



FIRST STREET NEIGHBORHOOD PLAN

Borough of Keyport, Monmouth County, New Jersey

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**FIRST STREET
NEIGHBORHOOD PLAN**



INTRODUCTION

Soon after Superstorm Sandy passed through New Jersey and caused a devastating and record amount of damage, the Borough of Keyport immediately began the recovery process. Once the recovery process was thoroughly underway with rebuilding and engineering efforts, Keyport began its first major planning action which was the preparation and adoption of the Strategic Recovery Planning Report. This significant document recorded the damage to the Borough and set forth a planning path through recommendations to improve the Borough's resiliency. Among its recommendations was to address the many vulnerabilities along the Raritan Bay that were exposed during Superstorm Sandy. A recommendation was given to create a First Street Neighborhood for which a Neighborhood Plan could be prepared to address the major stormwater, flooding, and surge issues experienced during Superstorm Sandy and other major storms. The Borough is acting upon this recommendation through this report and its findings herein. The Borough was able to create this First Street Basin Neighborhood Plan through the New Jersey Department of Community Affairs Post-Sandy Planning Assistance Grant (PSPAG) Program. This Neighborhood planning effort is being completed in conjunction with other PSPAG projects such as an Updated Master Plan, Coastal Vulnerability Assessment, Hazard Mitigation Plan, Capital Improvement Plan, and other Neighborhood Plans. Additionally, this Plan builds upon past planning efforts of the Borough such as the SRPR, Master Plan Reexamination, Keyport's Getting to Resiliency Report, and ongoing hazard mitigation projects in the Borough.

The purpose of this Neighborhood Plan is to examine current conditions of the First Street Basin Neighborhood with particular emphasis on current vulnerabilities to flooding, sea level rise, and storm surge. This Plan's analysis of the First Street Basin Neighborhood will include current land uses, zoning, past flood events or issues, circulation of vehicles and pedestrians, and a vulnerability assessment. The analysis also includes neighborhood resident and business survey participation. All analyses ultimately lead to key recommendations that can enhance resiliency, flood hazard mitigation, and overall economic development for the First Street Basin Neighborhood.

Neighborhood Boundary & Description

The First Street Basin Neighborhood was first created and delineated through the Borough's SRPR. The SRPR recommended, "Develop specific strategic plans for neighborhoods most severely impacted by Sandy, including the portion of Beers Street basin, Division Street basin, First Street waterfront and Walnut-Oak Street basin." Through the planning process to prepare and adopt the Borough's SRPR, the boundaries of the First Street Neighborhood were agreed upon. The map on the following page delineates the First Street Neighborhood as decided by the Borough SRPR.



The 49.8 acre First Street Neighborhood upon which this Plan focuses is situated along the majority of Keyport’s Bayshore frontage, extending all the way from Cedar Street including Terry Park and adjacent to Cedar Street Park to Broadway near Hans Pederson’s Marina. The First Street Neighborhood therefore encompasses Keyport’s Downtown Commercial district along the north side of West Front Street facing the Bay which is a defining element of this Bayshore community’s character. Additionally, The First Street Neighborhood encompasses other defining attributes of the Borough such as the Waterfront Promenade, long standing marinas, the Borough Municipal Boat Launch, the Fishing Pier, and several Borough Parks.

The boundaries of the Neighborhood are situated between the Raritan Bay, West Front Street, and 1st Street. The western boundary begins at Broadway and it continues to the east along West Front Street to become the southern boundary all the way to Church Street. At this juncture the Boundary makes a small S turn that transitions the southern boundary into 1st Street whereby it continues to Cedar Street which is the official eastern boundary. All properties between the Bay and these three boundary lines are included in the First Street Neighborhood. Broadway, West Front, Church, and 1st streets form the First Street Neighborhood, which is shaped in an elongated polygon like pattern. The First Street Neighborhood is primarily residential outside of the Downtown Commercial and Marine

districts and is characterized by 3-bay, 2-story brick and frame buildings of a domestic scale, built on lots of various sizes and setbacks.¹ Within the Neighborhood is the 1st Street Historic District which contains many elegant 18th and 19th century homes with defining architectural features from those periods. This is one of two early residential areas in Keyport that contains a variety of 19th century architectural styles, which include Greek revival, Italianate, Second Empire, Gothic Revival, as well as a number of vernacular buildings. This district has for the most part, stayed the same through the years besides some minor changes, which consisted of the removal of some clocks, railroads, and streetcars that were formerly a major part of this particular section of Keyport.

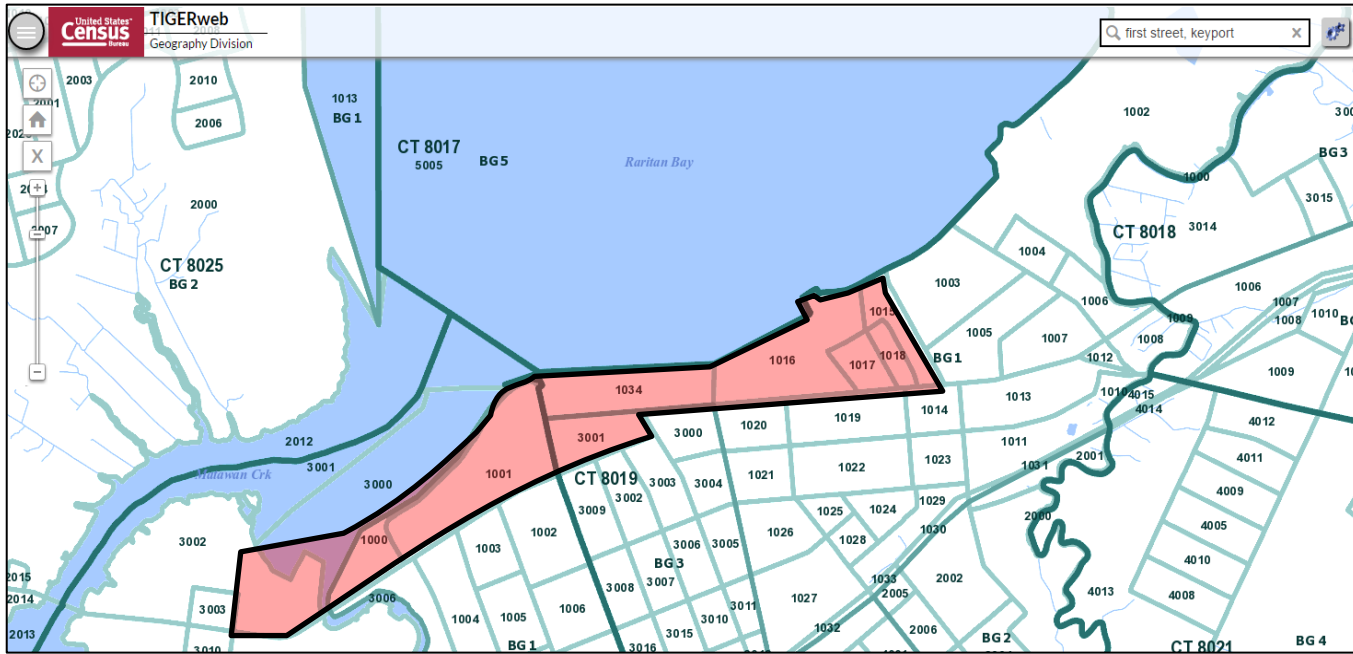
The Downtown Commercial district section of the Neighborhood has several high style buildings that consist of various retail and commercial uses as well as individual residential dwellings and apartment units located above many of the existing mixed use buildings. Some of these residential homes are also historic and have been maintained over time. A number of buildings have undergone some alterations over the years, but for the most part they have retained their essential characteristics. With the exception of the recent fire that damaged several structures in the Downtown, commercial and retail structures along West Front Street have remained the same which gives that “Main Street” ambience and character.

Demographics

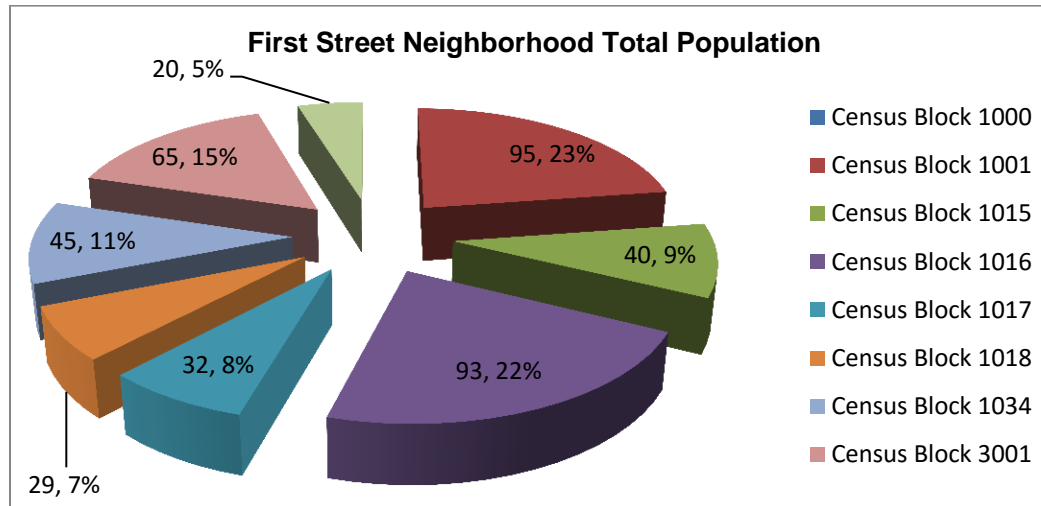
The First Street Neighborhood is located within Census Tract 8019 and 8020 which are the two Census Tracts that make up the Borough of Keyport according to the U.S. Census Bureau. Census Tract 8019 comprises the eastern portion of the Borough and Tract 8020 comprises the western portion of the Borough and therefore the Neighborhood is within both. Within Census Tract 8019, the First Street Neighborhood is comprised of Census Blocks 1015, 1016, 1017, 1018, 1034 within Block Group 1 and Census Block 3001 found in Block Group 3. These eastern Census Blocks include the First Street Condominiums, businesses along East Front Street, the Hook and Ladder Company Station, Beach Park, single family homes along the Bay, Keyport Yacht Club, Harborview Condominiums, Terry Park, Olsen’s Boat Yard, and many single family homes between Harborview and Cedar Street.

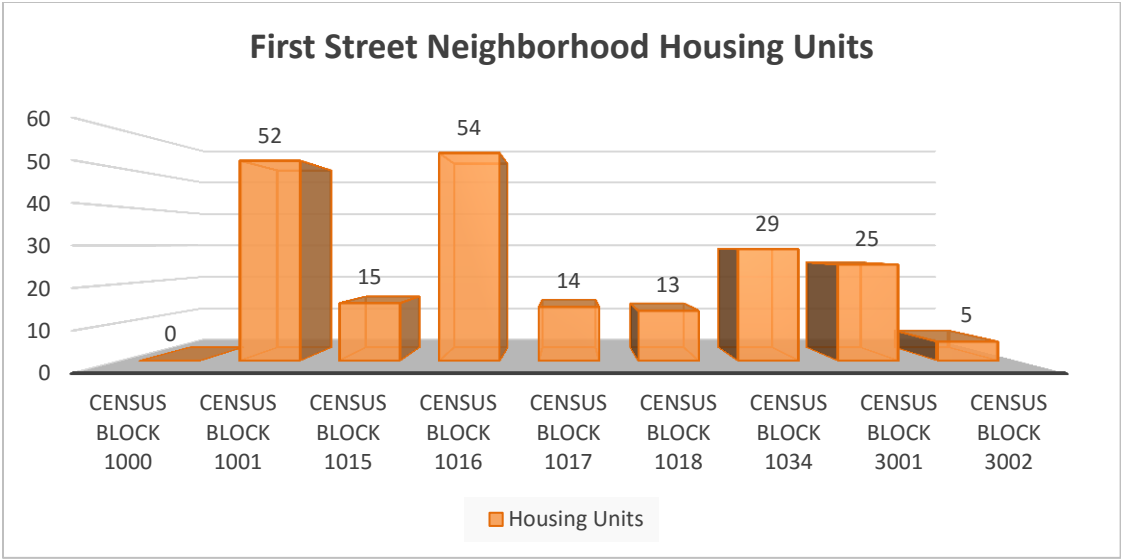
Within Census Tract 8020 on the western side of the Neighborhood are Census Blocks 1000, 1001 within Block Group 1 and a portion of Census Block 3002 within Block Group 3. Block 21 Lots 1-10, 10.01, 10.02, 11.01, 11.02, and 12 are the Neighborhood properties in Census Block 3002. The remainder of that Census Block is outside of the First Street Neighborhood. Notable properties include Keyport’s Waterfront Promenade, Downtown Businesses, Fireman’s Park, Hans Pederson & Sons Marina, Smith’s Liquor Shop, and several single family homes along the eastern side of Broadway adjacent to the Marina. The map below identifies the delineation of all the Census Blocks listed above that are within the First Street Neighborhood.

