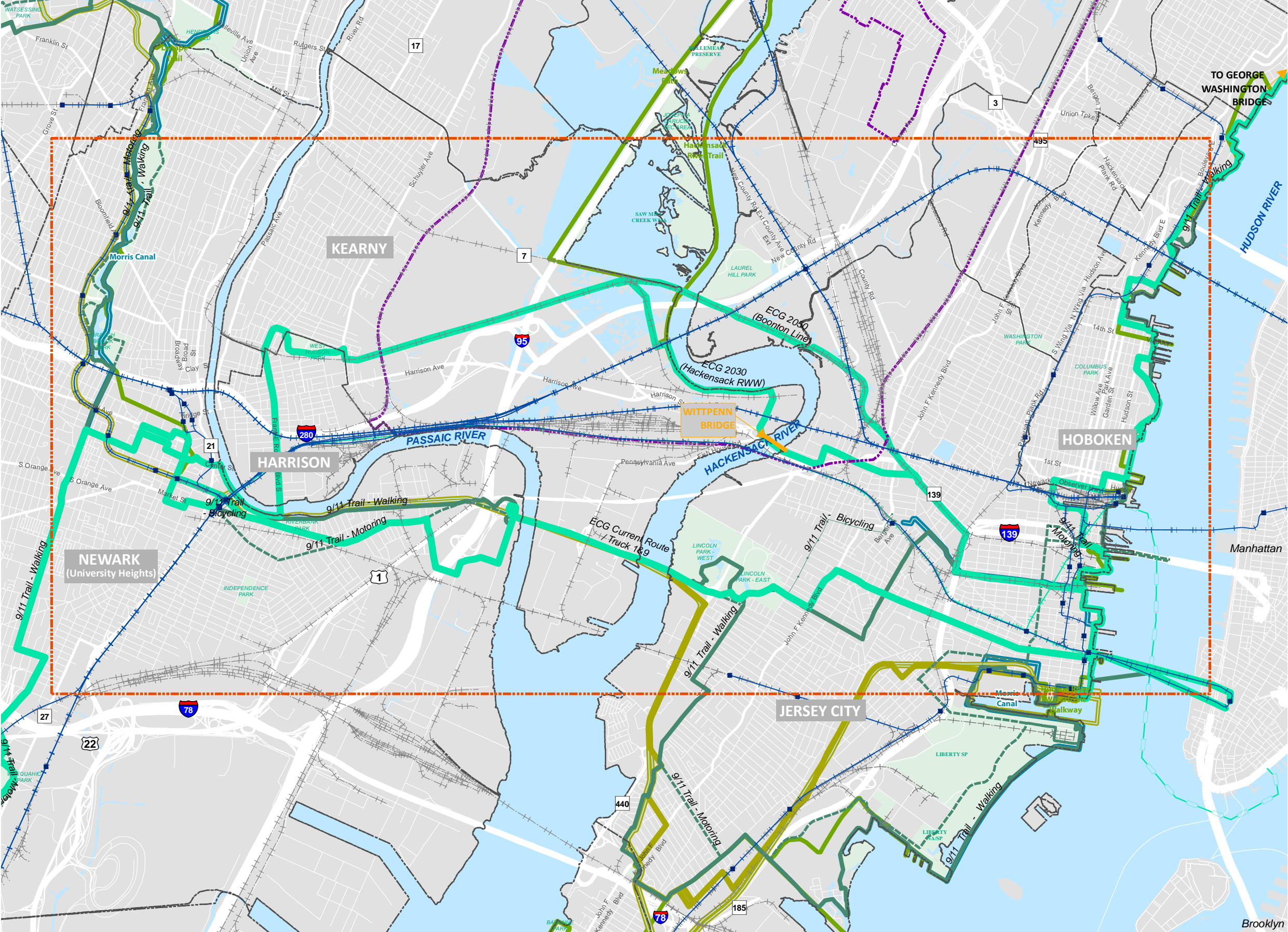


Photo: Truck Route 1 & 9 (Current Travel Route as part of East Coast Greenway)

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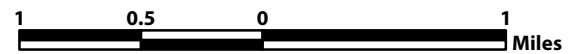
ECG ESSEX-HUDSON GREENWAY CONNECTOR ROUTING PLAN

Map 2 Existing / Planned Trails



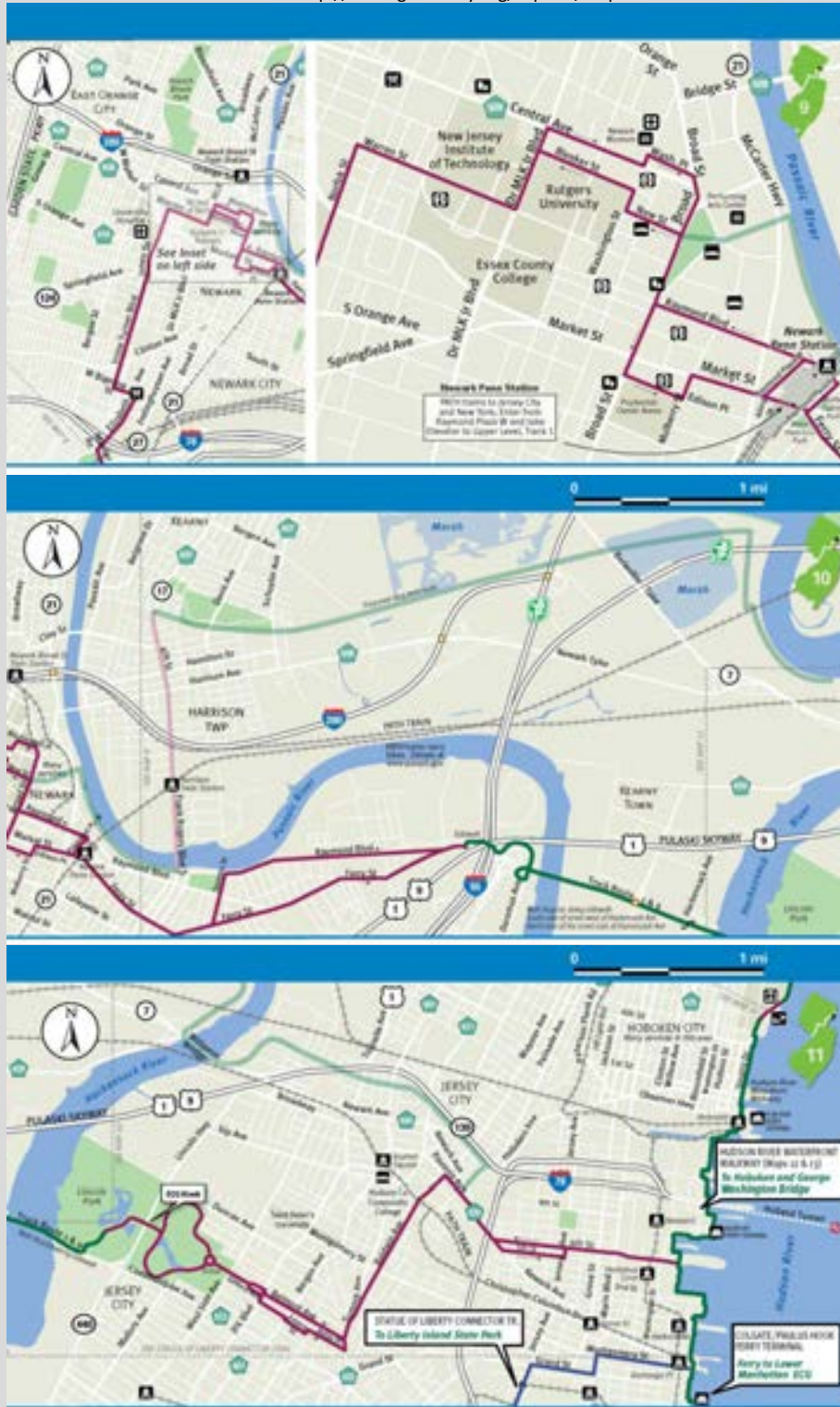
- Legend**
- East Coast Greenway
 - ECG (PathTrain)
 - ECG (Ferry to New York)
 - 9/11 Memorial Trail
 - 9/11 Trail Bicycling Only
 - 9/11 Trail Motoring Only
 - Morris Canal Greenway
 - Other Existing Trails
 - Liberty-Water Gap Trail
 - NJ Meadowlands
 - Municipalities
 - Counties
 - Train Station
 - Railroad
 - Other Railroad
 - Study Area Boundary

Source: NJDEP, NJDOT, ARCGIS, Plan4Safety



Study Area Cue Sheets from the NJ East Coast Greenway, 2013

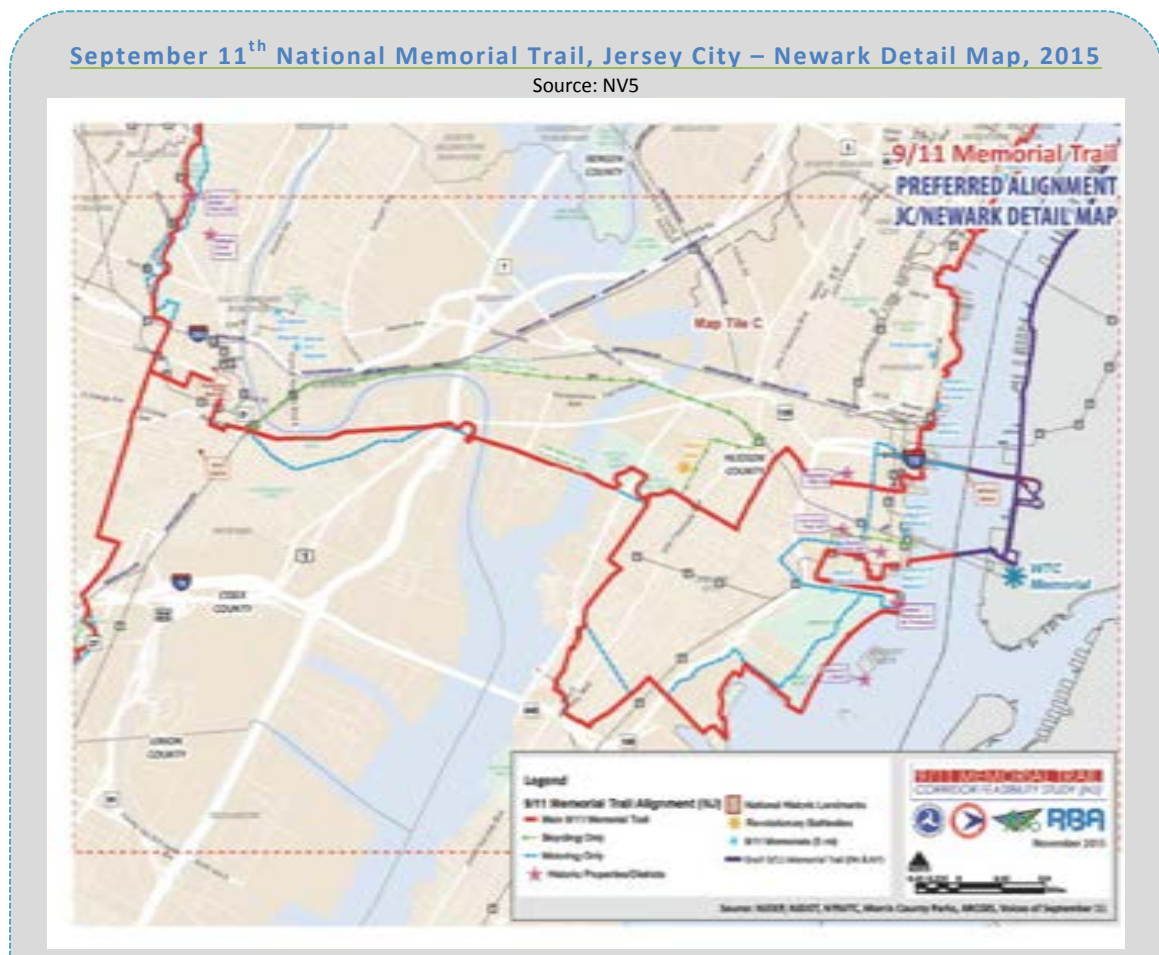
Source: <http://www.greenway.org/explore/maps>



2. September 11th National Memorial Trail

The September 11th National Memorial Trail (9/11 Memorial Trail) honors and pays tribute to the victims, their families and first responders whose sacrifices inspire all Americans to protect our freedoms and values. The 9/11 Memorial Trail, when finished, will be a network of multi-use trails connecting the September 11th National Memorial in New York City, Pentagon Memorial and the Flight 93 Memorial to inspire those who use it to remember the personal sacrifices for freedom while fostering patriotism and economic, cultural and recreational opportunities. The September 11th National Memorial Trail Alliance was formed in 2004 for the sole purpose of establishing the 9/11 Memorial Trail. NV5, formerly the RBA Group, was tasked with providing technical assistance to the Alliance in developing a plan to identify feasible bicycling, walking and motoring route(s) for the 9/11 Memorial Trail through New Jersey via two corridors (north and south). This study was funded by the Office of Bicycle and Pedestrian Programs, New Jersey Department of Transportation (NJDOT) under the Local Technical Assistance Program.

Within the project study area, the 9/11 Memorial Trail largely follows the alignment of the ECG and Morris Canal Greenway. The map below shows the 9/11 Memorial Trail alignments in the study area.



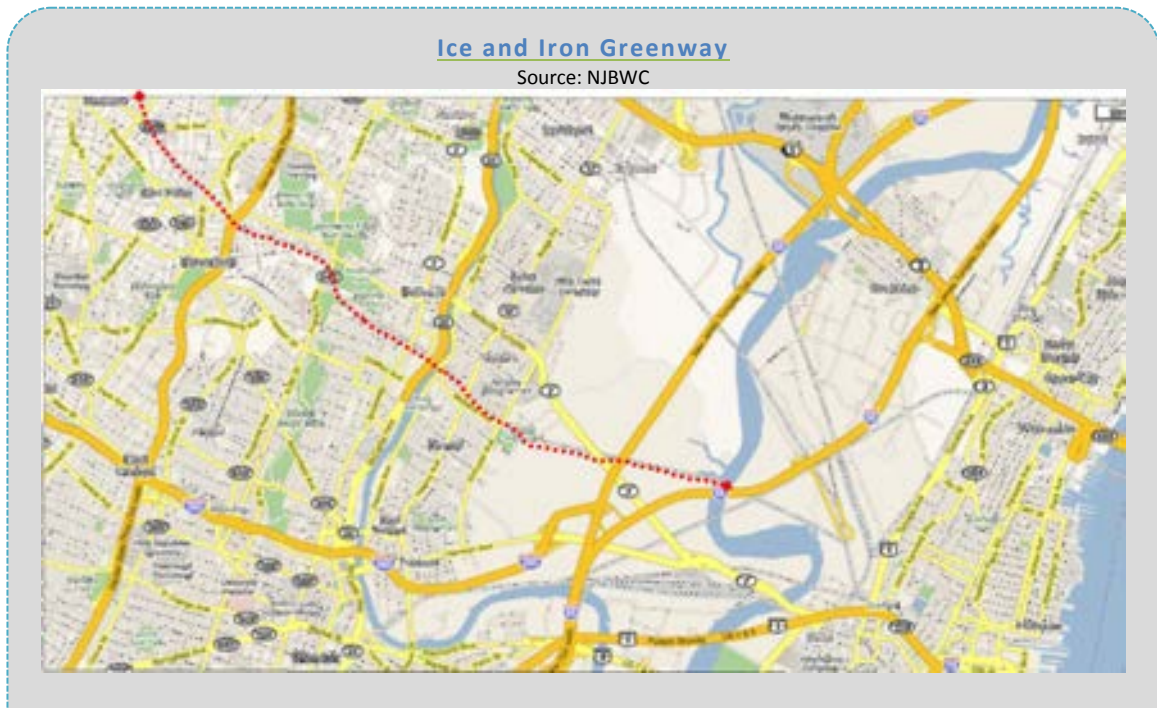
3. Morris Canal Greenway

The Morris Canal Greenway (MCG) aims to preserve the history of the canal and offer recreational opportunities to the surrounding communities and the region. Within the study area, only portions of the MCG exist and the remaining will be developed as and when it is feasible. The map below shows the proposed long-term alignment of the MCG within the study area.



4. Ice and Iron Greenway

As stated by the New Jersey Bike Walk Coalition, the Ice & Iron Greenway is a proposed 7.1 mile trail to be located along an unutilized train line connecting Jersey City to Montclair via the Meadowlands, Kearny, Newark, Belleville, Bloomfield and Glen Ridge. New Jersey Transit discontinued passenger service on the line in 1995 and sold the track to Norfolk Southern (NS). One of the sets of tracks has been removed (likely by NS) along the entire line. There has been no train usage on the rails in multiple years. The line is showing years of neglect. Some of it is overgrown with small trees and there are signs of encroachment, litter, squatters and other undesirable activity along the corridor.

