Beers Street Neighborhood Plan

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Borough of Keyport
Monmouth County, New Jersey

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Introduction

The New Jersey Department of Community Affairs (NJDCA) established the Post Sandy Planning Assistance Grant Program to support long range planning for community redevelopment in the municipalities and counties that sustained damage from Superstorm Sandy. The Program provides grants to municipalities and counties to assess conditions created or exacerbated by the storm, identify approaches to recovery that will be more resistant to damage from future storm events, and provides local governments with tools needed to efficiently manage municipal operations, supplementing the ongoing efforts of the storm-impacted local and county governments to rebuild and revitalize.

One such tool is the Strategic Recovery Planning Report (SRPR) which provided the Borough with an evaluation of the impacts of the disaster on relevant community features with a focus on planning goals, strategies, and priorities leading to actions that are most urgently needed for public safety and economic recovery. This guide not only identifies actions to be taken going forward to recover from the effects of Superstorm Sandy but also to reduce vulnerabilities to future disasters.

Figure 1 View of W. Front Street near Beers Street prior to Sandy landfall
Photo Courtesy Jessica Bame Aumack

The Borough of Keyport adopted their SRPR on April 17, 2014 and supplemented it with an amendment on August 24, 2014 which included a recommendation for the Borough to undertake Neighborhood Plans in four areas; Division Street basin, Walnut-Oak Street basin, First Street Waterfront and the Beers Street basin.

Keyport Borough's Beers Street neighborhood was inundated by flood waters destroying homes, businesses and compromising evacuation and recovery efforts. This Neighborhood Plan provides an overview of the neighborhood, an analysis of the development pattern within the Neighborhood and related zoning requirements to aid in determining specific recommendations to preserve and reinforce the neighborhood's existing core residential characteristics while making the neighborhood more resilient to future storm events and ensuring the residents' health, safety and general welfare.

The Beers Street Neighborhood Plan was prepared with the involvement and input from neighborhood residents and officials. Initial development of the plan began with a review of all relevant planning data for the Borough including the Borough's Post-Sandy SRPR, Master Plan and re-examination reports, existing land use and development regulations, geospatial data using a Geographic Information System (GIS), tax assessment property data, flood and storm surge projections, FEMA Flood Hazard areas, shoreline data, and environmentally sensitive areas. This

collection of data was used to start a conversation that would identify Borough and residents' priorities.

A public input session for residents to assist in the planning process was held on June 30, 2016 at the Keyport Consolidated Firehouse. At this meeting, planning staff reviewed the existing conditions with Borough residents and sought insight and recommendations for the neighborhood via a preference survey. Residents had an opportunity to ask questions and provide additional feedback. The feedback from this meeting was then used to develop the goals, objections, recommendations and actions listed in this Neighborhood Plan.

The Plan is supplemented with recommendations that identify specific strategies to mitigate, reduce or prevent impacts to the uses within the neighborhood from natural disasters and increase resiliency via sustainable design, green building techniques, green infrastructure and engineering controls, enhancement or restoration of natural systems. The preparation of the Beers Street Neighborhood Plan is intended to complement the Master Plan and other Post-Sandy Phase II planning projects being undertaken by the Borough.

Figure 2 Neighborhood Area Map

Neighborhood Description

The area of the Beers Street neighborhood, as viewed for this study, consists of the lands adjacent to the easterly bank of Luppatatong Creek on the south side of Front Street, across Beers Street east to the centerline of Kearney Street and south to the centerline of Elizabeth Street.

This area of the Borough exhibits a somewhat unique topography of floodplain and highland within a very small geographic area and that topography defines three distinct streetscapes in the neighborhood: Beers Street, Kearney St. and Elizabeth St. These three streets consist of different land uses, configurations and design characteristics.

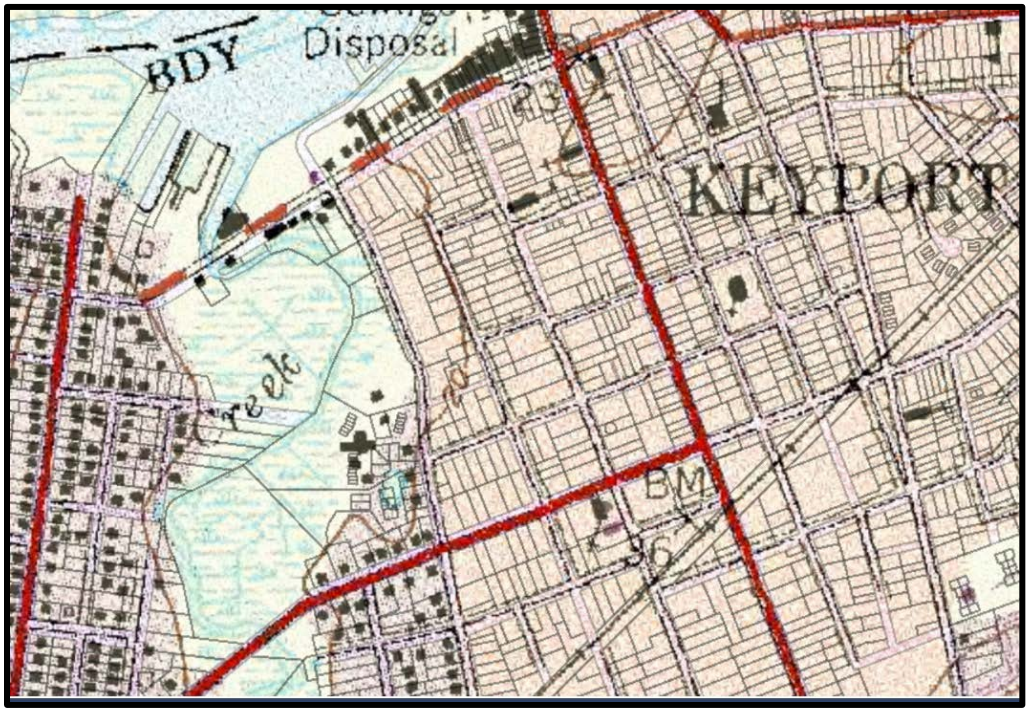


Figure 3 USGS Topographic Map

- Beers Street: a wide boulevard that slopes up from the waterfront to a ridge that runs roughly along Maple Place and Elizabeth Street. The west side of the street is constrained by the Luppatatong Creek. Its winding tidal, floodway hugs the rear of these lots and contributes to the irregular lot depths and shapes on this side of the street. The Keyport Legion/Leisure Bay tower dominates the streetscape, along with the view of the creek across landscaping surrounding the tower. The adjoining vacant lots between the tower and the commercial uses at the north end of the street provide further views of the creek. On the east side of the street, the pattern of development took advantage of the broad flat plain at the base of the Kearney Street ridge, with numerous long narrow lots. These lots have low front yards and the rear yards rise to meet the ridge formed along Kearney Street. There are a few single and two-family residences on this side of the street, and a row of single-family attached housing, originally constructed in the 1960s, currently being rebuilt as new townhouses. Aside from Keyport Legion/Leisure Bay and the townhouse

developments, the non-conforming residential uses have general appearance of being single-family structures.

- Elizabeth Street: on the north side of Elizabeth Street, large Victorian-styled homes with front porches, gingerbread trim and lush landscaping front on the 50 ft. wide right-of-way that has a combination of old slate and new concrete sidewalks and curbing. These homes are in the Residential RA district but consist of single-family and multi-family uses.
- Kearney Street: Kearney Street is located on a topographic rise, approximately elevation of 20 feet NAD83, south of Front Street. Split between the RA and RB zoning districts, this portion of the study area is focused on the west side of the very narrow (35 foot wide) right-of-way of Kearney Street and includes properties that front on Short Street, an east-west connector between Kearney and Beers Streets. The houses are a mix of single and two family dwellings on varying sized lots with minimal building setbacks; some dating to the 1800s, while others are of recent construction. Although the zoning district requires a minimum lot width of 75 feet, virtually every lot on both sides of the street is deficient for lot width and the buildings are placed close to the street. These features combined with the exceptional narrowness of Kearney Street gives the streetscape a crowded feeling. There are concrete sidewalks, some very degraded, and in some instances there is no curbing between the pavement and sidewalk.

Existing Land Use

There are a total of 76 properties within the study area which comprises a total of 19.4 acres; this constitutes 2% of the total Borough acreage.

The primary use in the neighborhood is single and two-family residential with approximately 90% of the properties being used as dwellings. A very small percentage of structures, less than 3%, are used as multi-family, having three or more dwellings in a building. Approximately 7.8% of the properties within the neighborhood are commercial uses.

There is a very small percentage of vacant land in the neighborhood, which consists of 6 tax lots; three of which adjoin each other and have approval for development that pre-dates Sandy. The remaining vacant parcels are compromised by their small size or environmental constraints:

- Former Kara Homes site (Block 22 Lots 26, 30 & 31) – approved for nine single-family lots
- Former Hot Dog Bob's site (Block 22 Lots 24 & 25) – next to Keyport Fishery
- Vacant municipal lot next to Apollo Sewer (Block 22 Lot 29)

Exhibit 'A' contains an Existing Land Use Map of the neighborhood that was prepared using current New Jersey Property Tax MOD-IV data.

Zoning

Four zoning districts cover the area: GC General Commercial, RC Residential Zone 'C', RB Residential Zone 'B' and RA Residential Zone 'A'. A copy of the current Zoning Map is included in the appendix.

Exhibit 'B' depicts the current Borough Zoning Map and Exhibit 'C' contains the full Zoning Schedule. The following schedule illustrates the lot requirements for each district:

District	Minimum Lot Requirements		Minimum Required Yard Depth						Maximum Percent of Lot Coverage by Buildings Inclusive of Accessory Buildings	Maximum Height		Maximum Percent Coverage		Maximum Percent of Lot Coverage by all Buildings and Impervious Surfaces
			Principal Building				Accessory Building							
	Area (square feet)	Lot Width (feet)	Front Yard (feet)	Minimum One Side Yard (feet)	Both Side Yards (feet)	Rear Yard (feet)	Side Yard (feet)	Rear Yard (feet)		Stories	Feet	Principal Building	Accessory Building	
RA and RA (PRD)	7,500	75(3)	20	6	16	15	3	3	40	2.5	30	30	10	60
	For Single Family, same as RA; For Planned Residential Development - see section													
RB														
1 family	7,500	75	20	6	16	15	3	15	40	2.5	30	30	10	60
2 family	7,500	75	20	6	16	20	3	15	40	2.5	30	30	10	60
RC														
1 family	7,500	75	20	6	16	15	3	15	40	2.5	30	30	10	60
2 family	7,500	75	20	6	16	20	3	15	40	2.5	30	30	10	60
NC	7,500	75	5	N/A	10	25	3	15	75	2	25	75	15	90
GC	N/A	N/A	N/A	N/A	N/A	N/A		N/A	85	3	35	85	15	90

Figure 4 Borough of Keyport Zoning Schedule

Generally, each of the 'R' districts permits single-family detached dwellings as the principal use on each lot. In the 'RB' two-family dwellings are permitted as conditional uses while in the 'RC' district they are principally permitted. Conversely, in the GC district no residential uses are permitted. Townhouse and multi-family uses are not permitted in any of the neighborhood's zoning districts making a substantial number of structures non-conforming.

Non-conforming Uses

Without a special blanket exemption to permit reconstruction following a catastrophic event, each of the following non-conforming uses faces a regulatory obstacle in the form of Zoning Board approval of a use variance, in order to be reconstructed following flooding or other loss. Per the Borough's code (25:1-19), in the event of destruction or damage exceeding 70% of their assessed value or 50% building volume, a structure containing a non-conforming use is not permitted to be rebuilt.

This puts a significant burden on property owners and potentially would create a substantial loss of housing units and negative impact to the municipal tax base if these structures could not be rebuilt. Vulnerability Assessment that follows details the fiscal impact of the loss of these uses would have on the municipal tax base.

The following are examples of non-conforming uses that exist in the neighborhood and impacts they suffered during Sandy:

- Keyport Legion/Leisure Bay Apartments and Sandpiper Townhouse Condominium are non-conforming multi-family uses in the RC District. While the Sandpiper development only suffered minor flooding, principally to the common elements of the site, the Keyport Legion/ Leisure Bay Apartments had significant losses to its ground floor level and still is not restored to pre-storm conditions.

Figure 5 Sandpiper Townhouse Complex

Figure 6 Keyport Legion/Leisure Bay Apartments

- 45 Beers Street – townhouses destroyed by Sandy which are currently under construction are not permitted uses in the RC District.

- Existing two- and three-family homes on Kearney and Elizabeth Street are in the RA District which only permits single-family dwellings.

- Residential use in the GC District which only permits business uses.

- Apollo Sewer, the utility contractor's office and storage yard at the corner of Beers Street and Front Street is not a use permitted in GC District.

Figure 7 Multi-family Dwelling on Elizabeth Street

Figure 8 Non-conforming commercial use in the GC District

Figure 9 Residence in the GC District

Zoning Recommendations

In order to facilitate recovery from future storm damage by residents, it is recommended that the following revisions be made to the zoning districts that cover the Neighborhood:

- Creation of overlay zoning or conditional use provision to permit existing Multi-family and Townhouse uses to be rebuilt without extensive variance and site plan approvals.

- Amend the permitted uses in GC District to encourage redevelopment of vacant and dilapidated properties for mixed residential-commercial use.

- Permit encroachments into setbacks for uncovered stairs and platforms to access elevated structures or for supplemental utility equipment such as generators and battery back-up systems.

Environmental Constraints

Wetlands and Open Waters

The western boundary of the Beers Street neighborhood is Luppatatong Creek, a tidal waterway, the path of which is continuously subject to erosion and sedimentation and during storm events entire segments of the creek may be damaged and its alignment temporarily interrupted. The east side of Luppatatong Creek is made up of a three shoreline types: gabion wall, traditional bulkheading and natural shoreline. There are no provisions for maintenance and improvement along this shoreline.