¹ http://www.nj.gov/dep/hpo/hrrcn_sandy_MON_GB_218_PDF/VL_01_MON_218_keyport_boro_part_a.pdf. 16-10-11



For the purposes of providing accurate demographic data, population, and other demographics for the Neighborhood, data for Census Block 3002 will be estimated based upon existing tax data given only a portion of Census Block 3002 is within the Neighborhood. According to 2010 Census Block data, First Street Neighborhood has a total population of 419 residents in approximately 207 occupied housing units. Below are breakdowns of Population and Housing Units by Census Block.

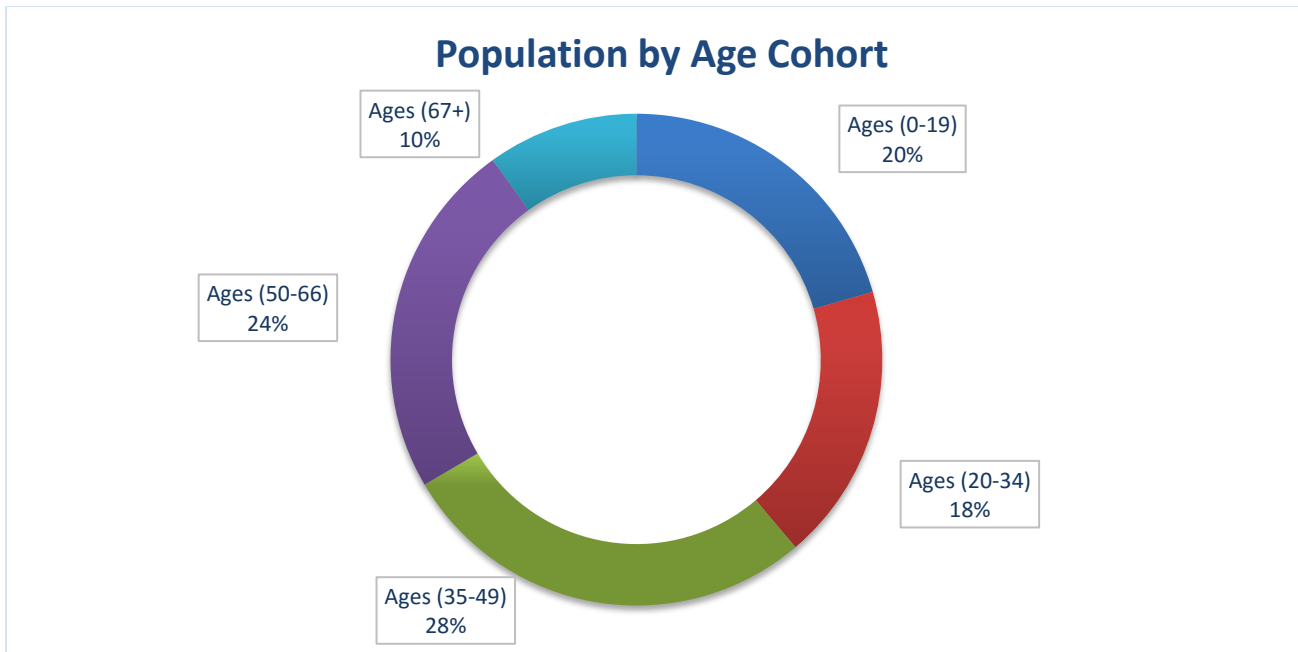




The table below takes a look at Average Household Size for each Census Block and compares the difference between the average household sizes of renters versus owners. It varies by Census Block, but most owners tend to have higher household sizes in comparison to renters, except for Blocks 1016, 1017, and 1018. This data point suggests single family owned housing units have more occupants and are denser than their renter occupied unit counterparts. The Average Household Size of the entire Neighborhood is 2.01 persons per occupied household.

Average Household Size by Tenure (Occupied Units)									
Average Household Size	Block 1000	Block 1001	Block 1015	Block 1016	Block 1017	Block 1018	Block 1034	Block 3001	Block 3002
Owner Occupied	0	2.33	3.00	1.65	2.23	2.13	2.00	2.85	2.30
Renter Occupied	0	2.26	2.50	2.46	3.00	2.40	1.21	2.55	2.20
Total	0	2.28	2.86	1.86	2.29	2.23	1.61	2.71	2.27

The First Street Neighborhood’s age structure gives a look into the type of services each age cohort will likely demand including the intensity of demand based on the overall age breakdown. The median age of the overall Neighborhood is 40.2 which is close to the Borough median age of 40.5. The following is an age-cohort of the First Street Neighborhood population. 66% of the Neighborhood’s population is 49 years old or younger meaning demand for children related services such as day care or access to schools may be more intense than aging population services such as nursing homes. The charts below outline Population by Age Cohort and Household Characteristics.



First Street Neighborhood Household Characteristics										
	Block 1000	Block 1001	Block 1015	Block 1016	Block 1017	Block 1018	Block 1034	Block 3001	Block 3002	TOTAL
Owner with Mortgage	0	6	25	38	23	11	25	31	22	181
Owner with No Mortgage (Free & Clear)	0	1	5	23	6	6	3	6	1	51
Renters	0	88	10	32	3	12	17	28	11	201
TOTAL	0	95	40	93	32	29	45	65	34*	433

*This data point is for the entire Census Block. The five single family homes in Census Block 3002 of the Neighborhood are likely all owners with mortgages or owned free and clear.

The household data illustrated in the table above shows a higher number of owners compared to renters by a small margin, 232 versus 201. A large portion of the renter population resides in apartments above businesses in the Downtown Business District as shown by the 88 renters in Block 1001. Renters in other Census Blocks emanate from interspersed multi-family dwellings. The balance of owners versus renters shows that Keyport offers a variety of housing types close to its main retail area. The total residents near the Downtown is lower compared to other municipalities with Main Streets similar in nature to Keyport's. A higher density in and around the Downtown Commercial district would increase the number of pedestrians and retail customers. Also, the higher number of owners versus renters indicates the socio-economic status of the First Street Neighborhood to be higher than other Neighborhoods in the Borough. The map below depicts key demographic data by Census Block for the First Street Neighborhood.





FIRST STREET NEIGHBORHOOD PLAN

EXISTING CONDITIONS

Land Use



The First Street Neighborhood has a large range of different land uses and businesses that typically are under the commercial and residential land use archetypes as illustrated on the previous page. All of these existing uses are within the Downtown Commercial district, the Marine Commercial district, Neighborhood Commercial district, and existing Residential districts. All land uses are within CAFRA regulations. The Borough of Keyport has and continues to focus on investing in its Downtown core by improving upon public access to the Bay front, capitalizing on the connection of the Bay front to the Commercial core, having open public events such as Christmas Tree lightings or summer activities to draw foot traffic, and other initiatives by the Keyport Bayfront Business Cooperative. This investment and passion injected into the First Street Neighborhood has resulted in excellent public spaces along the waterfront that allows easy access to West Front Street businesses and the overall Neighborhood. This promotes the First Street Neighborhood as very walkable while providing excellent access to all areas of the Neighborhood. The Downtown has a traditional retail pattern or Main Street feel with compact mixed uses built to the human scale. A majority of uses consist of ground floor retail with above ground floor apartments with four single family homes across from the Municipal Building and several public uses. The Downtown has connections to the Promenade through alleys and a large cut-through park. These connections provide access to retail options facing the Promenade and American Legion Drive. The Western portion of the Neighborhood is more focused on Marine type uses, residential uses, and a dash of neighborhood retail shops. The Eastern portion is more focused on residential uses with some marine type uses and its own open space/recreational areas. All of these uses coexist seamlessly together and share the defining characteristic of being close and accessible to the waterfront. The First Street Neighborhood has 163 tax lots. These tax lots consist of approximately 95 residential properties mostly consisting of single family homes, 47 businesses or retail properties including marinas, 3 properties with apartments, 9 public properties, 2 vacant parcels, and 7 tax exempt properties such as the Borough Fire Station, American Legion, Religious entities, and others. It should be noted that two commercial properties recently destroyed in a fire are currently vacant but are planned to be rebuilt as commercial uses. Additionally, a site visit of the Neighborhood noted some vacancies in the Downtown Commercial area on West Front Street but confirmed the land use pattern described above.

Open Space and Recreation is prevalent within the First Street Neighborhood due to the Waterfront Promenade's location in the center of the Neighborhood. The Promenade provides excellent public access to the Bay as well as amenities for its patrons. With its large open spaces, walkways along the bay, benches, gazebo, fishing pier, and easy pedestrian access, the Promenade acts as the focal center and attractor in tandem with the Downtown Commercial district. The Promenade directly connects to the Municipal Boat Launch and Beach Park, all of which provide public access as noted in the Borough's Municipal Public Access Plan. The Promenade also connects to Fireman's Park along West Front Street which is adjacent to public parking provided for the Promenade, other surrounding amenities, and public access areas. Terry Park is a significant open space area for Borough residents located at the eastern border of the Neighborhood. It provides beach access, passive recreation, and great views from the bulkhead and other areas of the park. More information can be found on public access in the Borough's Municipal Public Access Plan as all of these areas provide public access to the First Street Neighborhood.

Zoning

The First Street Neighborhood is located within several zoning districts. The western portion of the Neighborhood near Broadway is within three zones; Neighborhood Commercial (NC), Residential Zone A (RA), and the General Marine Commercial (GMC). East of the GMC zoning boundary is the General Commercial Zoning District (GC) which is the Downtown in the center of the Neighborhood. Further east on First Street itself is the Residential District B (RB) zoning district and then the Residential A (RA) zoning district. The map below delineates the zoning districts within the First Street Neighborhood.



The three commercial zoning districts aim at providing local retail or personal service establishments, general commercial uses, and marine oriented businesses within their respective zones. The GC and GMC zones permit the same exact uses and are the most inclusive as all uses permitted in the NC are also permitted in the GC/GMC. The difference between the GC and GMC zone lies within the bulk/development standards. The two Residential districts provide residential housing in the First Street Neighborhood and they also have the same exact permitted uses. The only difference between the two districts is that RB allows two-family dwellings as a conditional use where the RA zone does not. The permitted uses and bulk standards for all First Street Neighborhood zoning districts are listed in the tables below.