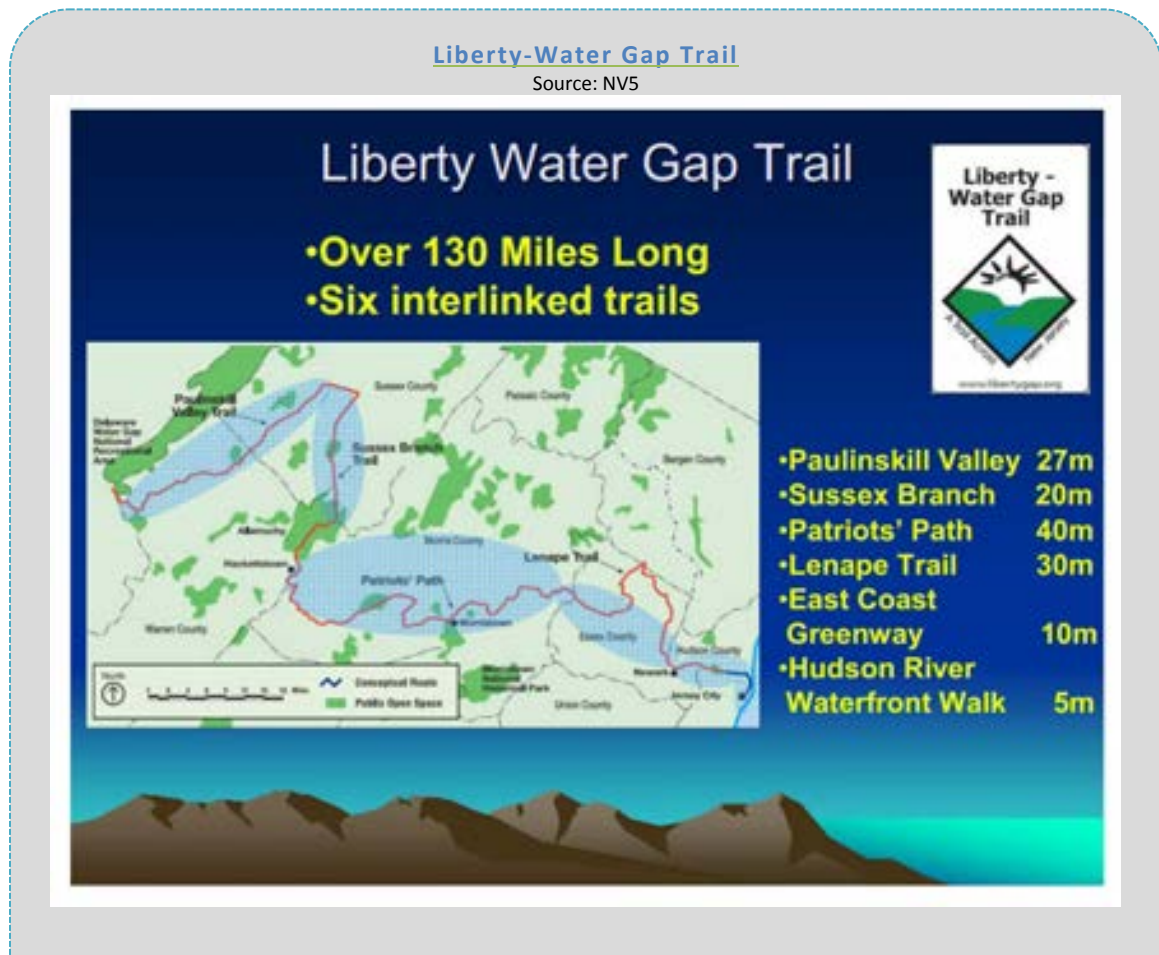


5. Liberty-Water Gap Trail

the Liberty-Water Gap Trail is a 150-mile trail that runs from Jersey City to the Delaware Water Gap National Recreation Area across Northern New Jersey. It consists of various trails linked together including the Lenape Trail, the Columbia Trail, the Highlands Trail, the Sussex Branch Trail, and the Paulinskill Valley Trail. Within the study area, the alignment of this trail overlaps mostly with the ECG across Passaic and Hackensack Rivers.

Liberty-Water Gap Trail

Source: NV5



Studies and Proposed Projects

1. New Jersey Bicycle and Pedestrian Master Plan

The New Jersey Department of Transportation is supportive of the development of bicycle and pedestrian infrastructure in the state. The recently completed 2016 New Jersey Bicycle and Pedestrian Master Plan articulates that support and identifies what should be done to achieve its vision stated below.



The Master Plan's goals and strategies further identify the ways in which the vision can be achieved. It acknowledged the importance of equity in transportation and the focus on the needs to disadvantaged/high risk populations – specifically youth, seniors, low-income, disabled and minority populations. Every goal in the Master Plan supports the development of the ECG Essex-Hudson Greenway Connector.

2. County Plans

Both Essex and Hudson Counties have adopted plans and complete streets policies that support this project. The County Complete Streets Policies are in **Appendix 2**.

Essex County Comprehensive Transportation Plan, 2014

We reviewed the Essex County Comprehensive Transportation Plan (ECCTP) to better understand the county's perspective on improving walking and bicycling in their communities. The vision for the ECCTP is to ***“Develop a safe coordinated and integrated multimodal transportation system that provides accessibility for all users while promoting connectivity, economic vitality and productivity, our communities' livability, and our ecosystem's viability.”*** Additionally, two of the goals identified to achieve this vision focus on bicycle and pedestrian travel within the county. These two ECCTP goals are to “increase and/or provide opportunities for walking & bicycling and to provide “connectivity for all modes of Transportation”. Section 2.6.6. Sidewalks, Paths & Bicycle Facilities includes a section on the East Coast Greenway and the development of the sidewalk along Truck Route 1&9 as a “bicycle/pedestrian way from Newark to Jersey City and the Hudson River.” In addition, the ECCTP identifies the “conversion to a greenway for Morris Canal and the Boonton Rail line” as a bicycle, pedestrian and safety project and a greenway feasibility study for the greenway was recommended.

Hudson County Plans

Hudson County prepared a Parks Plan (to be adopted) and Master Plan Reexamination Report in 2016. In 2008, Hudson County developed the 2008 addendum to “address the significant changes in the assumptions, policies, and objectives that formed the basis for the Hudson County Master Plan in 2002.” The plan does identify improving walking and bicycling in the county within the Land Use and Circulation sections of the plan. In addition, there is a section on the East Coast Greenway and the development of the greenway across Hudson County along the historic rail corridor as shown on the figure below.

[East Coast Greenway, Northern NJ Route Location Study, Recommended Route Overview Map, Hudson & Bergen Counties](#)

Source: Hudson County Reexamination of the Master Plan, 2008



3. Municipal Plans

City of Jersey City

The vision of the Circulation Element of the Jersey City Master Plan is as follows:

By the year 2050, Jersey City's extensive and sustainable development, redevelopment and neighborhood revitalization activity will have transformed the City into a bustling, "green," world-class center with a range of housing and retail choices, many employment and business opportunities, and excellent recreational, entertainment and cultural amenities. As befits any such center, the City will be served by a multi-modal transportation system that is attractive, clean, safe, efficient, reliable, inclusive, affordable, accessible, and user-friendly. Jersey City's comprehensive and seamless transportation network will provide options to its users and accommodate all types of trips - both local and regional in nature - to, from, and within all neighborhoods, throughout the day and night, and it will mitigate congestion and minimize the amount of single-occupancy vehicular traffic in Jersey City.

The City's transportation network will benefit residents, workers, and visitors alike by giving people a choice in how they travel to, from, and within Jersey City. The principal features of Jersey City's transportation network will be a highly-functioning and efficient multi-modal public transit system, a roadway network that will not only accommodate vehicular traffic but will also provide safe and efficient accommodation for bicyclists and pedestrians, and a network of off-road bicycle and pedestrian paths that complement the City's parks and open spaces.

The vision statement clearly identifies a support for bicycle and pedestrian infrastructure in the city. The 14 goals and corresponding actions within the plan emphasize a need for alternatives to automobile use such as bicycling and walking. One of the actions is to ***"Construct the East Coast Greenway Route as an off-road facility for pedestrians, bicyclists, and other non-motorized means of travel between Hudson River and Hackensack River waterfronts. In the interim, complete on-road alignment."***

City of Newark

The 2012 Newark Master Plan has a vision "to set a national standard for urban transformation that considers and is based on the three pillars of sustainability – economy, equity, and environment." To achieve this vision, three interconnected policy goals were identified:

- Goal 1: Economy = Economic Development
- Goal 2: Equity = Safe and Healthy Neighborhoods
- Goal 3 Environment = A City of Choice

In the plan, various strategies are identified to achieve the goals and the vision of the plan. Two of those strategies aim to "Facilitate and support the implementation of the East Coast Greenway Plan" and "Implement the East Coast Greenway Plan and identify potential additional greenways". The map shown on the following page shows the existing and proposed bicycle and pedestrian facilities including East Coast Greenway alignments.

Existing and Proposed Bicycle Infrastructure, Newark, NJ, 2012

Source: Newark Master Plan, 2012



Kearny

The goals and objectives of the 2007 Strategic Vision Plan of the Town of Kearny were stated in the 2008 Master Plan Reexamination Report / Master Plan Revision. One of those goals stated that the Town should *“Coordinate land uses with transportation investments to promote intermodal connections and encourage alternatives to driving such as mass transit and bicycle/pedestrian facilities.”* In addition, the objectives stated below focus on improving the bicycle and pedestrian facilities in the Town.

Circulation Objectives

Provide additional bicycle/pedestrian routes to promote and improve alternative circulation within the Town.

Recreation Objectives

Coordinate with the County and NJMC to establish linkages between Town and County / Meadowlands facilities, and capitalize on planned projects such as the East Coast Greenway and the Meadows Path.

Harrison

The 2007 Town of Harrison Master Plan states that *“as the Town continues its revitalization efforts it must be careful to maintain and improve pedestrian connections between the different destinations in the Town.”* The chapter on recommendations in the plan include *“pedestrian and bicycle circulation recommendations”* and states that the Town should *“Ensure that all transportation improvements and development projects improve the pedestrian and bicycle experience.”*

East Coast Greenway is identified as a proposed project in the Plan and there is a mention of “a portion of the proposed route would travel through Harrison on the abandoned Newark Industrial Tract rail line. This ‘rails to trails’ proposal would run along the southern edge of West Hudson Park and then turn south and run down Frank E. Rodgers Boulevard. The route would extend eastward linking into Lincoln Park and Liberty State Park.”

East Newark

The Borough of East Newark is located to the north west of the Town of Harrison. At the time of this memorandum, there were no major projects or plans proposed in East Newark that will significantly impact the ECG Essex-Hudson Greenway Connector project. A waterfront pathway along the eastern bank of the Passaic River is a long-term project that is being considered.

Hoboken

The City of Hoboken Bicycle and Pedestrian Master Plan was adopted in 2010 and set forth the following vision:

“Hoboken’s transportation system safely accommodates and seamlessly connects all modes of travel – walking, bicycling, transit use and driving. Hoboken’s residents, commuters, students and visitors of all ages and abilities can walk and bicycle with confidence and security. Its

excellent bicycling and walking facilities are central to the city’s valued transportation network and contribute to its identity, economic vitality, public health and overall quality of life.”

Related Projects / Developments

NJDOT Projects / Resources

Throughout the data collection task, NJDOT provided multiple resources including planned and existing related projects in the area and other examples of similar successful projects. Appendix 3 includes information on those resources. Several projects directly relate to the proposed connector project and are discussed below:

Wittpenn Bridge

The Route 7 Wittpenn Bridge project is a key component of the NJDOT Portway Corridor allowing access to New York City and the booming areas of Jersey City. The existing bridge will be replaced and is estimated to be complete in 2022. According to the NJDOT website, “the new vertical lift structure will carry two 12 feet through lanes, a 12 foot auxiliary lane and a 8 to 10 foot right shoulder in each direction as well as a six foot sidewalk along the eastbound roadway. An eight foot median consisting of variable width inside shoulders and a median barrier will separate opposing traffic flows. The new structure will accommodate pedestrian and bicycle traffic.” While this will be a great improvement to the existing Wittpenn Bridge,, the approach to the bridge itself is complicated and there is bicycle and pedestrian access on one side only.



Existing Wittpenn Bridge, Source: NV5, Inc



New Wittpenn Bridge Rendering, Source: NJDOT

Related previous NJDOT studies

Over the past several years, NJDOT has completed numerous planning efforts for the ECG, which have directly resulted in new segments of the ECG being constructed across New Jersey. These include:

- 2004 – ECG Route Location Study – identified a potential route for the ECG to connect between New Brunswick and Jersey City
- 2006 & 2007 ECG Close the Gaps Summits – Identified critical path next steps for each county and municipality to advance construction of the ECG across New Jersey, including Union County’s construction of the Lenape and Black Brook Park segments, and Newark’s prioritization and construction of the first phase of the Newark Greenway between Branch Brook Park and Weequahic Park

- 2008 – Memo to File on Route 7 Field Evaluation (Route 7 widening/ side path) – led to the detailed investigation of the Route 7 corridor
- 2010 – ECG Western Hudson County Routing that identified a phased implementation for crossing the Meadowlands area as defined in several progressive time periods: by 2020 using Route 7, by 2030 using the Hackensack River Waterfront Walkway, and by 2050 using Boonton rail line corridor with a new Hackensack River crossing
- 2011 – The East Coast Greenway, Route 7 (Shared Use Path) Tier 2 Screening Report in Jersey City & Kearny, Hudson County, NJ investigated the potential for constructing a shared use path along Route 7 west of the WittPenn Bridge. This focused concept along the State Route 7 corridor – this resulted in a finding of: “Due to ROW impacts, potential environmental impacts, and overall construction costs, it is recommended that no further evaluation should be undertaken at this time and that an alternative route should be investigated”. This current study is a next step in defining an alternate ECG route as recommended in the Tier 2 screening.

Other Projects / Redevelopments

Kearny Point

Kearny Point is co-working facility in Kearny slated to reactivate the former shipyard in South Kearny into a creative, bustling area. According to the Kearny Point website, there are 130 acres with 2 million square feet of space available to develop and they already have more than 65 businesses that operate out of the two buildings that are already open. The developers are interested in not just planning for cars but also considering other modes such as transit in conjunction with ride sharing, bicycles and pedestrians.



Kearny Point Map and Renderings, Source:www.kearnypoint.com

Portal Bridge

The Portal Bridge is a two-track moveable swing-span railroad bridge over the Hackensack River that is considered obsolete and will be replaced with a new, more reliable, fixed-span bridge. However this project is not currently planned to provide public bicycle and pedestrian access.



Portal Bridge rendering, Source: www.amtrak.com

Riverfront Park

In 2016, city and state officials broke ground on the third phase of Newark’s Riverfront Park along the Passaic River. The first phase opened in 2012, followed by second phase in 2013 and there are plans to extend it to the west and the east as shown in the image below.



Newark’s Riverfront Park – Phasing Plans, Source: NJ Advance Media for NJ.com

Bergen Arches

The Bergen Arches corridor has been the topic of numerous transportation studies over recent years. According to an NJDOT study, the Bergen Arches right-of-way is an unused railroad corridor approximately one mile long that cuts through the Palisades in Jersey City. The Arches were originally constructed to carry Erie Lackawanna Railroad traffic and passengers to the Hudson River waterfront in Jersey City. The Bergen Arches run parallel to Route 139 between J.F. Kennedy Boulevard near Tonnele Avenue to the west, and Palisades Avenue to the east. The corridor is rich in multi-modal transportation facilities, including Route 1&9, Route 139, I-78, the New Jersey Turnpike, Holland Tunnel, PATH rapid transit system, Hudson Bergen Light Rail system, NJ Transit commuter rail lines, and various freight rail lines and yards.



Source: Image by So+So Studio, retrieved from <http://www.g.reenvillain.com/bergen-arches/>

Harsimus Branch Embankment /6th Street corridor

As stated on the website (<http://www.embankment.org/>), the Harsimus Branch Embankment is a massive, segmented stone structure that runs for six blocks through Downtown Jersey City parallel to Sixth Street. Part of the once-mighty Pennsylvania Railroad freightway, the historic Embankment played a key role in shaping the Downtown and in the development of the Port of New York and New Jersey. The Embankment is listed on the State Register of Historic Places, is eligible for the National Register, and is a Jersey City Municipal Landmark.

The embankment is visualized to be a New Jersey version of New York City's HighLine, an elevated pathway along a historic rail corridor that connects through and above a dense urban city setting.



Source: www.embankment.org

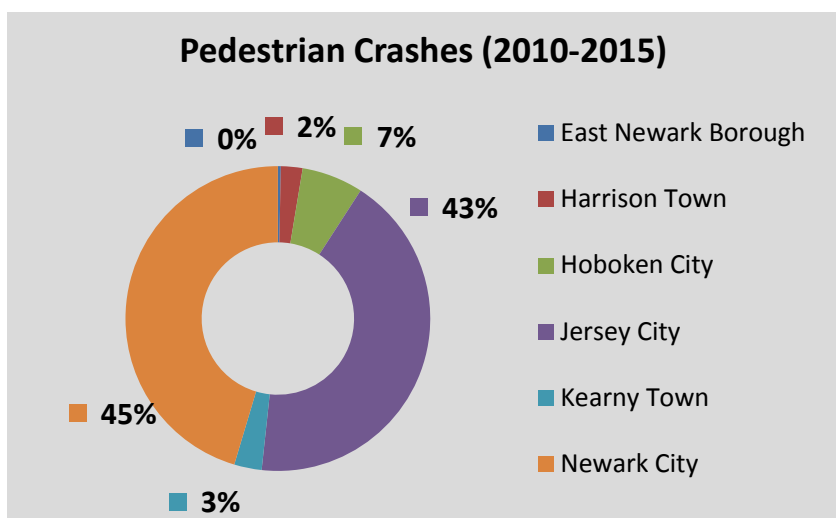
Laurel Hill Park

In 2016, the Laurel Hill Park in Secaucus opened a new elevated walkway that runs parallel to the coastline over the river. It is roughly 500-foot and has fishing stations and was opened by the Hudson County Improvement Authority and the Hackensack Riverkeeper.

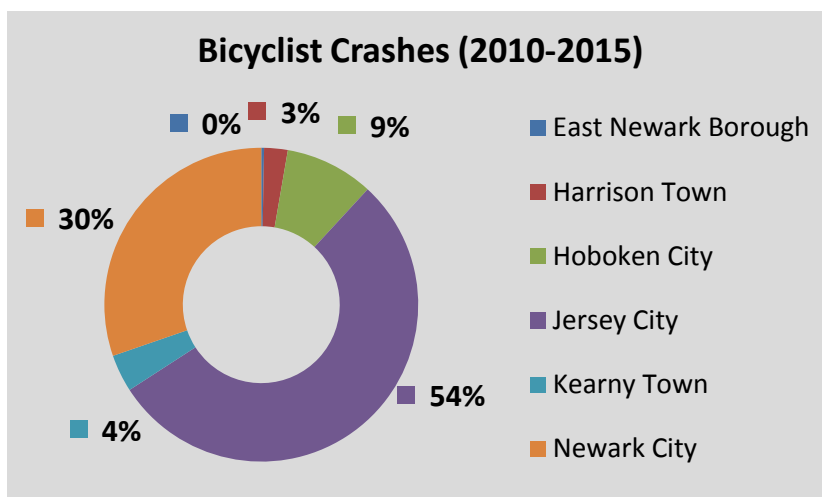
Crash Data

Bicyclist and pedestrian crash data from 2010-2015 for the study area was obtained using the NJDOT Plan4Safety tool. The crash data was collected for the municipalities within the study area – Jersey City, Newark, Harrison, Kearny, East Newark, and Hoboken. This section is intended to provide an overview of the crash data and not a detailed analysis. The crash data will be analyzed closely following the selection and identification of potential alignments.

From 2010-2015, there were almost 3,000 pedestrian crashes of which 48 were fatal crashes, 82 with incapacitating injuries, 2,462 moderate injury/pain and 319 property damage only crashes in the study area. Most of the pedestrian crashes occurred in Newark followed by Jersey City and Hoboken, see Map 3: Pedestrian Crashes (2010-2015).