Luppatatong Creek has a Surface Water Quality Classification designated by the NJDEP as FW2-NT/SE1, freshwater subject to man-made wastewater discharges that are non-trout producing and associated with a saline estuary. This waterway is also adjoined by regulated wetlands that have been identified by the NJDEP as containing habitat suitable for State Threatened Species. Specifically, three bird species that are listed as State Threatened, the black-crowned night heron, yellow-crowned night heron and osprey, have been observed in these wetland areas. Exhibit 'D' depicts the potential extent of these areas and includes detailed species occurrences compiled by the NJDEP.

Development occurring adjacent to these wetlands may be subject to additional restrictions designed to mitigate impacts on these species' populations and to preserve habitat. These features may provide opportunities to encourage preservation or use for passive recreation in addition to their assistance in mitigating flood impacts and land subsidence.

Soils

The soils that make up the developed portions of the neighborhood are Pemberton loamy sand (PegB) and Tinton-Urban land complex (ThhB) while the area of the creek and adjacent wetlands consist of Appoquinimink-Transquaking-Mispillion complex (AptAv). The Tinton-Urban land soils exhibit high depth to groundwater and are well drained while Pemberton loamy sands have shallow depth to groundwater between 12 and 48 inches and are considered moderately well drained. The Appoquinimink-Transquaking-Mispillion complex soils are very frequently flooded with groundwater found at or just below the surface. A detailed soils map of the neighborhood as depicted by the USDA Natural Resources Conservation Service is provided in Exhibit 'E'.

Figure 10 USDA Websoil Survey Snapshot

Flooding Risks

Flood Hazard Area

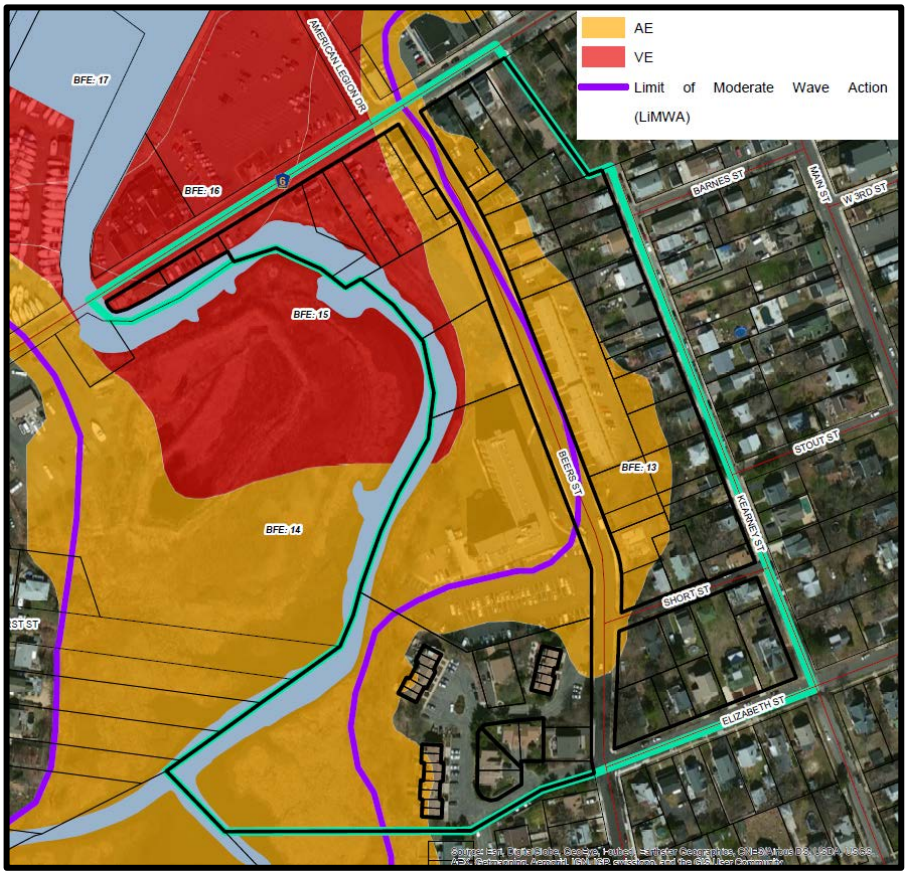


Figure 11 Excerpt of Preliminary FIRM January 31, 2014

The Beers Street neighborhood is subject to flooding from heavy rain, surface runoff, tidal events, hurricanes, and other storms. The topography and elevation of the neighborhood along with its proximity to tidal waterways exacerbates flooding problems caused by surface run-off and poorly drained soils.

The Flood Insurance Rate Map (FIRM) for the Borough is currently in the process of being updated. Advisory Base Flood Elevation Maps (ABFEs) were adopted shortly after Hurricane Sandy followed by Preliminary FIRM maps issued on January 31, 2014. A technical appeal of the Preliminary FIRM maps was made by the City of New York after finding technical and scientific errors in FEMA's modeling that overestimated the height of the BFE by between 1 and 2.5 feet across the city. If the City's appeal is successful, the BFEs as depicted in the current Preliminary FIRMs will decrease and the extent of the one-percent annual chance floodplain will decrease.

The current mapping indicates most of the area of Beers Street lies within the Special Flood Hazard Area, with a base flood elevation between 13 and 14 feet and areas of moderate wave action. This includes the adjoining properties on either side of the street up to Short Street.

This area corresponds, roughly, with the topographic bowl/ridge described earlier. The Keyport Legion/Leisure Bay tower lies within the Special Flood Hazard Area subject to moderate wave action with a base flood elevation of 14. The townhouses at 45 Beers Street fall just outside the area of moderate wave action, but are within the Special Flood Hazard Area with a base flood elevation of 13. Properties on Kearney and Elizabeth Street are located outside the flood zone. A few properties in the Sandpiper townhouse development and on W. Front Street are located in Zone X, Areas of 2% annual chance flood/areas of 1% annual chance flood with average depths of less than 1 foot.

Shallow Coastal Flooding

In addition to the vulnerability analysis that follows, historical flood events due to lesser storms and moon tides have affected Beers Street and its adjacent properties.

Beers Street is often closed to vehicle traffic periodically throughout the year due to incidental or inconvenient flooding. Borough resident Michael Lane has provided documentation of numerous occasions of street flooding in the neighborhood during nor'easters, hurricanes and moon tides from the last 25 years.

That documentation in combination with historic aerial photography illustrate the root cause of the nuisance flooding in Beers Street.

Figure 12 Extent of Shallow Coastal Flooding

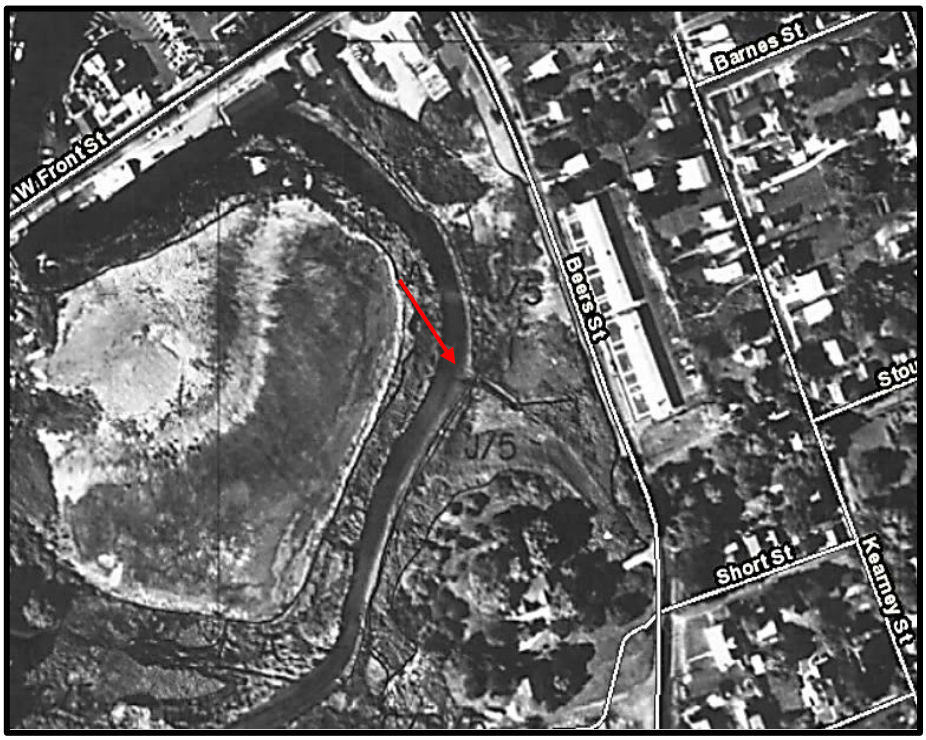


Figure 13 NJDEP 1970 Wetlands Basemap

There is a topographic low point in the roadway that coincides with the northerly driveway of the Keyport Legion/ Leisure Bay Apartments and drainage inlets in Beers Street. This location also lies along a former drainageway from Beers Street into Luppatatong Creek that apparently was filled during the construction of the Keyport Legion/Leisure Bay Apartments.

The combination of the roadway's low surface elevation, shallow depth to groundwater and poorly draining subsoils creates a perpetual flooding condition that compromises the structure of Beers Street and creates a long-lasting maintenance and repair obligation.

This condition creates a potential vulnerability for Beers Street to operate as a major travel way as an evacuation route and reduces the Borough's opportunities for rescue access and restoration routes. This condition also contributes to the gradual degradation of neighborhood appearance and property values as damage and excessive maintenance and repairs are delayed or forgone in anticipation of damage due to the next flood event. Constant inundation from persistent shallow flooding and incremental sea level rise will eventually affect subsurface infrastructure and create permanent access restrictions on Beers Street and W. Front Street.

The properties on Elizabeth and Kearney Street do not experience the same nuisance flood events that occur in Beers Street due to their higher elevation along the topographic ridge, and in Kearney Street, the stormwater collection system provides some measure of storage due to the depth and size of the inlet structures there.

Storm Surge

SLOSH is a computer model developed by the National Weather Service (NWS) and stands for Sea, Lake, and Overland Surge from Hurricanes and does not include impacts from other storm features such as rainfall amounts or wind-driven waves.

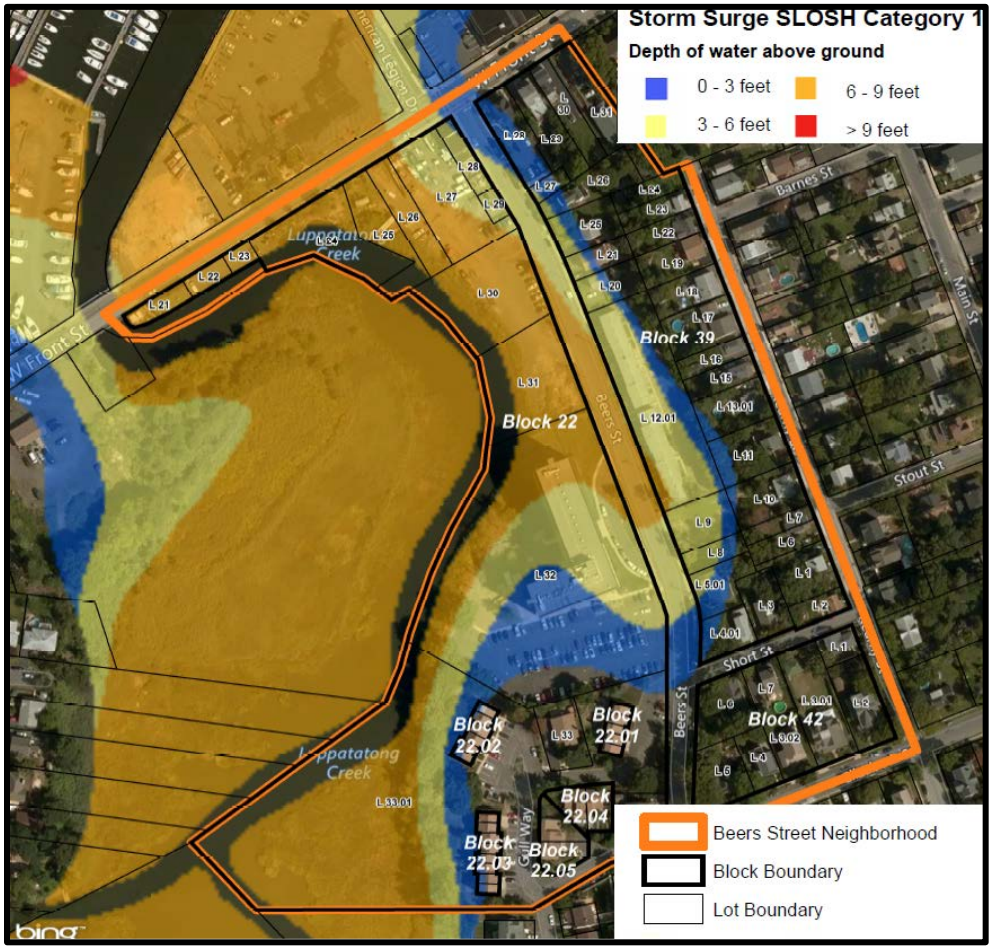


Figure 14 Category 1 SLOSH Map

Category 1, 2, & 3 SLOSH models for the Beers Street Neighborhood were run by the Jacques Cousteau National Estuarine Research Reserve (JCNERR) to estimate storm surge heights and winds that could result due to hypothetical, historic or predicted hurricanes.

As depicted in the maps found in Exhibits 'I- K', the storm surge associated with a Category 1 storm event would significantly impact the neighborhood, quite similarly to the

effects of Hurricane Sandy. During a Category 2 storm event, storm surge would further inundate the neighborhood, including properties on Kearney Street. Portions of Beers Street and W. Front Street would be inundated by more than 9 feet of water. During a Category 3 storm event all but one property in the neighborhood would be inundated and the extent of the surge would extend well beyond the boundaries of the study area.

Sea Level Rise

These same areas are projected to be affected by sea level rise. This phenomenon has a slow, incremental impact that may not be easily perceived and often exacerbates other flood events. The following map illustrates the areas of the neighborhood that may be affected by sea level rise based upon modelling projections made by the National Oceanic and Atmospheric Administration (NOAA).