GENERAL COMMERCIAL & GENERAL MARINE COMMERCIAL ZONING DISTRICTS (GC/GMC)	NEIGHBORHOOD COMMERCIAL ZONING DISTRICT (NC)
Permitted Principal Uses	
Apparel Shops	Bank
Banks and Other Financial Institutions	Barber Shops and Beauty Parlors
Bars and Cocktail Lounges (No Live Entertainment)	Book and Stationery Stores
Boat Yards, Boat Building Facilities, Service and Sales, Marinas, and Docks	Drug Stores
Church or Other Place of Worship, Parish House, Sunday School	Dry Goods and Variety Stores
Club, exclusive of swimming pool club	Dry cleaning and clothes pressing establishments
Furniture Stores	Florists
Theaters and Bowling Alleys	Food Stores
Major Department Stores, Specialty Shops, Personal and Business Service Establishments	Hardware Stores
Newspaper Publishing Plant	Laundromats
Paint and Wallpaper Stores	Business and Professional Offices
Professional Business and Technical Schools or Studios for Photography, Art, Music, and Dance	Package Liquor Stores
Public Utility Building or Structure	Photographic equipment and supplies
Sporting and Athletic Goods	Radio and Television Repair
Undertakers and Funeral Parlors	Shoe Repair Shops
	Tailors and Dressmaker Shops
	Telephone Exchanges
Permitted Accessory Uses	
Parking Garages, Off-Street Parking and Loading Areas	Off-street Parking and Loading Facilities
Accessory uses and structures customarily incidental to a permitted principal use	Accessory uses and structures customarily incidental to a permitted principal use
Accessory storage within a wholly enclosed permanent building; and Signs subject to Borough Code	Signs subject to Borough Code

RESIDENTIAL A & B DISTRICTS (RA/RB)	
Permitted Principal Uses	
Single-Family Detached Dwelling	
Church, Sunday School, or other places of worship	
Eleemosynary and philanthropic institutions	
Public school, park, playground, fire house, library, or municipal building	
Permitted Accessory Uses	
Uses customary and incidental to a principal use	
Home gardening except the raising of livestock, poultry, or similar objectionable activities	
Private garages and private parking areas	
Conditional Uses	
Private school or college	
Licensed nursing homes and nursery schools	
Home occupation and professional home office	
Community buildings, country clubs, clubs, social halls, lodges, fraternal organizations, and similar uses	
Public or private medical or surgical hospital	
Two-family dwelling unit	

First Street Neighborhood Zoning Schedule						
	NC	GC	GMC	RA	RB One-Family	RB Two-Family
Minimum Lot Area (Square Feet)	5,000	N/A	10,000	5,000	5,000	7,500
Lot Width (Feet)	50	N/A	100	50	50	75
Minimum Front Yard Setback (Feet)	5	N/A	20	20	20	20
Minimum One Side Yard (Feet)	N/A	N/A	6	6	6	6
Minimum Both Side Yards (Feet)	10	N/A	16	16	16	16
Minimum Rear Yard Setback (Feet)	25	N/A	20	15	15	20
Minimum Accessory Building Side Yard Setback (Feet)	3	N/A	6	3	3	3
Minimum Accessory Building Rear Yard Setback (Feet)	15	N/A	16	3	15	15
Maximum Percent Lot Coverage (All Buildings)	75%	85%	35%	40%	40%	40%
Maximum Height (Feet/Stories)	25/2	35/3	35/3	30/2.5	30/2.5	30/2.5
Maximum Percent Coverage Principal Building	75%	85%	35%	30%	30%	30%
Maximum Percent Coverage Accessory Building	15%	15%	15%	10%	10%	10%
Maximum Percent Lot Coverage (All Buildings and Impervious Surfaces)	90%	90%	90%	60%	60%	60%

A review of the Neighborhood's commercial zoning districts and standards reveals a non-restrictive zoning plan in that many different types of commercial uses are permitted with very few requirements particularly within the General Commercial district. This allows for flexibility in design and site layout and a diverse range of retail. However, if lots are consolidated in the GC district than the current zoning standards would not require new construction to be in line with the character and pedestrian scale currently in place on West Front Street. It is recommended to consider replacing requirements with N/A for the GC district with a minimum lot size that matches current lot sizes and possibly adding a maximum lot size to avoid losing individual shops and retail businesses on West Front Street. Another alternative is to require any building with frontage over a certain linear distance, preferably matching existing conditions, to exhibit design features that continues the current character such as required fenestration or design breaks. Regardless of the preferred method, the ultimate goal is to continue the character and feel of the Downtown Commercial district if and when new development occurs. This is especially important due to the GC districts vulnerability to storm and flood damage which has a high chance of necessitating new development or redevelopment. Other recommendations include changing N/A requirements to zero for setbacks to continue buildings fronting directly onto the sidewalk and existing in a row formation. Design standards should be considered for the GC district, especially for the rear of retail businesses that face the Promenade. It is recommended to require stores to operate two frontages with landscaping, upgrades to existing parking, dumpster enclosures, and other façade requirements to create another downtown feel facing the waterfront.

In contrast, the residential districts are much more restrictive with only 4 permitted uses and almost identical zoning standards to comply with. Given the desire to maintain and improve existing residential neighborhoods, it is not recommended to make any changes except for possibly adding design standards to residential uses. These design standards could include landscaping, streetscape improvements, façade, and other architectural requirements for new development or raised structures. Any design standards incorporated for structures raised above based flood elevation should include best practices of flood mitigation and good aesthetics to the extent possible. These recommended design standards are in line with the recommendations within the Borough's SRPR.

In terms of mitigating flood damage to the Neighborhood through zoning, the Borough has already adopted a Flood Prevention ordinance that updated definitions for Base Flood Elevation and Advisory Flood Hazard Map. Additionally, Building Height in Areas of Special Flood Hazard was updated to require structures in the Special Flood Hazard to be above base flood elevation. Additional zoning revisions to improve flood damage mitigation are recommended to permit living shorelines along the Bay front and green stormwater designs along the Borough's Right-of-Ways.

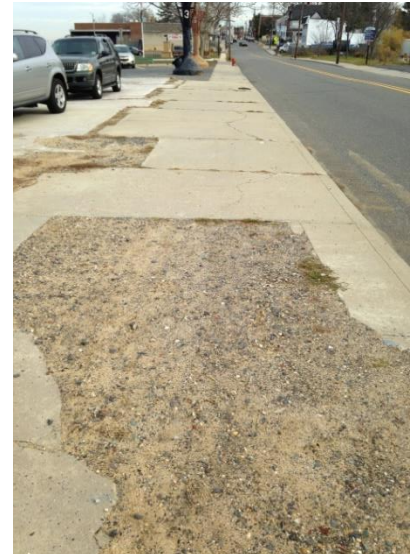
Circulation

Twelve streets connect and define the First Street Neighborhood; Broadway, West Front Street, American Legion Drive, Broad Street, East Front Street (two separate streets), 1st Street, Church Street, Atlantic Street, Myrtle Avenue, Prospect Street, and Cedar Street. The Neighborhood begins at its western boundary on Broadway where it turns east at the intersection of Broadway and West Front Street. West Front Street is the southern border of the Neighborhood which changes to East Front Street after crossing Broad, to a small portion of Church Street, and then finally the southern border becomes 1st Street. 1st Street connects with Cedar Street, which establishes the eastern edge of the Neighborhood while the Raritan Bay acts as a natural northern boundary giving the community beautiful waterfront aesthetics and a view of the New York City skyline. Several smaller roads within the Neighborhood include American Legion Drive providing access and connection to the Waterfront, Promenade, and Downtown Commercial district, while connecting with Broad Street and West Front Street. Additional smaller roads include Atlantic Street which provides access to the Keyport Yacht Club. Myrtle Avenue, Prospect Street, a small separate portion of East Front Street, and Cedar Street create a small but established pocket of residential homes in the eastern section of the Neighborhood.

A site visit was conducted to review the existing conditions of the Neighborhood's streets on December 6, 2016. Starting with Broadway, the roadway and curbing appear to be in good condition. The sidewalks are in new to decent condition with older sections of sidewalk mixing in with brand new sidewalk. Several areas of older sidewalk have minor cracking or missing concrete. Overall Broadway does not appear to be in need of repaving, curbing, or sidewalks throughout. Current conditions provide appropriate access, good pedestrian

circulation, and on-street parking for both sides of the street. No streetscape amenities such as ornamental lighting, benches, or trash cans were noted on Broadway. As the beginning of the Neighborhood traverses along West Front Street & down the hill towards the Keyport Fishery, Fireman's Park, and American Legion Drive, the street remains in good condition whereas certain sections of the sidewalks contain minor to heavy cracking. Also, areas of curbing along West Front Street are either non-existent or have succumbed to light vegetation. Curbing and sidewalk improvements in specific areas may be needed. Streetscape amenities such as benches and trash bins were found at the intersection of Broadway and West Front Street, and Fireman's Park.





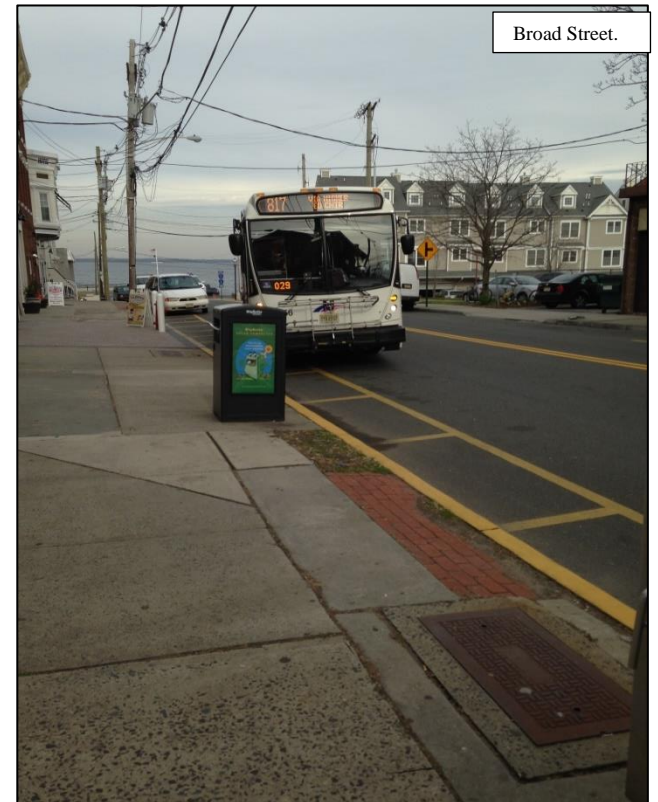
Moving east along West Front Street up until its intersection with Broad Street, the roadway and sidewalk conditions improve. Curbing, sidewalks, pavers, and smooth roadways are all present. Streetscape improvements are among the most prevalent here in the heart of Keyport with trash bins, solar powered recyclable bins, festive holiday decorations, benches, sidewalk lighting, public transit, on-street parking, bike racks, and street trees. Overall this section of West Front Street is in excellent condition and may only need minor improvements in the future.



American Legion Drive provides access to Keyport’s Waterfront Promenade and the Downtown Commercial District. This road bends to follow the Raritan Bay and contains streetscape improvements that provide many public amenities such as public parks, benches, trash bins, recyclable bins, street trees, a gazebo, sidewalk lighting, municipal boat launch, and many other amenities. The street, sidewalks, and curbing appear to be in great condition with only very minor cracking in the parking lot areas of the park. No streetscape or roadway improvements are necessary for American Legion Drive.



The portion of Broad Street situated within the First Street Neighborhood runs vertically connecting with American Legion Drive to the north and West Front Street to the south while also providing access to 1st Street. This road may be a small part of the Neighborhood but it is vital to the circulation of the downtown area. The roadway, curbing, and sidewalks remain in very good condition with only a very small segment of the sidewalk being in poor condition containing cracks and material different from the rest of the sidewalk. The streetscape amenities along West Front Street continue onto Broad Street with street trees, trash bins, solar powered recyclable bins, and on-street parking. As seen in the photograph to the right, a NJ Transit Bus can be seen pulling up at the bus stop location for the 817 bus route. Although public transit is provided, there is no signage marking or indicating that a bus stop is located here and there is no bus shelter or any other kind of NJ Transit indications. Overall this section of Broad Street does not require improvements, but coordinating with NJ Transit to at least provide signage would be a welcomed addition to the streetscape and amenities provided in the First Street Neighborhood.