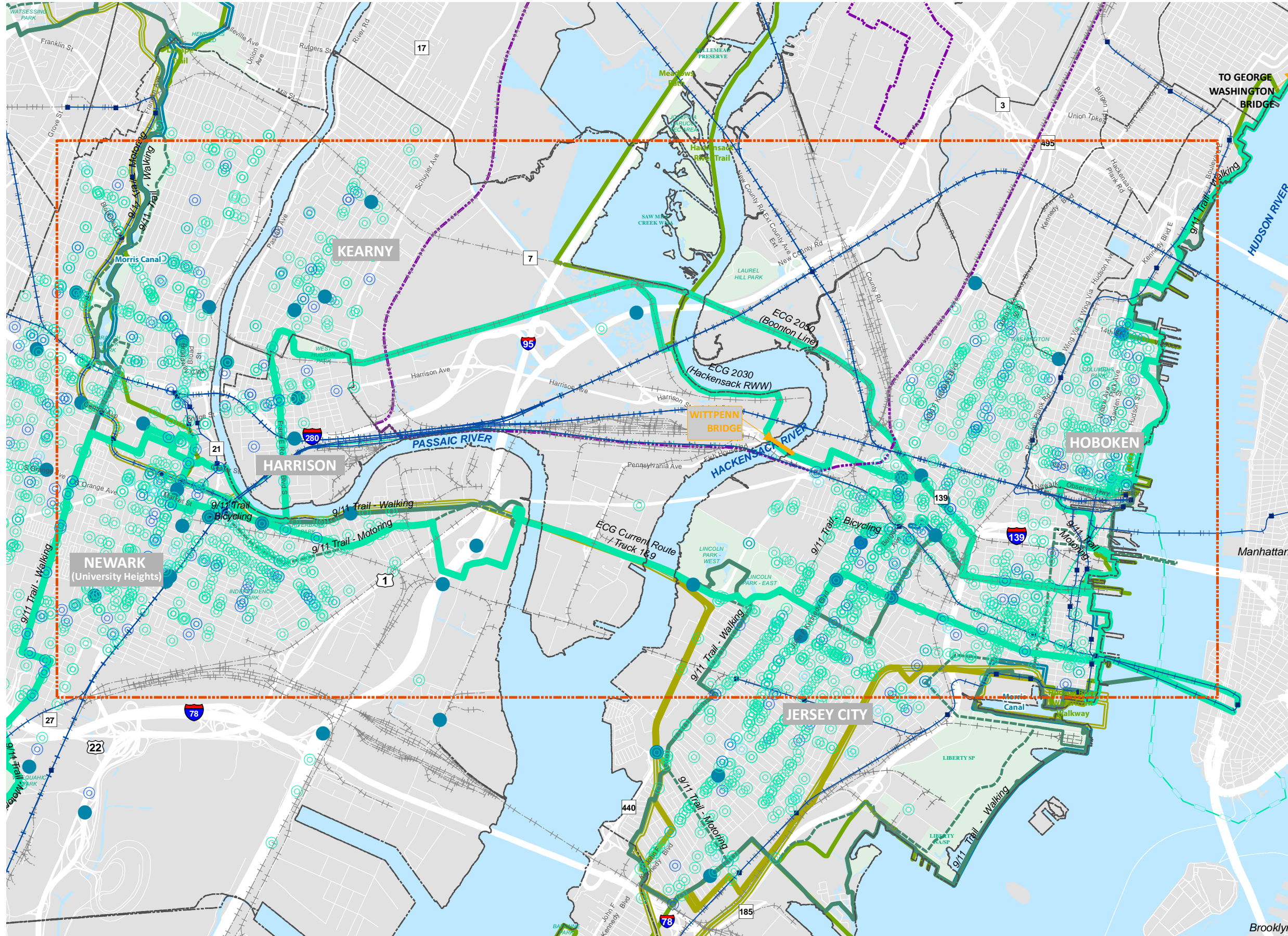
During the same time, there were 700 bicyclist crashes of which 4 were fatal crashes, 11 were incapacitating crashes, 386 were moderate injury/pain and 99 were property damage only crashes within the study area. The majority of the bicyclist crashes occurred in Jersey City (54%) followed by Newark (30%) and Hoboken (9%), Map 4: Bicyclist Crashes (2010-2015).



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**ECG ESSEX-HUDSON
GREENWAY CONNECTOR
ROUTING PLAN**

**Map 3
Pedestrian Crashes
(2010-2015)**



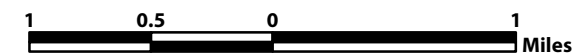
Legend

Pedestrian Crashes by Severity

- Fatal Injury
- Incapacitating Injury
- Moderate Injury; Pain
- PDO

- East Coast Greenway
- ECG (PathTrain)
- ECG (Ferry to New York)
- 9/11 Memorial Trail
- 9/11 Trail Bicycling Only
- 9/11 Trail Motoring Only
- Morris Canal Greenway
- Other Existing Trails
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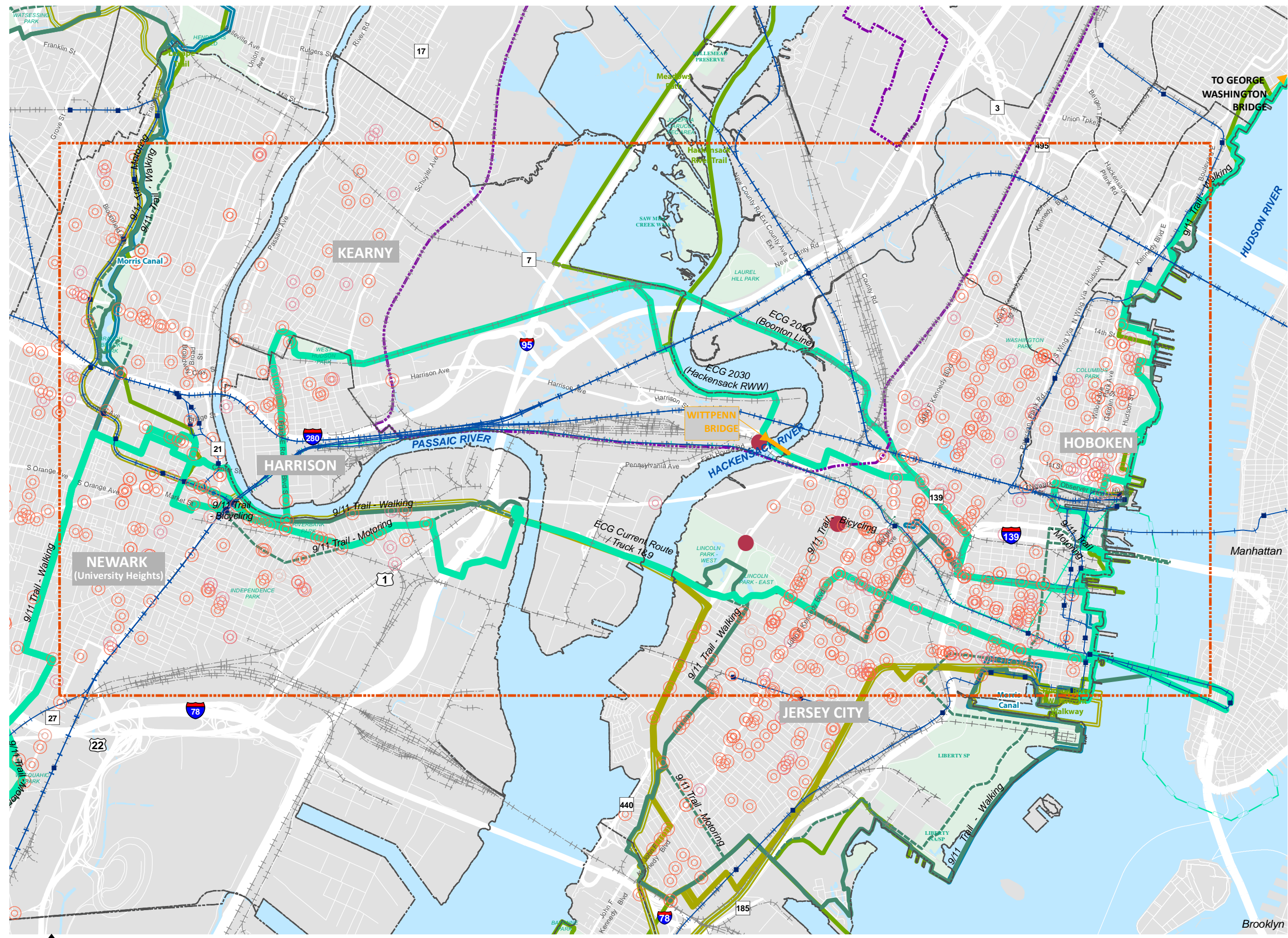
Source: NJDEP, NJDOT, ARCGIS, Plan4Safety



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**ECG ESSEX-HUDSON
GREENWAY CONNECTOR
ROUTING PLAN**

**Map 4
Bicyclist Crashes
(2010-2015)**



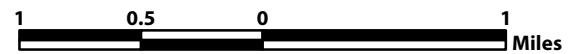
Legend

Pedestrian Crashes by Severity

- Fatal Injury
- Incapacitating Injury
- Moderate Injury; Pain
- PDO

- East Coast Greenway
- ECG (PathTrain)
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- 9/11 Memorial Trail
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Source: NJDEP, NJDOT, ARCGIS, Plan4Safety



Best Practices / Methods

Railbanking

Railbanking is a method by which rail corridors that are unused or abandoned are preserved for future rail use and converted to a trail in the interim. The railbanking statute allows the removal of all equipment (except bridges, tunnels and culverts) and the transfer of maintenance as a trail to a private or public agency. It was established in 1983, as an amendment to Section 8(d) of the National Trails Act.

The Rails to Trails Conservancy (RTC) has multiple resources on railbanking on their website as part of their trail building toolbox (<https://www.railstotrails.org/build-trails/trail-building-toolbox/railbanking/>). Both RTC and NJDEP recommend the use of this toolbox as a way to utilize the underused railroads within the study area for creating a greenway.

Ferry

During the project kick-off meeting, there was discussion on whether a small ferry would be sufficient to cross both the rivers as a short-term or long-term option. Examples of ferries being used to traverse similar distances include the Liberty Landing Ferry in Jersey City to provide access to Liberty State Park and downtown Manhattan, NY Waterway Ferry from Hoboken Terminal to midtown Manhattan, and Island Line Bike Ferry in Burlington, Vermont.

The Liberty Landing Ferry provides access between Paulus Hook in Jersey City, Liberty State Park and the World Financial Center Terminal in Manhattan. A portion of the route is a short trip (500 feet approximately) between Jersey City and the Liberty State Park across the Morris Canal Basin.



The Island Line Trail in Burlington, Vermont is a 14-mile rail trail that has a small 200' cut on the causeway of a portion of the trail across Lake Champlain. To shuttle bicyclists across the “cut”, a local company Local Motion operates the Island Bike Trail, see image (source: www.localmotion.org).



Source: www.libertylandingferry.com

To establish a ferry for daily use along the Greenway, there would be substantial construction and operating costs. Initial construction would include docks and landings at each access point. Operating costs would be partly determined once a schedule and operating parameters are established, but at a minimum would include leasing the vessel, two person crew (captain and deck hand), logistics about ticketing and operating the route on a schedule.

Environmental Constraints

The Essex-Hudson Greenway Connector study area is highly environmentally sensitive. Using available GIS and Geoweb (NJDEP's GIS data) information, NV5 has completed a “desktop research”, to identify known environmental constraints within the study area. The following environmental constraints were identified:

- 1000 known contaminated sites (non-homeowner)
- 112 Chromate waste sites
- 408 wetlands (from Land Use / Land cover 2012 update)
- 447 classification exception areas – well restriction areas
- 81 historic districts and 1000 historic properties

The USEPA website was reviewed for superfund site information and cleanup status, and this is also noted on the **Map 5: Environmental Constraints**. Additional research on environmental constraints will be conducted during the next task for the potential alternatives / corridors. This research did not include NJDEP file searches which would occur in later design phase of any segment of the Essex-Hudson Connector through this area.

ECG ESSEX-HUDSON GREENWAY CONNECTOR ROUTING PLAN

Map 4 Environmental Constraints

Legend

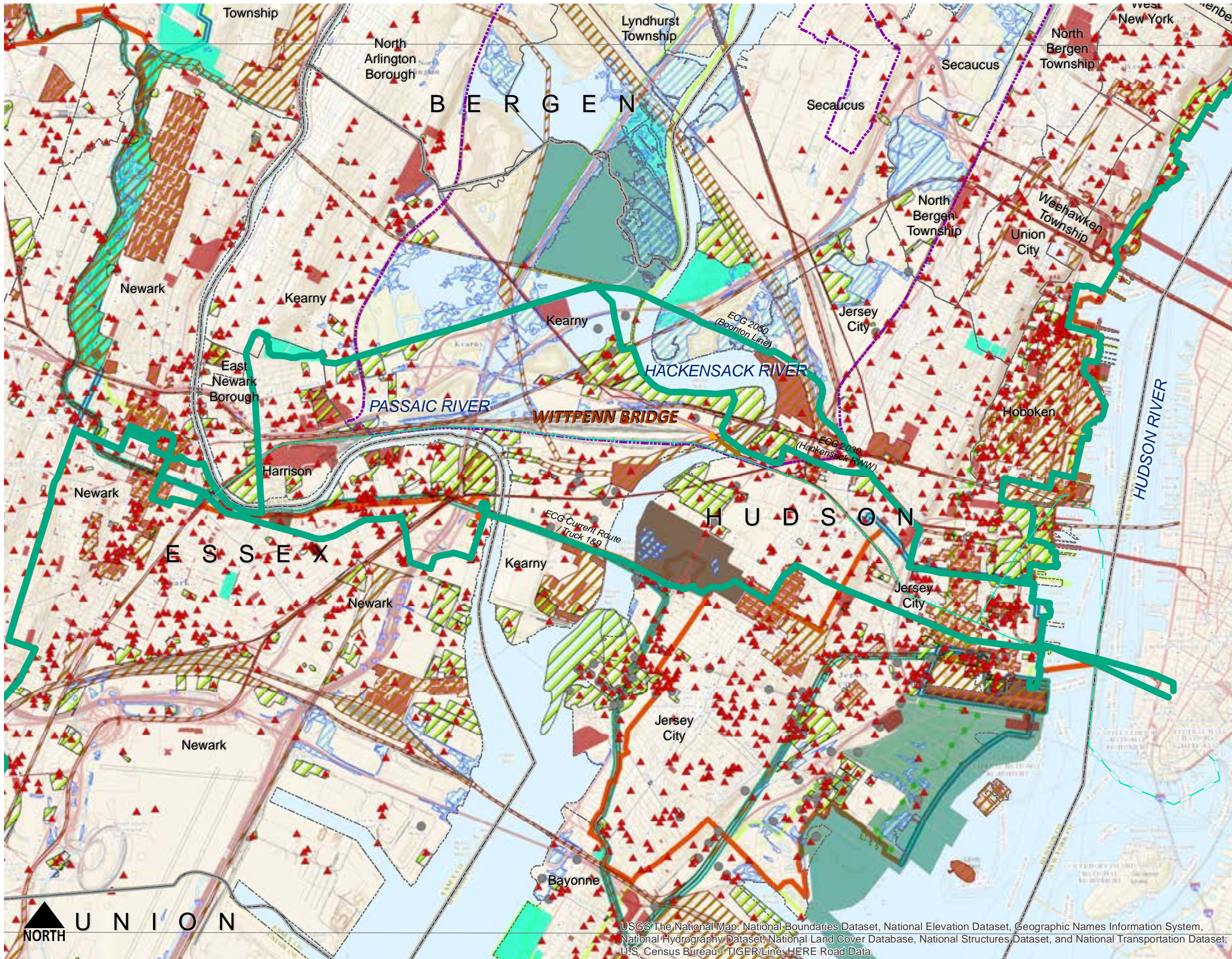
- East Coast Greenway
- ECG (PathTrain)
- ECG (Ferry to New York)
- Main 9/11 Memorial Trail
- Morris Canal Greenway
- Liberty-Water Gap Trail
- NJ RailTrails
- NJ Trails Existing
- NJDOT Bike Routes
- NJMC_Boundary
- Municipalities

Source: NJDEP, NJDOT, ARCGIS

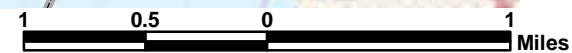
NJDEP NJOIS Features

- Known Contaminated Site List for New Jersey (Non-Homeowner)
- Chromate Waste Sites in New Jersey
- Wetlands (from Land Use/Land Cover 2012 Update)
- Classification Exception Areas-Well Restriction Areas for New Jersey
- Currently Known Extent of Groundwater Contamination (CKE) for New Jersey
- Historic Properties
- Historic Districts
- County Open Space and Recreation Areas in New Jersey
- State Protected Open Space and Recreation Areas in New Jersey

Source: NJDEP, NJOIS, National Geographic Society, USGS



USGS The National Map: National Boundaries Dataset, National Elevation Dataset, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; U.S. Census Bureau - TIGER/Line, HERE Road Data



5/17/2017

Opportunities & Constraints

The data collection task and the Steering Committee kick-off meeting helped identify opportunities and constraints to developing the Essex-Hudson Greenway Connector. Constraints included limited right of way, multiple river crossings, industrial uses, environment concerns, and heavy traffic volumes. The current roadway network has heavy traffic volumes, and includes river crossings that use operating drawbridges. The overall land use throughout the area is highly industrial, and is spotted with environmental cleanup sites. The motor vehicle traffic includes a very high percentage of truck traffic, due to the abundance of staging areas of roll-on/ roll-off tractor trailer container staging areas in east Newark and Kearny. The New Jersey Turnpike, Pulaski Skyway and Route 1&9 Truck all traverse the study area. Rail freight lines also bisect the study area, as do several historic rail corridors that are currently either unused or partially used.

Opportunities include multiple unused rail corridors, redevelopments, environmental cleanup sites, Wittpenn bridge project, and regional significant destinations. Replacing the existing Wittpenn drawbridge with a newer, higher drawbridge is NJDOT's largest bridge project to date is currently under construction. Due to its increased clearance over the Hackensack River it will not need to be operated nearly as often. This bridge will include a six foot wide sidewalk on one side that will cross the free flow access ramps at grade via a proposed signalized pedestrian actuated traffic light along the ramp. There will be continuous sidewalk connecting the bridge to Fish House Road in Kearny and to Newark Avenue in Jersey City.

The Boonton (from Montclair/ Bloomfield/ Belleville/ Kearny) and the Newark Industrial Tract (from Harrison) lines are historic rail corridors in the study area north of the Northeast Corridor (NEC). These two historic railroad corridors converge in Kearny, just west of the Hackensack River. These rail lines used one turn style drawbridge to cross the Hackensack River. This bridge is now locked in a position that is open to river navigation, creating a gap in the rail corridor access across the river. These rail corridors present significant opportunity for reestablishing public access, now as a path for pedestrian and bicycle access across the Meadowlands.

