9.6 City of Burlington

This section presents the jurisdictional annex for the City of Burlington.

9.6.1 Hazard Mitigation Plan Point of Contact

The following individuals have been identified as the hazard mitigation plan's primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Frank Caruso, EMC 525 High Street, Burlington, NJ 08016 609.284.3105 fcaruso@burlingtonnj.us	Kenneth Shine, Assoc. DBIA, CFM 525 High Street, Burlington, NJ 08016 856.656.2890 kshine@pennoni.com

9.6.2 Municipal Profile

The City of Burlington is located in northern Burlington County, New Jersey. The City is bordered by the Delaware River to the north and surrounded by the Township of Burlington to the west, east, and south. The City's location on the Delaware River and close proximity to Pennsylvania makes it a suburb of Philadelphia, Pennsylvania. The City of Burlington is comprised of approximately 4 square miles, with nearly ¾ of a square mile of water. According to the 2010 Census, the community's population was 9,920.

The Mayor is elected by the City voters and performs under the Mayor-Council form of government authorized in the Optional Municipal Charter Law NJSA 40:69A. This form provides for the direct election of the mayor, who serves a four-year term. This form is designed for a mayor to be independent of council, in charge of the administration of the municipality.

The mayor is the chief executive of the municipality and has the enforcement responsibility for all ordinances, charter provisions and prepares the budget of the municipality. The mayor, with the advice and consent of the council, appoints and removes department heads, including a business administrator. The mayor has the right to speak at council meeting but has no vote and does not need to attend.

The Council is the legislative body of the municipality. The Council consists of seven (7) members who are elected to 4-year terms. Three (3) Council members are "At-large" and four (4) Council members are ward representatives. The Council is generally limited to legislative functions, but has investigative power and may remove municipal officers for cause. The Council can reduce items in the Mayor's budget by a majority vote, but it needs a two-thirds majority to increase any item in the budget.

Growth/Development Trends

The following table summarizes recent residential/commercial development since 2013 to present and any known or anticipated major residential/commercial development and major infrastructure development that has been identified in the next five years within the municipality. Refer to the map in 9.6.8 of this annex which illustrates the hazard areas along with the location of potential new development.

Table 9.6-1. Growth and Development

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
Recent Development from 2013 to present					

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
Matrix Development Group	Warehouse	1	1101 E. Pearl Street, Block 226/Lot 1	Flood: 1% Event: A-Zone; SLOSH: Category 1; Sea-Level Rise:2 ft. SLR	Received all land use approvals
Peron Pearl Point	Apartments	2	Pearl Street (no #), Block 112 Lot 1 Block 118 Lot 2.01	1% Event: A-Zone	Received all land use approvals
The Willows at Burlington Mills	Apartments	65	505 Mitchell Ave, Block 198 Lot 1	Flood: 1% Event: A-Zone; SLOSH: Category 4	Completed 5/28/2014
Known or Anticipated Development in the Next Five (5) Years					
New Yorkshire Senior Housing	Senior Apartments	1	Vicinity of Clarkson & Linden Ave's, Block 141 Lots 8, 9, 11-13, 15-17	Flood: 1% Event: A-Zone; SLOSH: Category 4	Preliminary Planning Phase

** Only location-specific hazard zones or vulnerabilities identified.*

9.6.3 Natural Hazard Event History Specific to the Municipality

Burlington County has a history of natural and non-natural hazard events as detailed in Volume I, Section 5.0 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. For the purpose of this plan update, events that have occurred in the County from 2013 to present were summarized to indicate the range and impact of hazard events in the community. Information regarding specific damages is included, if available, based on reference material or local sources. This information is presented in the table below. For details of these and additional events, refer to Volume I, Section 5.0 of this plan.

Table 9.6-2. Hazard Event History

Dates of Event	Event Type (Disaster Declaration if applicable)	Burlington County Designated?	Summary of Damages/Losses
April 30-May 1, 2014	Heavy Rain and Flooding	N/A	Heavy rain caused considerable poor drainage and creek flooding in the northern Burlington County. Rancocas Creek was hit the hardest by flooding. Many roads were flooded and closed. Approximately $1 million in property damage in the County. While the event impacted the entire County, the City did not experience significant losses or damages.
June 23, 2015	Severe Storm (DR-4231)	Yes	$10 million in property damage in the County ($8 million in Medford, $1 million in Mt Laurel and $1 million in Medford Lakes). While the event impacted the entire County, the City did not experience significant losses or damages.
January 22-24, 2016	Severe Winter Storm (DR-4264)	Yes	Heavy snow fell throughout the County; snowfall totals ranged from 12 inches to 16.4 inches. While the event impacted the entire County, the City did not experience significant losses or damages.
January 20 thru January 30, 2017	NJ/PATP Bridge Closure	No	Road closures, traffic control points, additional manpower including the Sherriff's Department
August 03, 2017	City-wide Severe Flash Flooding	No	Water damage to structures and vehicles, Pump outs, road closures

Notes:
EM Emergency Declaration (FEMA)
FEMA Federal Emergency Management Agency

DR *Major Disaster Declaration (FEMA)*
N/A *Not applicable*

9.6.4 Hazard Vulnerabilities and Ranking

The hazard profiles in Section 5.0 of this plan have detailed information regarding each plan participant's vulnerability to the identified hazards. The following summarizes the hazard vulnerabilities and their ranking in the City of Burlington. For additional vulnerability information relevant to this jurisdiction, refer to Section 5.0.