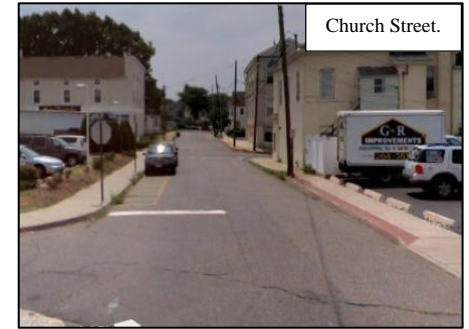
East Front Street.



West Front Street turns into East Front Street at the intersection of West Front Street and Broad Street and contains the last section of the downtown area within the First Street Neighborhood. Additionally, this is the area of which the First Street Neighborhood and Division Street Neighborhood boundaries meet. This analysis will focus upon the northern portion of East Front Street.

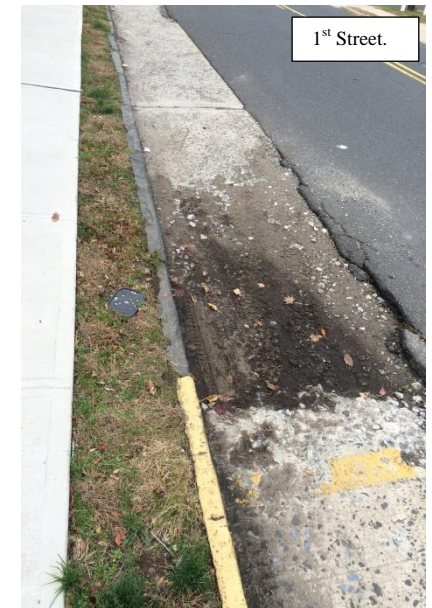
East Front Street provides on-street parking on both sides of the roadway as well as public amenities such as trash/recycling receptacles, street trees, and shrubs or flowers. The curbing and sidewalk are in great to good condition except for a small area closer to Church Street where the sidewalk is not concrete. It changes to slate material with some vegetation growth. East Front Street is in need of pavement upgrades most notably towards the bottom of the “basin” between Division Street and Osborn Street. As noted in the Division Street Neighborhood Plan, this area is extremely prone to flooding and storm surge damage. Improvements of the drainage system capacity and efficiency in tandem with Green Street improvements are recommended here. Also raising of the First Street Firehouse parking lot to base flood elevation would mitigate flood and storm surge damage. These drainage recommendations will be reiterated in the recommendations section. For streetscape improvements, adding benches, ornamental lighting, and street trees with green stormwater improvements are suggested for East Front Street. It is recommended that all drainage issues be improved before any repaving or other streetscape upgrades. If drainage is not improved than any upgrades or improvements will simply diminish in quality from continued flooding and the problem will not be solved. East Front Street ends at the intersection of Church Street where the transition from the Downtown area ends and the residential area begins.

Church Street, like Broad Street, is another vertical road that makes up a small portion of the Neighborhood that is vital to its circulation. It connects with East Front Street to the south and 1st Street to the north which runs east towards the rest of the Neighborhood. This portion of Church Street remains in good condition with minor cracking along the roadway. Streetscape includes on-street parking. There are not many streetscape improvements in this area since it is only a small segment of the Neighborhood and remains in good condition except at its intersection with 1st Street to the north where the roadway is made of a different material and some cracking and minor pot holes have formed.



1st Street is within Keyport's First Street Historic District that includes several historic homes dating back to the 18th and 19th century. Many of these homes project distinct facades and architectural designs not found in other sections of the Borough. This section of 1st Street in the Neighborhood is a major part of Keyport's character and charm. 1st Street within the Neighborhood boundary runs from the intersection with Broad Street near Beach Park and the 1st Street Condominiums all the way east to Cedar Street. It connects the historic neighborhood and homes directly to Keyport's Promenade and Waterfront and to neighboring Union Beach. Overall roadway and curbing were found to be in bad to great condition throughout the Neighborhood.

Some sections of the roadway have different pavement material with some cracking, where on-street parking is allowed on this side of the street. Our survey recorded small cracking in portions of the roadway closer to Cedar Street and dilapidated or non-existent curbing shown in the photos to the left. These areas of dilapidation may need upgrades.



Sidewalk conditions vary along 1st Street with a mixture of brand new sidewalks, older slate sidewalks, and narrow concrete paved sidewalks. The further east one goes along 1st Street, more occurrences of narrow sidewalks and slate sidewalks will be noticed. The narrow sidewalks and slate material does not appear to be an issue as the intensity of pedestrians is low. The sidewalks offer excellent pedestrian circulation and access to the overall Neighborhood. Streetscape amenities situated along 1st Street are most prevalent near Beach Park with benches, trash receptacles, and ornamental street lighting. Further along 1st Street the streetscape amenities begin to diminish on the more narrow sidewalks except on-street parking and minor sidewalk lighting. Suggested improvements are more streetscape amenities and replace slate sidewalks with concrete.



Atlantic Street is another small road within the Neighborhood of which a very small portion of its Right-of-Way provides access to the Keyport Yacht Club. The roadway remains in fair condition with some heavy cracking and dipping of the road at its intersection with 1st Street. The sidewalk and curbing appear to be in good condition along the eastern edge of the road, but there is no sidewalk along its western edge. Heavy vegetation has grown and has started to extend into a portion of the roadway on its western edge. No streetscape improvements were noted.





The final portion of the Neighborhood includes Prospect Street, Myrtle Avenue, East Front Street, and Cedar Street. These roadways create a small pocket residential area as well as access to Terry & Cedar Street Park. Prospect Street remains in good condition along its roadway. Curbing, sidewalk, and lighting upgrades are necessary for Prospect Street as they are non-existent along both sides of the road to the south. Prospect runs vertically to 1st Street to the south and East Front Street to the north. East Front Street runs horizontally forming a cul-de-sac to the west and intersecting with Myrtle Avenue to the east. East Front Street remains in fair condition with minor cracking throughout the roadway. The sidewalk and curbing are only present on the north side of the road and remain in fair condition. Streetscape improvements include sidewalk installation along the rest of the northern side and the entire southern side of East Front Street as well as installation of sidewalk lighting.

Myrtle Avenue is another roadway that runs vertically and intersects with East Front Street to the north and 1st Street to the south. Myrtle Avenue remains in good condition with the sidewalks appearing to be in fair condition. Curbing can be found in small segments along the sidewalks but appear non-existent in other sections. Improvements to Myrtle Avenue include curbing upgrades and sidewalk lighting installments. Finally, Cedar Street is the last road that forms the eastern border of the First Street Neighborhood. The street, sidewalks, and curbing appear to be in very good condition. Public amenities within this section of the Neighborhood includes the Cedar Street Park which contains a playground, benches, a small paved parking lot area, trash bins, recyclable bins, picnic tables, and waterfront access with a view of the New York City skyline. All roads within this section of the Neighborhood have on-street parking. Recommendations for these roads include minor paving, sidewalk, and lighting upgrades where needed.



Overall Neighborhood pedestrian connectivity is in good shape in that sidewalks are provided on almost all streets and provide the residents access to all areas and land uses of the Neighborhood as well as other parts of the Borough. Any future improvements including pavement, upgrades of sidewalks, painted crosswalks, installment of curbing, or street trees are encouraged to include Green Street or green stormwater designs as outlined in the recommendations section. Currently, there are no dedicated bicycle lanes within the Neighborhood. However, with the on-street parking and narrow roadway dedicated bike paths may not fit. It is recommended to install signs indicating bicyclists and motorists to share the road when any roadway improvements are made to the Neighborhood and to include way-finding signage to the Henry Hudson Trail.

Public Transit

The only public transit option for the First Street Neighborhood is the NJ Transit Bus Route 817 which runs between Perth Amboy and Campbell's Junction in Middletown and provides access to the South Amboy Rail Station on the North Jersey Coast Rail Line. The 817 bus route stops, as noted previously, on Broad Street between 1st and West Front Streets, and also stops at the corner of 1st Street and Atlantic across from the Yacht Club. Neighborhood residents can easily walk to both bus stops. This provides the Neighborhood with limited public transit options, especially if residents wish to access locations outside the bus route or the North Jersey Coast Rail Line. Additionally, the bus stops are not marked at all. No signs, bus shelters, or any kind of indication of the bus stop locations. It is recommended to work with NJ Transit to improve signage and wayfinding to the bus stops.

Survey Results

On June 30th, 2016 Keyport Borough held a Community Resiliency Meeting at the Borough's Consolidated Firehouse to receive public input on all of Keyport's Neighborhood Plans under the Post Sandy Planning Grant including First Street's Neighborhood Plan. The public provided us with ideas and suggestions to prepare the First Street Neighborhood Plan with particular emphasis on future resiliency.

Two surveys were prepared for the Community Resiliency Meeting. Both were provided to all attendees at the meeting. One survey was created through SurveyMonkey and the other was created specifically for the Community Resiliency Meeting, however, both surveys are very similar in format and questions posed. This was by design to allow Neighborhood residents to complete the survey online if they were unable to attend the meeting on June 30th. The survey provided specifically for the meeting is entitled "Public Open House Response Sheet". This Response Sheet was modeled after the SurveyMonkey survey. The purpose of this additional survey was an attempt to extrapolate more information and to initiate a dialogue among participants at the meeting. Both surveys were posted to the Borough website for any residents to fill out subsequent to the Community Resiliency Meeting. Additionally, comments could be added by online survey participants if they wished to add more information. Completed Public Open House Response Sheets were returned for analyzation and SurveyMonkey responses were automatically recorded and tabulated using the online program. It should be noted that the same survey was used for both the First Street and Division Street Neighborhood Plans. The first question of each survey asks the participant to designate which Neighborhood their answers will pertain towards. Three months after the initial June 30th meeting of both surveys being posted to the Borough website, all results were collected, tabulated, and analyzed. The following is a description of the "Public Open House Response Sheet" questions and the results received from all respondents.

The first question (after the participant indicated which Neighborhood) asked the respondent to comment on the existing conditions of the Neighborhood, discuss areas or issues that need improvement, and any other significant conditions of the Neighborhood. The answers received from respondents mainly focused on existing conditions that caused issues such as poor lighting or speeding in the Neighborhood. Similar or common responses are summarized below:

- Several respondents commented on poor lighting or the need for added aesthetic or security lighting;
- Responses related to flooding or the need for improved resiliency touched on storm surge protection through neighbors working together, a Beach Park retaining wall to stop erosion, wave attenuators or breakwaters outside the harbor, and address routine flooding that occurs from normal storm events or even a full moon;
- Respondents noted existing issues with speeding and traffic on 1st Street. One response suggested speed bumps or 4-way stops to mitigate;
- Streetscape improvements were noted to be needed such as more ornamental lighting throughout 1st Street, new curbing on the parking side of 1st Street, landscaping buffers for parking lots fronting on 1st Street, adding benches or picnic tables, and overall street and sidewalk repairs particularly near Fulton, Cedar, & Waverly street;
- Another common response was the need to improve buildings in serious disrepair, improve property maintenance including West Front Street storefronts; and
- Other comments included keeping Veteran's Bank as a passive use and to enforce one and two family homes as the only permitted uses.