The historic rail corridor continues to the east through the Bergen Arches, a corridor that has been long considered for various transportation uses, and is presently unused. At the eastern terminus of the Bergen Arches, there is a small network of freight rail lines that run north-south parallel to the New Jersey Turnpike that is elevated through this section of Jersey City.

The Sixth Street/ Harsimus Stem Embankment corridor connects this historic rail corridor and Bergen Arches to the Hudson Riverfront area. The embankment project is the focus of a major concept to create a Greenway along what had been an elevated rail line with multiple parallel tracks. There is a coalition (<http://www.embankment.org/>) that was formed whose goal is to "...to preserve the structure and its longer right of way for a habitat-oriented linear park..." This is another excellent opportunity for the Essex-Hudson Greenway Connector for routing across Jersey City.

There are opportunities to connect many regionally significant destinations along and around the Essex-Hudson Greenway Connector corridor study area with new pedestrian and bicycle access. Connecting the parks, commercial areas, high density residential areas and currently inaccessible meadowlands

areas between Newark and Jersey City will be an excellent enhancement for residents, visitors and employees throughout the region. This Greenway has the opportunity to provide non-motorized travel alternative to the PATH and NJ TRANSIT trains and motor vehicle crossings of the Meadowlands area and will link Newark and Jersey City.

The following Map 6 **shows the opportunities and constraints within the study area.**

DRAFT

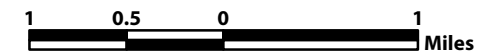
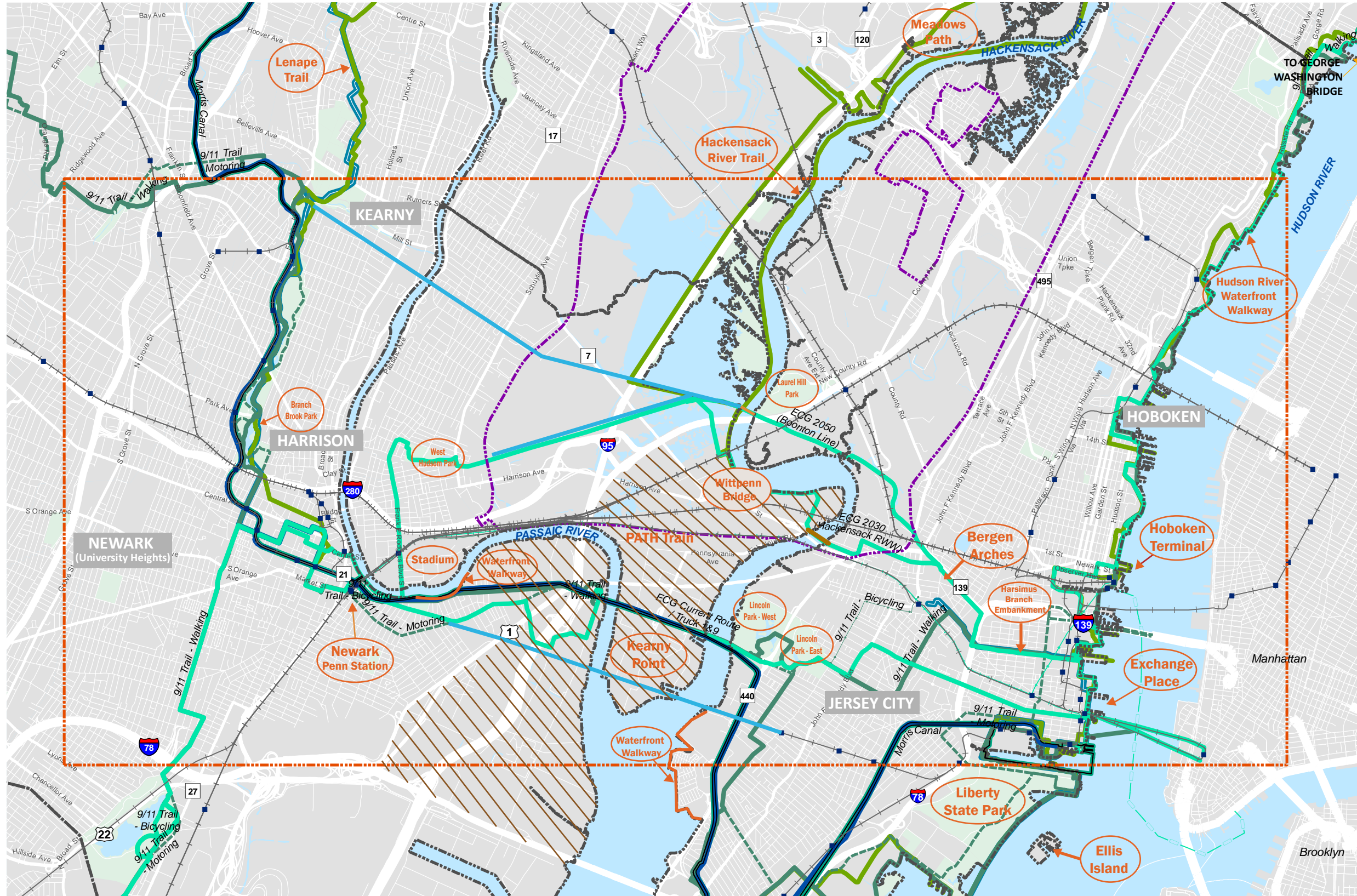
ECG ESSEX-HUDSON GREENWAY CONNECTOR ROUTING PLAN

Map 6 Opportunities & Constraints Map

Legend

- East Coast Greenway
- ECG (PathTrain)
- ECG (Ferry to New York)
- 9/11 Memorial Trail
- 9/11 Trail Bicycling Only
- 9/11 Trail Motoring Only
- Morris Canal Greenway
- Other Existing Trails
- Liberty-Water Gap Trail
- NJ Meadowlands
- Municipalities
- Counties
- Train Station
- Railroad
- Study Area Boundary
- Industrial Uses
- Major Destinations
- Historic Rail Corridor

Source: NJDEP, NJDOT, ARCGIS



5/17/2017

Bibliography

1. New Jersey Department of Transportation. 2016. *New Jersey Bicycle and Pedestrian Master Plan*. <http://www.state.nj.us/transportation/commuter/bike/pdf/bikepedmasterplan2016.pdf>
2. *Hudson County Reexamination of the Master Plan*. 2008. http://www.hudsoncountynj.org/wp-content/uploads/2013/06/Hudson_County_Master_Plan_Reexamination_Report_2008.pdf
3. *Hudson County Master Plan Reexamination Report*. 2016. Provided by Hudson County
4. *Essex County Comprehensive Transportation Plan*. 2013. http://ecdpw.org/pdf/ECCTP_Chapters.pdf
5. *Town of Harrison Master Plan*. 2007. <http://townofharrisonnj.com/wp-content/uploads/2016/07/Harrison-Master-Plan.pdf>
6. *City of Hoboken Reexamination Report*. 2010. <http://hobokennj.gov/docs/communitydev/Hoboken-Reex-2010-Final.pdf>
7. *City of Hoboken Master Plan*. 2004. <http://www.hobokennj.org/washingtonstreet/files/hoboken-master-plan-2004.pdf>
8. *Jersey City Master Plan / Circulation Element*. 2011. <http://www.cityofjerseycity.com/cityplanning/>
9. Heyer, Gruel & Associates. 2008 *Master Plan Reexamination Report / Master Plan Revision, Town of Kearny*. http://www.kearnynj.org/sites/default/files/Master%20Plan%20Reexamination%20Report_Whole%20document.pdf
10. *Newark's Master Plan*, Volume 1 & 2. 2012. <http://planning.ci.newark.nj.us/master-plans/>
11. Rails-To-Trails Conservancy. *Railbanking Basics*. <https://www.railstotrails.org/build-trails/trail-building-toolbox/railbanking/railbanking-basics/>

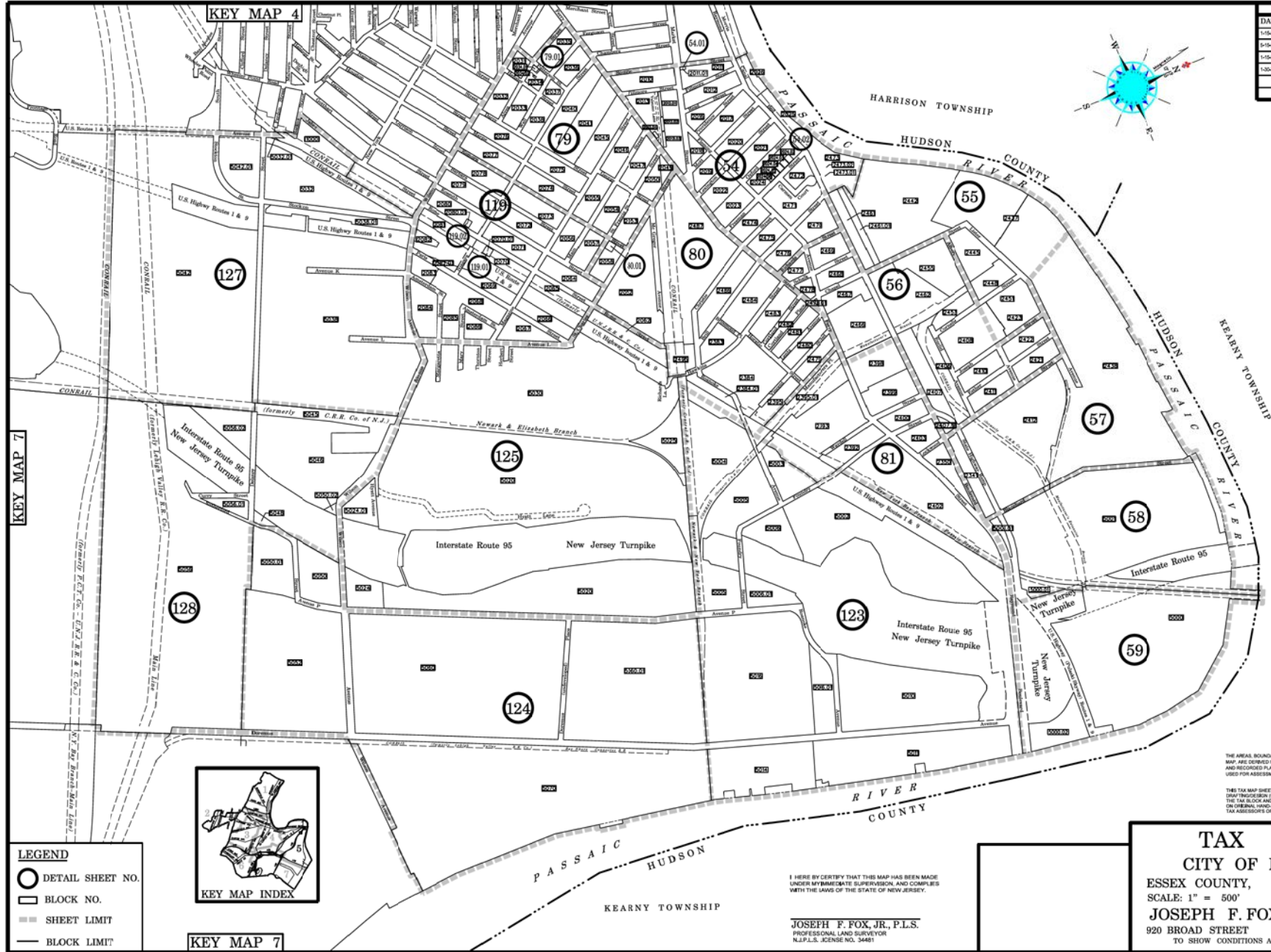
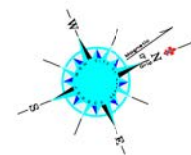


Appendix 2:

EXISTING CONDITIONS MAPS

KEY MAP NO. 5

REVISIONS		
DATE	NAME	NO.
1-15-2012	JOSEPH F. FOX, JR., P.L.S.	34481
5-15-2013	JOSEPH F. FOX, JR., P.L.S.	34481
1-15-2015	JOSEPH F. FOX, JR., P.L.S.	34481
1-30-2016	JOSEPH F. FOX, JR., P.L.S.	34481



KEY MAP 7

KEY MAP 4

KEY MAP 7

LEGEND

- DETAIL SHEET NO.
- BLOCK NO.
- ▬ SHEET LIMIT
- BLOCK LIMIT



I HEREBY CERTIFY THAT THIS MAP HAS BEEN MADE UNDER MY IMMEDIATE SUPERVISION AND COMPLIES WITH THE LAWS OF THE STATE OF NEW JERSEY.

JOSEPH F. FOX, JR., P.L.S.
PROFESSIONAL LAND SURVEYOR
N.J.P.L.S. LICENSE NO. 34481

TAX MAP
CITY OF NEWARK
ESSEX COUNTY, NEW JERSEY
SCALE: 1" = 500' JANUARY 1, 2010
JOSEPH F. FOX, JR., P.L.S.
920 BROAD STREET NEWARK, N.J. 07102
TO SHOW CONDITIONS AS OF JANUARY 1, 2010

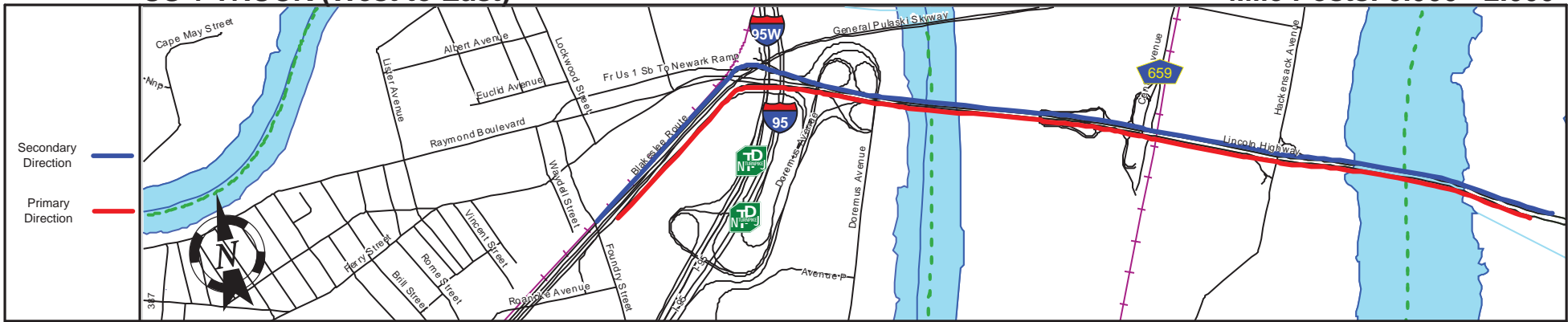
THE AREAS, BOUNDARIES AND DIMENSIONS, SHOWN ON THIS TAX MAP, ARE DERIVED FROM GROUND SURVEYS, AERIAL SURVEYS AND RECORDED PLANS, MAPS, DEEDS, WELLS, AND ARE TO BE USED FOR ASSESSMENT PURPOSES ONLY.

THIS TAX MAP SHEET HAS BEEN DRAWN USING COMPUTER AIDED DRAFTING TECHNIQUES AND COORDINATE GEOMETRY (CGO). THE TAX BLOCK AND LOT INFORMATION SHOWN HEREON IS BASED ON ORIGINAL HAND-DRAWN MAPS ON FILE IN THE CITY OF NEWARK, TAX ASSESSOR'S OFFICE, LAND SURVEYOR'S SECTION.

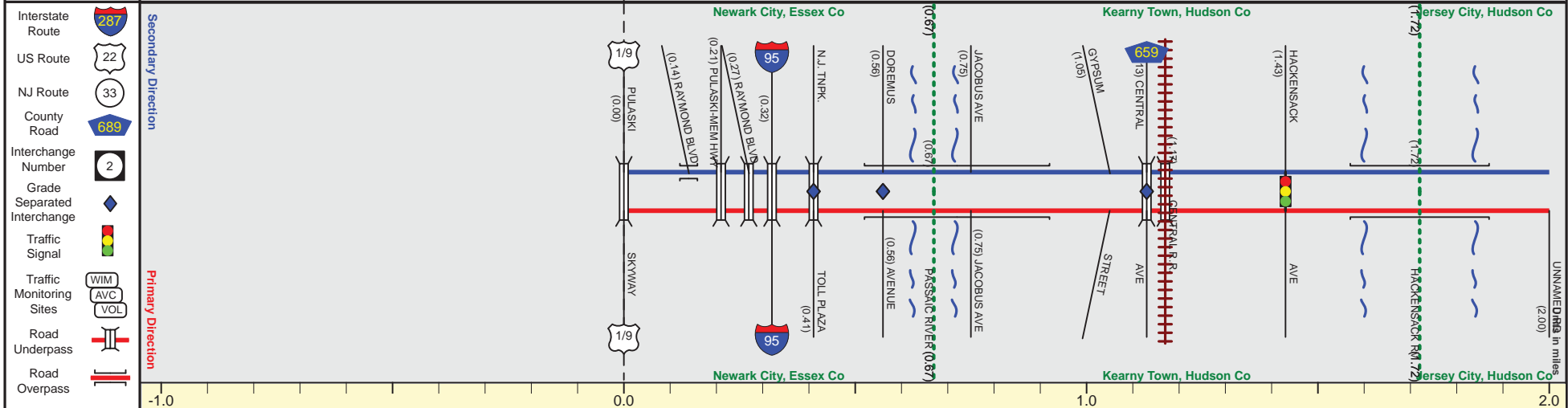
KEY MAP NO. 5

US 1 TRUCK (West to East)

Mile Posts: 0.000 - 2.000



Pavement	30	40
Shoulder	0	
Number of Lanes	2	3
Speed Limit	50	
Street Name	Blakeslee Route	