Hazard Risk/Vulnerability Risk Ranking

The table below summarizes the hazard risk/vulnerability rankings of potential hazards for the City of Burlington. During the review of the hazard/vulnerability risk ranking, the City indicated the following:

- Drought was changed from a medium hazard to a high hazard.
-

Table 9.6-3. Hazard Risk/Vulnerability Risk Ranking

Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard [a, c]		Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking [b]
Coastal Erosion	RCV Exposed to CE Hazard Area:	$28,359,797	Occasional	12	Low
Drought*	Damage estimate not available.		Frequent	30	High
Earthquake	100-Year GBS: 500-Year GBS: 2,500-Year GBS:	$0 $2,015,192 $29,455,384	Occasional	28	Medium
Flood	1% Annual Chance:	$2,194,748,648	Frequent	54	High
Landslide	RCV Exposed to Landslide Hazard Area	$3,059,601,853	Occasional	36	High
Severe Storm	100-year MRP: 500-year MRP: Annualized:	$1,233,308 $10,871,676 $88,160	Frequent	48	High
Severe Winter Weather	1% GBS: 5% GBS:	$19,626,446 $98,132,230	Frequent	51	High
Wildfire	Estimated Value in the Extreme, Very High, and High Hazard Areas:	$14,802,212	Occasional	12	Low

Notes:

a. *Building damage ratio estimates based on FEMA 386-2 (August 2001)*

b. *The valuation of general building stock and loss estimates was based on custom inventory for the municipality.*
High = Total hazard priority risk ranking score of 31 and above
Medium = Total hazard priority risk ranking of 20-30+
Low = Total hazard risk ranking below 20

c. *Loss estimates for the severe storm and severe winter storm hazards are structural values only and do not include the value of contents.*

d *Loss estimates for the flood and earthquake hazards represent both structure and contents.*

e. *The HAZUS-MH earthquake model results are reported by Census Tract.*

** The City of Burlington changed the risk ranking for drought from medium to high*

National Flood Insurance Program (NFIP) Summary

The following table summarizes the NFIP statistics for the City of Burlington.

Table 9.6-4. NFIP Summary

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 100-year Boundary (3)
City of Burlington	976	240	$621,951.30	10	0	895

Source: FEMA Region 2 2017, 2018
(1) Repetitive loss and severe repetitive loss statistics provided by FEMA Region 2 and are current as of 10/31/2017. Policy and claims statistics current as of 9/30/2018
Please note the total number of repetitive loss properties does not include the severe repetitive loss properties. The number of claims represents claims closed by 9/30/2018.
(2) Total building and content losses from the claims file provided by FEMA Region 2.
(3) The policies inside and outside of the flood zones are based on the addresses geocoded from the FEMA Region 2 policy file – 10/31/2017.
Notes: FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility.
A zero percentage denotes less than 1/100th percentage and not zero damages or vulnerability as may be the case.

Critical Facilities

The table below presents Hazards United States (HAZUS) – Multi-Hazards (MH) estimates of the damage and loss of use to critical facilities in the community as a result of a 1-percent annual chance flood event.

Table 9.6-5. Potential Flood Losses to Critical Facilities

Name	Type	Exposure		Potential Loss from 1% Flood Event	
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage
152 - Library Company Of Burlington	County Building	-	X	-	-
166 - Dr Philson's Office-Burlington Fpc	County Building	X	X	13.4	77.6
170 - Heureka Center-Burlington Wic	County Building	X	X	14	84.4
241 - Sr. Citizens Nutrition Program-Burlington	County Building	X	X	16.2	100
255 - Sr. Citizens Nutrition Program - Burlington	County Building	X	X	3.5	21
259 - Communications Equipment-Burlington City-Inside To	County Building	-	X	-	-
285 - Sr. Citizens Nutrition Program - Burlington	County Building	-	X	-	-
477 - Communications Equipment - Burlington City	County Building	X	X	3	18
Agaway	Hazmat	X	X	-	-
All Saints Parochial School	School	X	X	13	72
Arfa Enterprises Inc	Hazmat		X	-	-

Name	Type	Exposure		Potential Loss from 1% Flood Event	
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage
Burlington City Fire Department	Fire	X	X	8.5	14
Burlington City Fire Department	Police	X	X	-	-
Burlington Board Of Education	School	X	X	0	0
Burlington Bristol Bridge	Tier Facility	X	X	-	-
Burlington Bristol Bridge Police Dept	Police	X	X	14.7	68.5
Burlington City High School	School	X	X	0	0
Burlington City High School	Shelter	X	X	0	0
Burlington City Municipal Building	Municipal Hall	X	X	-	-
Burlington City Police	Police	X	X	14	0
Burlington City Sewerage Authority	Wastewater Treatment	X	X	-	-
Burlington Generating Station Heliport (PSEG)	Airport	X	X	-	-
Burlington LNG Plant	Tier Facility	-	X	-	-
Burlington South	Intermodal Transit	X	X	57.6	67.3
Burlington South Light Rail Station	Light Rail	X	X	-	-
Burlington Towne Centre	Intermodal Transit	X	X	0.2	0.2
Burlington Towne Ctr Light Rail Station	Light Rail	X	X	-	-
Captain James Lawrence School	School	X	X	32.5	0
Cementex Production	Hazmat	X	X	-	-
Cenco Heating Oil	Hazmat	X	X	-	-
Central Safety Equipment	Hazmat	X	X	-	-
Central Safety Equipment Co.	Chemical	X	X	-	-
City Sewer Plant	Hazmat	X	X	-	-
Commerce Square	Water Tower	-	X	-	-
Common Council Burlington City	Wastewater Treatment	X	X	-	-
Cooper House	Historic Site	X	X	11.1	85.7
Curtin Marina	Hazmat	X	X	-	-
Davita Burlington North	Medical	X	X	0	0

Name	Type	Exposure		Potential Loss from 1% Flood Event	
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage
Delucia Enterprises Inc.	Chemical	-	X	-	-
Elias Boudinot Elementary School	School	-	X	0	0
Endeavor Emergency Squad	EMS	X	X	2.8	3.2
Gasko Oil Company	Hazmat	X	X	-	-
Holy Light Christian Academy	School	X	X	6	32.5
Home For Aged Women	Senior	X	X	-	-
Isaac Collins House	Historic Site	X	X	0	2
J.F. Budd Baby Shoe Factory	Historic Site	-	X	-	-
Lawrence House	Historic Site	X	X	12	94.4
Library Company Of Burlington	Library	X	X	-	-
Lukoil	Hazmat	X	X	-	-
Malwa Enterprises Inc	Hazmat	X	X	-	-
Martin L Steinmann	Hazmat	X	X	-	-
Mitchell Fire Co #3	Fire	X	X	14	0
Mother's Kitchen	Hazmat	-	X	-	-
Municipal	EOC	X	X	8.5	14
National Guard Armory	Military	X	X	-	-
Neptune Hose Co #5	Fire	X	X	75.5	0
Niagara Hose Co 6	Fire	X	X	16	75.5
NJSP Marine Police	Police	X	X	0	0
Pearson-How House	Historic Site	X	X	12	92.6
Penn Metal Finishing	Hazmat	-	X	-	-
Penn Metal Finishing Co. Inc	Chemical	-	X	-	-
PSE&G	Hazmat	-	X	-	-
PSE&G Substation	Substation	X	X	-	-
Public Service Electric And Gas	Chemical	-	X	-	-
Quaker School	Historic Site	X	X	0	2
Samuel Smith Elementary School	School	X	X	8.4	48.5
Slf Inc	Hazmat	X	X	-	-