Figure 15 NOAA Projected Extent of 3 Foot Sea Level Rise

According to this model, the majority of properties within the neighborhood will not be severely impacted by sea level rise below 4 feet, however sea level rise of 2 feet will result in Beers Street being completely unpassable at the Keyport Legion/Leisure Bay low point.

At 3 feet of sea level rise flooding within Beers Steet will extend beyond the Keyport Legion/ Leisure Bay low point. The townhouses at 45 Beers Street will become 'waterfront' property. The pending development on the former 'Kara Homes' site will be completely inundated, as will be the Keyport Fishery and a significant portion of W. Front Street.

The open space areas adjacent to Luppatatong Creek at Keyport Legion/Leisure Bay and the Sandpiper townhouse complex may experience a transition to a more saline environment which may degrade the quality of the landscape that buffers these developments.

Evacuation Zones and Routes

A Hurricane Evacuation Study performed in 2007 by the Army Corps of Engineers (ACOE) Philadelphia District and FEMA, informed the State of New Jersey of local and regional hurricane evacuation clearance times. The study looked at a range of hurricane evacuation planning issues and developed local and regional hurricane evacuation clearance times for the state. The study found that at high tourist occupancy (height of tourist season), the evacuation clearance times in the Atlantic Coastal counties (Cape May, Atlantic, Ocean and Monmouth) will range from 25 hours in a Category 1 storm to as high as 44 hours in a Category 4 storm.

The study recommended that enhancing sheltering opportunities could help reduce evacuation clearance times if segments of the population could find adequate shelter during these events. It recommended a Statewide shelter survey be performed to identify shelters in all counties, including Red Cross certifiable structures, non-certifiable "refuge" shelters, special needs shelters, and shelters accepting pets.

Since the completion of that study, the Monmouth County Office of Emergency Management has developed an additional tool to aid municipalities, as well as the county, in responding to flood threats. The Coastal Flood Evacuation Zone Map identifies four distinct zones — A, B, C, & D which hierarchically target evacuation priorities for areas that are at the highest risk based upon threat, strength, direction and forecasted storm surge. Municipal Emergency Management officials can use this tool to plan for and issue localized evacuation orders for storms that are forecast to have area specific impacts. This mapping tool in conjunction with coastal evacuation route maps also can aid in planning decision-making for land use, traffic and transportation and capital improvement planning.

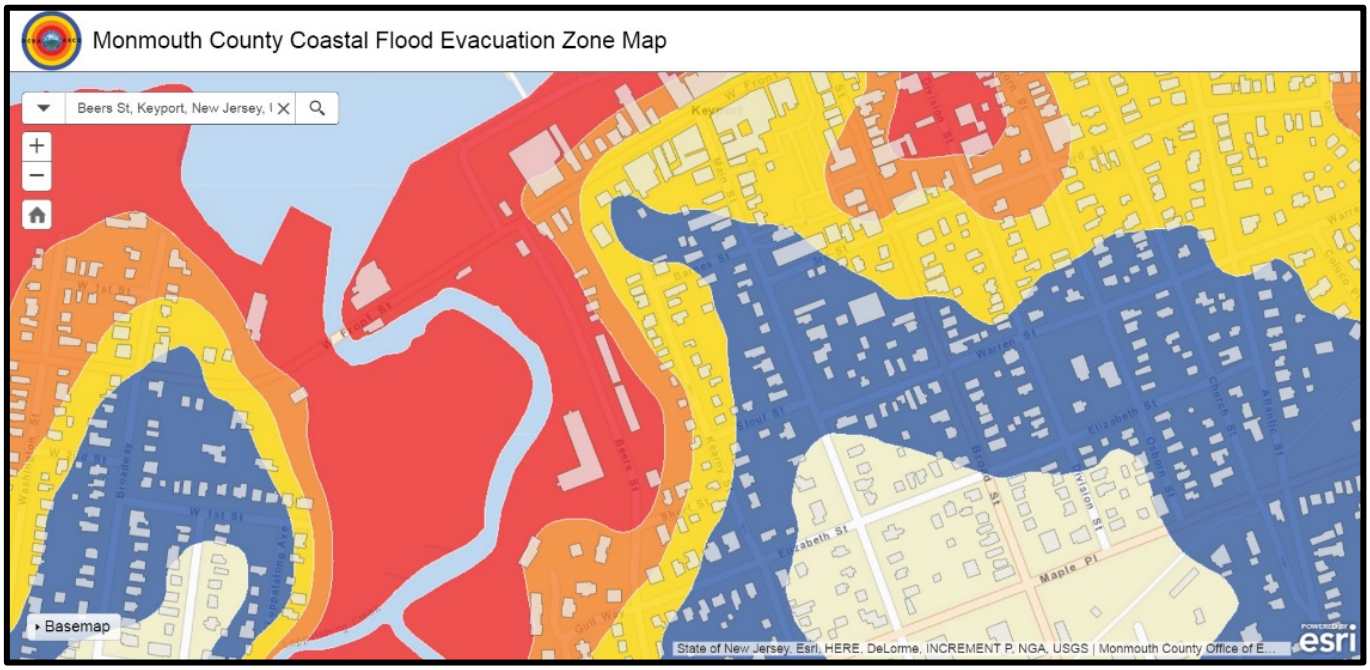


Figure 16 Monmouth County OEM Coastal Flood Evacuation Zones

All of the Beers Street neighborhood falls within the Coastal Flood Evacuation Zone and the greatest land area and number of dwelling units are within Zone A, including the Keyport Legion/Leisure Bay apartments and 45 Beers Street townhouses. A significant portion of Beers Street itself falls within Zone A, indicating that it will be potentially inundated at an early stage of a storm event, which may restrict the ability of some to evacuate on the closest southerly route out of the evacuation zone.

Significant efforts will be required to ensure that occupants of Keyport Legion/Leisure Bay can comply with a mandatory evacuation order, even if to a local shelter. The areas of the neighborhood with the highest geographic elevation along Kearney and Elizabeth Streets are in Zones B & C. Unfortunately, a significant amount of population in Keyport and in the adjacent coastal communities also lie within Zones A & B as well as portions of the designated Coastal Flood Evacuation Routes: State Highways 35 & 36 and the Garden State Parkway.

As recommended in the 2007 ACOE/FEMA study, enhancing sheltering opportunities could help reduce evacuation clearance times. Additionally, local residents may be more at ease with the idea of evacuation if they can find shelter in a nearby location that is known to them. The Borough should consider performing a shelter survey to evaluate shelter-suitable buildings and locations within the Borough as well as identifying vulnerable populations who could benefit from such sites.

Vulnerability Analysis

A GIS-based analysis has been performed to assess the potential vulnerability of properties in the neighborhood to floodwaters, based on the latest preliminary flood insurance rate mapping of the Federal Emergency Management Agency; and excessive stormwater runoff, based on flow direction and accumulation calculations performed with digital elevation models of the United States Geological Survey. This analysis illustrates the assessed value of properties affected by flooding and their respective use classification using currently available property tax assessments.

Number of Vulnerable Properties

There are a total of 76 properties in the Study Area. Of those, 45, or more than 59 percent, are potentially vulnerable to floodwaters and excessive stormwater runoff. A significant number of this subset are residential uses and as such the burden of recovery is carried mostly by single-family homeowners in this neighborhood. Table 1, below, summarizes the number of potentially vulnerable properties by assessed land use.

Table 1: Potentially Vulnerable Properties by Assessed Land Use

Land Use	Number of Vulnerable Properties
Class 1 (Vacant)	3
Class 2 (Residential)	33
Class 4A (Commercial)	6
Class 4C (Multifamily)	1
Class 15C (Public Property)	1
Class 15F (Tax Exempt [Affordable Age-Restricted Housing])	1
Total	**45**

Assessed Value of Vulnerable Properties

The total assessed value of the 45 potentially vulnerable properties is $28,210,230. This figure includes $13,279,740 in land value, and $14,930,490 in improvement value. Table 2 summarizes the total value of potentially vulnerable properties by assessed land use.

Table 2: Assessed Value of Potentially Vulnerable Properties by Assessed Land Use

Land Use	Land Value	Improvement Value	Total Assessed Value
Class 1 (Vacant)	$391,600	$0	$391,600
Class 2 (Residential)*	$2,868,040	$4,058,990	$6,927,030
Class 4A (Commercial)	$492,300	$616,700	$1,109,000
Class 4C (Multifamily)	$101,400	$525,000	$626,400
Class 15C (Public Property)	$21,400	$0	$21,400
Class 15F (Tax Exempt)	$9,405,000	$9,729,800	$19,134,800
Total	**$13,279,740**	**$14,930,490**	**$28,210,230**

These properties and the extent of flood impacts and their improvement values are depicted in the attached Vulnerability Map in Exhibit 'N'.

Although floodwaters and excessive stormwater runoff may result in soil erosion and other types of land degradation, the most significant financial impacts of these threats will generally be on improvements (including building and other structures such as exterior damage and basement flooding). As has been stated above and summarized in Table 2, the total improvement value of potentially vulnerable properties is $14,930,490. Table 3 provides complete details on the assessed value of each potentially vulnerable property.

Table 3: Assessed Value of Potentially Vulnerable Properties

Block	Lot	Land Use Class*	Land Value	Improvement Value	Total Assessed Value
22	21	4A	$95,700	$113,700	$209,400
22	22 & 23	2	$15,500	$47,900	$63,400
22	24 & 25	4A	$12,400	$202,700	$215,100
22	26	1	$119,700	$0	$119,700
22	27	1	$271,900	$0	$271,900
22	28	4A	$83,100	$83,200	$166,300
22	29	15C	$21,400	$0	$21,400
22	30	2	$145,500	$18,600	$164,100
22	31	4A	$134,300	$0	$134,300
22	32	15F	$9,405,000	$9,729,800	$19,134,800
22.02	8	2	$85,000	$112,300	$197,300
22.02	9	2	$85,000	$109,000	$194,000
22.02	10	2	$85,000	$115,100	$200,100
22.02	11	2	$85,000	$110,800	$195,800
22.02	12	2	$85,000	$113,000	$198,000
22.03	13	2	$85,000	$109,100	$194,100
22.05	24	2	$85,000	$142,900	$227,900
39	1	2	$123,900	$138,900	$262,800
39	3	2	$126,200	$131,500	$257,700
39	4.01	2	$110,500	$124,200	$234,700
39	5.01	2	$12,640	$496,900	$509,540
39	6 & 7	2	$69,600	$131,800	$201,400
39	8, 9 & 10	2	$113,200	$163,900	$277,100
39	11	2	$102,800	$141,300	$244,100
39	12.01	4C	$101,400	$525,000	$626,400
39	13.01	2	$118,000	$135,500	$253,500
39	20	2	$88,200	$128,600	$216,800
39	21	2	$120,800	$194,100	$314,900
39	24 & 25	2	$80,500	$124,300	$204,800
39	26 & 27	2	$113,700	$135,000	$248,700
39	28	4A	$166,800	$217,100	$383,900
39	29	2	$164,200	$188,900	$353,100
42	1	2	$86,300	$119,800	$206,100

Block	Lot	Land Use Class*	Land Value	Improvement Value	Total Assessed Value
42	2	2	$136,200	$181,000	$317,200
42	3.01	2	$141,900	$278,800	$420,700
42	3.02	2	$128,400	$219,500	$347,900
42	6	2	$145,600	$145,200	$290,800
42	7	2	$129,400	$129,700	$259,100

Critical Infrastructure

The neighborhood area that is the subject of this study does not contain any schools, child care facilities, senior health care facilities, hospitals, emergency service stations (such as police, fire, and emergency medical services), electrical substations, or sewer pump stations.

It is, however, noted that Block 22, Lot 32 is the site of Keyport Legion/Leisure Bay apartments, an affordable, independent-living senior housing complex, which is vulnerable to flooding and excessive stormwater runoff. Special care must be taken to ensure the timely evacuation of residents, many of which may not have private transportation or the physical or fiscal ability to leave their homes in times of emergency.

Electric / Telecom

Electricity is provided to the Borough by JCPL/First Energy via pole-mounted, overhead distribution lines. There are no power generating or substations within the neighborhood and there are no microgrid or cogeneration facilities in the neighborhood.

Time Warner provides cable TV service, while Verizon owns and maintains telephone lines in the neighborhood. Both of these services are provided via pole-mounted, overhead distribution lines, often shared with the electric distribution network. These facilities are at great risk of both high wind events and icing, both of which occurred during and following Sandy. Many areas of the State were without power and telecommunication for many weeks following the storm, hampering the efforts of first responders as well as businesses assisting restoration efforts.

Figure 17 Existing overhead utilities in the Beers St. Neighborhood

Future Land Use Plan

As noted previously, nearly 90% of the neighborhood land area is currently developed and only one parcel appears to require substantial rehabilitation. Of the remaining vacant lands, approximately 3.5% are anticipated to remain vacant. A significant number of properties within the neighborhood were not impacted by flooding during Sandy and are not anticipated to be significantly impacted by either flooding or sea level rise in the future. It is very likely that future land use will reflect the current pattern of development.

Open Space and Areas Proposed for Preservation

There is one property that is suited to being reserved for open space or preservation use within the neighborhood.

Hot Dog Bob's – Block 22 Lots 24 and 25 – This property was formerly developed with a modular-style one-story building used as a walk-up restaurant and has been vacant since the building was destroyed during Sandy. Located to the east of the Keyport Fishery, it has frontage on W. Front Street and is encumbered by wetlands and the floodplain of Luppatatong Creek along the rear property line. The site has a small amount of upland area, very narrow width and lacks bulkheading or bank stabilization along the creek frontage. It is at high risk for flooding by the creek along the rear of the property as well as along W. Front Street from the creek overwashing the now vacant Ye Cottage Inn site. The future use of this site may be best suited to one that does not require a permanent structure. It's close proximity to parking and public facilities at Fireman's and Waterfront Park and the Downtown make it ideal for extension of the current public waterfront use or as a nature watching area with a low-impact public access facility to the creek.