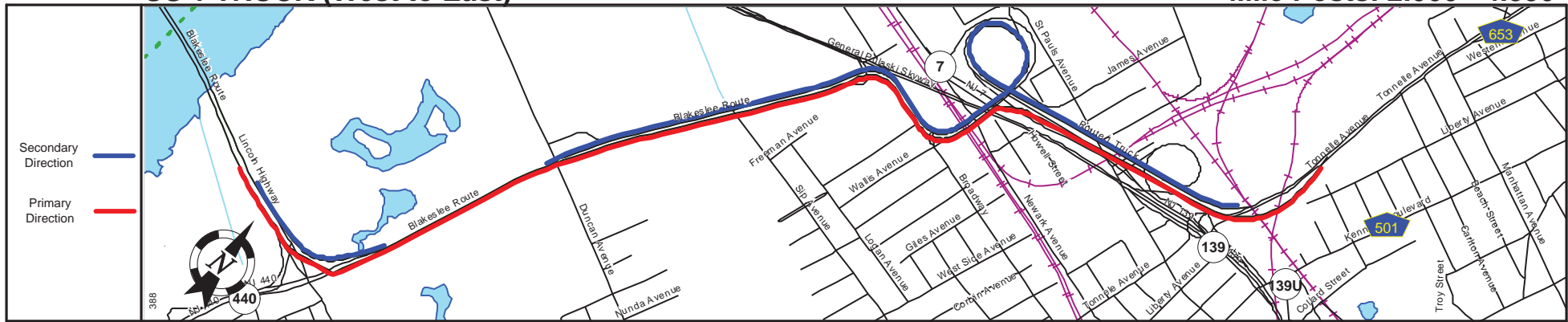


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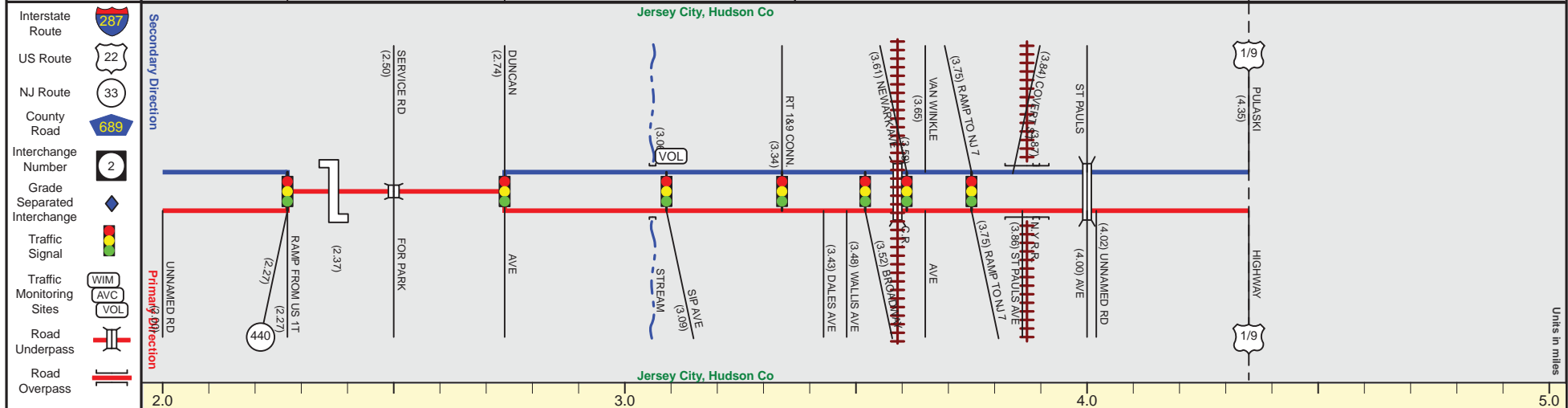
Date last inventoried: July 2014

US 1 TRUCK (West to East)

Mile Posts: 2.000 - 4.350



Pavement	40		26						
Shoulder	0				0				
Number of Lanes	3				2				
Speed Limit	50				40		30		40
Street Name	Blakeslee Route				Blakeslee Route				Route 1 Truck

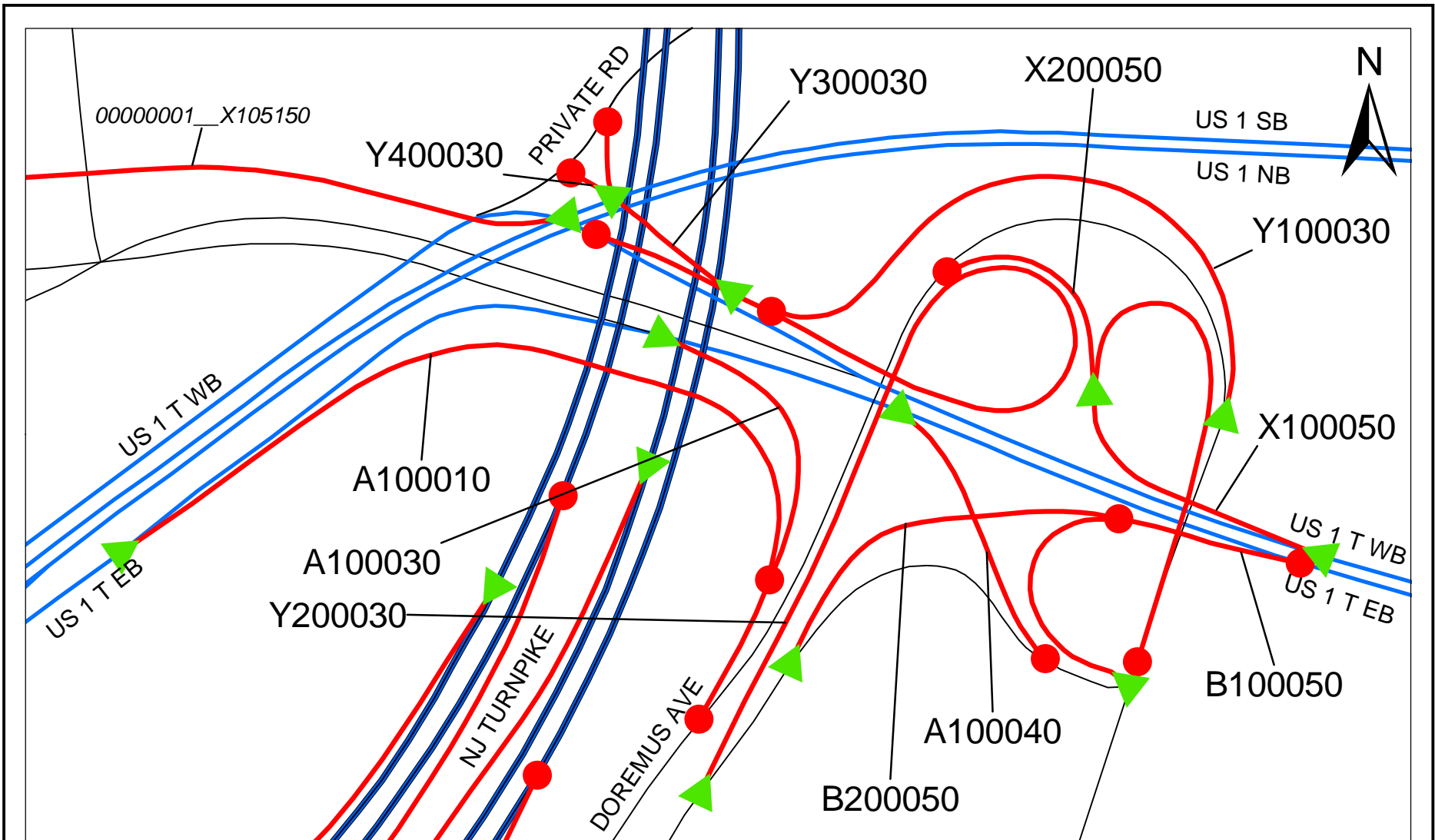





Street Name	Lincoln Highway		Blakeslee Route							
Jurisdiction					N.J.D.O.T.					
Functional Class					Urban Principal Arterial					
Federal Aid - NHS Sy					NHS					
Control Section	0905				0906					
Speed Limit	50				40				30	
Number of Lanes	3	6	4		2				4	
Med. Type	Positive		None					Positive		
Med. Width	6		0		10			6		
Pavement	40		54		26			24		40
Shoulder					0					
Traffic Volume								25,468 (2014)		
Traffic Sta. ID								3-1-015		
Structure No.		0906152	0906151		N/A			0906154	0906158	
Enlarged Views										

SRI = 0000001T_

Date last inventoried: July 2014

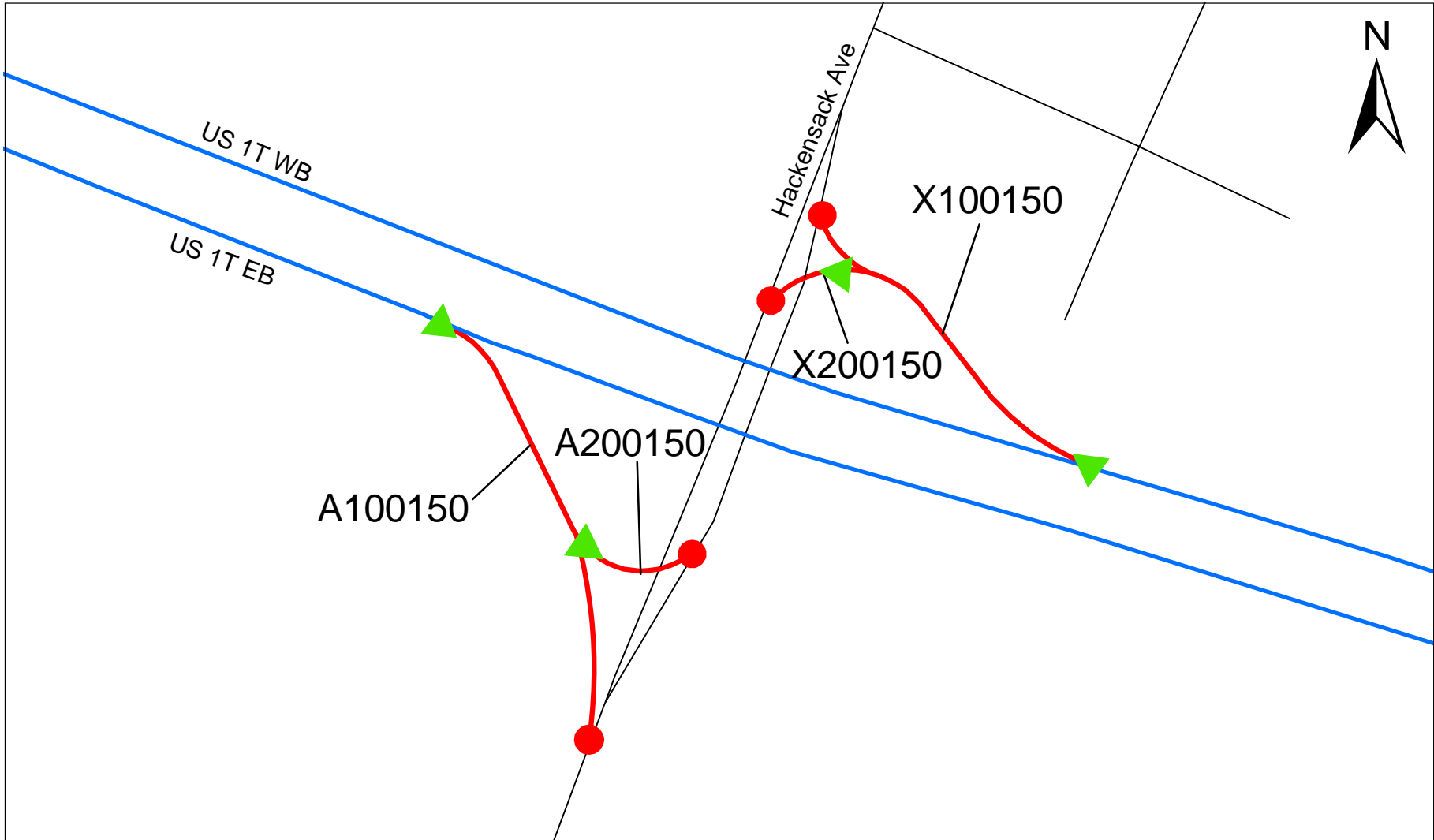
End US 1 Truck MP=4.35






-  Beginning of Ramp
-  End of Ramp
-  Ramp

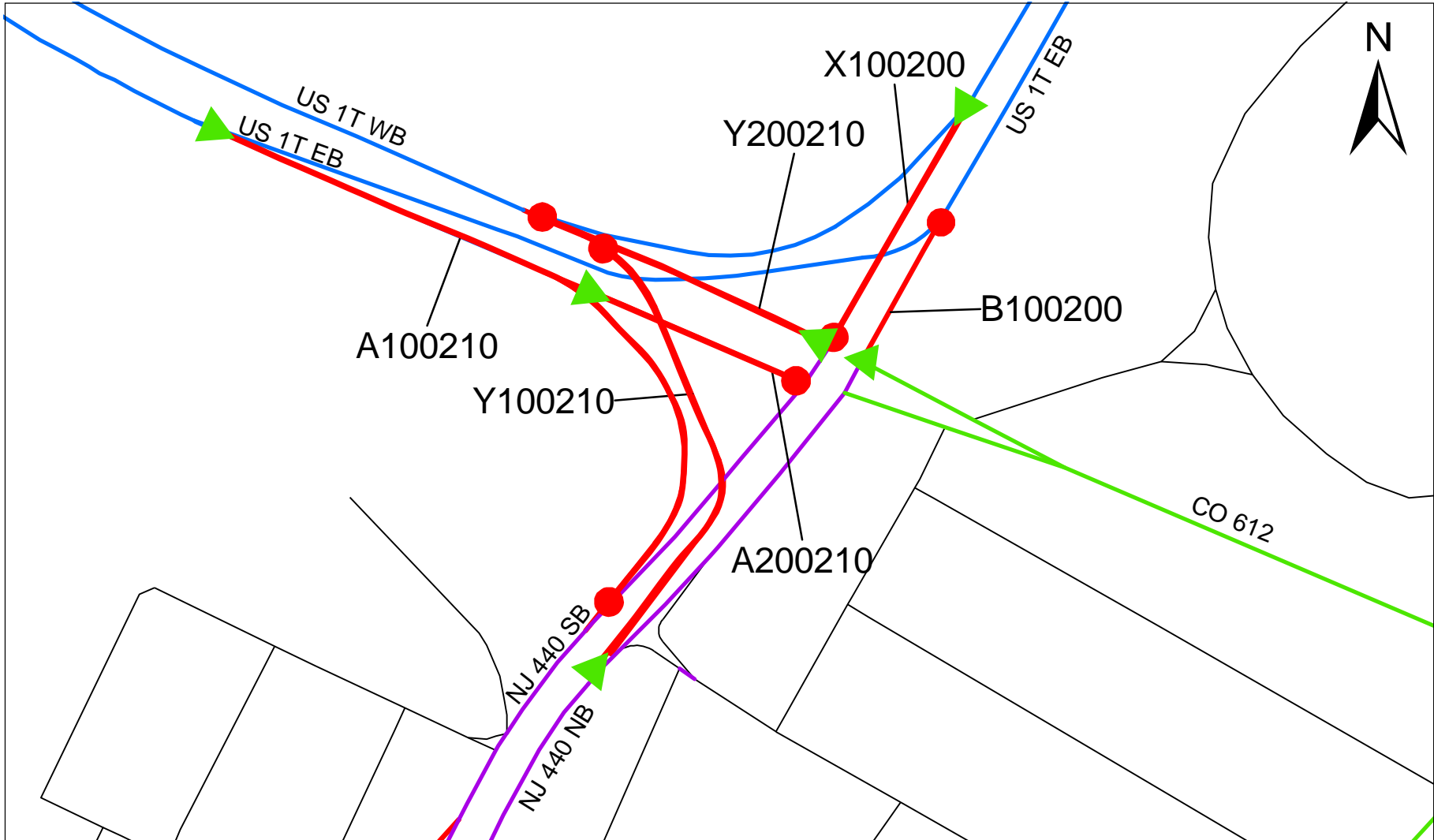
SRI RAMP IDENTIFICATION




US 1 Truck at Doremus Avenue and New Jersey Turnpike



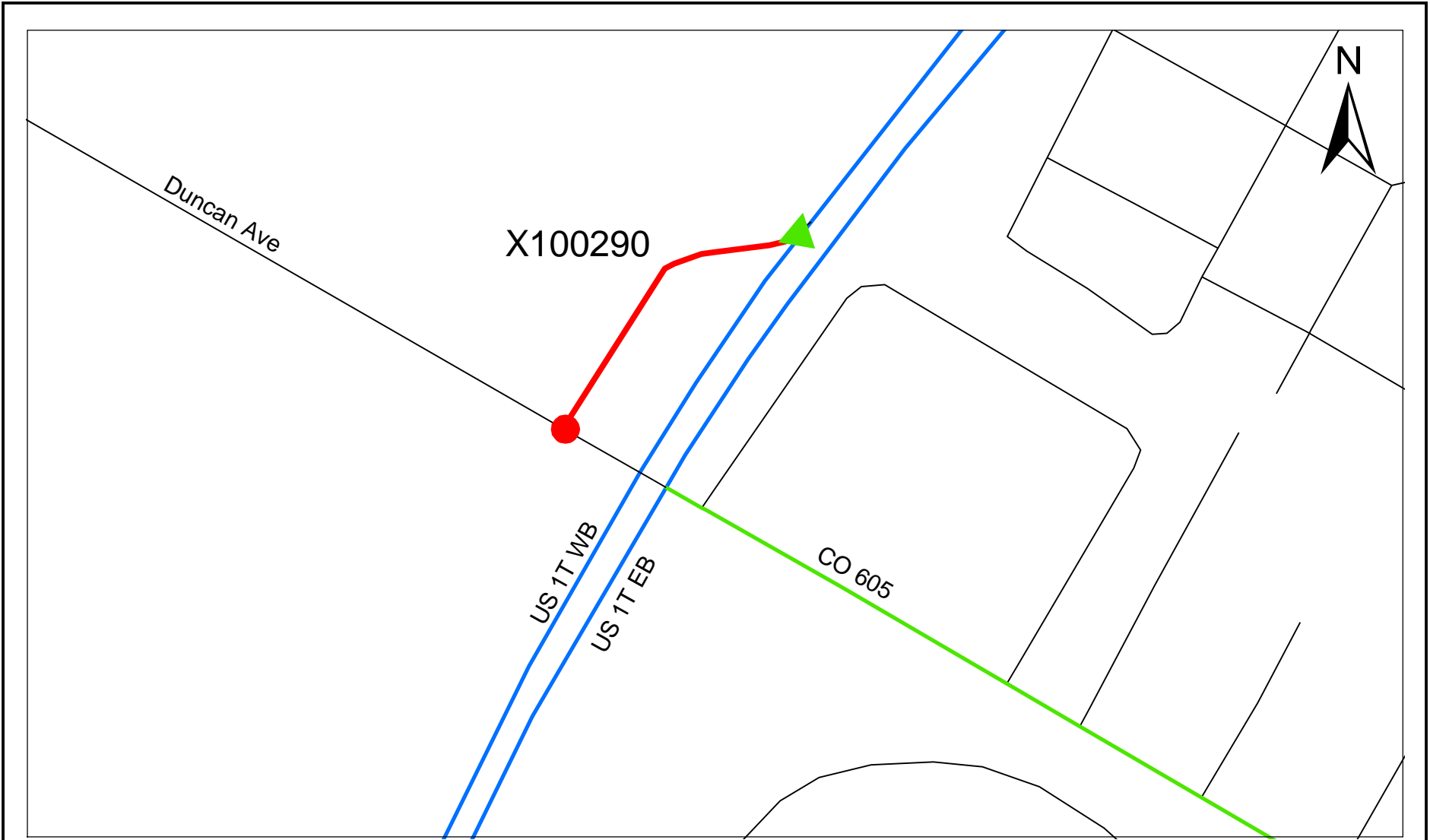
-  Beginning of Ramp
-  End of Ramp
-  Ramp