Name	Type	Exposure		Potential Loss from 1% Flood Event	
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage
St Mary's Hall -Doane Academy	School	-	X	-	-
St. Mary's Episcopal Church	Historic Site	-	X	-	-
Sunoco	Hazmat	X	X	-	-
Tedan Inc	Hazmat	X	X	-	-
Tedan Inc.	Chemical	X	X	-	-
Us Pipe & Foundry Co.	Hazmat	X	X	-	-
Verizon	Hazmat	X	X	-	-
Verizon NJ Inc	Hazmat	X	X	-	-
Water Plant	Hazmat	X	X	-	-
Wilbur Watts Intermediate School	School	X	X	14	73.5
Wilbur Watts Middle School	Shelter	X	X	17	97

Source: FEMA 2017, Burlington County
Note: - = Damages not calculated by HAZUS-MH v4.0

Other Vulnerabilities Identified

The municipality has identified the following vulnerabilities within their community:

- Approximately 85% of the City is in a flood prone area due to the Delaware River and Assiscunk Creek bordering two sides of the City.
- The Muni-POD location does not have back-up power due to requirement to elevate the generator above the base flood elevation which is approximately eleven (11) feet.

9.6.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the City of Burlington.

Table 9.6-6. Planning and Regulatory Tools

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Planning Capability				
Master Plan	Yes	Local	Land Use Board	Municipal Land Use Law
Capital Improvements Plan	Yes	Local	Various	Approved Municipal Budget
Floodplain Management / Basin Plan	No	-	DVRPC	This should be addressed as a regional issue.
Stormwater Management Plan	Yes	Local	Sewer & Drainage	Storm Water Control Ordnance
Open Space Plan	Yes	Local	City Administration	ROSI- Recreation and Open Space Inventory
Stream Corridor Management Plan	Yes	Local	Sewer & Drainage	City Drainage Systems O&M (with Drainage Channel Map)
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	Yes	Local	City Council	Master Plan
Comprehensive Emergency Management Plan	Yes	Local	OEM	Emergency Operations Plan, Current until 2020
Emergency Operation Plan	Yes	Local	OEM	Emergency Operations Plan
Post-Disaster Recovery Plan	Yes	Local	OEM	Emergency Operations Plan
Transportation Plan	Yes	Local	Land Use Board	Master Plan
Strategic Recovery Planning Report	N/A	-	-	-
Other Plans:	-	-	-	-
Regulatory Capability				
Building Code	Yes	State & Local	-	State Uniform Construction Code Act (N.J.S. 52:27D-119 et seq.)
Zoning Ordinance	Yes	Local	Zoning/Land Use Board	Zoning Ordinance, Chapter 207 Article VII
Subdivision Ordinance	Yes	Local	Land Use Board	Land Development Ordinance, Chapter 207
NFIP Flood Damage Prevention Ordinance	Yes	Local	Land Use Board, Construction Office	Flood Damage Prevention Ordinance, Chapter 170
NFIP: Cumulative Substantial Damages	Yes	Local	Flood Plain Manager	Flood Damage Prevention Ordinance, Chapter 170
NFIP: Freeboard	Yes	State, Local	Flood Plain Manager	Flood Damage Prevention Ordinance, Chapter 170
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	Yes	Local	Land Use Board	Land Development Ordinance, Chapter 207
Stormwater Management Ordinance	Yes	Local	Land Use Board	Storm Water Management Ordinance, Chapter 207 Article VI

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Municipal Separate Storm Sewer System (MS4)	Yes	Local	Sewer & Drainage	SP3
Stormwater Program Ordinances •Pet waste •Litter Control •Improper Disposal of Waste •Wildlife Feeding •Yard Waste Collection •Illicit Connection •Private Storm Drain Retrofitting •Refuse Container / Dumpster (optional)	Yes	Local	-	Chapter 84 Article VI: Pet Waste; Chapter 217: Littering; Chapter 277-10: Prohibited Waste; Chapter 84 Article VII: Wildlife Feeding; Chapter 300 Article III: Yard Waste Collection; Chapter 277 Article II: Illicit Connections; Chapter 207 Article VI Stormwater Management; Chapter 300: Solid Waste
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	-	-
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	Yes	Local	Historical Preservation Commission	Historical Preservation Commission Ordinance

Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the City of Burlington.

Table 9.6-7. Administrative and Technical Capabilities

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Administrative Capability		
Planning Board	Yes	Land Use Board (also does Zoning)
Mitigation Planning Committee	Yes	Various
Environmental Board/Commission	No	-
Open Space Board/Committee	Yes	City Council
Economic Development Commission/Committee	Yes	City Council
Maintenance programs to reduce risk	Yes	Department of Public Works
Mutual aid agreements	Yes	Fire, Police, OEM, EMS, DPW, Sewer & Drainage
Technical/Staffing Capability		
Planner(s) or engineer(s) with knowledge of land development and land management practices	Yes	Remington & Vernick
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Alaimo (City Engineers) and Remington & Vernick
Planners or engineers with an understanding of natural hazards	Yes	Alaimo, and Remington & Vernick
NFIP Floodplain Administrator (FPA)	Yes	Construction Department
Surveyor(s)	Yes	Alaimo (City Engineers)

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	No	County OEM, BCHD
Scientist familiar with natural hazards	No	Refer to consultant
Emergency Manager	Yes	Office of Emergency Management, OEM
Grant writer(s)	Yes	Burlington Bristol Bridge Commission, Tom Rutala
Staff with expertise or training in benefit/cost analysis	Yes	OEM
Professionals trained in conducting damage assessments	Yes	OEM, DPW, CERT

Fiscal Capability

The table below summarizes financial resources available to the City of Burlington.