Figure 19 W. Front Street View of former Hot Dog Bob's site

Figure 18 View of shoreline along rear of former Hot Dog Bob's site

Future Redevelopment/Rehabilitation Sites

There are two sites within the neighborhood that are underutilized and are dilapidated. There have been no indications of future redevelopment or reinvestment to improve them.

Apollo's Sewer – Block 22 Lots 27 & 28 - The existing building exhibits a dilapidated condition, and visual inspection reveals that part of the building's façade may be structurally unsound. The site is poorly maintained and the use is inconsistent with GC District permitted uses.

The design of site layout, with the building located close to the Beers Street right-of-way, reduces visibility of the Beers Street intersection with W. Front Street. In addition to a safety concern, this creates a negative visual impact at an essential gateway to Downtown.

Figure 20 View of Apollo Sewer W. Front Street facade

As the site is partially located within a VE Zone and has a fairly high Base Flood Elevation, particular care needs to be given to the types of uses and design criteria that will be required so that a resilient use of the property can result.

Figure 21 View of Apollo Sewer Beers Street facade

Figure 22 View of Apollo Sewer outside storage along W. Front

Borough-owned Lot – Block 22 Lot 29 - This vacant, undersized lot has 50 feet of street frontage along Beers Street behind the Apollo Sewer building and is used by the Borough for storage. In addition to the negative visual impact along the street frontage, this lot lies within the flood hazard area. Materials stored within this area are unsecured and can be carried by floodwaters, causing damage to structures and creating obstructions in a flood event.

Although it is too small to develop on its own, it has the potential to be incorporated into the adjoining Apollo Sewer property. This addition would provide a more usable lot configuration, aiding redevelopment opportunities for that site.

Figure 23 View of Beers Street frontage of Borough-owned lot

Circulation Plan and Pedestrian Linkages

The right-of-way-width of Beers Street varies greatly from W. Front Street to the neighborhood boundary at Elizabeth Street. In the area between Short Street and the former 'Kara Homes'

Figure 24 View of Beers Street overall width

development site, a road diet, or narrowing of the pavement width, would benefit the adjoining residential uses and provide space for stormwater infrastructure improvements.

However, at the intersection of Beers and W. Front Street acquisition of additional right-of-way may be desired to improve sight distance and vehicle turning movements.

Figure 25 View of intersection of Beers and W. Front Streets

Improvement of the Beers Street right-of-way throughout its length, to include bike lanes on both sides of street, expansion of sidewalks and provision of pedestrian-quality lighting and crosswalks would permit the addition of stormwater control and storage facilities below as well as provide surface benefits. Extension of these facilities from beyond the specific neighborhood boundary, from at least the intersection of the Henry Hudson Trail to W. Front St. would permit a greater

Figure 26 View of Henry Hudson Trail crossing Beers Street

number of residents and visitors to access the waterfront and Downtown area on a less congested route than Broad Street. Areas of Beers Street with limited right-of-way width may require the use of sharrows in the roadway rather than full bike lane.

Figure 27 Entrance to Henry Hudson Trail at Beers Street

Figure 28 Example of 'sharrow'

Rehabilitation of existing sidewalk and curbing is also recommended for Kearney and Short Streets. Curb improvements are of particular importance in Kearney Street to ensure stormwater is directed to collection and storage infrastructure.

A Future Land Use Map has been provided in Exhibit 'O', illustrating projected land use following the development of the former 'Kara Homes Site', 45 Beers Street and potential redevelopment of the Apollo Sewer site and the Borough-owned lot.

Statement of Goals and Objectives

The Beers Street Neighborhoods Plan identifies the following goals and objectives aimed at increasing resiliency throughout the neighborhood.

Goal 1: Promote Stormwater Management

In many undeveloped areas stormwater is readily absorbed into the ground, where it is naturally filtered and eventually replenishes aquifers, or surface-flows into larger water bodies such as streams, rivers, lakes and ultimately the ocean. It can also accumulate at topographical low points where it is retained until it either evaporates into the atmosphere or is eventually absorbed into the ground. In developed areas, however, the prevalence of impervious surfaces impairs the ability of stormwater to infiltrate into the ground, causing a disproportionate amount of stormwater to accumulate on surfaces or quickly runs off, carrying away soil and pollutants directly to water bodies.

Accumulated stormwater results in localized flooding, pooling or standing water which create conditions favorable to the reproduction of mosquitoes and their resultant vector-borne diseases (e.g., West Nile Virus or Zika); pollution of water bodies with silt and other pollutants from impervious surfaces (e.g., oil and heavy metals from vehicle exhaust, salts from winter roadway treatments, nitrogen from pet waste or fertilizers). Proper stormwater management can help to mitigate these impacts, as well as to increase recharge of groundwater.

Given the above, promoting stormwater management is an important goal not just within the Beers Street neighborhood, but also in the adjoining neighborhoods whose stormwater flows downstream into the neighborhood and Luppatatong Creek. To promote stormwater management, the Beers Street Neighborhood Plan identifies the following objectives:

- Enhance stormwater management by implementing green infrastructure techniques in strategic locations such as excess right-of-way or undeveloped or underutilized areas.

- Develop a Stormwater Management ordinance to minimize impervious surface cover to reduce stormwater runoff and facilitate implementation of green infrastructure techniques and best management practices for all development, not just ‘major development’ regulated under the NJDEP’s stormater management rules.

- Where practicable, increase storage of stormwater to reduce volume of run-off, permit recharge or reuse and reduce turbulent flows to the ultimate outfalls in Luppatatong Creek and Keyport Harbor.

- Raise street surface levels in areas that are most prone to flooding, especially the northerly end of Beers Street which serves as a primary connection to designated coastal evacuation routes and integrate subsurface stormwater storage within the unused portions of the right-of-way.

- Where practicable, fill topographic low points to minimize the potential for localized flooding and pooling of stormwater.

- Upgrade storm drains to allow more efficient outflow of flood water without "reverse flooding" (water entering through storm drains).

- Educate the public on the importance of stormwater management and the potential benefits of green infrastructure techniques.

Goal 2: Ensure the Safety of Buildings and Structures

Buildings and structures located in the neighborhood may be subject to high flood waters and strong winds during storm events. The experience of Hurricane Sandy demonstrated that these flood waters and strong winds can cause significant damage to buildings and structures, and their contents. It is, therefore, of critical importance that the goal of ensuring the safety of buildings and structures is met. To meet this goal, the Beers Street Neighborhood Plan identifies the following objectives:

- Ensure that existing building and property maintenance codes are strictly enforced and that inspections are made prior to an event. Yard areas kept free from unnecessary equipment and debris reduces the potential for flood debris which may damage structures.

- Promote the elevation of principal buildings and electrical and mechanical equipment (e.g., electric panels, generators, air conditioning compressors) above the Base Flood Elevation.

- Ensure that new public facilities are located outside of the flood hazard area or have features that may *survive* a flood event.

- Identify the location and reason for localized flooding along roadways and eliminate such areas, or work with appropriate agencies to remedy.

- Ensure that flood protection devices are in place and properly maintained. This applies to both individual properties (e.g., provision of pumping systems within basements and bulkheads) and the neighborhood as a whole (e.g., maintenance of flood control devices and stormwater collection systems).

Goal 3: Protect Natural Resources and Promote Effective Shoreline Management

Natural resource areas not only enhance residents' quality of life by providing scenic vistas and recreational opportunities, they also serve important ecological functions. These areas serve as a receptacle for stormwater by providing expansive areas of permeable surface where stormwater can be absorbed into the ground, contain vegetation that helps to aerate the soil while resisting erosion and facilitating drainage, and aids in reducing the velocity and wave height of storm surge.

Luppatatong Creek and its floodway are an important natural resource for the Borough and the Beers Street Neighborhood. As the path of the creek is continuously subject to erosion and sedimentation, entire segments of the creek may be damaged and its alignment temporarily interrupted during storm events. The floodway associated with the creek is a critical defense against property damage due to flooding. Promoting effective shoreline management and protecting natural resource areas are important goals of the Beers Street Neighborhood Plan. To meet these goals, the Plan identifies the following objectives:

- Protect the integrity of existing natural resource areas, such as the undeveloped areas adjacent to Luppatatong Creek.

- Where available acquire land area adjacent to the Luppatatong Creek for preservation and passive recreation.

- Ensure that appropriate shoreline stabilization devices are in place and properly maintained. Where appropriate, consider the provision of additional or replacement measures for shoreline stabilization.

- Collaborate with the American Littoral Society and Clean Ocean Action to investigate the possibility of developing a plan which would help to stabilize soil and mitigate erosion in Luppatatong Creek particularly along the section of creek adjacent to Lots 24 and 25 in Block 22 (Hot Dog Bob's) and to improve the condition of the gabion wall adjacent to Lots 30 and 31 in Block 22 (former Kara Homes site).

- Educate the public on the importance and benefits of natural resources such as wetland areas in general, and within the neighborhood in particular.

- Promote public awareness of the importance and practice of effective shoreline management in the neighborhood.

Goal 4: Preparedness

The Borough of Keyport is not alone in planning for resiliency and protecting its residents during storm events. Coordination of relief and rescue efforts by charitable organizations, County and State agencies and adjacent municipalities is complicated and time consuming. While the Borough undertakes separate Vulnerability Assessments and Hazard Mitigation Plans, it will need to consider developing measures that ensure all residents are adequately informed of the impacts that impending storms will have on the Borough, including it's ability to respond to requests for emergency aid and rescue.

With respect to the Beers Street neighborhood, a significant portion of the Beers Street Neighborhood population are generally unable and some unwilling to evacuate prior to a flood event and will be potentially stranded as their homes become inaccessible before, during and long after a storm event. This will create a burden on Borough services.

The Borough should consider employing the following strategies to aid in efforts to ensure that residents that are at risk of flood or similar events are well-informed of the steps that are recommended to be taken beforehand and during the emergency:

- The Borough should consider performing a shelter survey to evaluate shelter-suitable buildings and locations within the Borough.

- Identify funding sources that would permit retrofitting existing public facilities to make them shelter ready.

- Maintain and routinely update a database of resident and property owner contact information for reverse emergency warnings.

- Enlist the aid of 'apps' to provide a means for all, including visitors and users of mobile telecommunications devices, to give their contact information voluntarily in order to stay informed of Borough alerts.

- Coordinate with all neighborhood and condominium associations, as well as fire, police, and ambulatory services, to establish and inform residents of the best safety practices, evacuation routes, and emergency care and lodging centers. This is especially important for occupants of Keyport Legion/Leisure Bay who do not have either the physical or financial abilities to relocate, especially for extended periods, following a catastrophic storm event.

- Coordinate with the Keyport Legion/Leisure Bay apartment owners to develop strategies to make the site self-sufficient and able to survive a flood event.

- Obtain funding for backup generators and improvements for communication, water distribution and fuel dispensing facilities during power failures for designated shelter sites and aid distribution sites.

- Ensure that neighborhoods and shelter locations are not cut off from emergency services and can be easily accessed by rescue and assistance organizations.

- Promote the use of small-scale renewable energy generation devices (e.g., solar panels or microgrid). Use of such devices may help to attenuate the impacts of potential disruptions in public electricity service during storm events and in the case of Keyport Legion/Leisure Bay, would ensure a self-sufficient, sustainable location for its vulnerable population.

Goal 5: Facilitate Faster Recovery from Future Storm Events

While every measure must be made to prevent damage from future storm events, it is important to lay the foundations for a speedy recovery from potential damage and destruction that may

result from future storm events. This includes damage at both the individual property level, as well as the neighborhood level. To meet this goal, the Beers Street Neighborhood Plan identifies the following objectives:

- Prepare zoning amendments to reduce minor zoning non-conformities such as for bulk requirements like lot width and size and to permit encroachments by stairs or platforms for elevated structures, within the neighborhood. Such amendments reduce the burden on property owners facing rebuilding.

- Coordination with utility companies immediately following a storm event to ensure that restoration of access, power and gas occurs expeditiously.

- Encourage and coordinate with the BPU and JCPL to develop an undergrounding plan for the local electric distribution network, particularly in VE zones and strategic access areas to minimize hazards associated with downed lines and service interruptions.

Relationship to Local Planning Objectives

Local Planning Objectives

Strategic Recovery Planning Report

As part of the Borough's Post-Sandy recovery process, it adopted a Strategic Recovery Planning Report (SRPR) in 2014. The SRPR outlined a recommended set of implementable actions to guide the Borough in promoting recovery from the impacts of Superstorm Sandy and future storm resilience throughout the Borough but also in specific target areas such as the Beers Street neighborhood:

- Beers Street Stormwater Management Improvements - Elevate low lying section of Beers Street near Front Street and rehabilitate stormwater management system to prevent backflow from Luppatatong Creek during moon high tide and heavy rainfall events.

- Replace or combine rip-rap with bulkheading in areas of extreme coastal erosion - Conventional rip-rap was insufficient to withstand erosion and scouring from Sandy's surge. Concrete bulkheads of insufficient height and/or design were also broken up by the surge. Rip-rap should either be replaced or used in combination with bulkheading.

- Acquire key properties for open space expansion – Ye Cottage Inn site is the priority, but other key properties identified by the NY/NJ Baykeeper are the Aeromarine Site, Luppatatong Creek flood plain corridor along Beers Street, and the Pedersen's and Brown's Point Marinas

- Design Standards (integrating elevated structures into community design character) to address the visual impact of mitigation measures such as elevating bulkheads, elevating buildings on foundations or pilings, such standards might include requirements for skirting exposed pilings, parking under the lowest habitable floor and using exterior decking to stagger stairways to elevated first floor levels.

- Hardening of Infrastructure – The Borough's water and sewer capacity was impacted by either flooding or loss of power. Operating equipment at pump stations needs to be either raised above flood levels or hardened for protection against future events.

Keyport 2012 Master Plan Re-examination Report

As part of the 2012 Master Plan re-examination Report, the following specific changes were recommended for the Master Plan and Development Regulations which impact this analysis and which are being reevaluated as part of additional Borough-wide planning efforts.

- Creation of a Green Buildings and Environmental Sustainability Element should be considered for inclusion in the master plan either as a standalone element or during the next comprehensive update of the Borough Master Plan.