SRI RAMP IDENTIFICATION
US 1 Truck at Hackensack Ave



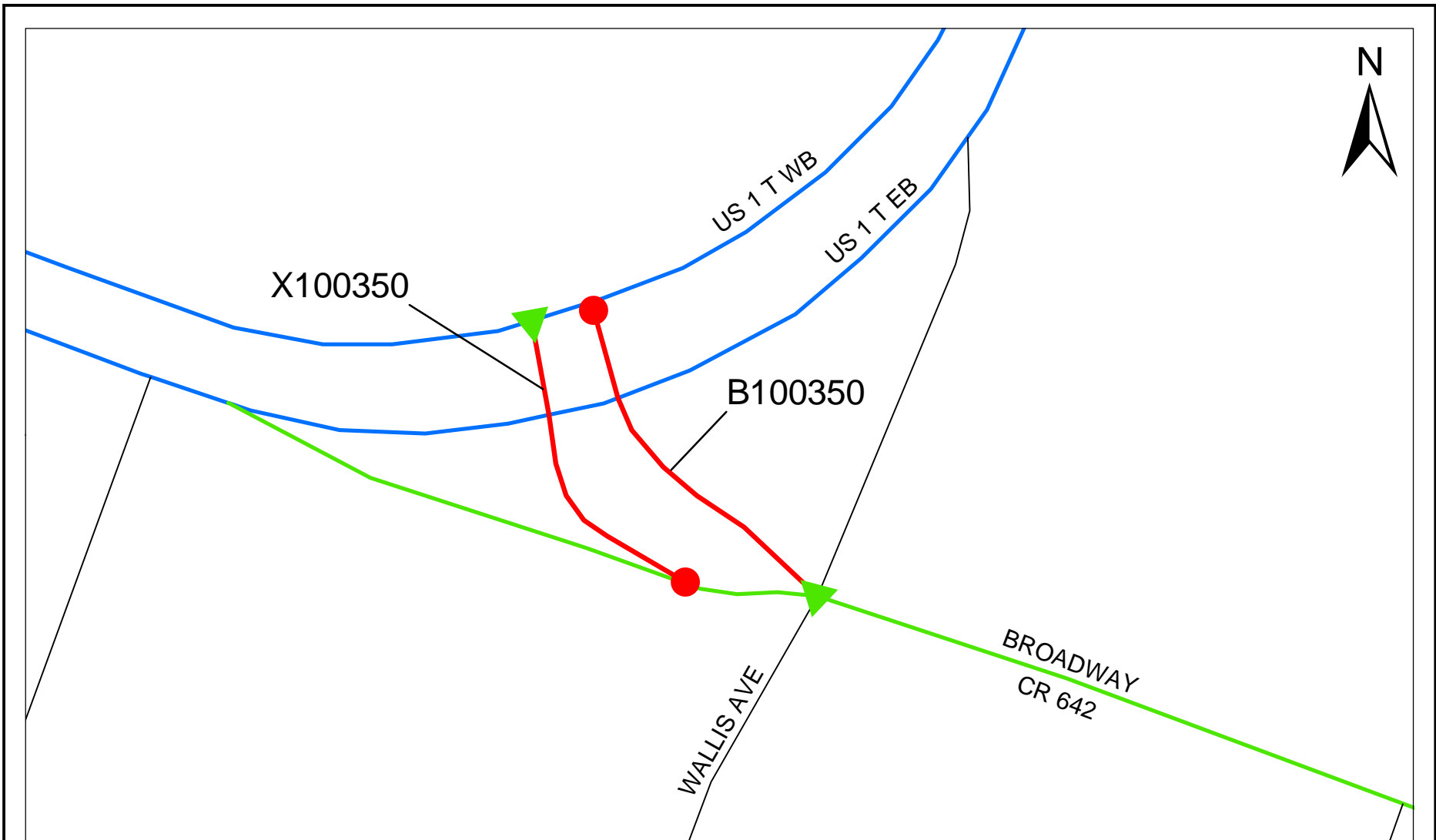
-  Beginning of Ramp
-  End of Ramp
-  Ramp




SRI RAMP IDENTIFICATION
US 1 Truck at NJ 440 & CO 612



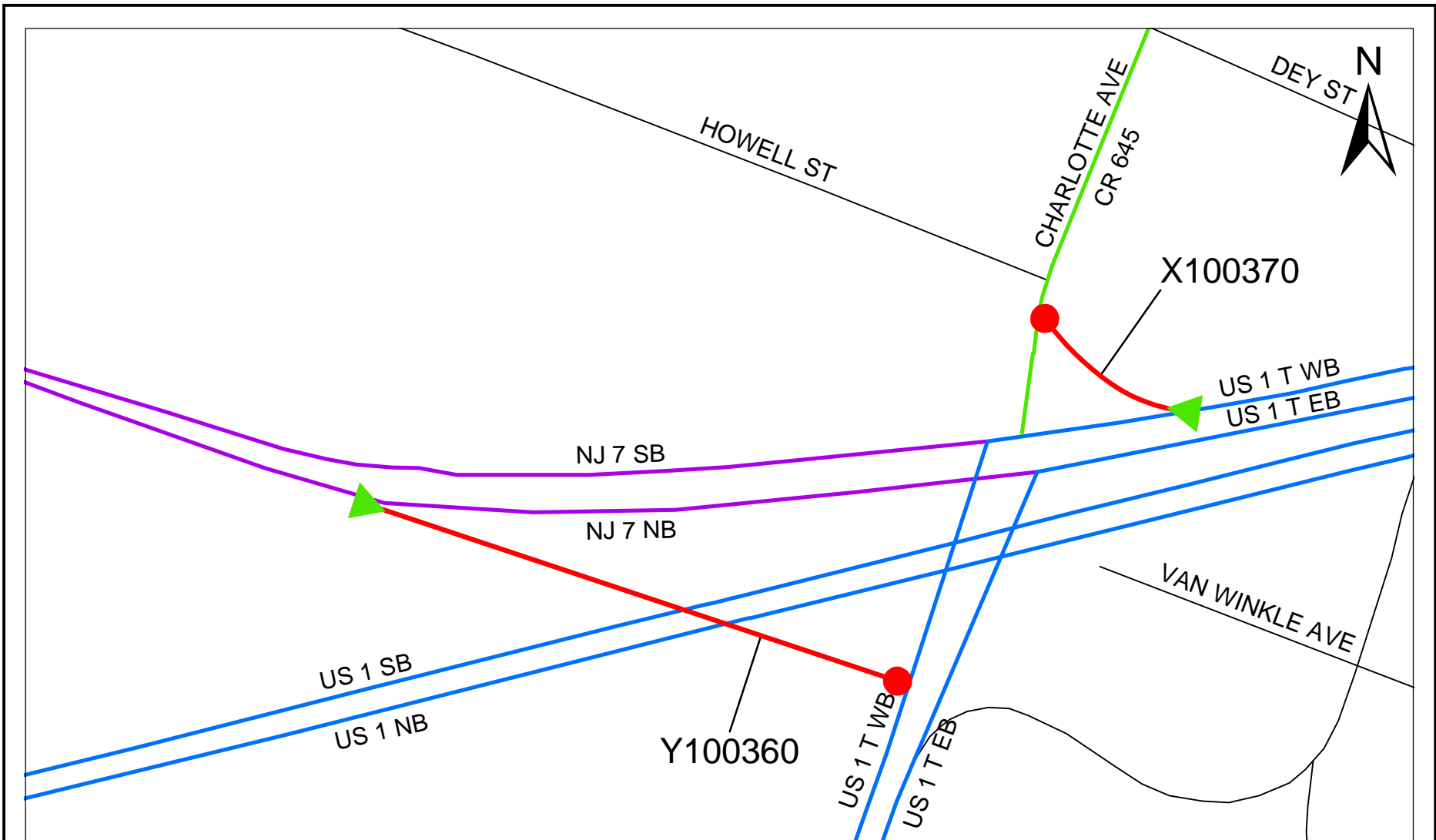
	Beginning of Ramp
	End of Ramp
	Ramp




SRI RAMP IDENTIFICATION
US 1 Truck at Duncan Ave



	Beginning of Ramp
	End of Ramp
	Ramp

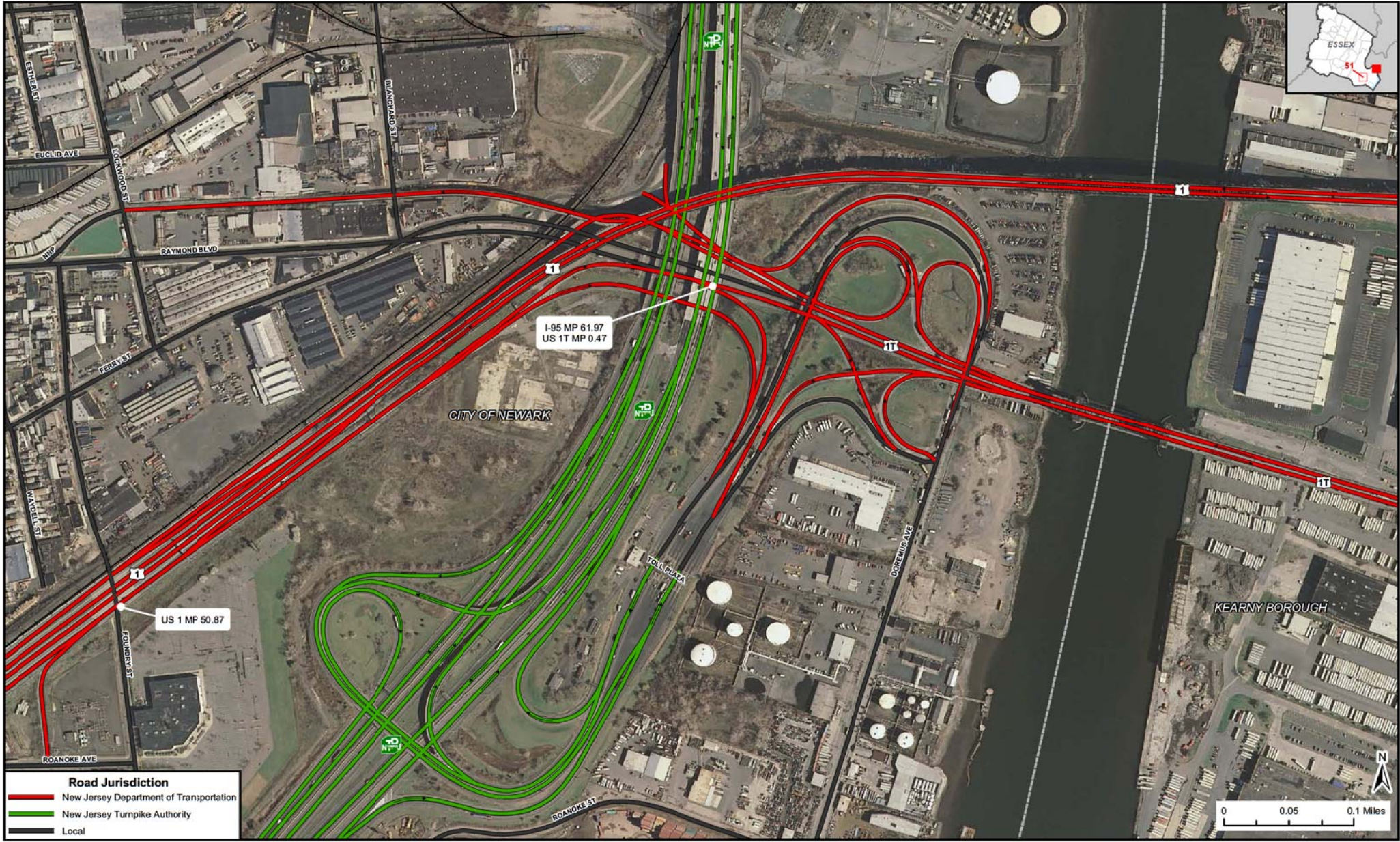
SRI RAMP IDENTIFICATION
US 1 Truck at CR 642 Broadway

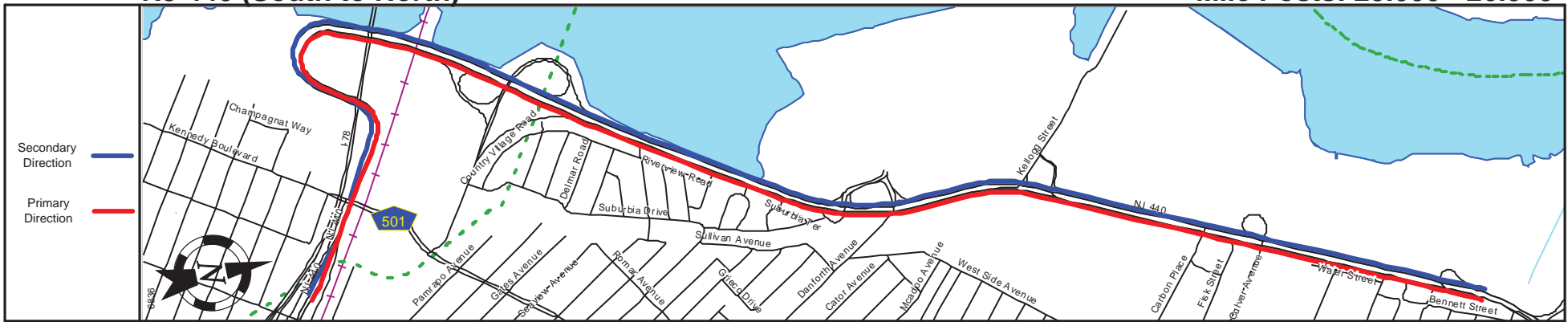


	Beginning of Ramp
	End of Ramp
	Ramp

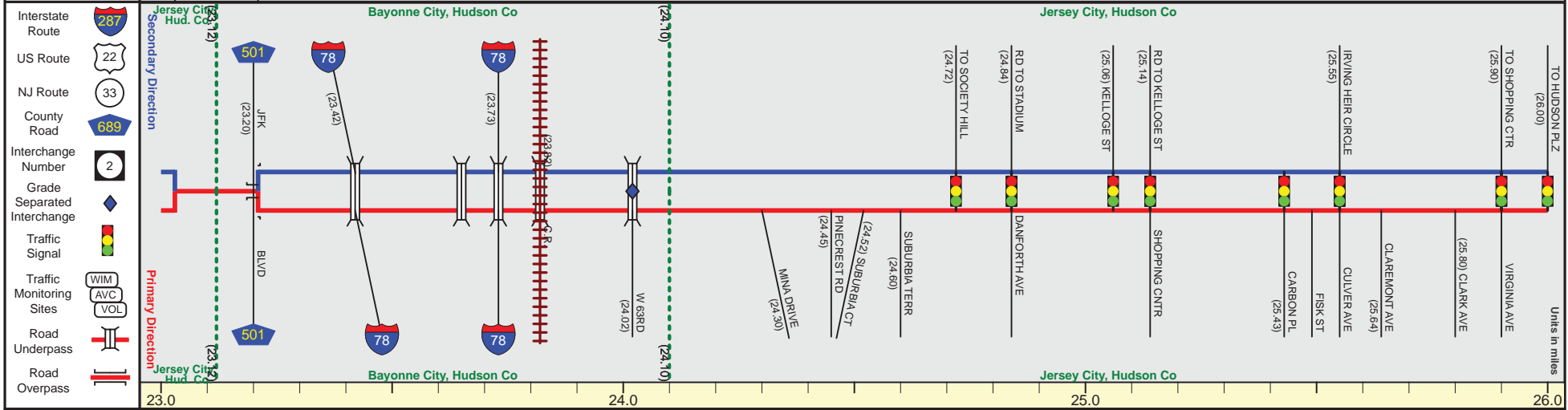
SRI RAMP IDENTIFICATION
US 1 Truck at NJ 7 and CR 645

ENLARGED VIEW 54 (City of Newark, Essex County; Kearny Borough, Hudson County)





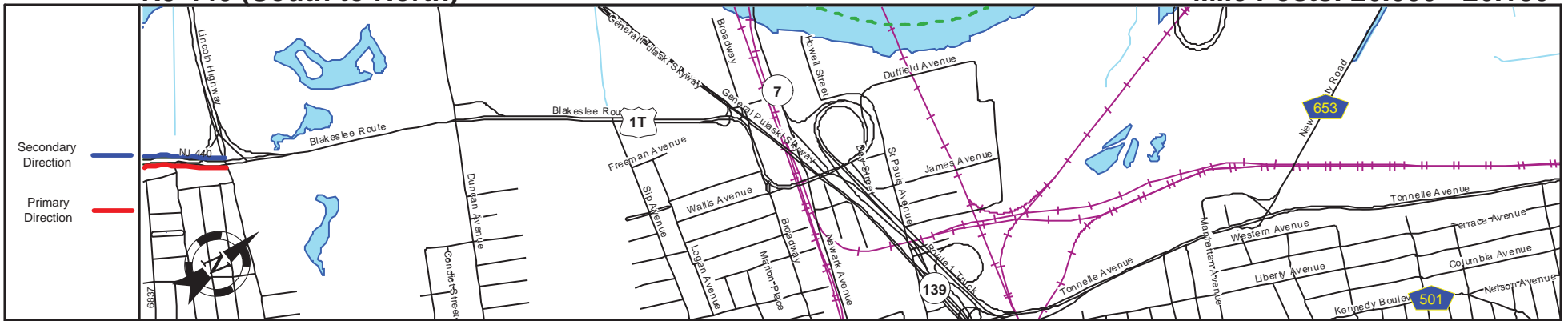
Pavement	24		28				24
Shoulder	10		12			20	12
Number of Lanes	2					2	
Speed Limit	40	40	25			45	
Street Name	NJ 446			NJ 440			