Table 9.6-8. Fiscal Capabilities

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	No
Incur debt through private activity bonds	Unknown
Withhold public expenditures in hazard-prone areas	Unknown
Other federal or state Funding Programs	Yes
Open Space Acquisition funding programs	Yes
Other	-

Community Classifications

The table below summarizes classifications for community program available to the City of Burlington.

Table 9.6-9. Community Classifications

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	Yes	8	2013
Building Code Effectiveness Grading Schedule (BCEGS)	Yes	4	2017
Public Protection (ISO Fire Protection Classes 1 to 10)	No	-	-
Storm Ready Certification	Yes	Certified	January 2017
Firewise Communities classification	No	N/A	N/A

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Natural disaster/safety programs in/for schools	Yes	Exercises	Last exercise March 2017
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	Yes	Social Media	Website, NIXLE, Facebook, ongoing public presentations
Public-private partnership initiatives addressing disaster-related issues	Yes	BUCOAD, BCPPP	-

Note:
N/A *Not applicable*
NP *Not participating*
- *Unavailable*

The classifications listed above relate to the community's ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community's capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class 1 being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO's Public Protection website at https://www.isomitigation.com/ppc/
- The National Weather Service Storm Ready website at http://www.stormready.noaa.gov/index.html
- The National Firewise Communities website at http://firewise.org/

Self-Assessment of Capability

The table below provides an approximate measure of the City of Burlington's capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

Table 9.6-10. Self-Assessment Capability for the Municipality

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)*	Moderate	High
Planning and regulatory capability			X
Administrative and technical capability			X
Fiscal capability	X – Municipal Capital Projects are dependent upon supplemental grant funding		
Community political capability			X
Community resiliency capability		X	

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)*	Moderate	High
Capability to integrate mitigation into municipal processes and activities			X

National Flood Insurance Program

NFIP Floodplain Administrator (FPA)

Howard Wilkins, Construction Official

Flood Vulnerability Summary

The City of Burlington maintains inventories of properties that have been damaged by flooding and identifies property owners who are interested in mitigation. The FPA indicated that there are currently no residents interested in elevation or mitigation. One of the City bulkheads has recently collapsed and the cause is being investigated. The replacement of the bulkhead is a high priority as the bulkhead protects the City from flooding.

Resources

The FPA assumes the responsibilities of floodplain administration for the City of Burlington in conjunction with other staff. NFIP administration services and functions provided to residents of City of Burlington include permit review, inspections, and damage assessments (done by the Building Department). The City provides education to the community regarding flood hazards/risk or flood risk reduction through brochures and education tables at events. The FPA stated there are currently no barriers to running an effective floodplain management program and feels adequately supported and trained to fulfill his responsibilities as the municipal floodplain administrator. The FPA would consider attending continuing education and certification training on floodplain management if it were offered in the future.

Compliance History

The City is in good compliance with the NFIP. The most recent Community Assistance Visit was in 2016 and there will be another meeting in February 2018.

Regulatory

The City of Burlington's floodplain management ordinance meets the standard set by FEMA and the State of New Jersey. The FPA indicated that there are other local ordinances, plans, or programs that support floodplain management and that the planning/zoning boards work with the City's CRS program.

Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community's progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures.

Planning

Hazard Mitigation: The City of Burlington actively participated in the 5-year update of the Burlington County Hazard Mitigation Plan. The City continues to support the implementation, monitoring, maintenance, and updating of the plan.

Master Plan: The City's Master Plan was written in 2010 in order to provide a vision for future land development, redevelopment, and planning efforts in the City. It includes an environmental inventory, land use plan element, and circulation plan element. It has the following goals:

- Promote land use and development patterns that strengthen the City's existing diversified and historically compact nature and that encourage pedestrian activity, enhance public safety, support transit, and reduce dependency on the automobile;
- Enhance and improve pedestrian, bicycle, bus, light rail, and automobile circulation through the city. Add to those improvement, new opportunities available from the Delaware River and Assicunk Creek;
- Promote planning and urban design principles that encourage traditional and sustainable urban development patterns in order to protect the City's 332 year history and increase the quality of life for City residents and businesses.

Regulatory and Enforcement (Ordinances)

The City of Burlington's codebook is available online at https://ecode360.com/BU2898#BU2898.

Flood Damage Prevention: The purpose of the flood damage prevention ordinance (Chapter 170 of the municipal code) is to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed to:

- Protect human life and health;
- Minimize expenditure of public money for costly flood control projects;
- Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- Minimize prolonged business interruptions;
- Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges located in areas of special flood hazard;
- Help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas;
- Ensure that potential buyers are notified that property is in an area of special flood hazard.

Land Development Ordinance: The Land Development Ordinance is enacted in accordance with the Master Plan of the City for the following purposes:

- To guide the appropriate use and development of land, in a manner which will promote the public health, safety, morals and general welfare;
- To secure safety from fire, flood, panic and other natural and man-made disasters;
- To provide adequate light, air and open space;
- To promote the establishment of appropriate population densities and concentrations that will contribute to the well-being of persons and neighborhoods, and preservation of the environment;
- To encourage the location and design of transportation routes which will promote the free flow of traffic while discouraging location of such facilities and routes which result in congestion or blight;
- To promote a desirable visual environment through creative development techniques and good civic design and arrangements;
- To protect and preserve the unique character, identity and historic heritage of historic districts and historic sites;
- To comport with other such purposes as set forth in N.J.S.A. 40:55D-2.

The ordinance covers land use, stormwater management, zoning, flood damage prevention, and historic preservation.

NJDEP Municipal Stormwater Regulation Program: New Jersey Department of Environmental Protection issued the statewide municipal stormwater permits that became effective January 1, 2018 and authorizes stormwater discharges from municipal separate storm sewer systems (MS4s) to the waters of the state. Municipalities that have been issued a Notice of Authorization (NOA) to discharge under the Tier A (urban and coastal municipalities) or Tier B (more rural municipalities) master general permit must develop and implement a stormwater program. The first New Jersey Pollutant Discharge Elimination System (NJPDES) permit authorizing discharges from MS4 municipalities became effective in 2004 (subsequently renewed in 2009 and now in 2018), so most municipalities have developed stormwater programs; however, the 2018 permit requires municipalities to maintain a stormwater management plan and enforce stormwater ordinances to address development and redevelopment consistent with the Stormwater Management rules at N.J.A.C 7:8, as well as implementation of additional requirements. For more information on the municipal stormwater regulation program, see http://www.nj.gov/dep/dwq/msrp_home.htm. Burlington City is a Tier A municipality.