The second question asked participants about future land uses they would like to see in the Neighborhood. Respondents were able to fill in four or more land uses that they feel are needed or missing from the First Street Neighborhood. The following responses were collected:

- Increased open space;
- Increased recreation particularly boating and waterfront activities like kayak rentals;
- More restaurants such as waterfront dining to improve economic development of the Neighborhood; and
- Change existing multi-family back to single family uses within the Historic District and improve existing single family homes

The third question asked all respondents to describe any challenges the First Street Neighborhood faces for vulnerability to flooding, development, or any other challenges. The following challenges were outlined by participants:

- Erosion and flooding challenges to Beach Park (sand dunes was offered as a possible mitigation technique);
- Existing homes with bay frontage are vulnerable to flooding and storm surges. Also some homes may be less protected than others which causes overall weakness for the entire Neighborhood.
- The potential impact to the Neighborhood from the implementation of the Union Beach Army Corp of Engineers project; and
- Funding and economic challenges to improve the Neighborhood.

The fourth question asked each respondent to discuss the character and amenities of the Neighborhood, how they would like it to change if desired, and any other suggestions to improve the character or neighborhood amenities. The following responses were provided by participants:

- A beautification project to assist neighbors with the upkeep and maintenance of facades and landscaping;
- Continuing the Historic nature and character of 1st Street;
- Increased local businesses in harmony with the existing character such as a bakery, butcher shop, or bed and breakfast.
- Maintaining the boating industry and tradition of the Borough; and
- More ornamental or historic lighting to increase the existing historic theme or nature of the Neighborhood.

The fifth question asked the respondent to describe their vision of the First Street Neighborhood over the next ten years. Respondents answered in the following manner:

- Quaint historic shore looking town;
- Increased emphasis on the existing view sheds to promote tourism and economic development;
- Preservation protection and appropriate infill development on vacant properties;
- Create and improve the draw to the Borough especially foot traffic to the downtown, improve Keyport's downtown and activities to be a place to live and play, and improve the eastern section of the Neighborhood.

The sixth questions was regarding green infrastructure. Each respondent was able to offer any input or suggestions on how to make the First Street Neighborhood more green and sustainable. The following comments and suggestions were given:

- More open spaces and trees;
- Work to bring living shorelines such as oyster reefs back to the Bay to help with flood protection and the health of the Bay; and
- Improve water cleanliness and preserve wetlands.

The seventh and final question allowed each respondent to add any additional comments they had regarding the Neighborhood. The comments included code enforcement for all properties, place the Historic District on the State’s Historic Preservation List/Trust, regulate the shoreline for flood protection, and provide homeowners with more knowledge and information on storm damage prevention and flood mitigation techniques.

SURVEYMONKEY

The following outlines the questions from the survey provided by the SurveyMonkey online application and the resulting answers.

1. What do you like about your Neighborhood?

- Pearl of the Bayshore!
- Waterfront is excellent, the scenic views, pedestrian access, and Marine recreation;
- Historic Preservation of century old homes, friendly neighbors, and quaint homes;
- The downtown, proximity to excellent shopping, summer activities, and overall great place to live and play!

2. What do you dislike about your Neighborhood?

- Fast traffic on First Street;
- Motorcycle noise and Fire House Sirens;
- Broken curbs and potholes;
- Poor property maintenance and unkemptness; and
- Abuse of wetlands and on-street parking damaging slate curbing.

3. How would you improve your Neighborhood?

- Slow traffic with speed bumps, improve lighting, and use alternate methods to sirens;
- Storm protection with wave attenuator;
- Lighting, cleanliness, and events that highlight the views;
- Speed control without using speed bumps and repair potholes;
- More events for the Neighborhood; and
- Add more waterfront “centric” uses such as restaurants and recreational, especially for the area occupied by the Post Office.

4. What type of land uses would you like to see in the Neighborhood?

- More single family houses, less condos; and
- Uses that maximize the waterfront access and views;

- Quiet businesses; and
- No tall land uses.

5. What type of residential development is appropriate for your Neighborhood?

This question provided multiple choices for each respondent. Each participant was allowed to fill in as many choices as desired. The choices included single family homes, duplexes, luxury mid-rise apartments, apartments above ground floor non-residential, luxury mid-rise condos, townhomes, or no residential development. The following table breaks down the responses.

Single Family Homes	8
Duplexes (Two-Family)	3
Luxury Mid-Rise (4 stories max) Apartments	0
Apartments above ground floor non-residential	1
Luxury Mid-Rise (4 stories max) Condo Complex	2
Townhomes	3
No residential development	1

6. What type of commercial services is appropriate for your Neighborhood?

This question was presented in the same manner as Question 5 with multiple choices. The choices included specialty retail, sit down restaurant, take-out restaurant, bar/tavern, banks, health/fitness clubs, personal service retail, medical offices, convenience stores, and child care centers. Below are the results from this question.

Retail	4
Sit down Restaurant	4
Take-out Restaurant	4
Bar/Tavern	3
Banks	1
Health/Fitness Clubs	2
Personal Service Retail	2
Medical Offices	2
Convenience Store	1
Child Care Center	1

Other: None of the above	5
Bakery	
Art Gallery	
Cafes/Coffee Shops	
Gift Shops & Children's Clothing Stores	

7. What type of recreation facilities would you like added to your Neighborhood?

This question was posed as a fill in response as opposed to providing multiple-choices. Three participants responded with the following answers.

- Parks are presently adequate;
- Gardens, Horseshoe pits, Cornhole, and competitions; and
- Kayak rentals & “Street Fair” type activities

8. How can your Neighborhood improve its resiliency to future flooding and/or storm surge?

- Combat Climate Change;
- Have a united front for all waterfront towns with bulkheads and sand dunes;
- Upgrade bulkheads and add a wave attenuator;
- Repopulate the Bay with oyster reefs;
- Education on protection and storm pump for residents; and
- Utilize lessons learned from Sandy, generators for key facilities, better shelter plans, supply coordination, and mandatory evacuation.

9. Other comments regarding your Neighborhood?

This was the final question and several responses were given including I love Keyport, Code enforcement, place First Street on Historic District preservation trust, and to unite and stick together. Overall, the number of participants for both surveys are far too low to draw any conclusions of note regarding the First Street Neighborhood in terms of overall public opinion within the Neighborhood and the Borough as a whole. However, the results of the survey do provide a glimpse into the perception of several neighborhood residents and highlight areas that could use improvement. In conclusion, taking into consideration some of the public comments may in fact benefit the Neighborhood from a land use and sustainability perspective. Examples include the comments made for storm surge protection, improved streetscapes, and more open space has the potential to improve the Neighborhood’s resiliency and reduce the risk of flood exposure during a major storm event.



Photo from Allyson Rooke

Vulnerability Assessment

The bay front location and overall topography of the First Street Neighborhood has time and again experienced flooding during extreme precipitation events such as Superstorm Sandy. This section of the Plan will be focusing on documenting the various vulnerabilities the First Street Neighborhood faces in order to identify actions to reduce said vulnerabilities. Thorough understanding of the Neighborhood's challenges and obstacles is crucial to creating and implementing key resilient measures to reduce the storm and flood damage experienced by the Neighborhood in future storms. This vulnerability assessment will rely upon GIS tools provided by different entities that will illustrate threats and vulnerabilities. This shall include the Coastal Flood Exposure Mapper provided by the National Oceanic and Atmospheric Administration (NOAA), the New Jersey Flood Mapper provided by Rutgers University, and the Nature Conservancy's Coastal Resilience Mapping Portal.

Past Flooding Events and Resiliency Efforts

Keyport has been the victim of many extreme precipitation events like Nor'easters and Hurricanes over its existence. The most recent obviously being Superstorm Sandy which is still fresh in the mind of many Keyport citizens. The First Street Neighborhood has experienced flooding issues during normal rain events, but significant damage has always resulted from major storm events. The Neighborhood flooded or experienced damage during several Nor'easters in the 1990's, Hurricane Irene, and Superstorm Sandy. There have been numerous resiliency efforts over the years by both the Borough and individual property owners to mitigate storm and flood damage. These include bulkhead projects at Terry Park, the entire bulkhead of the Waterfront Promenade, timber breakwater installations, stormwater upgrades, and individual property owner bulkheads and retaining wall installations. Other efforts include stormwater and roadway improvements, pump station installations, and purchasing a mobile back-up generator that can be safely stored outside the flood zone and brought to where it is most needed.

Current FEMA Flood Zone Risk

The First Street Neighborhood has long been within both the high-risk (1% annual chance, or 100 year floodplain) and moderate-risk (0.2% annual chance or 500 year floodplain) flood zones designated by FEMA. According to FEMA, these flood zones may experience frequent flooding from extreme precipitation events, but the Borough's experience confirms First Street properties experience frequent flooding, especially those in low lying areas. Therefore, it is almost a certainty that areas of the First Street Neighborhood will flood during an extreme precipitation event from rain accumulation and storm surge such as a Nor'easter or Hurricane. The map on the following page delineates FEMA's flood hazard zones with respect to the First Street Neighborhood. It should be noted that several properties along First Street successfully petitioned FEMA to correct their maps with regards to the location of the VE zone on their respective properties. This map does not reflect this change in VE zone delineation. Additionally, there are several repetitive flood properties in the lower area of West Front Street.



Sea Level Rise

Sea Level Rise is becoming more and more of a concern among experts, climatologists, and New Jersey municipalities along the coast. Currently, it is estimated that Sea Level Rise will reach 1.3 feet by 2050 and it is predicted to rise as high as 3 feet by 2100. Though slow and gradual, Sea Level Rise is a real threat to the Borough of Keyport, particularly to the First Street Neighborhood. Looking at the map below which shows Sea Level Rise up to three feet, a zoomed in version of the Sea Level Rise (SLR) map depicts that SLR directly affects the First Street Neighborhood all along the bay front. In the map, the darkest blue color delineates the extent of 1 foot of Sea Level Rise and the lightest blue (almost white) shows the extent of 3 feet of Sea Level Rise. One will notice certain areas that are colored in between the light and dark blues which delineates 2 feet of Sea Level Rise.

As seen in the map, the area most vulnerable to Sea Level Rise in the Neighborhood is the western section where West Front Street traverses downhill into the low lying areas around the Luppataong Creek. Almost the entire parking lot west of American Legion Road, Fireman's Park, and the vacant site that previously had Ye Old Cottage Inn will be under water if 3 feet of Sea Level Rise occurs. Even if 1 or 2 feet of Sea Level Rise occurs than portions of the parking lot will be under water. This area is most vulnerable because of its elevation but also the change of bulkhead improvements between the Promenade and parking area. The Promenade has elevated, improved bulk heads where the existing parking lot north of Fireman's Park has older bulkheads that are not as high. Another reason this area is so vulnerable is the Luppataong Creek is also estimated to rise and cause waters to cover land area from behind. This will allow bay water to encroach and put this section of the Neighborhood permanently under water. The Promenade with its elevated bulkheads are predicted, per NOAA's SLR data in the map below, to mitigate any Sea Level Rise but may increase flooding of the Promenade. However, another major concern is that Sea Level Rise will inundate West Front Street and parts of American Legion Drive which would block any vehicular traffic from entering or exiting Keyport along those roadways. Consideration should be taken to eventually raise those streets to avoid Keyport's main roadways and access to the waterfront being taken by the sea.

Additional areas vulnerable to Sea Level Rise include the Hans Pederson Marina which is expected to lose a significant amount of land and its dock space. The residential lot on the western border of the Neighborhood is expected to lose some beach area to Sea Level Rise as well. East of the Promenade, NOAA estimates that the Municipal Boat Launch will be inundated along with a large portion of the beach at Beach Park.

Further east, all homes along 1st Street are predicted or estimated to experience issues and vulnerability to Sea Level Rise. Homeowners may lose their bulkheads and other hazard mitigation infrastructure in place that would make their homes even more vulnerable to storms. Also the Yacht Club may lose its pier, Olsen's Boat Yard may experience issues but its existing bulkheads appear to assist in keeping Sea Level Rise in check, and Terry Park's beach will experience inundation from the Raritan Bay. Terry Park's bulkhead will also assist in mitigating the extent of Sea Level Rise which is important since a pump station is located in Terry Park. However, it is recommended to improve the pump stations resilience as increased Sea Level Rise will increase its existing vulnerability.