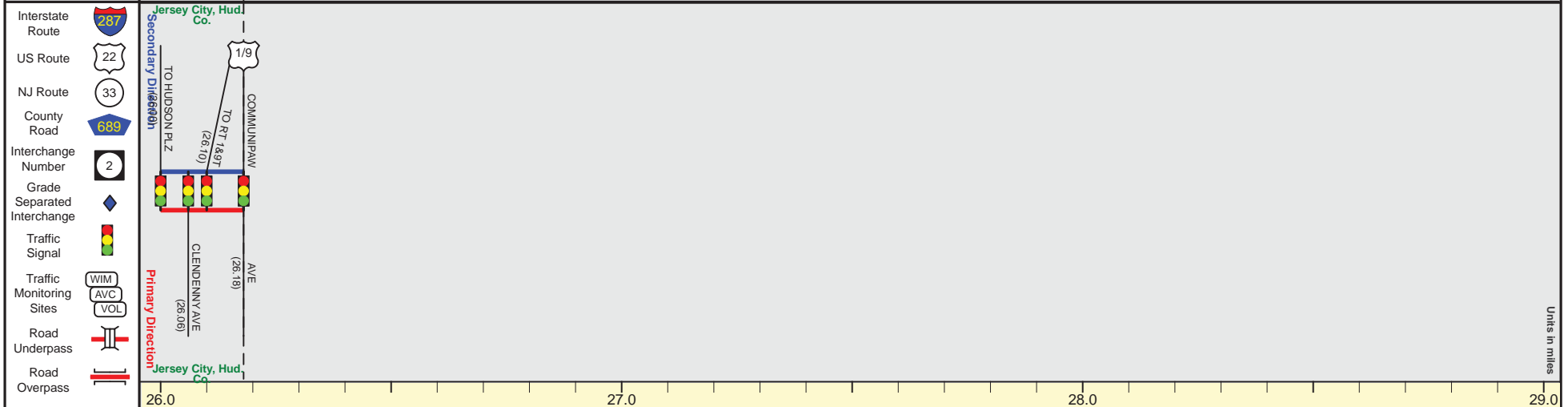
Street Name	NJ 440						
Jurisdiction	N.J.D.O.T.						
Functional Class	Urban Principal Arterial						
Federal Aid - NHS Sy	NHS						
Control Section	0913		0918			0915	
Speed Limit	40			45			
Number of Lanes	2	4				2	
Med. Type	Positive	None	Curbed	Unprotected			Unprotected
Med. Width	VAR	0	VAR			18	VAR
Pavement	24	48	28				24
Shoulder	10						12
Traffic Volume						41,174 (2014)	56,888 (2010)
Traffic Sta. ID						100906	3-4-312
Structure No.	0913155	TPKN075	0913156	0915150	0915151		
Enlarged Views							

NJ 440 (South to North)

Mile Posts: 26.000 - 26.180



Pavement	24
Shoulder	12
Number of Lanes	2
Speed Limit	45
Street Name	NJ 440



Street Name	NJ 440
Jurisdiction	N.J.D.O.T.
Functional Class	Urban Principal Arterial
Federal Aid - NHS Sy	NHS
Control Section	0915
Speed Limit	45
Number of Lanes	2
Med. Type	Unprotected
Med. Width	VAR
Pavement	24
Shoulder	12
Traffic Volume	
Traffic Sta. ID	
Structure No.	
Enlarged Views	

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Date last inventoried: January 2014

Units in miles

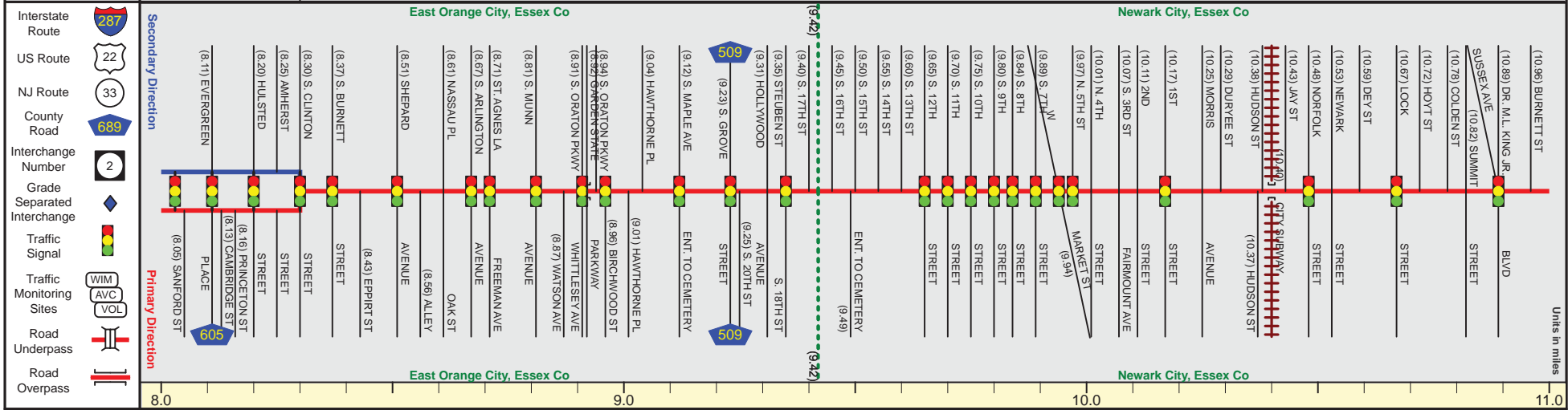
Page Created: June, 2015

ROUTE 508 (West to East)

Mile Posts: 8.000 - 11.000



Pavement	24
Shoulder	0
Number of Lanes	2
Speed Limit	35
Street Name	Central Avenue



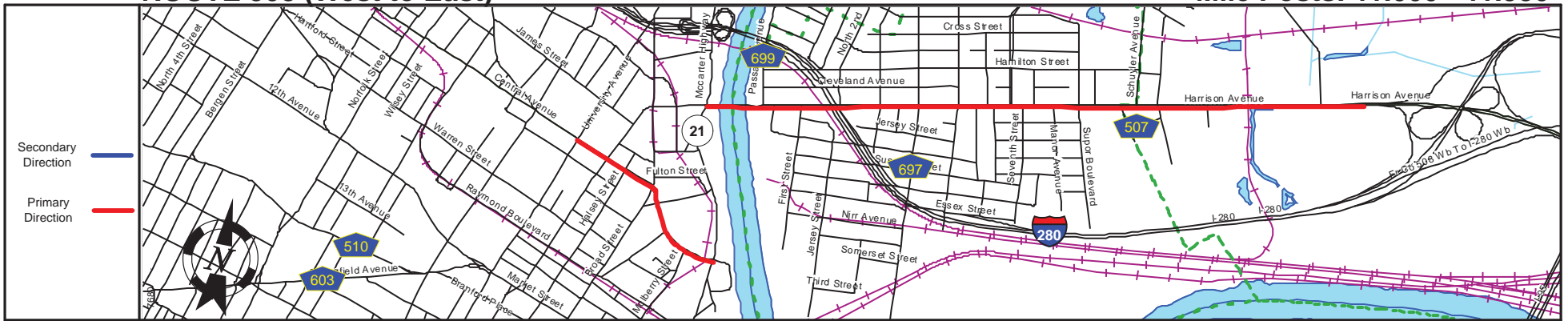
Street Name	Central Avenue	
Jurisdiction	County	Municipal
Functional Class	Urban Principal Arterial	
Federal Aid - NHS Sy	NHS	
Control Section		
Speed Limit	35	30
Number of Lanes	2	4
Med. Type	Curbed	None
Med. Width	4	0
Pavement	24	40
Shoulder		0
Traffic Volume	15,835,(2012)	12,793,(2012)
Traffic Sta. ID	090710	090711
Structure No.	N/A	N/A
Enlarged Views		

SRI = 0000508

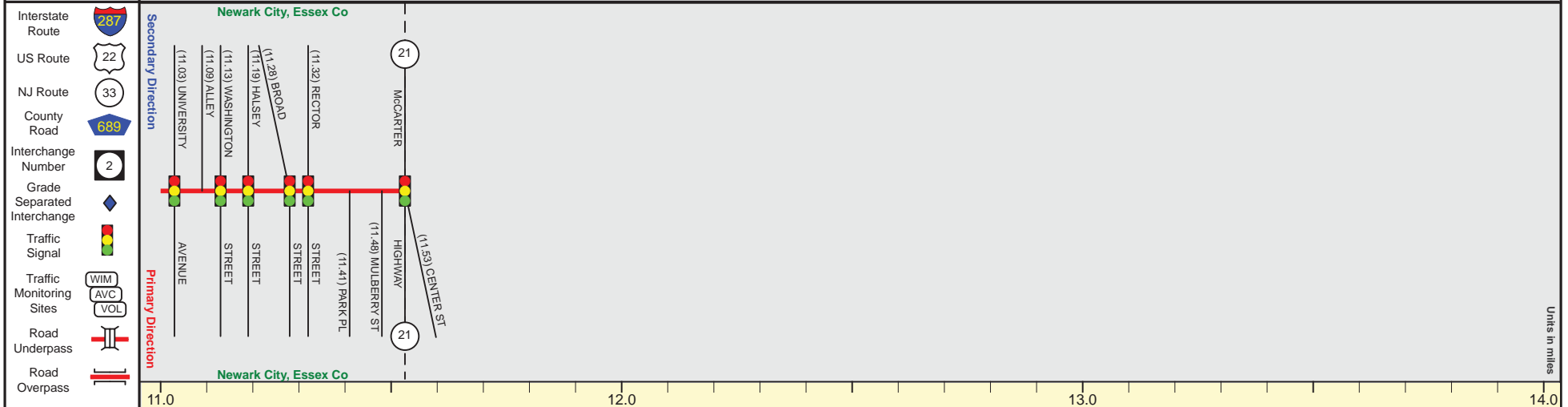
Date last inventoried: July 2012

ROUTE 508 (West to East)

Mile Posts: 11.000 - 11.530



Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	



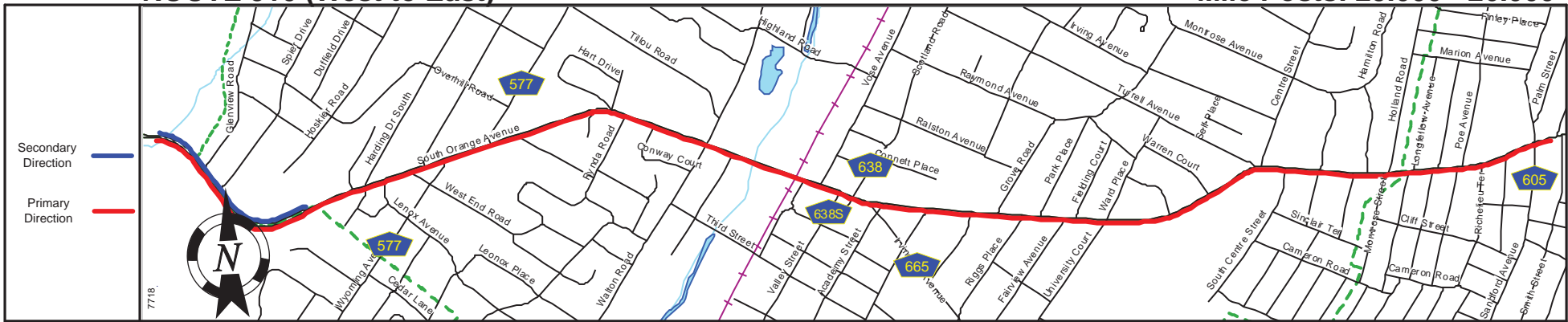
Street Name	Central Avenue	Park Place	Center Street	
Jurisdiction	Municipal			
Functional Class	Urban Principal Arterial			
Federal Aid - NHS Sy	NHS			MP 11.53-12.20 Spc NJ 21 MP 2.56-2.98
Control Section				
Speed Limit	30			
Number of Lanes	4			
Med. Type	None			
Med. Width	0			
Pavement	40	+	60	
Shoulder	0			
Traffic Volume				
Traffic Sta. ID				
Structure No.				
Enlarged Views				

SRI = 0000508

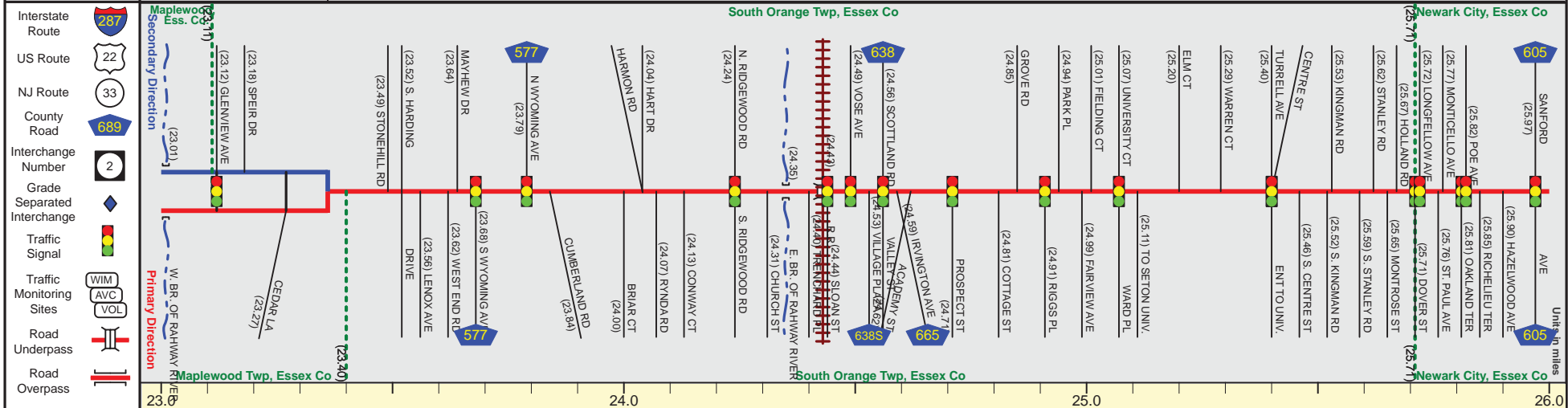
Date last inventoried: July 2012

ROUTE 510 (West to East)

Mile Posts: 23.000 - 26.000



Pavement	12
Shoulder	12
Number of Lanes	1
Speed Limit	40
Street Name	South Orange Avenue



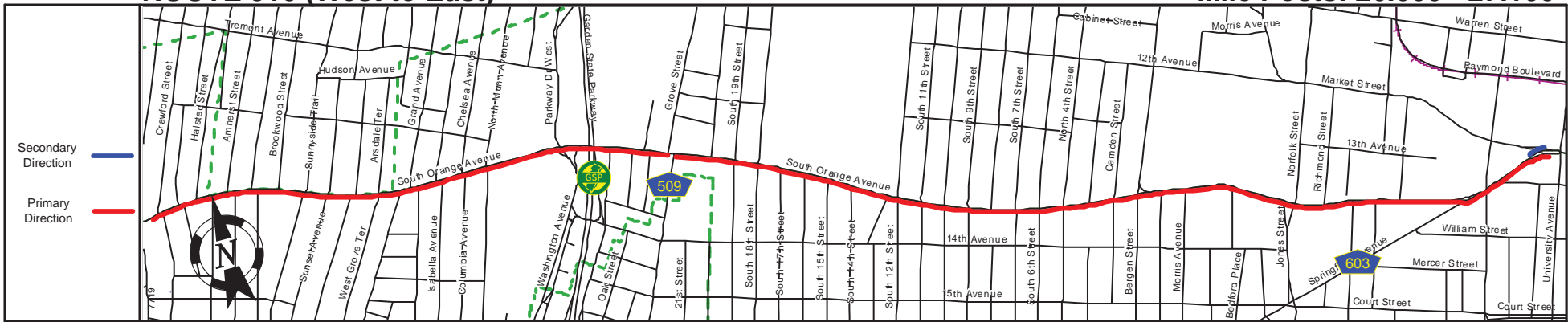
Street Name	South Orange Avenue	
Jurisdiction	County	
Functional Class	Urban Principal Arterial	
Federal Aid - NHS Sy	NHS	
Control Section		
Speed Limit	40	35
Number of Lanes	2	4
Med. Type	Positive Curbed	None
Med. Width	3 VAR	0
Pavement	22	50
Shoulder	0	
Traffic Volume	14,795 (2012)	
Traffic Sta. ID	090721	
Structure No.	N/A	
Enlarged Views		

SRI = 0000510

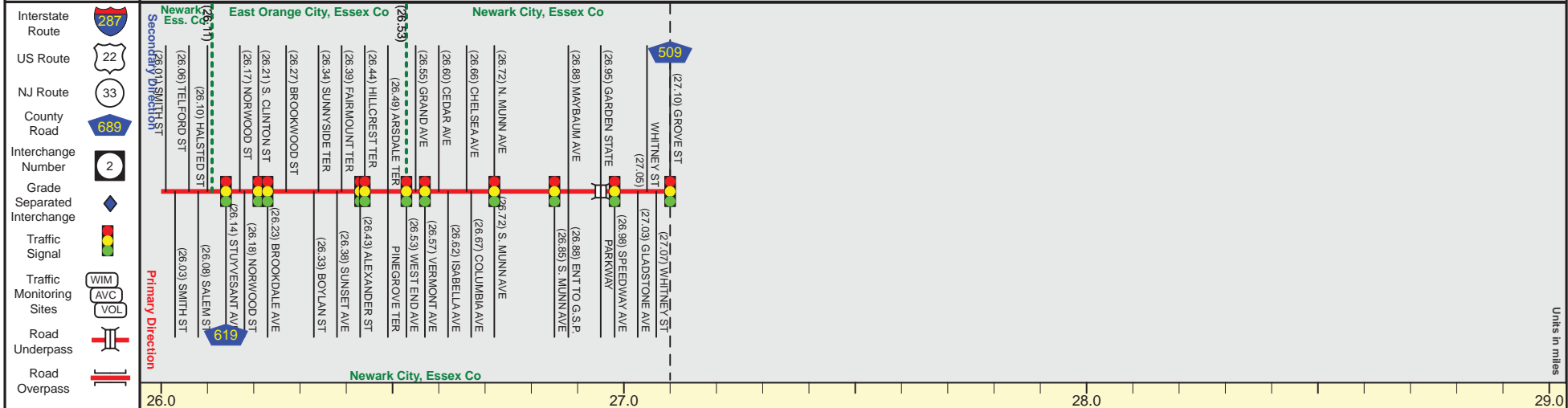
Date last inventoried: August 2007

ROUTE 510 (West to East)