Stormwater Management: Chapter 207 Article VI of the municipal code discusses stormwater management. The chapter is intended to regulate the feeding of wildlife, disposal of waste, including pet solid waste, yard waste collection, litter, and other waste and pollution that may find its way into stormwater runoff in order to improve, preserve and protect the water quality of waters and streams within the City and surrounding communities that may be downstream from the City so as to protect the health safety and welfare of the public. This chapter also regulates connections to the municipal separate storm sewer system (MS4) operated by the City and establishes penalties for violations of the provisions of this chapter.

Historical Preservation Commission Ordinance: The purpose of the Historical Preservation Commission Ordinance is to effect and accomplish the protection, enhancement and perpetuation of especially noteworthy examples or elements of the City's environment and establish the commission.

Operational and Administration

Mutual Aid: The City maintains mutual aid agreements with neighboring communities for continuity of operations

Vegetation Management: The City's DPW maintains a tree maintenance and clearing program along roadways in high hazard areas.

Information Sharing: The City is working with Burlington County to improve municipal communications systems to include information sharing with the county and surrounding municipalities. The City also utilizes Swift911 and Nixle to share information with residents.

Floodplain Administrator: The City promotes the participation of the Floodplain Administrator within the hazard mitigation planning process and other plans and activities.

Land Use Board: The City of Burlington's Land Use Board is a joint board comprised of former Zoning Board and Planning Board members.

Historic Preservation Commission: The City of Burlington's Historic Preservation Commission is primarily charged with safeguarding the important architecture and historic heritage of the City. The Planning & Zoning Board relies on Commission advice on these matters.

Funding

The City of Burlington plans to look at mitigation actions when allocating funding in the future. The City has provided funding for mitigations projects that have been identified in the hazard mitigation plan and protection for buildings and infrastructure in high hazard areas.

Education and Outreach

The City of Burlington conducts outreach on hazards through various methods.

The City maintains a municipal website (http://www.burlingtonnj.us/) where they post information regarding upcoming community events, important municipal decisions, and information about the municipality. There is a dedicated section of the website dealing with flooding and flood insurance. The City also maintains a Facebook page and runs ongoing public presentations

Burlington County utilizes the Swift911 Emergency Notification system. Swift911 is used in order to keep residents informed during fires, outages, floods, hurricanes, evacuations, road closures and more. All notifications are delivered for the sole purpose of delivering emergency messages and public notifications that are time sensitive in order to increase the safety and security. This service is also extended to the 40 municipalities within Burlington County, including the City of Burlington.

Similar to Swift911, the City of Burlington utilizes Nixle. Nixle is a messaging service that residents can register for that allows messages to be sent by government agencies to local residents via phone, email, and web. Nixle can be used for emergency or non-emergency situations.

9.6.6 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and prioritization.

Past Mitigation Initiative Status

The following table indicates progress on the community's mitigation strategy identified in the 2013 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under 'Capability Assessment' presented previously in this annex.

Table 9.6-11. Status of Previous Mitigation Actions

Action Number	2013 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status 1. Please describe what was accomplished and indicate % complete. 2. If there was no progress, indicate what obstacles/delays encountered? 3. If there was progress, how is/was the action being funded (e.g., FEMA HMGP grant, local budget)?	Next Steps 1. Project to be included in 2019 HMP or Discontinue 2. If including action in the 2019 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
BTC-1	WWTP Stormwater Pump Upgrades - Replace aging 60hp and 100 hp pumps with two new 150 hp pumps.	Public Works / Sewer and Drainage Department / NJOEM	In Progress	1. Project designed, bid, is currently in construction phase (as of Dec 2017), and is approximately 20% complete. 2. N/A 3. FEMA HMGP, NJEIT, City capital	1. Include in 2019 HMP 2. See table 9.6-12 3. N/A
BTC-2	Tide gate Mitigation - Install tide gate units on outfall pipes that do not have existing tide gates installed.	Public Works / Sewer and Drainage Department / NJOEM	In Progress	1. New tide gates have been installed on various outfall pipes and all required upgrades are 5% complete. 2. N/A 3. City capital	1. Include in 2019 HMP 2. See table 9.6-12 3. N/A
BTC-3	PHASE 1 Assiscunk Creek Levee Improvements Phase 1 - including Columbus Park Storm Pipe tide gate replacement - Tide gate replacement and creek-side clearing	Public Works and Engineering	In Progress	1. Completed 2000 LF of creek-side stabilization and project is 25% complete. 2. N/A 3. Small Cities CDBG.	1. Include in 2019 HMP 2. See table 9.6-12 3. N/A
BTC-4	PHASE 2 Assiscunk Creek Levee Mitigation - Armor the river side slopes and upgrade interior drainage pipes.	Public Works / Sewer and Drainage Department / NJOEM	No Progress	1. Less than 1% complete. 2. Lack of funding. 3. N/A	1. Include in 2019 HMP 2. See table 9.6-12 3. N/A
BTC-5	Riverbank near Watkins Alley - Replace inlet and pipes, install a tidal shock valve and restore curbs and sidewalks.	Public Works / Sewer and Drainage Department / NJOEM	No Progress	1. 0% complete. 2. Lack of funding. 3. N/A	1. Include in 2019 HMP 2. See table 9.6-12 3. N/A
BTC-6	Riverbank and Wood Street - Replace inlet and pipes, and restore curbs, pavement and sidewalks	Public Works / Sewer and Drainage Department / NJOEM	No Progress	1. 0% complete. 2. Lack of funding. 3. N/A	1. Include in 2019 HMP 2. See table 9.6-12 3. N/A
BTC-7	Mitchell Court Outfalls (west side of Assiscunk Creek). Replace pipe, install tideflex check valves and restore disturbed areas.	Public Works / Sewer and Drainage Department / NJOEM	No Progress	1. 0% complete. 2. Lack of funding. 3. N/A	1. Include in 2019 HMP 2. See table 9.6-12 3. N/A
BTC-8	Mitchell Avenue Outfalls (east side of Assiscunk Creek) - Replace pipe, install tideflex	Public Works / Sewer and Drainage Department / NJOEM	In Progress	1. One (1) tide gate replaced and work is 40% complete. 2. N/A 3. City capital	1. Include in 2019 HMP 2. See table 9.6-12 3. N/A