- Specific Revisions to the Development Regulations to permit mixed use buildings (i.e. a vertical mix of commercial and residential uses within the same building) as a principal use in the GC General Commercial zone district. Typically, the ground floor is devoted to a non-residential use such as retail commercial or an office use and the second and possibly third floor are devoted to the residential use. Design standards for mixed use buildings will be necessary to regulate density of the residential use in addition to the area, yard and bulk standards. Possible development standards for mixed use buildings were discussed during the Smart Growth Visioning studies in 2004.

- Zone boundary adjustment. The zone boundary between the RA and RC district near Beers Street should be relocated to follow the proposed line as shown in Appendix Four. The line should be adjusted to follow a property line and not split a tax lot.

Bayshore Region Strategic Plan

The Bayshore Region Strategic Plan adopted by the Monmouth County Planning Board in 2006, and which the Borough participated in preparing, proposed several action items in its Planning Implementation Agenda for Keyport that present opportunities for improving the Borough's quality of life. One specifically targets the neighborhood:

- Proposed Bikeway along the Bay shoreline and on Beers Street

Keyport Waterfront and Downtown Improvement Plan

The Steering Committee of the Smart Growth study entitled the Keyport Waterfront and Downtown Improvement Plan led an extensive public outreach effort that yielded the following objectives from their report to the Mayor and Council in a memo dated October 7, 2004:

- Preserve "small town" quality and the role of all of its components (one "walkable" place with business, residential, recreation, and transportation).

- Maintaining Keyport as a "recreational port and place" that values "traditional waterfront uses" (fishing, crabbing, swimming, boating, nature watching), beach parks, marinas, and new opportunities for waterfront recreation and business.

- Preserve historic character of our buildings, both commercial and residential.

- Harmony with the natural environment, preservation of wetlands (including Matawan, Luppatatong, and Chingarora Creeks and Brown's Point) and creation of new, eco-friendly ways to explore the environment.

- Multi-mode transportation linkages within Keyport and to transportation hubs in neighboring towns, such as Hazlet (bus and train), Matawan (train), and Belford (ferry). Providing a variety of transportation options is desirable.

Design Standards

The goals that are provided in the previous section of the Beers Street Neighborhood Plan will help the neighborhood become more resilient to future storm events, and the accompanying objectives to assist in meeting these goals are clear and actionable. This section of the Beers Street Neighborhood Plan provides strategies that will further help implement objectives, meet goals and build resiliency.

One of the key factors in reducing flood impacts is to reduce stormwater. Amendments to the stomwater management ordinance and the existing zoning and development regulations to minimize impervious surface cover, facilitate implementation of green infrastructure techniques and best management practices for all development, not just 'major development' regulated under the NJDEP's stormater management rules should be considered along with the following recommended design standards.

Green Infrastructure Techniques

Green infrastructure, in the context of the Neighborhood Plan, is best described as an approach to reduce and treat stormwater at its source while providing environmental, social and economic benefits. It uses vegetation, soils and other natural and design elements to facilitate natural processes, such as absorption of stormwater into the ground.

Green infrastructure is contrasted by traditional (i.e., gray) infrastructure, which focuses on moving stormwater away from developed areas for treatment offsite; key examples of traditional infrastructure include storm drains and sewers. Traditional infrastructure is a critical part of the neighborhood's line of defense against flooding, but it can be overburdened during storm events. Green infrastructure can, however, be implemented as an environmentally-friendly and cost-effective means of reducing the strain on traditional infrastructure and has great potential to help build resiliency.

The following green infrastructure techniques may be most suitable for application on public and private properties within the neighborhood.

Absorbent Landscapes

Absorbent landscapes are areas with vegetation and soil that that absorb stormwater, such as residential lawns or natural open space areas. While the simplest example of green infrastructure, absorbent landscapes are among the most effective: nearly all precipitation that falls on absorbent landscapes never becomes runoff but, rather, is absorbed into the ground where it is filtered and, eventually, enters the local aquifer.

The maximization of absorbent landscapes should be encouraged within the neighborhood. This can be done not only through impervious surface limits, but also specific landscaping design and maintenance requirements. Important design and maintenance measures for absorbent landscapes include: proper soil aeration and roughening to reduce crusting, which causes reduced permeability; use of compost to increase percolation and reduce the need for water and fertilizer; and, periodic replacement of surface mulch. Increasing the depth of growing medium (e.g., topsoil) is also important to the design of absorbent landscapes, because water storage capacity increases with the volume of growing medium.

Bioswales

Bioswales are open, linear channels that are designed to capture stormwater as runoff or via drain pipes. They divert stormwater from traditional infrastructure by providing space for it to be absorbed into the ground. They are generally designed to have a maximum depth of six to eight inches, and a maximum absorption time of approximately 48 hours. Depending on the slope of the land on which they are situated, bioswales may have a weir at either end to prevent outflow.

Bioswales are typically planted with sodded grass. However, the aesthetics of low-volume bioswales can be improved by planting a combination of native perennial grasses, shrubs, trees, etc. The function of

bioswales can be enhanced by providing rock substrate below the growing medium (e.g., topsoil), which enhances and facilitates infiltration of stormwater through the growing material and into the ground. Maintenance requirements are low and mainly include periodic: aeration and cultivation of topsoil to eliminate surface compaction and crusting, which may result from stormwater absorption; inspection and cleaning of drain pipes; and general maintenance for any plantings.

Rain Gardens

Rain gardens are similar to bioswales. They are concave landscape areas that are designed to capture and absorb stormwater. Growing medium and substrate structure is largely the same as with bioswales, as are suitable plantings. When planning rain gardens, it is important to note that: several smaller rain gardens are more effective than one large rain garden; rain gardens should be located at least ten feet downslope of building foundations; and, mulch should be replaced periodically. In addition, the maximum depth should be no more than one foot (i.e., 12 inches), the maximum absorption time should be no more than 72 hours, and the sides should have a slope of no greater than 2:1, although a more gradual slope (e.g., 4:1) will facilitate maintenance.

Downspout Disconnection

Downspout disconnection refers to the rerouting of rooftop drainage downspouts to specialized containment devices (e.g., rain barrels, cisterns), absorbent landscapes, bioswales, rain gardens, etc., as opposed to traditional stormwater drainage systems (e.g., storm sewers). This allows stormwater to note only be absorbed into the ground, but also to be collected for later use (e.g., watering lawns and gardens), which reduces demand on public water supplies.

It is important to note that containment devices for downspout disconnection should have a secure lid and be light proof. This is necessary to: ensure that animals are unable to enter the containment device; eliminate the possibility of the cistern being populated by mosquitos and other insects and used for breeding; and, to prevent the growth of potentially harmful bacteria.

Green Roofs

Green roofs are roofs that are covered with substrate and vegetation that minimize runoff by enabling the retention of precipitation, as well as its evaporation and consumption by vegetation. In addition to minimizing runoff, green roofs lead to reduced building operating costs and energy consumption by providing improved insulation of the roof surface, and absorbing less heat on the roof surface (i.e., increasing the roof surface albedo over traditional roof surfaces).

Flat and low-pitched roofs are most suited to green roof development and retrofitting therewith; when a green roof is planned on a slope of greater than ten degrees, anti-shear measures should be incorporated. Green roofs must be designed by an engineer or architect with careful attention paid to gravity load calculations. Green roofs must have a drainage system under the substrate to allow for excess water to be drained in periods with heavy rain.

Undergrounding

The most common hardening practice is replacing wooden utility poles with poles made of steel, concrete, or a composite material and upgrading transmission towers from aluminum to galvanized-steel lattice or concrete. Installing guy wires and other structural supports is another common tactic, as is increasing the number of poles. Such measures are intended to allow the pole, tower, or other structure to better withstand wind, including hurricane-force winds, as well as ice storms and snowstorms. These measures do not protect the power lines, transformers or conductors mounted on the poles themselves. Undergrounding of overhead utilities takes hardening a step further.

The main benefits of undergrounding electric lines, apart from improving visual impacts and physical impairment of the streetscape:

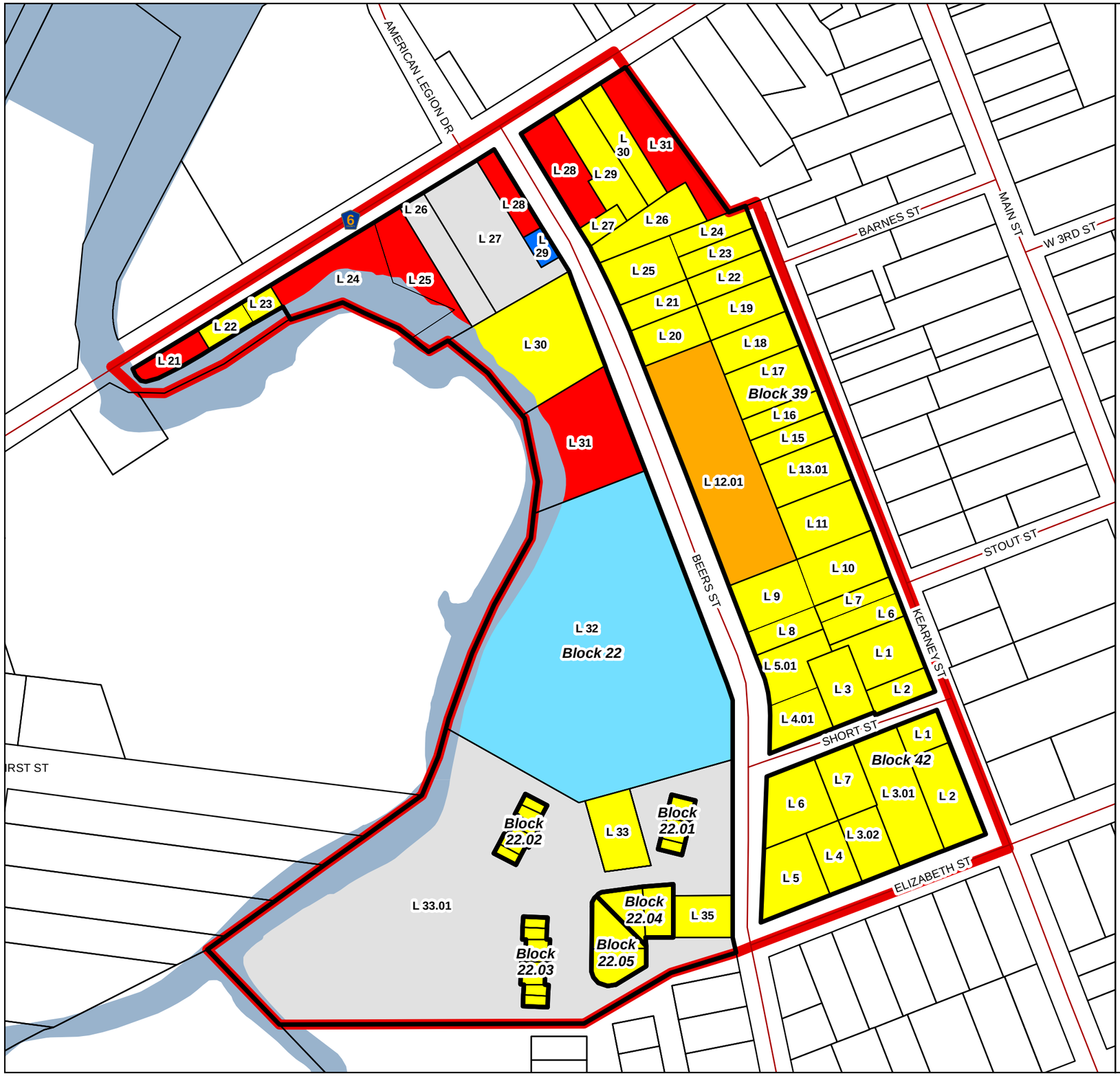
- lower transmission losses;
- can absorb emergency power loads;
- lower maintenance costs;
- emit no electric field and can be engineered to emit a lower magnetic field than an overhead line;
- are less susceptible to the impacts of severe weather

Once installed in the ground, cables are intrinsically maintenance free. Florida Power and Light's (FPL) March 2, 2015, Annual Reliability Report filing stated that FPL's underground facilities' reliability and performance system-wide during 2010 to 2014 was better than overhead facilities. FPL says undergrounding provides "better reliability in normal and adverse weather conditions, especially during wind and lightning events."

Many areas outside of New Jersey have found that simple hardening of mounting structures may be an insufficient strategy to ensure that utilities can withstand future storms. It is recommended that the Borough work with other municipalities to engage the BPU and JCPL to adopt a strategy similar to that in Florida and encourage the installation of utility lines underground when restoring or constructing new lines for service and distribution.