Overall, Sea Level Rise is a major threat to the entire Bayfront for not only the entire First Street Neighborhood but all areas of the Borough along the Raritan Bay. It is recommended to address these vulnerabilities to the maximum extent possible. Especially, in combination with this predicted Sea Level Rise, storm surge is likely to be more intense than if there was no Sea Level Rise. It's important to understand that increases in Sea Level Rise simultaneously increases the amount of land area affected by flooding and storm surge by a significant amount. Over time and taking Sea Level Rise into account, the special flood hazard areas identified in the current FEMA maps on Page 34 will cover more land area within the First Street Neighborhood.



Storm Surge

Storm Surge is an even larger threat to the Neighborhood than Sea Level Rise as a majority of properties, particularly along the Bay, are vulnerable to damage from Storm Surge. The latest evidence of this vulnerability was brought to the surface by Superstorm Sandy. As depicted in the image below, produced from the New Jersey Floodmapper composed by Rutgers University, the extent of Sandy's surge affected a majority of the First Street Neighborhood. Analyzing the map, one can see that many properties on 1st Street, West Front Street, American Legion Drive, and all properties near the Bay experienced Storm Surge during Superstorm Sandy. This correlates with the private properties officially affected by Superstorm Sandy found in the table below. Superstorm Sandy was near the equivalent of Storm Surge from a Category 1 Hurricane so the image below represents both Sandy's Surge and where Storm Surge from a Category 1 Hurricane is estimated to affect the First Street Neighborhood.



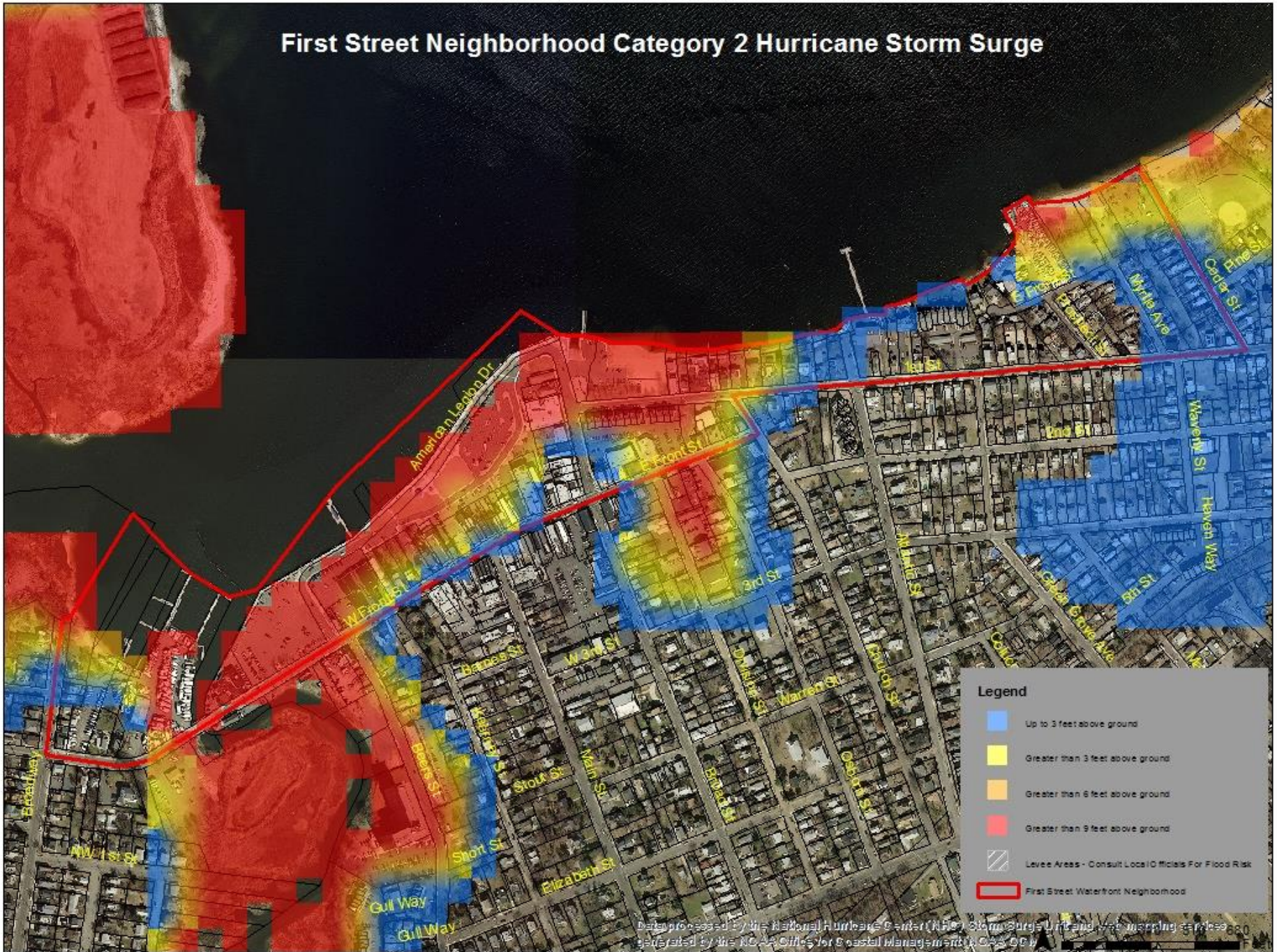
First Street Neighborhood Residences Damaged by Superstorm Sandy*		
Location	Owner	Damage
30 First Street	Corbett, Robert J & Linda M	Garage Destroyed, Basement Flooded
37 First Street	Mangione, Vincent	Water – Rear Wall Collapse
42 First Street	Reedy, Michael & Ann Marie	Water
7 Broadway	Zuback, Ronald & Jane	Erosion
89 First Street	Ruiz, Brenda J	Water, Bulkhead Destroyed
51 First Street	Lane, Michael S	Water
53 First Street	Zieman, William H Jr.	Water & Bulkhead Damage
55 First Street	Dounelis, Athas	Water, Bulkhead & Retaining Wall Destroyed
69 First Street	Florentine, Barbara	Water & Bulkhead Destroyed
75 First Street	75 First St LLC	Water & Hill Erosion
79 First Street	Schafer, Carol H	Hill Erosions
85 First Street	Azzolino, Agnes	Hill Erosions & Damaged Deck
93 First Street	Kosobucki, Lynne C.	Retaining Wall Destroyed & Hill Erosion

*Information gathered from Borough’s Strategic Recovery Planning Report.

The following two maps depict Category 2 and Category 3 Hurricane Storm Surge scenarios for the First Street Neighborhood based on estimates and data from NOAA. The first map below shows Category 2 Hurricane Storm Surge which would threaten additional properties in the Neighborhood when directly compared to Superstorm Sandy surge. The western section of the Neighborhood between American Legion Drive and Broadway would experience almost identical storm surge as Sandy with the only difference being water coming slightly further inland and properties such as 7 Broadway, Hans Pederson Marina, and others experiencing higher water levels of 3 to 6 feet high above ground. Fireman’s Park, the Borough Parking Lot above the park, and the entire Promenade would experience surge of 9 feet or higher. Additionally, a Category 2 surge is expected to push water levels all the way up to West Front Street which would likely mean businesses on the north side of West Front Street would experience higher water levels than Sandy. Homeowners on 1st Street would experience very similar surge as Sandy with slightly higher water levels. A key difference between a Category 2 and Sandy Storm Surge is the eastern section of First Street Neighborhood around Myrtle, Cedar, and East Front Streets where surge is would affect many more residences with around 3 feet of water.

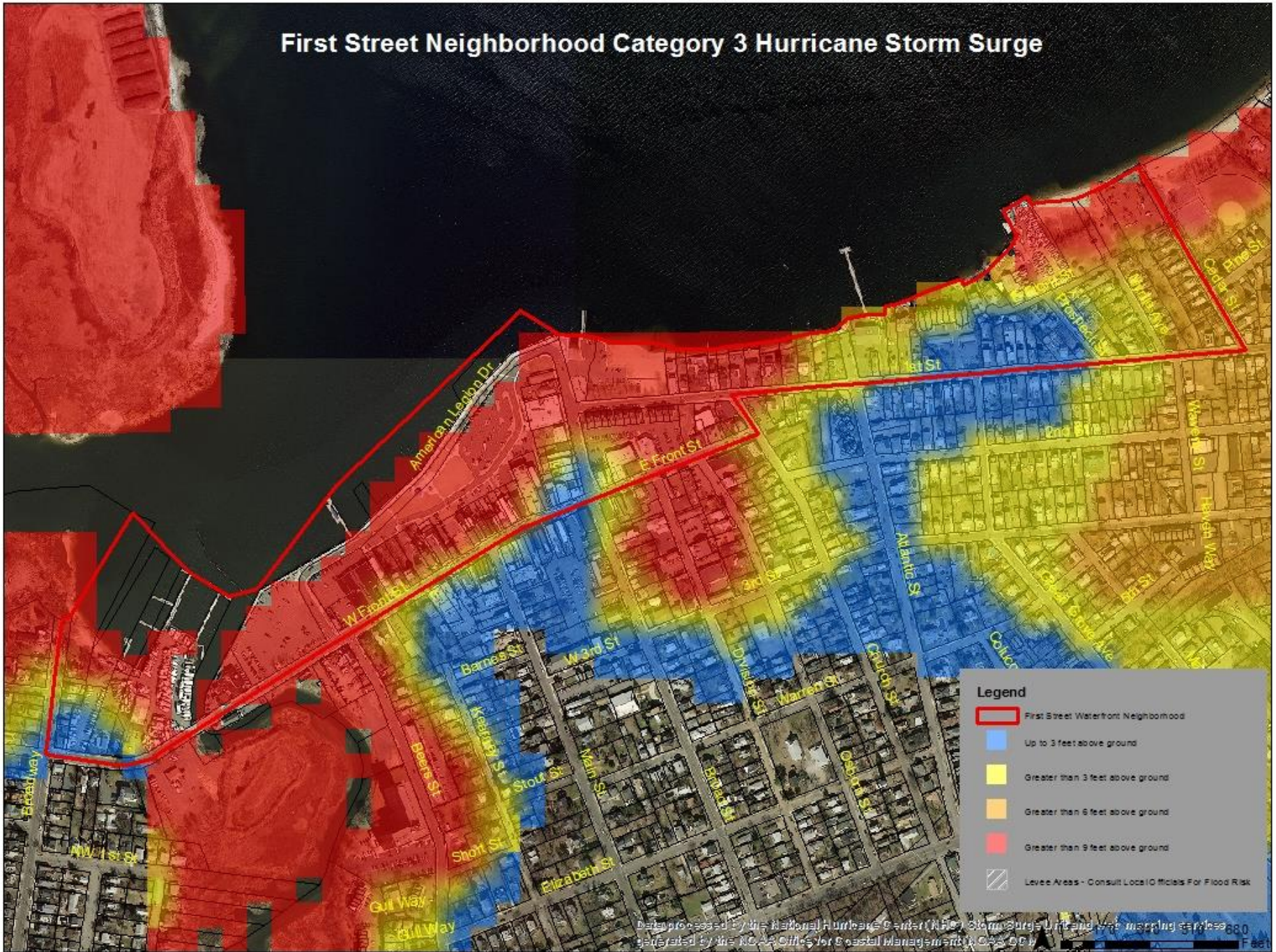
Category 3 Hurricane Storm Surge in the second map below, expects that every single property within the First Street Neighborhood will experience some level of storm surge ranging from 3 feet or less to 9 feet or more. Areas of the Neighborhood that will experience the worst of the surge are any property on the Bay, all businesses on West Front Street, and businesses or homes on 1st Street and beyond. A Category 3 Hurricane or stronger is easily the worst case scenario the First Street Neighborhood faces. The statistical probability of a Category 3 Hurricane directly hitting Keyport is low, but still within the realm of possibility. Therefore, the Borough is recommended to implement mitigation to the maximum extent possible and homeowners or business owners in the First Street Neighborhood are recommended to be as prepared as possible for such a worst case scenario.