Action Number	2013 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status 1. Please describe what was accomplished and indicate % complete. 2. If there was no progress, indicate what obstacles/delays encountered? 3. If there was progress, how is/was the action being funded (e.g., FEMA HMGP grant, local budget)?	Next Steps 1. Project to be included in 2019 HMP or Discontinue 2. If including action in the 2019 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
	check valves and restore disturbed areas.				
BTC-9	Mitchell Avenue Pump Station Storm Event Bypass System - Provide bypass pumping to handle storm surges	Public Works / Sewer and Drainage Department / NJOEM	No Progress	1. 0% complete. 2. Lack of funding. 3. N/A	1. Include in 2019 HMP 2. Keeping in plan until project is 100% complete. 3. N/A
BTC-10	Kennedy Lake Dredging - Dredge the lake at the low-end of the drainage area to maximize stormwater storage.	Public Works / Sewer and Drainage Department / NJOEM	No Progress	1. 0% complete. 2. Lack of funding. 3. N/A	1. Include in 2019 HMP 2. Keeping in plan until project is 100% complete. 3. N/A
BTC-11	Upgrade to various outfalls along the Delaware River and Assiscunk Creek - Replace aging flapper tide gates with tideflex check valves.	Public Works / Sewer and Drainage Department / NJOEM	In Progress	1. Installed a few new tide gates and project is 10% complete. 2. N/A 3. City capital	1. Include in 2019 HMP 2. Keeping in plan until project is 100% complete. 3. N/A
BTC-12	Mobile Emergency Bypass Pump System - Purchase a 12" pump with trailer with associated hoses and piping.	Public Works / Sewer and Drainage Department / NJOEM	No Progress	1. 0% complete. 2. Lack of funding. 3. N/A	1. Include in 2019 HMP 2. See table 9.6-12 3. N/A
BTC-13	Scott, Pine, McNeill Streets and Route 130 Drainage Improvements - Replace inlets and pipe including undersized pipe under Route 130 and restore curbs, sidewalks and pavement.	Public Works / Sewer and Drainage Department / NJOEM	No Progress	1. 0% complete. 2. Lack of funding. 3. N/A	1. Include in 2019 HMP 2. See table 9.6-12 3. N/A
BTC-14	Conduct and facilitate community and public education and outreach for residents and businesses to promote natural hazard risk reduction to include: • Disaster preparedness • Hazard mitigation	Municipality with support from Planning Partners, County Planning, NJOEM, FEMA	In Progress	1. 99% completed. Continual regular effort of the OEM in Jurisdiction. 2. N/A 3. Funded by local budget / volunteer efforts.	1. Include in 2019 HMP 2. See table 9.6-12. 3. N/A
BTC-15	Improve municipal communications systems to include information sharing with county and surrounding municipalities.	OEM with support from County, NJOEM and FEMA	In Progress	1. 99% completed. Improving radio communications for marine incidents on Delaware River and back up public safety communications within jurisdiction through use of repeater and UHF / VHF radios.	1. Discontinue 2. See table 9.6-12 3. Ongoing capability

Action Number	2013 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status 1. Please describe what was accomplished and indicate % complete. 2. If there was no progress, indicate what obstacles/delays encountered? 3. If there was progress, how is/was the action being funded (e.g., FEMA HMGP grant, local budget)?	Next Steps 1. Project to be included in 2019 HMP or Discontinue 2. If including action in the 2019 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
				2. Finding a qualified vendor. 3. Local Budget, EMAA Grant	
BTC-16	Obtain and install backup power sources at all critical facilities to include shelters.	Municipality engineering, OEM with support from County, NJOEM and FEMA	In Progress	1. 75% Completed. Majority of facilities have back up power except for Keegan Center (Muni-POD). Generator has been secured but not installed. 2. No funding. 3. Lack of Municipal funding.	1. Include in 2019 HMP 2. Need to be addressed in 2019 or 2019 local public works budget. 3. N/A
BTC-17	Create/Enhance/Maintain Mutual Aid agreements with neighboring communities for continuity of operations	Municipal Government, OEM with support from County, NJOEM, FEMA and surrounding communities	Complete	1. 100% completed. County wide mutual aid agreements in place. Pennsylvania mutual aid agreements in place. 2. N/A 3. County	1. Discontinue 2. Will be readdressed in 2020. 3. Ongoing capability
BTC-18	Continue to support the implementation, monitoring, maintenance, and updating of this Plan through participating in the 5 year Plan Update	Municipal Government, OEM with support from Planning Partners, County Planning, NJOEM, FEMA	In Progress	1. 100% complete 2. We are doing this task as part of this update. 3. County / Local	1. Discontinue 2. Continual effort. 3. Ongoing capability
BTC-19	Continue to promote the participation of Floodplain Administrator within the planning process and other related activities.	Municipal Government with support from County, NJOEM and FEMA	In Progress	1. 75% completed. A program of public education and awareness was implemented two years ago. Floodplain Administrator is undergoing a change and the new person will need time to be acclimated into the job. 2. N/A 3. Local Budget	1. Discontinue Continual effort. 3. Ongoing capability
BTC-20	Enhance resilience to severe storms by joining the NOAA "Storm Ready" program.	OEM with support from County, NJOEM and FEMA	Complete	1. 100% completed. Recertified as Storm Ready in 2017 by the NWS. 2. N/A 3. Local Budget	1. Include in 2019 HMP 2. See table 9.6-12 3. N/A
BTC-21	Provide public education and outreach on proper installation and/or use of backup power	Municipal Clerk, OEM and government	In Progress	1. 99% completed. Continual social media awareness program for OEM to educate public on timely issues and safe practices during emergencies. 2. N/A Local budget / volunteer efforts.	1. Include in 2019 HMP Continual program. 3. N/A
BTC-22	Address dangerous trees threatening people and property through proactive tree-trimming (vegetation	Municipal DPW	In Progress	1. 100% completed. Public Works has vegetation management / disposal program to mitigate potential damage to public and private property.	1. Discontinue Continual effort. 3. Ongoing capability