APPENDICES

Beers Street Neighborhood
Land Use Map
Keyport Borough
Monmouth County, New Jersey



Beers Street Neighborhood

Block Boundary

Lot Boundary

Open Water

Roadway Network

Land Use Property Class

- Class 2 - Residential
- Class 4C - Apartment
- Class 4A - Commercial
- Class 15C - Public
- Class 15F - Other Exempt
- Class 1 - Vacant

N

0 50 100 200 300 400 Feet

The Pearl of the Bayshore SM
Keyport
NEW JERSEY

Keyport Borough, New Jersey
70 West Front Street
Keyport, NJ 07735

T&M Associates
11 Tindall Road
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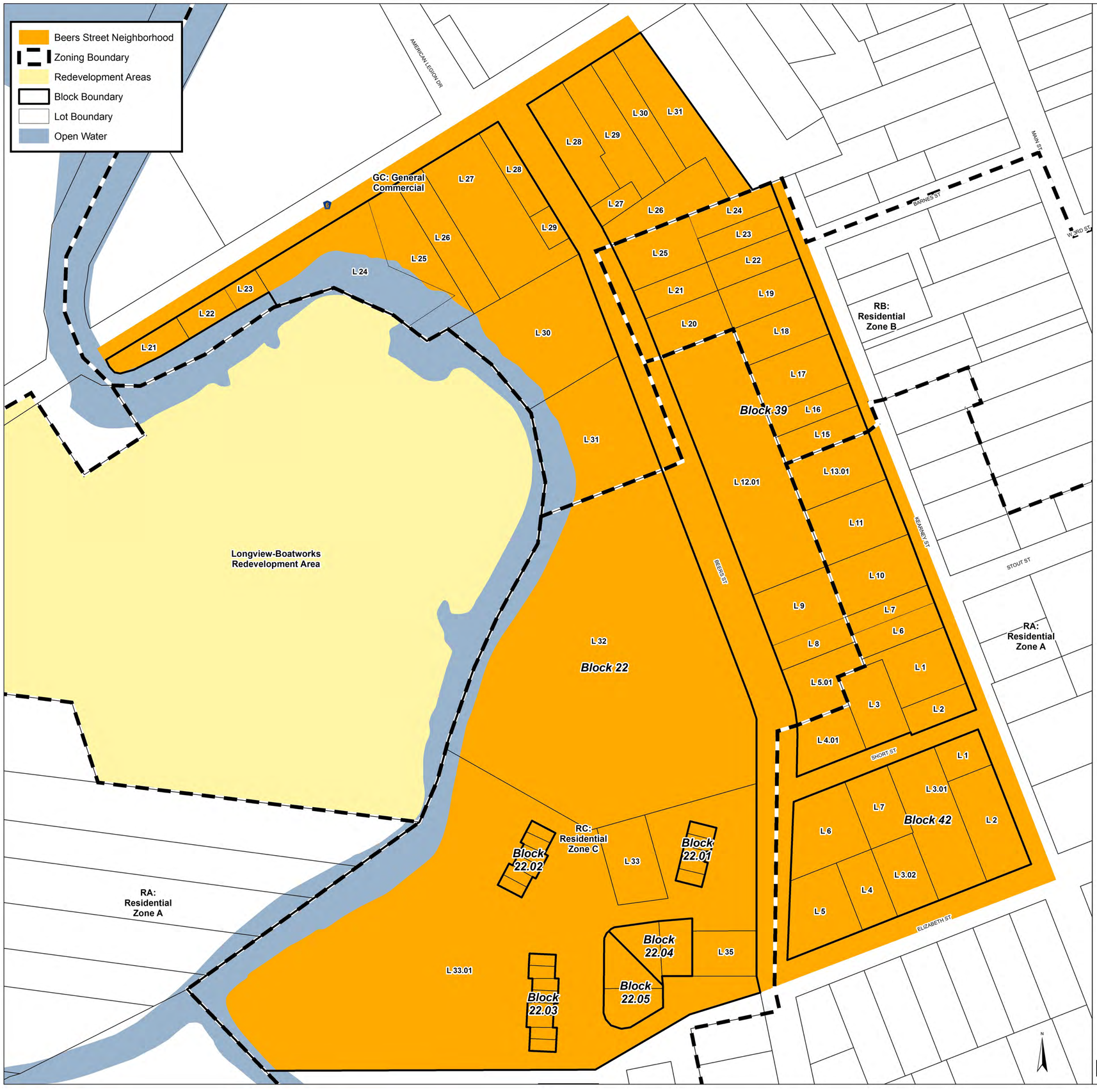
Prepared by: JAC, 6/29/2016
Source: NJDOT; NJGIN; Monmouth County; Keyport Borough; T&M Associates
H:\KUPL\00020\GIS\Projects\Land Use Map.mxd



Permitted Uses

GC (General Commercial)	RA (Residential A)	RB (Residential B)	RC (Residential C)
Bank	Single-family detached dwelling	Single-family detached dwelling	Single-family detached dwelling
Church or other place of worship, parish house, Sunday school building	Church, Sunday School, and other places of worship	Church, Sunday School, and other places of worship	Church, Sunday School, and other places of worship
Barber shops and beauty parlors	Eleemosynary and philanthropic institutions	Eleemosynary and philanthropic institutions	Eleemosynary and philanthropic institutions
Book and stationery stores	Public school, park, playground, fire house, library, municipal building	Public school, park, playground, fire house, library, municipal building	Public school, park, playground, fire house, library, municipal building
Drug stores			Two family structure
Dry goods and variety stores			
Dry cleaning and clothes pressing establishments, provided that no flammable cleaning agents are used			
Eating and drinking establishments without live entertainment			
Florists			
Food stores			
Hardware stores			
Laundries, hand or automatic			
Office, business and professional			
Package liquor stores			
Photographic equipment and supplies			
Radio and television repair			
Shoe repair shops			
Tailor and dressmaker shops			
Telephone exchanges			
Apparel shops			
Banks and other financial institutions			
Bars and cocktail lounges without live entertainment			
Boat yards, boat building facilities, service and sales, marinas and docks			
Club, exclusive of a swimming pool club			
Furniture stores			
Theaters and bowling alleys			
Major department stores, specialty shops, personal and business service establishments			
Newspaper publishing plant			
Paint and wallpaper stores			
Professional business, and technical schools, and schools and studios for photography, art, music and dance			
Public utility building or structure, telephone exchange			
Sporting and athletic goods			
Undertakers and funeral parlors			

Beers Street Neighborhood Zoning Map Keyport Borough Monmouth County, New Jersey

0 25 50 100 150 200 Feet

Keyport Borough, New Jersey
70 West Front Street
Keyport, NJ 07735

T&M Associates
11 Tindall Road
Middletown, NJ 07748
Phone: 732-671-6400
Fax: 732-671-7365

Prepared by: JAC, 6/30/2016
Source: NJDOT; NJGIN; Monmouth County; Keyport Borough, T&M Associates
H:\KUPL\00020\GIS\Projects\Zoning Map.mxd

BOROUGH OF KEYPORT CODE

SECTION 25:1-16

ZONING SCHEDULE

District	Minimum Lot Requirements		Minimum Required Yard Depth						Maximum Percent of Lot Coverage by Buildings Inclusive of Accessory Buildings	Maximum Height		Maximum Percent Coverage		Maximum Percent of Lot Coverage by all Buildings and Impervious Surfaces
			Principal Building			Accessory Building								
	Area (square feet)	Lot Width (feet)	Front Yard (feet)	Minimum One Side Yard (feet)	Both Side Yards (feet)	Rear Yard (feet)	Side Yard (feet)	Rear Yard (feet)		Stories	Feet	Principal Building	Accessory Building	
RA and	7,500	75[3]	20	6	16	15	3	3	40	2.5	30	30	10	60
RA (PRD)	For Single Family, same as RA; For Planned Residential Development - see section													
RB														
1 family	7,500	75	20	6	16	15	3	15	40	2.5	30	30	10	60
2 family	7,500	75	20	6	16	20	3	15	40	2.5	30	30	10	60
RC														
1 family	7,500	75	20	6	16	15	3	15	40	2.5	30	30	10	60
2 family	7,500	75	20	6	16	20	3	15	40	2.5	30	30	10	60
NC	7,500	75	5	N/A	10	25	3	15	75	2	25	75	15	90
GC	N/A	N/A	N/A	N/A	N/A	N/A		N/A	85	3	35	85	15	90
GMC	10,000	100	20	6	16	20	6	16	35	3	35	35	15	90
HC	10,000	100	50	6	16	20	6	16	35	3.5	40	35	15	90
LI	12,500	100	15	6	16	25	6	16	50	3	40	50	10	90
I	15,000	100	15	6	16	25	10	10	50	3	40	50	10	90

N/A - Not Applicable

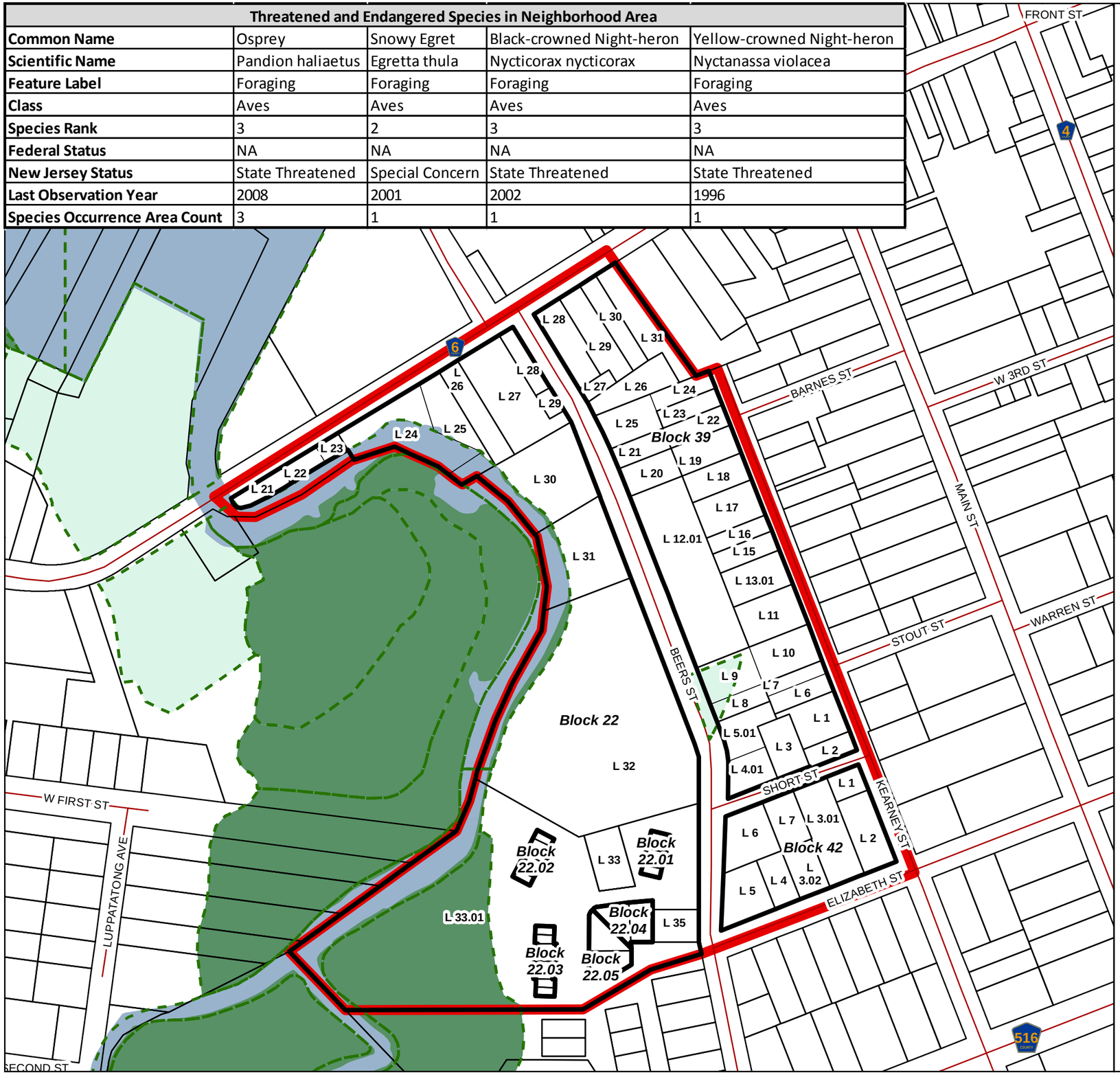
Note 1: Sections 25:1-14, 25:1-15 set forth general regulations which also govern the development of land and uses.

Note 2: No accessory structure shall be permitted in the required front yard area.

Note 3: This shall not apply to lots containing a 50' lot width and a minimum lot requirement of 5,000 square feet, as same were conforming prior to the adoption of Ordinance Nos. 22-03 ad 1-07. This shall also be deemed to apply to any such lot that may have been rendered nonconforming exclusively by the adoption of Ordinance No. 22-03.

(Ord. #13-90, §25:1-16; Ord. #22-03, §2; Ord. #4-05, §§1. 2; Ord. #1-07, §1)

Threatened and Endangered Species in Neighborhood Area				
Common Name	Osprey	Snowy Egret	Black-crowned Night-heron	Yellow-crowned Night-heron
Scientific Name	Pandion haliaetus	Egretta thula	Nycticorax nycticorax	Nyctanassa violacea
Feature Label	Foraging	Foraging	Foraging	Foraging
Class	Aves	Aves	Aves	Aves
Species Rank	3	2	3	3
Federal Status	NA	NA	NA	NA
New Jersey Status	State Threatened	Special Concern	State Threatened	State Threatened
Last Observation Year	2008	2001	2002	1996
Species Occurrence Area Count	3	1	1	1



Beers Street Neighborhood
Threatened and Endangered Species
Keyport Borough
Monmouth County, New Jersey

Beers Street Neighborhood

Block Boundary

Lot Boundary

Roadway Network

Open Water

Species-Based Habitat (T&E Species)

Rank 1 - Habitat Specific Req's

Rank 3 - State Threatened

N

0 65 130 260 390 520 Feet

The Pearl of the Bayshore SM
Keyport
NEW JERSEY

Keyport Borough, New Jersey
70 West Front Street
Keyport, NJ 07735

T&M Associates
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Fax: 732-671-7365

Prepared by: JAC, 2/3/2017
Source: NJDEP; NJDOT; NJGIN; Monmouth County; Keyport Borough; T&M Associates
H:\KUPL\00020\GIS\Projects\Threatened and Endangered Species Map.mxd

NOTE: This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not State-authorized.