First Street Neighborhood Category 2 Hurricane Storm Surge



Data processed by the National Hurricane Center (NHC) Storm Surge Unit and the mapping services generated by the NOAA Office for Coastal Management (OCM) CMA OCW

First Street Neighborhood Category 3 Hurricane Storm Surge



Data processed by the National Hurricane Center (NHC) Storm Surge Unit and the mapping services generated by the NOAA Office for Coastal Management (OCM) and CMAA, LLC. 680 Feet

Vulnerability of Built Environment

Analyzation of the Sea Level Rise and Storm Surge maps confirms both pose major threats to the First Street Neighborhood. Both threats are interconnected as Storm Surge is a threat to the Neighborhood now and will only increase in terms of damage and consequences as Storm Surge levels increase as it's directly connected to Sea Level Rise. Additionally, Sea Level Rise by itself threatens existing infrastructure and Borough land from inundation in the future. These combined threats highlight the fact that the entire built environment of the First Street Neighborhood is vulnerable to one or both of these threats. Specific areas such as the Promenade are vulnerable to Sea Level Rise but Sea Level Rise in itself increases the magnitude of Storm Surge for the Neighborhood. Therefore, Sea Level Rise is a both a direct and indirect threat to the entire Neighborhood's built environment including roads, parks, businesses, homes, and water based recreational amenities. As noted in the previous Storm Surge section, a majority or the entire Neighborhood's built environment is vulnerable. It is recommended to raise existing structures, if possible, to reduce flood damage from Storm Surge and to implement Living Shorelines or raise bulkheads on both public and private properties to combat land being taken from Sea Level Rise. West Front Street also may have to be raised to avoid Sea Level Rise blocking the Right-of-Way.

Within the entire built environment of the Neighborhood are several critical facilities. The map depicted on page 43 below identifies the location and type of these critical facilities. Critical facilities include the entire Waterfront Promenade Bulkhead, Terry Park Bulkhead, Timber Breakwaters near Hans Pederson Marina and the Municipal Boat Launch, Pump Stations on Cedar Street and for the 1st Street Condominiums, Hook & Ladder Fire Company on 1st Street, and Stormwater flooding issues on West Front Street. The Borough Municipal Building is technically outside the First Street Neighborhood but is a critical facility very near to the Neighborhood. These critical facilities are all highly vulnerable to Storm Surge. Additionally, all of these critical facilities are highly vulnerable to Sea Level Rise with the exception of the Beach Park Outfall Pipe, 1st Street Condo Pump Station, and the Hook & Ladder Fire Company on 1st Street. The vulnerabilities in the map below are also highlighted within the Borough's Coastal Vulnerability Assessment (CVA). The following are excerpts from the Borough's CVA that highlight level of vulnerability, exposure, and potential consequences.

FIRST STREET BASIN NEIGHBORHOOD				
COMPONENT NAME	SECTOR	VULNERABILITY RATING		EXPOSURE & CONSEQUENCES
		Sea Level Rise	Storm Surge	
Timber Breakwater	Critical Buildings & Infrastructure	High	High	The breakwater will be effective for lower strength storms but will be completely inundated and not functional during a CAT1 or greater. Sea level rise of 1 foot may bring the entire breakwater below the bay surface.
Common Flooding	Stormwater	High	High	Common flooding at Fireman's park near the Keyport Fishery will only be exacerbated or worsened by sea level rise of 1 foot or greater. The roadway may become impassible due to sea level rise and definitely will be flooded during any Hurricane, Nor'easter, or Tropical Storm.
Waterfront Park Bulkhead	Critical Buildings & Infrastructure	High	High	Sea level rise of 1 foot will bring portions of the waterfront bulkhead underwater. 2 feet or higher of sea level rise will bring almost the entire bulk head and the parking lot near Fireman's Park underwater. The bulkhead will flood 6 to 9 feet from a CAT 2 event. Sea Level Rise will make the waterfront park unusable in certain areas.
Boat Ramp Timber Breakwater	Critical Buildings & Infrastructure	High	High	The Boat Ramp breakwater will be underwater from 1 foot of sea level rise and will not be functional during any storm surge. Sea Level Rise may make the boat ramp unusable in the future.

Storm Outfall	Stormwater	Low	High	Sea level rise of 3 feet will reach the storm outfall at Beach Park and will affect its functionality. The outfall will be inundated during a CAT1 or stronger event and will not be functional.
First Street Condo Pump Station	Critical Buildings & Infrastructure	N/A	Medium	Sea level rise will exacerbate storm surge threatening the condos and its pump station but will not reach the pump station itself. The medium exposure to storm surge may cause the pump station to fail or overflow if a CAT2 event occurs.
Hook & Ladder Company Station	Emergency Facilities	N/A	Medium	Exposure to storm surge may cause damage to the structure. All crucial equipment should be moved upland to avoid damage during a CAT2 or stronger storm. Sea level rise will not impact the station and has no consequences except increased storm surge exposure.
Terry Park Bulkhead	Critical Buildings & Infrastructure	High	High	The bulkhead at Terry Park is exposed to both sea level rise and storm surge. One foot of sea level rise may bring the water above the bulk head and reduce its effectiveness during hurricane events and its usefulness to protect nearby uses. Storm surge from a CAT2 event will flood the entire bulkhead and likely will cause damage.
Cedar Street Pump Station	Critical Buildings & Infrastructure	High	High	The pump station has the same exposures as the Terry Park bulkhead. Storm surge from a CAT2 may cause the pump station to fail and possibly overflow. Rising sea levels will increase the pump stations exposure to flooding and storm surge.

As outlined in the table above many of the Neighborhood’s critical facilities are highly vulnerable. It is recommended to implement mitigation projects such as raising breakwaters, pump stations, or bulkheads to reduce the risk of flood damage from future Sea Level Rise and Storm Surge. In light of the fact that both critical facilities and the entire built environment of the First Street Neighborhood is vulnerable to these threats, it is recommended to explore large flood mitigation projects that would reduce the overall vulnerability and risks for the entire Neighborhood. In summation, critical facilities and the overall built environment are highly vulnerable to both Seal Level Rise and Storm Surge with Storm Surge posing the highest risk of damage, especially in the short term. Immediate action to combat these threats, reduce overall vulnerability, protect critical facilities, and increase the resiliency of the Neighborhood is recommended.

First Street Neighborhood Critical Facility Locations



Social Vulnerability

Population density within the First Street Neighborhood is higher in comparison with other Neighborhoods and sections of Keyport. The main reason for this higher density is because of the increased number of apartments within the Neighborhood including the rental units available above ground floor commercial in the Downtown Commercial District. With a higher population density, the overall social vulnerability is high as evacuation from dangerous storms or hurricanes may take some time given the number of overall housing units and that those near the Bay will be affected first by Storm Surge. According to the image below, the First Street Neighborhood has a 5% or less in the eastern section of the Neighborhood and between 5 to 15 percent of residents Age 65 or older. Any residents with special needs or mobility issues in the Neighborhood should be identified so that Borough staff and professionals can ensure their evacuation in a timely fashion in the event of an emergency.



Low income residents are in the Neighborhood as depicted in the map below. The Neighborhood falls into two categories of 2% or less and 2.1% to 10% of residents that are considered near or below the poverty line. These residents may not have access to vehicles and may rely on public transit or other means to evacuate. Borough emergency services are recommended to ensure all apartment units and homes in the Neighborhood are effectively evacuated in the event of an emergency.



Vulnerability of Transportation

Evacuation routes are not vulnerable to current FEMA Flood Areas as they are well within the southern section of the Borough and not near the First Street Neighborhood. However, access to these evacuation routes are vulnerable especially West Front Street and 1st Street. These roads lead to or provide a path to the Borough's evacuation routes which makes it imperative that all First Street Neighborhood citizens evacuate prior to any disaster or major flooding event. In terms of public transit the 817 NJ Transit Bus Route is vulnerable to flooding and storm surge as the bus route traverses through the First Street Neighborhood along West Front Street and 1st Street. During an emergency flood situation, the bus route would be blocked and most likely would not be operational. In this respect, the Neighborhood's access to transportation facilities and evacuation routes are vulnerable to major storm events and flooding. The map below displays how Keyport's current flood zones impact on the Neighborhood's roads and transportation infrastructure access.



Vulnerability of Natural Environment

There are several environmental or natural areas that are located within the First Street Neighborhood such as beaches, wetlands, marshes, or freshwater/saline water bodies. The entire Bay is a saline water body which is part of the Neighborhood’s natural environment. Additionally, there are beaches at Terry Park, Beach Park, and at the end of Broadway that also include natural dunes, wetlands, or marshes. It is recommended to increase the presence of a natural environment to reduce impervious surface and improve stormwater management. Ideally, this would manifest itself through improved dunes, building living shorelines to mitigate flood areas, and other tactics to reduce erosion and vulnerability to the Neighborhood and improve the overall natural environment in the First Street Neighborhood.

Recommendations and Resilient Measures

The Neighborhood's current conditions, threats, and vulnerabilities are outlined providing insight into areas of potential improvement. This section will focus on recommendations and possible resilient measures for the First Street Neighborhood with the ultimate goal of reducing flood damage and improving resiliency for the entire Neighborhood including its built environment, critical facilities, and natural environment. First and foremost, it is recommended to implement or continue recommendations in the Strategic Recovery Planning Report that pertain to the First Street Neighborhood.

SRPR Recommendations

Beach Park Outfall Improvements

- Improve the existing stormwater management facilities for draining Division Street and First Street including capacity and larger pipes both for the outfall pipe and the overall system in order to prevent backwater flooding from the Bay;

Harbor Commission Recommendations:

- Dredge silted channels of Luppataong Creek;
- Implement Army Corps recommendations for a levee and/ or wave break; and
- Acquisition of the Ye Cottage Inn lot for permanent open space and possible public boating facilities.

Raise Bulkheads along First Street and Raise Abutting Land:

- Continued need for higher bulkheads with sea level rise and rising storm surges;
- Combine with elevation of occupied structures; and
- Fill land behind elevated bulkheads for capped bulkheads per NJDEP requirements.

Elevate Occupied structures in Special Flood Hazard Areas especially where bulkheading is not an option;

Replace or combine rip-rap with bulkheading in areas of extreme coastal erosion;

Bulkhead extension at Fireman's Park;

Combination of elevated bulkheading and overall elevation of the First Street Firehouse parking lot to create the effect of a levees at 12.5 feet;

Acquire key properties for Open Space expansion; and

Develop Design Standards for specific zones of the Neighborhood and also for integrating elevated structures into the existing Neighborhood Character.