Action Number	2013 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status 1. Please describe what was accomplished and indicate % complete. 2. If there was no progress, indicate what obstacles/delays encountered? 3. If there was progress, how is/was the action being funded (e.g., FEMA HMGP grant, local budget)?	Next Steps 1. Project to be included in 2019 HMP or Discontinue 2. If including action in the 2019 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
	management) programs in conjunction with property owners and utility companies.			2. N/A 3. Local Budget.	
BTC-23	Develop study for identifying specific vulnerabilities associated with vulnerable critical facilities noted in Section 9.6.6.2 of this annex	Lead: City OEM Support: City Engineer	In Progress	1. 75% completed. DVRPC has published the Burlington City Coastal Vulnerability Assessment report, which summarizes our conversations in 2015 and 2016 on the city's vulnerabilities to flooding from sea level rise and storm surge, and offers recommendations based on those vulnerabilities as well as resources for funding and technical assistance. 2. N/A 3. Local Budget, Grant, DVRPC	1. Include in 2019 HMP Continual program. 3. N/A
BTC-24	Appoint a committee of relevant stakeholders (e.g. police, fire, etc.) to explore feasible mitigation activities for the City's identified vulnerable critical facilities	Lead: City OEM Support: City PD, Fire, Schools	Complete	1. LEPC formed in jurisdiction of Public Safety Officials, Community Leaders and Business Leaders to look at these issues continually. 2. N/A 3. Local Budget.	1. Include in 2019 HMP 2. Continual program 3. N/A
BTC-25	Kennedy Lake Outfall Pipe Upgrades	Public Works / Sewer and Drainage Department / NJOEM	In Progress	1. Project is less than 1% complete. 2. N/A 3. Preliminary project scoping being funded through City capital.	1. Include in 2019 HMP 2. Awaiting funding opportunities. 3.N/A
BTC-26	Columbus Street Drainage Pipe and Outfall Upgrades	Public Works / Sewer and Drainage Department / NJOEM	In Progress	1. Project is less than 1% complete. 2. N/A 3. Preliminary project scoping being funded through City capital.	1. Include in 2019 HMP 2. Awaiting funding opportunities. 3. N/A
BTC-27	Corrugated Metal Pipe (CMP) Drainage Pipe Upgrades (City-wide)	Public Works / Sewer and Drainage Department / NJOEM	No Progress	1. 0% complete. 2. Lack of funding. 3. N/A	1. Include in 2019 HMP 2. Awaiting funding opportunities. 3. N/A
BTC-28	Assiscunk Creek Levee Upgrades to 500-Year Flood Level Elevation	Public Works / Sewer and Drainage Department / NJOEM	No Progress	1. 0% complete. 2. Lack of funding. 3. N/A	1. Include in 2019 HMP 2. Awaiting funding opportunities. 3. N/A

Completed Mitigation Initiatives not Identified in the Previous Mitigation Strategy

The City of Burlington has identified the following mitigation projects/activities that have also been completed but were not identified in the previous mitigation strategy in the 2013 Plan:

- Burlington City's constructed Kennedy Lake and its surrounding park as a flood control structure, constructed a bulkhead along the Delaware River, and constructed a levee along the Assiscunk Creek. More recent capital projects have involved maintenance of these facilities (DVRPC 2017).

- One of the city's most recent projects was clearing a portion of the levee of trees that had grown on top of it and were threatening to undermine its structural integrity. Phase 2 of the levee improvements is currently under design. During Phase 1 of the permitting process, NJDEP required that the city plant two times the number of trees removed from the levee that were 8 inches in diameter or larger because of their location in the floodplain. Similar mitigation is expected for future phases as well. Furthermore, the levee is located in habitat for bald eagles, which are on New Jersey's Threatened and Endangered Species list. Their presence affects how the levee can be reconstructed (DVRPC 2017).

- Burlington City has also been cleaning its storm drains and studying the possibilities of moving significant structures, like the public works garage, to higher ground (DVRPC 2017).

Proposed Hazard Mitigation Initiatives for the Plan Update

The City of Burlington participated in a mitigation action workshop in March 2018 and was provided the following FEMA publications to use as a resource as part of their comprehensive review of all possible activities and mitigation measures to address their hazards: FEMA 551 'Selecting Appropriate Mitigation Measures for Floodprone Structures' (March 2007) and FEMA 'Mitigation Ideas – A Resource for Reducing Risk to Natural Hazards' (January 2013).

Table 9.6-12 summarizes the comprehensive-range of specific mitigation initiatives the City of Burlington would like to pursue in the future to reduce the effects of hazards. Some of these initiatives may be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6, 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as 'High', 'Medium', or 'Low.' The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.6-13 provides a summary of the prioritization of all proposed mitigation initiatives for the Plan update.