Beers Street Neighborhood
Soil Map
Keyport Borough

PegB—Pemberton loamy sand, 0 to 5 percent slopes

Typical profile

Ap - 0 to 10 inches: loamy sand
E - 10 to 25 inches: loamy sand
Bt1 - 25 to 37 inches: sandy clay loam
Bt2 - 37 to 45 inches: sandy clay loam
C - 45 to 60 inches: stratified sand to clay

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 12 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.6 inches)

ThhB—Tinton-Urban land complex, 0 to 5 percent slopes

Typical profile

Ap - 0 to 7 inches: loamy sand
E - 7 to 32 inches: loamy sand
Bt - 32 to 46 inches: sandy clay loam
2C - 46 to 60 inches: stratified sand to sandy loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.7 inches)

AptAv—Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded

Typical profile

Ag - 0 to 12 inches: mucky silt loam
Cg - 12 to 30 inches: silt loam
Oe - 30 to 80 inches: mucky peat

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: Frequent
Salinity, maximum in profile: Strongly saline (16.0 to 32.0 mmhos/cm)
Available water storage in profile: Very high (about 17.7 inches)

N

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Keyport
NEW JERSEY

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70 West Front Street
Keyport, NJ 07735

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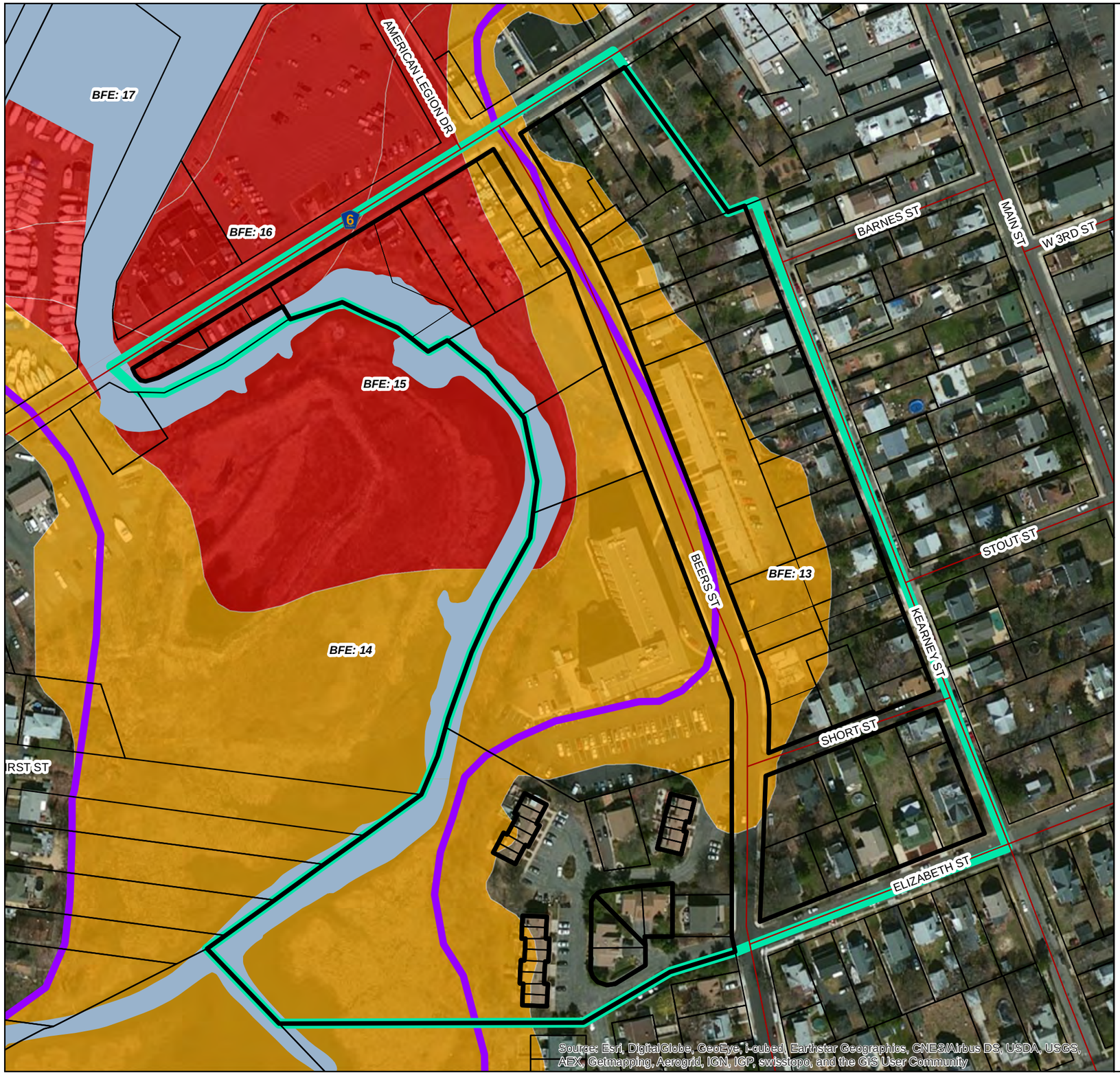
Fax: 732-671-7365

Prepared by: DM, 2/8/2017
Source: ; Keyport Borough; T&M Associates H:\KUPL\00020\GIS\Projects\Soilmap.pdf

Beers Street Neighborhood
Flood Hazards
Keyport Borough
Monmouth County, New Jersey



- Block Boundary
- Roadway Network
- Lot Boundary
- Beers Street Neighborhood
- Open Water

Preliminary FEMA Flood Zone

- AE
- VE
- Limit of Moderate Wave Action (LiMWA)

N

0 50 100 200 300 400 Feet

The Pearl of the Bayshore SM
Keyport
NEW JERSEY

Keyport Borough, New Jersey
70 West Front Street
Keyport, NJ 07735

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Prepared by: NAD, 2/13/2017
Source: NJDOT; NJGIN; FEMA; Monmouth County; Keyport Borough; T&M Associates
H:\KUPL\00020\GIS\Projects\Flood Map.mxd

Beers Street Neighborhood
Shallow Coastal Flooding
Keyport Borough
Monmouth County, New Jersey

Beers Street Neighborhood

Block Boundary

Lot Boundary

Shallow Coastal Flooding

N

0 50 100 200 300 400 Feet

The Pearl of the Bayshore SM
Keyport NEW JERSEY

Keyport Borough, New Jersey
70 West Front Street
Keyport, NJ 07735

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Fax: 732-671-7365

Prepared by: JAC, 12/27/2016
Source: NOAA, NJDOT; NJGIN; Monmouth County; Keyport Borough; T&M Associates
H:\KUPL\00020\GIS\Projects\Shallow Coastal Flooding Mapping.mxd

Beers Street Neighborhood
Aerial Map (1970)
Keyport Borough
Monmouth County, New Jersey

Beers Street Neighborhood

Block Boundary

Lot Boundary

N

0 50 100 200 300 400 Feet

The Pearl of the Bayshore SM
Keyport
NEW JERSEY

Keyport Borough, New Jersey
70 West Front Street
Keyport, NJ 07735

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Prepared by: JAC, 2/2/2017
Source: NJDOT; NJGIN; Monmouth County; Keyport Borough; T&M Associates
H:\KUPL\00020\GIS\Projects\Aerial Map 1970.mxd

Beers Street Neighborhood
SLOSH Mapping - Category 1
Keyport Borough
Monmouth County, New Jersey

Beers Street Neighborhood

Block Boundary

Lot Boundary

Storm Surge SLOSH Category 1

Depth of water above ground

- 0 - 3 feet
- 3 - 6 feet
- 6 - 9 feet
- > 9 feet

N

0 50 100 200 300 400 Feet

The Pearl of the Bayshore SM
Keyport NEW JERSEY

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Prepared by: JAC, 12/27/2016
Source: NJDOT; NJGIN; Monmouth County; Keyport Borough; T&M Associates
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Beers Street Neighborhood
SLOSH Mapping - Category 2
Keyport Borough
Monmouth County, New Jersey

Beers Street Neighborhood

Block Boundary

Lot Boundary

Storm Surge SLOSH Category 2

Depth of water above ground

- 0 - 3 feet
- 3 - 6 feet
- 6 - 9 feet
- > 9 feet

N

0 50 100 200 300 400 Feet

The Pearl of the Bayshore SM
Keyport NEW JERSEY

Keyport Borough, New Jersey
70 West Front Street
Keyport, NJ 07735

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Prepared by: JAC, 12/27/2016
Source: NJDOT; NJGIN; Monmouth County; Keyport Borough; T&M Associates
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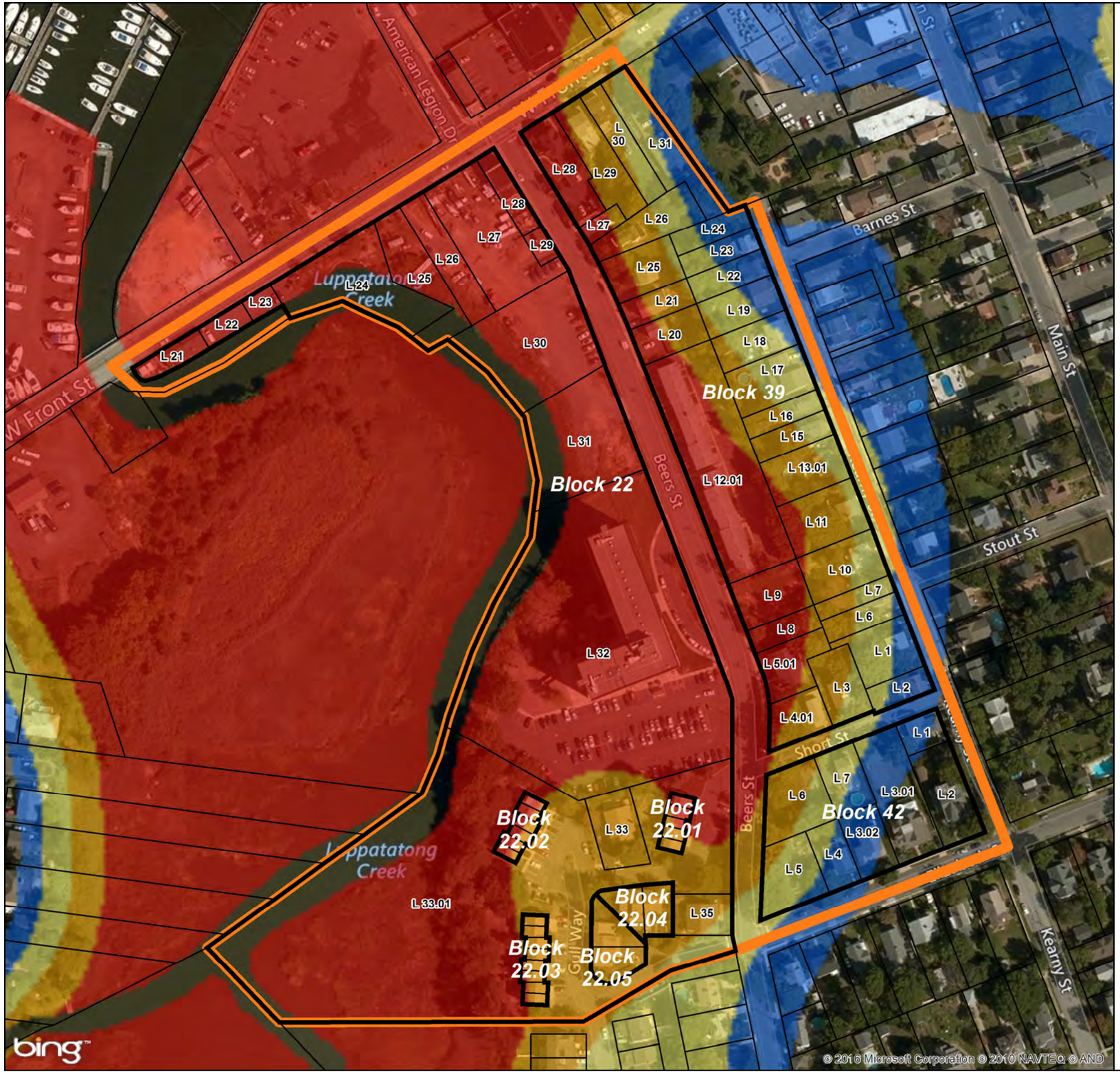

Beers Street Neighborhood
SLOSH Mapping - Category 3
Keyport Borough
Monmouth County, New Jersey

Beers Street Neighborhood

Block Boundary

Lot Boundary

Storm Surge SLOSH Category 3

Depth of water above ground

- 0 - 3 feet
- 3 - 6 feet
- 6 - 9 feet
- > 9 feet

N

0 50 100 200 300 400 Feet

The Pearl of the Bayshore SM
Keyport NEW JERSEY

Keyport Borough, New Jersey
70 West Front Street
Keyport, NJ 07735

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Phone: 732-671-6400
Fax: 732-671-7365

Prepared by: JAC, 12/27/2016
Source: NJDOT; NJGIN; Monmouth County; Keyport Borough; T&M Associates
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Beers Street Neighborhood
Sea Level Rise - 3 Foot Depth
Keyport Borough
Monmouth County, New Jersey