Future Storm and Disaster Preparedness

The Borough since Day 1 of Post-Sandy New Jersey has been working hard and admirably to recover, improve, and rebuild the Borough. Resiliency efforts such as the Post Sandy Planning Assistance Grant and the Getting to Resiliency Program offered by JCNERR through Rutgers University have continued the Borough's efforts with more of a focus on strengthening the Borough's resiliency to storms and reducing the risk of flood damage. A key resiliency effort, as outlined in the Borough's Getting to Resiliency Report, is future storm and disaster preparedness. Being prepared for a disaster with a detailed plan in place where all participants know their jobs and goals can significantly decrease the physical, emotional, and social damage a major disaster can evoke upon the Borough. Communication with residents, Borough staff, and emergency services can be the key in stemming the extent of damage to the Borough and the efficiency of recovery. Below are key preparedness recommendations from the Getting to Resiliency Report and other related recommendations that can be applied to the First Street Neighborhood:

Pre-Flood Plan

Develop a pre-flood plan that disseminates key information to residents such as evacuation routes, safety procedures, and recovery operations. This should include the location of the Borough's emergency shelters, emergency operations center, and supply areas;

Special Needs Database

Create a special needs database for the First Street Neighborhood and other areas of the Borough. This database should include elderly citizens with mobility issues that may need special assistance during an evacuation, citizens that do not have access to a car or public transit during a disaster, and anyone else in the Neighborhood that requires special needs during an evacuation;

Emergency Operations Plan

Create an emergency operations plan that describes the hierarchy during emergencies and highlights the jobs of first responders. The First Street Neighborhood should be included in the Plan with respect to any necessary preparations to the Neighborhood prior to a storm such as protecting critical facilities or preparing emergency shelters;

Evacuation Plan

Create an evacuation plan that incorporates the special needs database and all citizens within the Neighborhood and overall Borough. The Plan should include how to efficiently evacuate, alternate routes if primary routes are flooded, and safe locations for evacuees; and

Relocation of Critical Equipment

In anticipation of a major disaster, crucial Borough equipment and vehicles that are in flood zones should be moved to higher ground to ensure they can be used in disaster evacuation, response, and overall operations.

Implementing these recommendations will help the Borough of Keyport and the Neighborhood better prepared to tackle the challenges of any disaster and reduce the extent of damage to the Borough. In addition to the recommendations from other reports, this Plan proposes the following recommendations to improve resiliency for the First Street Neighborhood.

Green Streets

It is recommended to incorporate Green Streets or other alternative mitigation strategies in conjunction with the recommended stormwater improvements to East Front Street and other locations such as 1st Street. Incorporating Green Streets would supplement an existing or upgraded stormwater system and reduce the strain during a major storm to allow water to more naturally percolate into the ground. Green Streets have several options that may be implemented to increase the capacity and efficiency of the system. Green Streets utilize green stormwater infrastructure methods to capture stormwater runoff. These methods can be used on existing street conditions. The City of Philadelphia developed a Green Streets Design Manual which is an excellent resource for design standards, green stormwater infrastructure options, and creative approaches to reducing impervious coverage on streets and Right-of-Ways. The following are some design concepts of green stormwater infrastructure methods from the Green Streets Design Manual that can potentially be implemented onto Neighborhood streets to mitigate flood damage and increase resiliency of the Neighborhood. The design manual and more Green Streets information can be accessed here, http://www.phillywatersheds.org/what_were_doing/gsdm

Figure 2.1: Three-Dimensional View of a Stormwater Planter



Figure 2.3: Three-Dimensional View of a Stormwater Tree

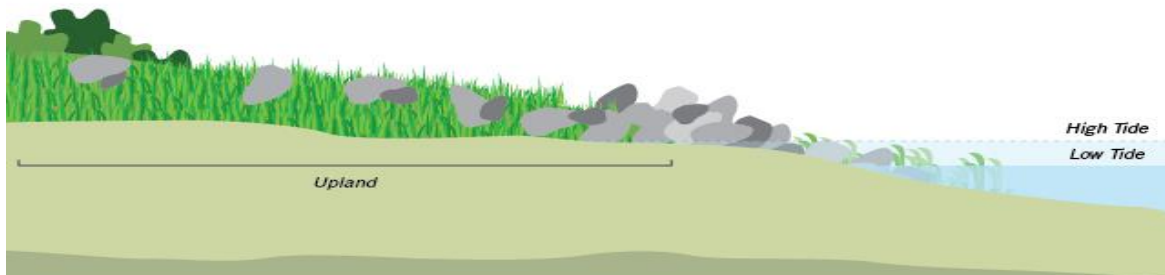
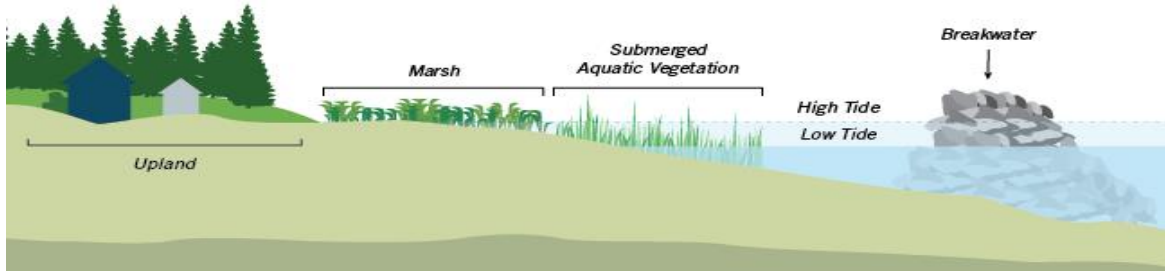
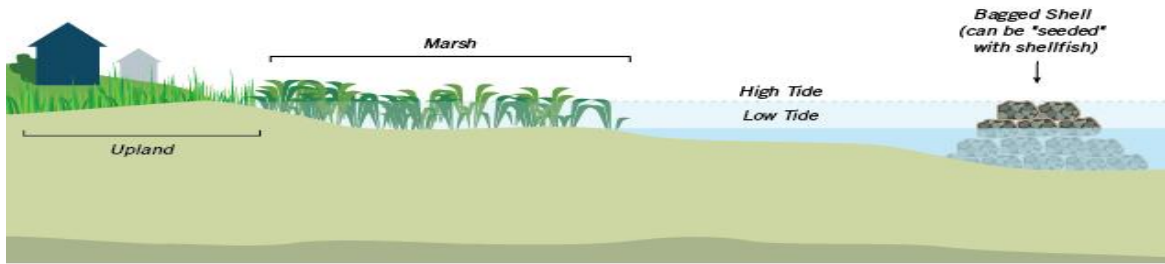


Source: City of Philadelphia Green Streets Design Manual, dated 2014



Develop a Hybrid Strategy to Mitigate Sea Level Rise and Storm Surge

As detailed in the vulnerability assessment, the entire First Street Neighborhood is at risk in multiple areas and locations of loss of infrastructure and land from Sea Level Rise and significant amounts of damage from storm surge from any extreme precipitation events. In order to mitigate these risks and increase the Neighborhood's resiliency, it is recommended to adopt a hybrid strategy that combines natural and built defense structures to resist Sea Level Rise and Storm Surge. This would manifest itself in elevated bulkheads, levees, wave breaks, living shorelines, improved dunes, increased open space along the Bay, Green Stormwater Infrastructure, and other similar options. All of these would coexist and work together to reduce and mitigate the effects of Sea Level Rise and Storm Surge for the First Street Neighborhood. Some examples of living shorelines, wave breaks, and other techniques are shown in the images below.





This hybrid strategy recommendation includes the following potential actions:

- Implement Living Shorelines at Beach Park, the end of Broadway, and Terry Park to reduce the effects of storm surge and slow Sea Level Rise;
- Improve existing dunes at Terry Park and at the end of Broadway;
- Overall drainage improvements to the Neighborhood to assist in mitigating floods including Green Stormwater Infrastructure
- Construct a wave break in the Raritan Bay harbor to decrease wave action and reduce the strength of any storm surge making its way to the First Street Neighborhood and beyond;
- Elevate existing bulkheads and add bulkheads wherever possible, especially at Fireman’s Park to combat Sea Level Rise;
- Implement the Army Corp of Engineer recommendations for the First Street Firehouse parking lot in conjunction with Division Street stormwater improvements; and
- Acquire at-risk properties along the Raritan Bay for open space whenever the opportunity presents itself.

Elevate Pump Stations and Address Critical Facility Vulnerabilities

Based upon the vulnerability assessment’s findings that several critical facilities require resiliency improvements, this recommendation encourages the Borough to address these vulnerabilities. It is recommended to raise the pump stations and related critical infrastructure to above base flood elevation, raise existing bulkheads to combat Sea Level Rise, improve breakwaters to handle increased storm surge, prepare a plan to address the possibility of losing West Front Street to Sea Level Rise, prepare a plan to protect the fire station’s critical equipment, and improve the Beach Park outfall pipe.

Reduce Impervious Surfaces

It is recommended to reduce impervious surfaces throughout the Neighborhood and increase open space to the maximum extent possible. Removing impervious surfaces through either pervious surface enhancements or natural open space will increase the amount of stormwater and flood waters that can be naturally percolated into the soil. Reducing overall impervious surface in the Neighborhood will also lower the strain put on existing or improved stormwater systems. Potential means of reducing impervious surface in the Neighborhood are Green Streets outlined above, more street trees or planters throughout the Neighborhood, installing green roofs on existing structures, and to look into possibly converting the existing parking lot on the corner of 1st Street and Church Street into permeable pavement or permanent open space. Creating the exiting parking lot into Open Space would have the additional advantage of potentially installing further stormwater management improvements.

Raise Structures and Purchase At-Risk Properties

Reduced impervious surfaces and improved stormwater systems will certainly improve resiliency and mitigate flood hazards but as the Vulnerability Assessment shows, many properties within the Neighborhood basin will still experience flood damage from a major hurricane's Storm Surge. In order to combat this and increase resiliency, it is recommended to raise occupied structures and buy at risk properties to be turned into open space.

Streetscape Improvements

It is recommended to upgrade and improve streets and sidewalks where needed and to add streetscape improvements within the Neighborhood. These improvements may include new sidewalks, curbing, benches, street trees, bike parking, and lighting. Specific areas that could use curbing, sidewalk, and asphalt improvements include East Front Street, Division Street, sidewalks on Church Street, and specific areas of Broad Street. Streetscape improvements could be implemented on 3rd Street, East Front Street, and Division Street in conjunction with any planned Green Street improvements. For example, stormwater trees would also act as street trees and could be supplemented with other streetscape improvements such as lighting similar to those found on 1st Street, benches, and bike parking. Streetscape improvements on East Front Street may provide the added benefit of improving the overall character of the Downtown Commercial district and provide a more pleasant pedestrian experience for retail and business customers.

Sustainability Practices and Leadership in Energy and Environmental Design (LEED) Concepts in Zoning Ordinance

It is recommended to consider updating the Borough zoning ordinance with sustainability practices and LEED concepts. LEED is a green building certification program to increase sustainability and lower a building's carbon footprint. In order to achieve LEED certification for a Neighborhood or one structure would require a very large retrofit or redevelopment. As Division Street Neighborhood is very established at this point, major redevelopment or retrofitting of existing structures may prove difficult. However, if it does occur, the Borough should encourage developers to seek LEED certifications. A more practical avenue may be to update the Borough ordinance to include sustainability practices that LEED strives to incorporate such as reduction in water use, reduction in energy use, reduction in stormwater runoff such as green roofs, and using alternative forms of energy such as solar panels. If the Borough updates their zoning code to allow or encourage these practices, it opens the door for more sustainable building and possibly the introduction of LEED certified buildings.

Monitor Ongoing Army Corp of Engineer Projects in Surrounding Municipalities

The Army Corp of Engineers is implementing a very large capital project known as the Hurricane Sandy Limited Reevaluation Report (HSLRR) for Coastal Storm Risk Management in Union Beach, New Jersey. This HSLRR's recommended plan includes levees, roller gates, floodwalls, and other major flood mitigation projects right on the border of Keyport near Aeromarine and where Route 36 enters Keyport from Union Beach. The impacts of these projects should be monitored to ensure flood waters are not pushed towards Keyport once the HSLRR plan is implemented.

Zoning Ordinance Recommendations

Keyport is recommended to review its General Commercial district bulk standards and potentially revise in order to maintain the existing Downtown character as any development or redevelopment occurs. Additionally, it is recommended to revise the Borough's Zoning Ordinance to permit hazard mitigation techniques such as living shorelines, green stormwater improvements, and other techniques noted herein.