Mile Posts: 26.000 - 27.100



Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	



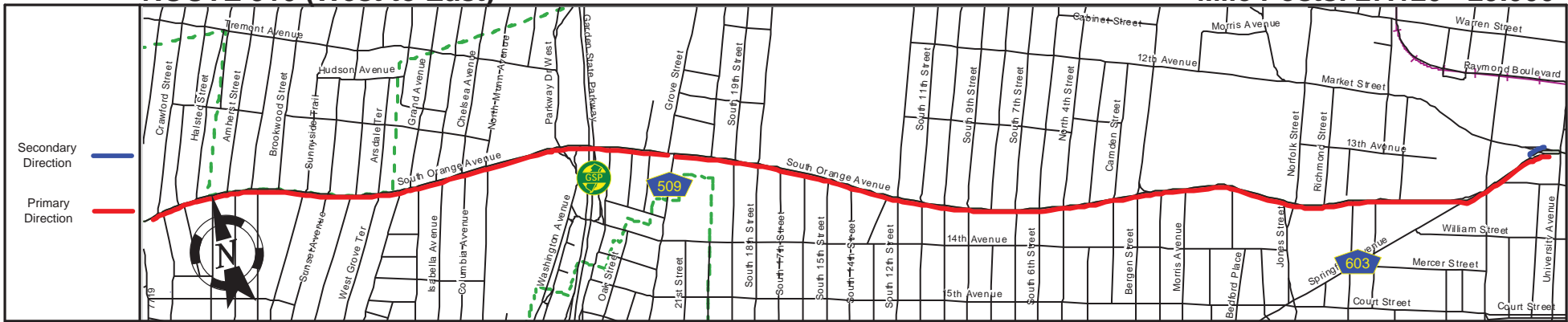
Street Name	South Orange Avenue
Jurisdiction	County
Functional Class	Urban Principal Arterial
Federal Aid - NHS Sy	NHS
Control Section	
Speed Limit	35 + 30
Number of Lanes	4
Med. Type	None
Med. Width	0
Pavement	50
Shoulder	0
Traffic Volume	
Traffic Sta. ID	
Structure No.	361461T
Enlarged Views	

SRI = 0000510

Date last inventoried: August 2007

ROUTE 510 (West to East)

Mile Posts: 27.120 - 29.000



Pavement	-36
Shoulder	0
Number of Lanes	2
Speed Limit	-35
Street Name	Street

Secondary Direction

- Interstate Route
- US Route
- NJ Route
- County Road
- Interchange Number
- Grade Separated Interchange
- Traffic Signal
- Traffic Monitoring Sites
- Road Underpass
- Road Overpass

Primary Direction

Newark City, Essex Co

Newark City, Essex Co

Street Name	South Orange Avenue	Springfield Avenue
Jurisdiction	County	County
Functional Class	Urban Principal Arterial	Urban Principal Arterial
Federal Aid - NHS Sy	NHS	NHS
Control Section		
Speed Limit	30	30
Number of Lanes	2	2
Med. Type	None	Curbed
Med. Width	0	VAR
Pavement	50	72
Shoulder		0
Traffic Volume	48	40
Traffic Sta. ID		
Structure No.		
Enlarged Views		

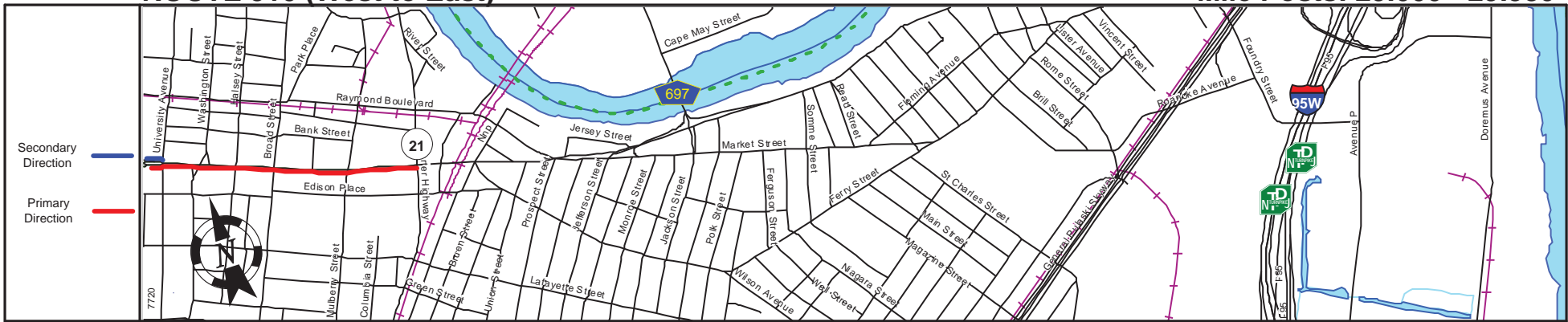
MP 27.10-27.12 See Rte 509 MP 11.55-11.56
End Conc. With Rt 509 MP=27.12

SRI = 0000510

Date last inventoried: August 2007

ROUTE 510 (West to East)

Mile Posts: 29.000 - 29.580



Pavement	36
Shoulder	0
Number of Lanes	2
Speed Limit	35
Street Name	Market Street



Street Name	Market Street	
Jurisdiction	County	
Functional Class	Urban Principal Arterial	
Federal Aid - NHS Sy	NHS	
Control Section		End Rt. 510 MP=29.58
Speed Limit	30	
Number of Lanes	2	4
Med. Type	Curbed	None
Med. Width	VAR	0
Pavement	36	80
Shoulder		0
Traffic Volume	17,877, (2013)	14,695, (2012)
Traffic Sta. ID	3-4-610	3-4-609
Structure No.		N/A
Enlarged Views		

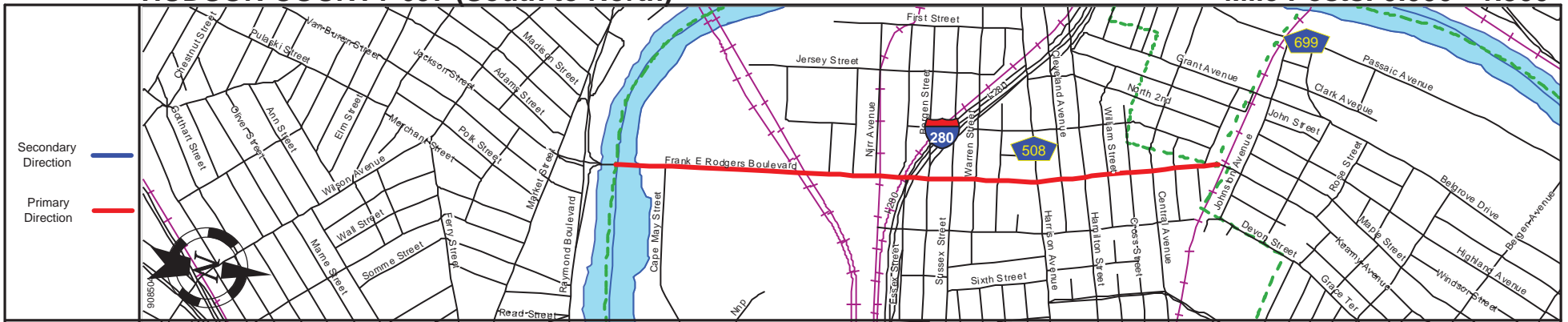
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Date last inventoried: August 2007

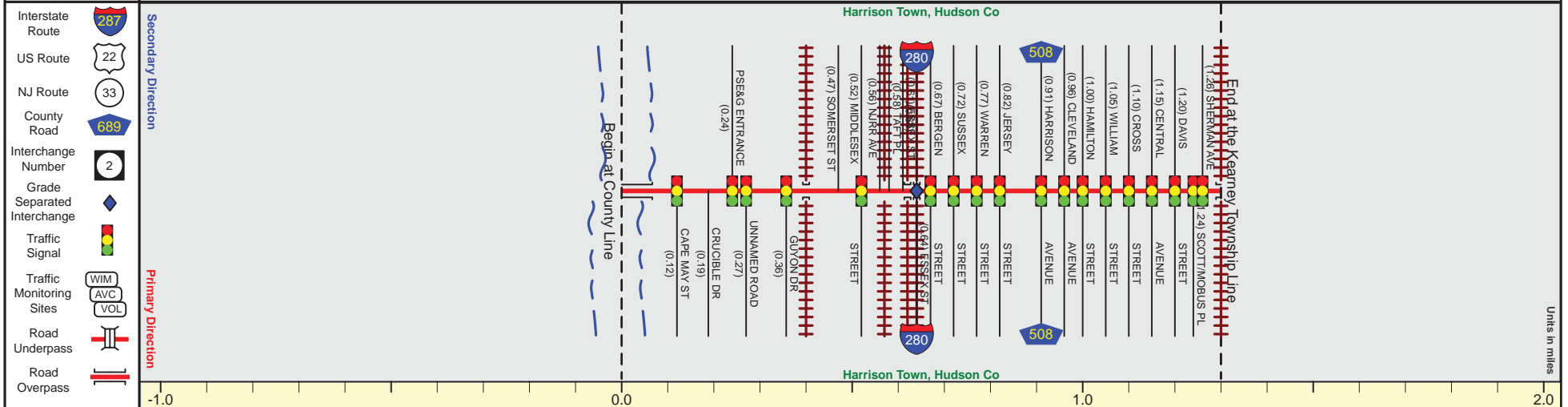
Units in miles

HUDSON COUNTY 697 (South to North)

Mile Posts: 0.000 - 1.300



Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	



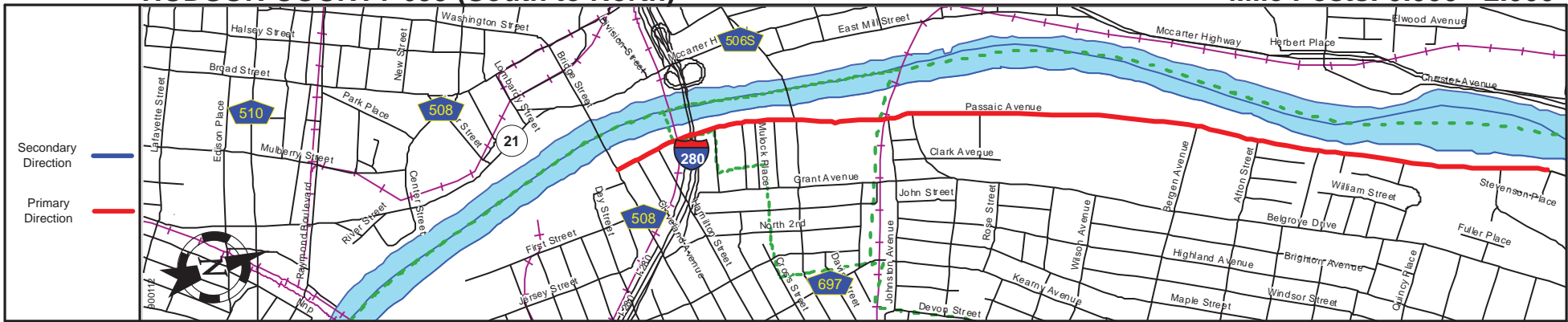
Street Name	Frank E Rodgers Boulevard	Frank E Rodgers Boulevard South	Frank E Rodgers Boulevard North
Jurisdiction	County		
Functional Class	Urban Major Collector		
Federal Aid - NHS Sy	STP	IM - Transit Term.	STP
Control Section	Begin Hudson County 697 MP=0		
Speed Limit		25	
Number of Lanes	2	4	2
Med. Type	None		
Med. Width	0		
Pavement	32	48	32
Shoulder	0		
Traffic Volume	24,773 (2012)	15,925 (2014)	
Traffic Sta. ID	3N54720	110953	
Structure No.			
Enlarged Views			

SRI = 0900697

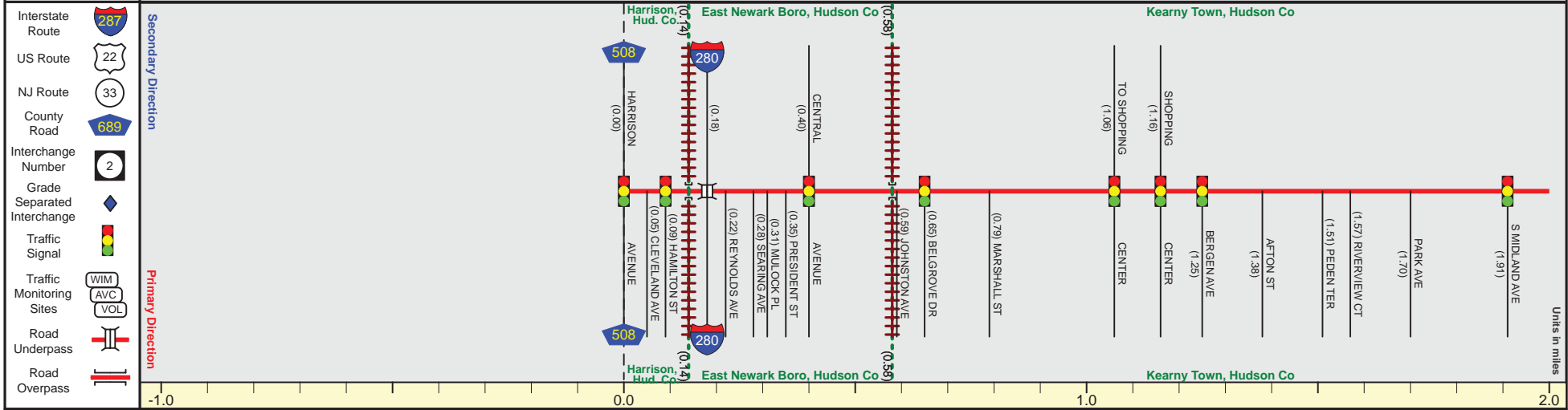
Date last inventoried: September 2011

HUDSON COUNTY 699 (South to North)

Mile Posts: 0.000 - 2.000



Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	



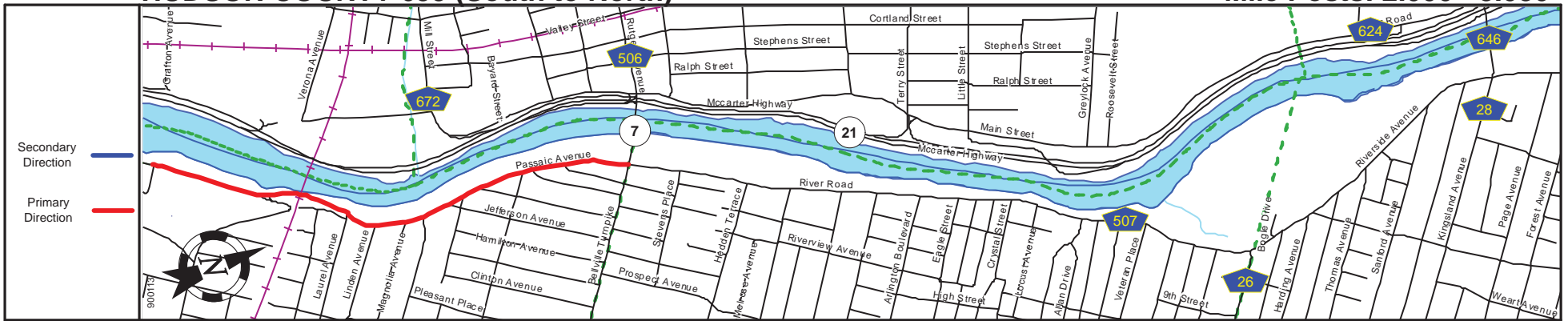
Street Name	Passaic Avenue
Jurisdiction	County
Functional Class	Urban Minor Arterial
Federal Aid - NHS Sy	STP
Control Section	
Speed Limit	NOT POSTED
Number of Lanes	2
Med. Type	None
Med. Width	0
Pavement	30
Shoulder	28
Traffic Volume	14,515 (2011)
Traffic Sta. ID	110955
Structure No.	
Enlarged Views	

SRI = 09000699

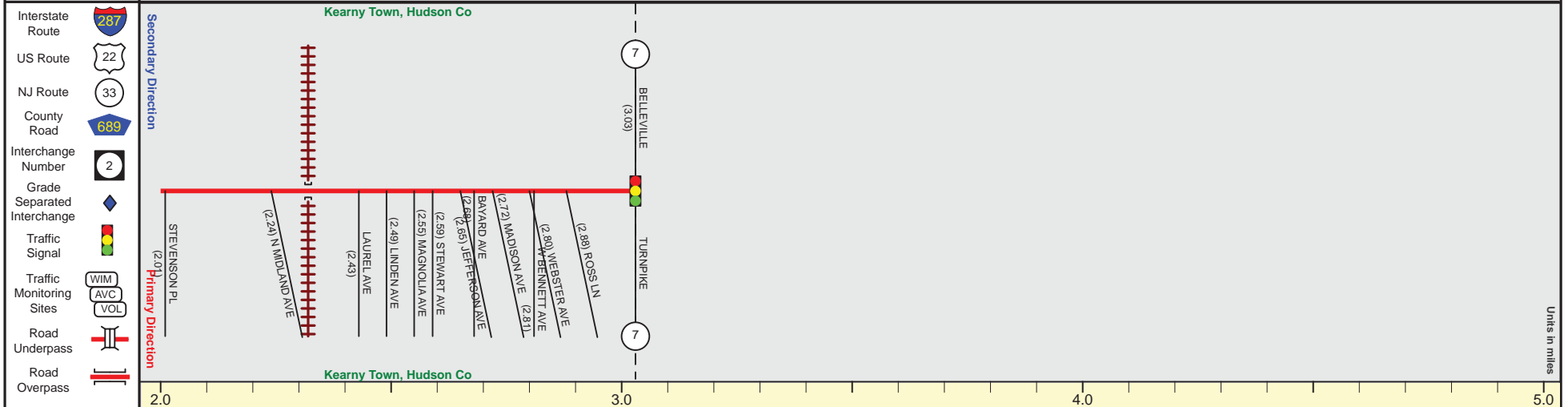
Date last inventoried: September 2011

HUDSON COUNTY 699 (South to North)

Mile Posts: 2.000 - 3.030



Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	



Street Name	Passaic Avenue
Jurisdiction	County
Functional Class	Urban Minor Arterial
Federal Aid - NHS Sy	STP
Control Section	
Speed Limit	25
Number of Lanes	2
Med. Type	None
Med. Width	0
Pavement	28
Shoulder	0
Traffic Volume	
Traffic Sta. ID	
Structure No.	
Enlarged Views	

End Hudson County 699 M.P.=3.03

SRI = 0900699

Date last inventoried: September 2011

DRAFT

**ECG ESSEX-HUDSON
GREENWAY CONNECTOR
ROUTING PLAN**

Working Draft March 2017

**Aerial Map
Legend**

 Study Area Boundary