Block Boundary

Lot Boundary

Beers Street Neighborhood

Sea Level Rise - 3 Foot Depth

N

0 50 100 200 300 400 Feet

The Pearl of the Bayshore SM
Keyport
NEW JERSEY

Keyport Borough, New Jersey
70 West Front Street
Keyport, NJ 07735

T&M Associates
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Middletown, NJ 07748
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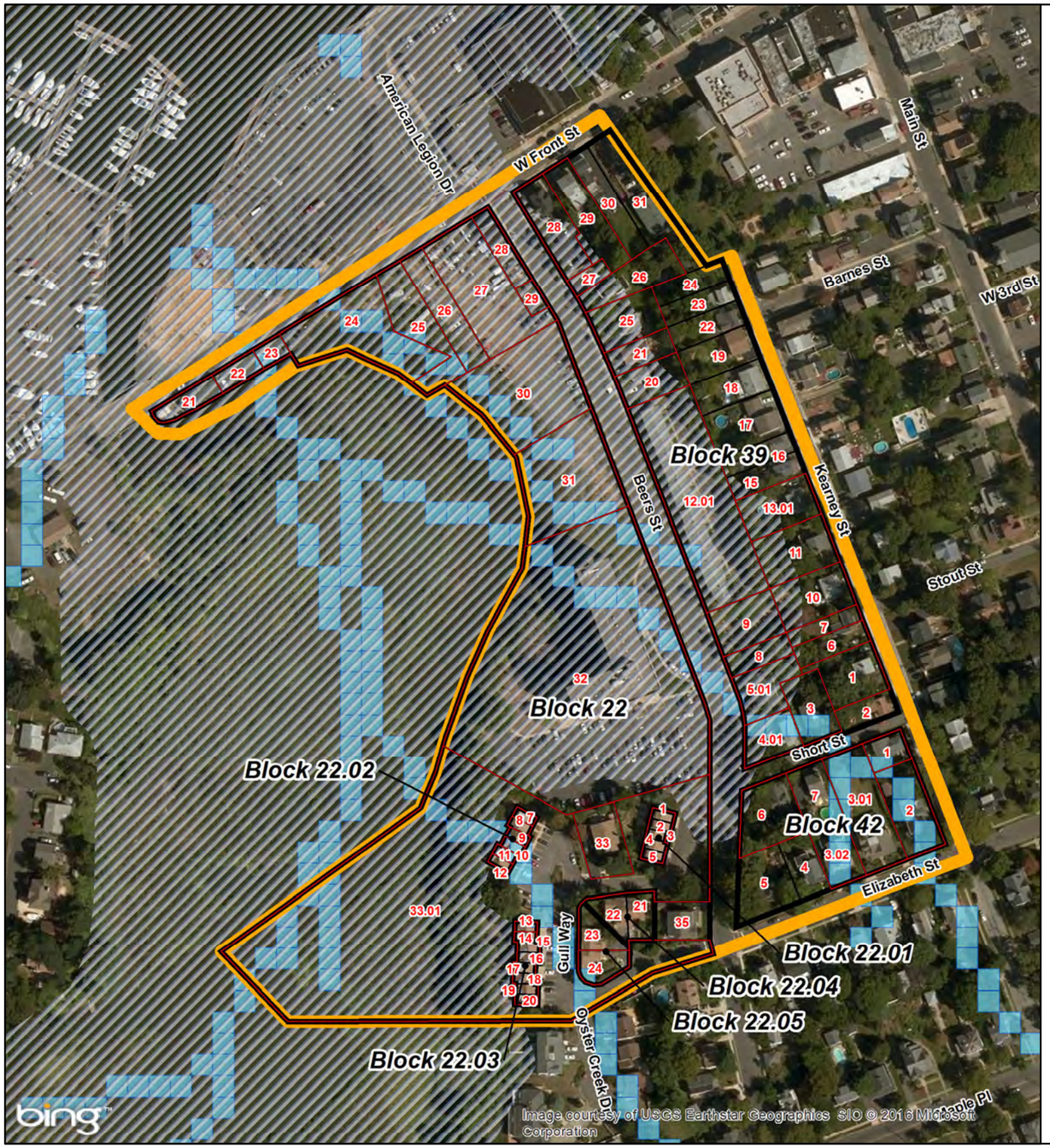
Prepared by: JAC, 12/28/2016
Source: NOAA, NJDOT; NJGIN; Monmouth County; Keyport Borough; T&M Associates
H:\KUPL\00020\GIS\Projects\Sea Level Rise 3 Feet.mxd



Details of Potentially Vulnerable Parcels

Block	Lot	Land Use	Improvement Value
22	21	Commercial	$113,700
22	22, 23	Residential	$15,500
22	24, 25	Commercial	$12,400
22	26	Vacant	$0
22	27	Vacant	$0
22	28	Commercial	$83,100
22	29	Public	$0
22	30	Residential	$18,600
22	31	Commercial	$0
22	32	Tax Exempt	$9,729,800
22	33.01	Vacant	$0
22.02	8	Residential	$112,300
22.02	9	Residential	$109,000
22.02	10	Residential	$115,100
22.02	11	Residential	$110,800
22.02	12	Residential	$113,000
22.03	13	Residential	$109,100
22.05	24	Residential	$142,900
39	1	Residential	$123,900
39	3	Residential	$126,200

Block	Lot	Land Use	Improvement Value
39	4.01	Residential	$110,500
39	5.01	Residential	Unavailable
39	6	Residential	$69,600
39	7	Residential	Unavailable
39	8, 9, 10	Residential	$113,200
39	11	Residential	$102,800
39	12.01	Multifamily	$101,400
39	13.01	Residential	$118,000
39	20	Residential	$88,200
39	21	Residential	$194,100
39	25	Residential	Unavailable
39	26, 27	Residential	$113,700
39	28	Commercial	$166,800
39	29	Residential	$164,200
42	1	Residential	$86,300
42	2	Residential	$181,000
42	3.01	Residential	$278,800
42	3.02	Residential	$219,500
42	6	Residential	$145,200
42	7	Residential	$129,700

Beers Street Neighborhood

Block Boundary

Parcel Boundary

Potentially Vulnerable Parcel

Potential Vulnerabilities

Flood Hazard

Area of Excessive Stormwater Runoff/Accumulation*

* Potential Area of Excessive Stormwater Runoff / Accumulation has been calculated with digital elevation modeling of the United States Geological Survey, and represents the generalized areas where stormwater may accumulate, or where there may be excessive stormwater runoff, if ground-water infiltration is impaired (e.g., by impervious surfaces and water-logged soil) and without regard to existing stormwater catchment devices. It should be taken to represent a worst-case scenario. The areas displayed on this map are areas where 150 or more inches of stormwater would accumulate.

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Potentially Vulnerable Parcels
Beers Street Neighborhood Plan
Keyport Borough, Monmouth County, New Jersey

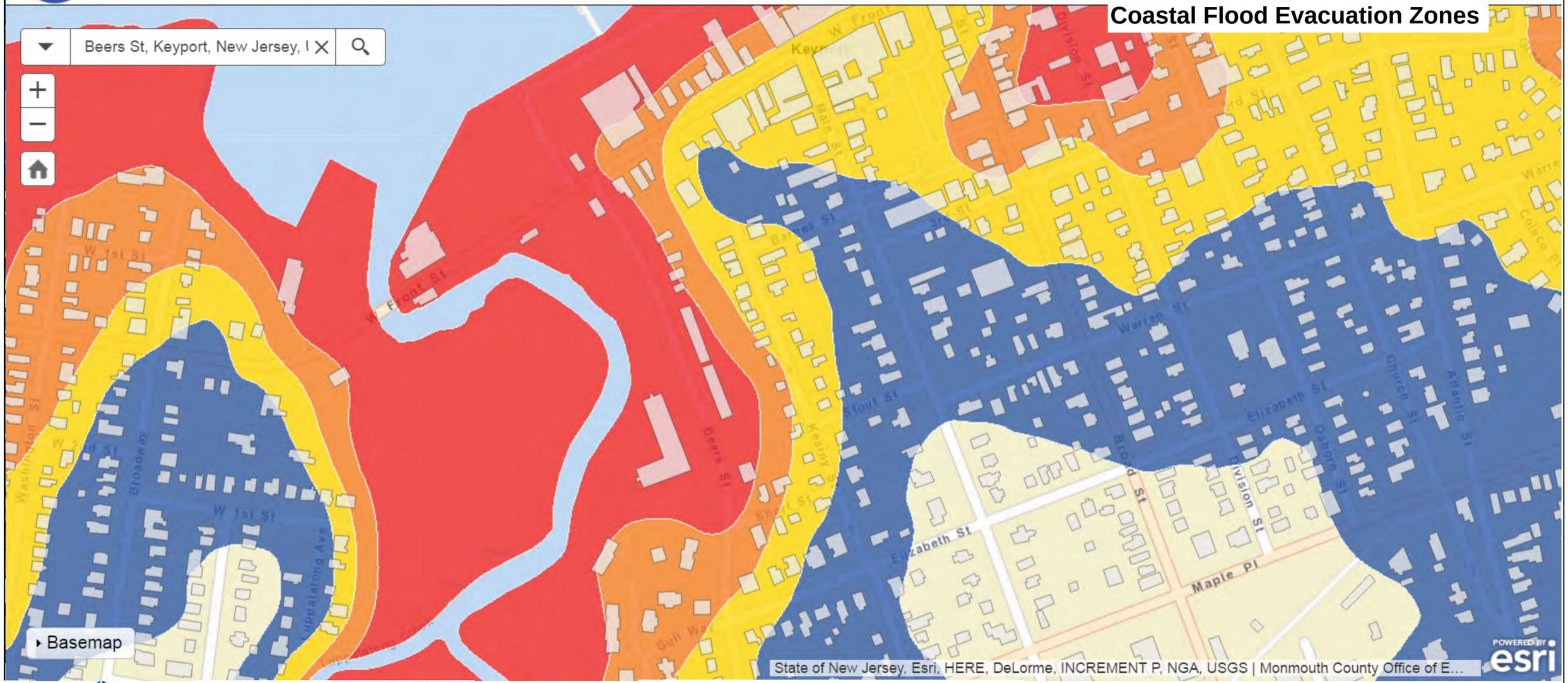
N

0 100 200 400 Feet

Prepared by: RED, August 8, 2016
Revised by: JAC, December 27, 2016
Source: NJDEP, USGS, FEMA, NJDOT, Monmouth County, T&M Associates, MOD-IV
File Path: H:\KUPL\00020\GIS\Projects\Figure 1 - Potential Vulnerability by Improvement Value.mxd

NOTE: This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not State-authorized.

Monmouth County Coastal Flood Evacuation Zone Map



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The Pearl of the Bayshore SM
Keyport
NEW JERSEY

Keyport Borough, New Jersey 70 West Front Street Keyport, NJ 07735

Coastal Flood Evacuation Zones

- Zone A
- Zone B
- Zone C
- Zone D

N

Beers Street Neighborhood

Coastal Flood Evacuation Zones

Keyport Borough
Monmouth County, New Jersey

Prepared by: DM, 2/8/2017
Source: Monmouth CountyGIS and OEM; Keyport Borough; T&M Associates
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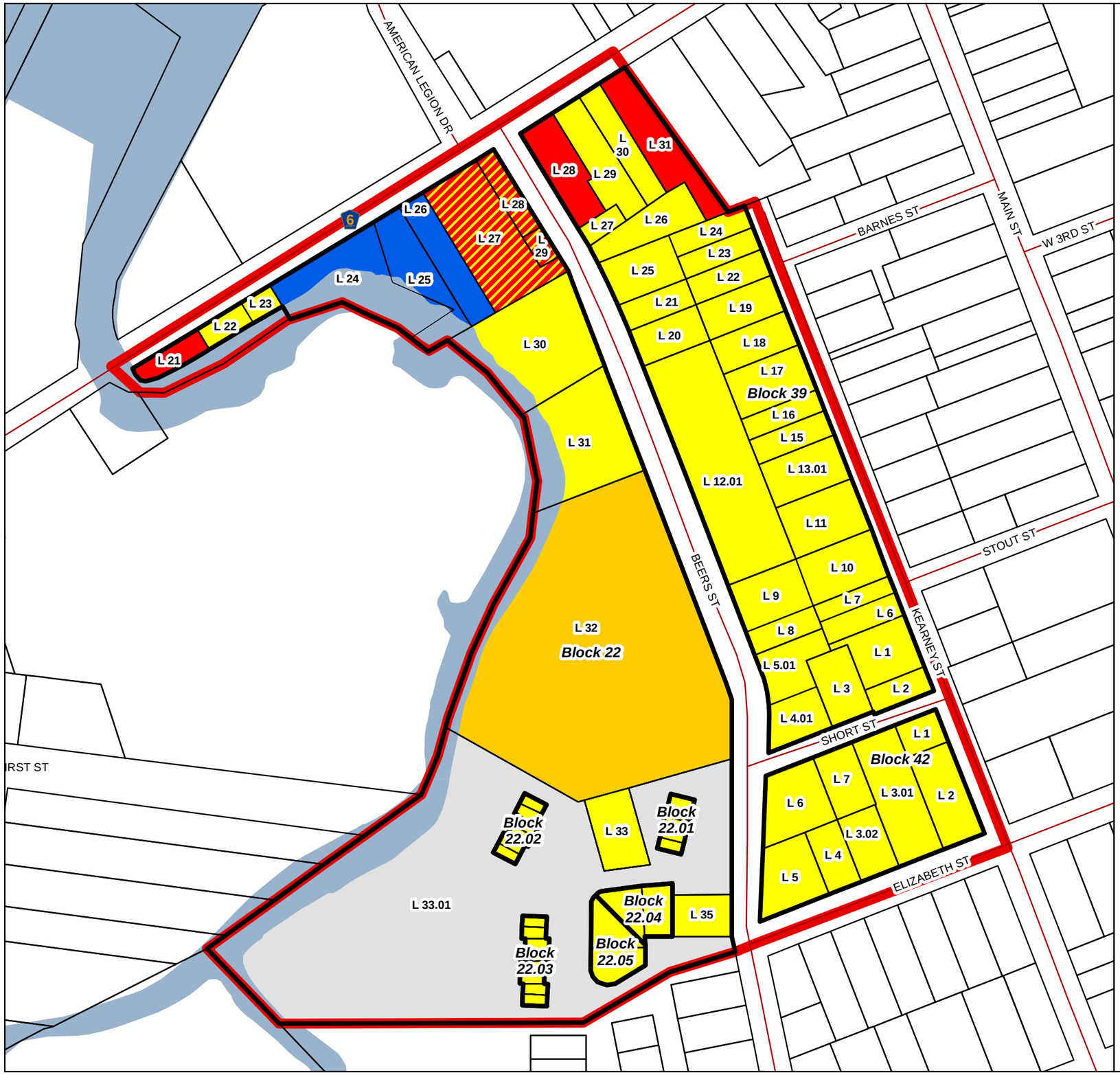
Beers Street Neighborhood
Future Land Use Map
Keyport Borough
Monmouth County, New Jersey



Beers Street Neighborhood

Block Boundary

Lot Boundary

Open Water

Roadway Network

Future Land Use

- Residential
- Apartment
- Commercial
- Mixed Use (Residential above Commercial)
- Public Open Space
- Vacant

N

0 50 100 200 300 400 Feet

The Pearl of the Bayshore SM
Keyport NEW JERSEY

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70 West Front Street
Keyport, NJ 07735

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Prepared by: JAC, 2/3/2017
Source: NJDOT; NJGIN; Monmouth County; Keyport Borough; T&M Associates
H:\KUPL\00020\GIS\Projects\Future Land Use Map.mxd

Prepared By:

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