Table 9.6-12. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Critical Facility (Yes/No)	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
C. Burlington - 1 (former BTC-1)	WWTP Stormwater Pump Upgrades - Replace aging 60hp and 100 hp pumps with two new 150 hp pumps.	Yes	Flood	1, 3, 4	Public Works with support from Sewer and Drainage Department / NJOEM	High	High $780,000	HMGP, NJEIT	Short Term DOF	High	SIP	SP
C. Burlington - 2 (former BTC-2)	Tide gate Mitigation - Install tide gate units on outfall pipes that do not have existing tide gates installed.	No	Flood	2, 3	Public Works with support from Sewer and Drainage Department / NJOEM	High	High $267,000	HMGP	Short Term DOF	High	SIP	SP
C. Burlington - 3 (former BTC-3)	PHASE 1 Assiscunk Creek Levee Improvements Phase 1 - including Columbus Park Storm Pipe tide gate replacement - Tide gate replacement and creek-side clearing	No	Flood	2, 3	Public Works with support from Engineering	High	High $425,730	CDBG	Design in progress	High	SIP	SP
C. Burlington - 4 (former BTC-4)	PHASE 2 Assiscunk Creek Levee Mitigation - Armor the river side slopes and upgrade interior drainage pipes.	No	Flood	2, 3	Public Works with support from Sewer and Drainage Department / NJOEM	High	High $2,171,735	HMGP NJEIT	Short Term DOF	High	SIP	SP
C. Burlington - 5 (former BTC-5)	Riverbank near Watkins Alley - Replace inlet and pipes, install a tidal shock valve and restore curbs and sidewalks.	No	Flood	2, 3	Public Works with support from Sewer and Drainage Department / NJOEM	High	High $300,000	HMA grant funding	Short Term DOF	Medium	SIP	SP
C. Burlington - 6 (former BTC-6)	Riverbank and Wood Street - Replace inlet and pipes, and restore curbs, pavement and sidewalks	No	Flood	2, 3	Public Works with support from Sewer and Drainage Department / NJOEM	High	High $115,000	HMA grant funding	Short Term DOF	Medium	SIP	SP
C. Burlington - 7 (former BTC-7)	Mitchell Court Outfalls (west side of Assiscunk Creek). Replace pipe, install tideflex check valves and restore disturbed areas.	No	Flood	2, 3	Public Works with support from Sewer and Drainage	High	High $300,000	HMA grant funding	Short Term DOF	Medium	SIP	SP

Initiative	Mitigation Initiative	Critical Facility (Yes/No)	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
					Department / NJOEM							
C. Burlington - 8 (former BTC-8)	Mitchell Avenue Outfalls (east side of Assiscunk Creek) - Replace pipe, install tideflex check valves and restore disturbed areas.	No	Flood	2, 3	Public Works with support from Sewer and Drainage Department / NJOEM	High	High $300,000	HMA grant funding	Short Term DOF	Medium	SIP	SP
C. Burlington - 9 (former BTC-9)	Mitchell Avenue Pump Station Storm Event Bypass System - Provide bypass pumping to handle storm surges	No	Flood	2, 3	Public Works with support from Sewer and Drainage Department / NJOEM	High	High $260,000	HMA grant funding	Short Term DOF	Medium	SIP	SP
C. Burlington - 10 (former BTC-10)	Kennedy Lake Dredging - Dredge the lake at the low-end of the drainage area to maximize stormwater storage.	No	Flood	2, 3, 4	Public Works with support from Sewer and Drainage Department / NJOEM	High	High $4,000,000	HMA grant funding	Short Term DOF	Low	NSP	NR
C. Burlington - (former BTC-11)	Upgrade to various outfalls along the Delaware River and Assiscunk Creek - Replace aging flapper tide gates with tideflex check valves.	No	Flood	2, 3	Public Works with support from Sewer and Drainage Department / NJOEM	High	High $1,500,000	HMA grant funding	Short Term DOF	Low	SIP	SP
C. Burlington - 12 (former BTC-12)	Mobile Emergency Bypass Pump System - Purchase a 12" pump with trailer with associated hoses and piping.	No	Flood	2, 3	Public Works with support from Sewer and Drainage Department / NJOEM	Medium	High $100,000	HMA grant funding	Short Term DOF	Low	SIP	ES
C. Burlington - 13 (former BTC-13)	Scott, Pine, McNeill Streets and Route 130 Drainage Improvements - Replace inlets and pipe including undersized pipe under Route 130 and restore curbs, sidewalks and pavement.	No	Flood	2, 3	Public Works with support from Sewer and Drainage Department / NJOEM	High	High $405,000	HMA grant funding	Short Term DOF	Low	SIP	SP
C. Burlington - 14(former BTC-14)	Conduct and facilitate community and public education and outreach for residents and businesses to	No	All Hazards	5	Municipality with support from Planning Partners, County	Medium	Medium	Municipal Budget, HMA programs with local	Short Term	High	EAP	PI

Initiative	Mitigation Initiative	Critical Facility (Yes/No)	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
	promote natural hazard risk reduction to include: • Disaster preparedness • Hazard mitigation • High water marks				Planning, NJOEM, FEMA			or county match				
C. Burlington - 15 (former BTC-16)	Obtain and install backup power sources at all critical facilities to include shelters.	Yes	All Hazards	1, 3, 6	Municipality engineering with support from OEM, County, NJOEM and FEMA	Medium	Medium	Municipal Budget	Short Term	Medium	SIP	ES
C. Burlington - 17 (former BTC-20)	Enhance resilience to severe storms by joining the NOAA "Storm Ready" program.	No	Severe Storm	1, 2, 5, 6	OEM with support from County, NJOEM and FEMA	Medium	Low	Municipal Budget	Short Term DOF	Medium	EAP	PI
C. Burlington - 18 (former BTC-21)	Provide public education and outreach on proper installation and/or use of backup power	No	Severe Storm	1, 5	Municipal Clerk with support from OEM and government	Medium	Low	Municipal Budget	Short Term	High	EAP	PR
C. Burlington - 19 (former BTC-23)	Develop study for identifying specific vulnerabilities associated with vulnerable critical facilities noted in Section 9.6.6.2 of this annex	No	Flood	1, 2, 3, 6	Lead: Twp. OEM Support: Twp. Engineer	High	Medium	Municipal Budget, FEMA grants	Short Term	High	SIP	PR PP
C. Burlington - 20 (former BTC-24)	Appoint a committee of relevant stakeholders (e.g. police, fire, etc.) to explore feasible mitigation activities for the City's identified vulnerable critical facilities	No	Flood	1, 2, 3, 6	Lead: Twp. OEM Support: Twp. PD, Fire, Schools	High	Low	Municipal Budget	Short Term	High	LPR	PR PP
C. Burlington - 21 (former BTC-25)	Kennedy Lake Outfall Pipe Upgrades	No	Flood	2, 3, 4	Public Works with support from Sewer and Drainage Department / NJOEM	High	High	Preliminary project scoping being funded through City capital	Short Term	High	SIP	SP, PP
C. Burlington - 22	Columbus Street Drainage Pipe and Outfall Upgrades	No	Flood	2, 3	Public Works with support from Sewer	High	High	Preliminary project scoping	Short Term	High	SIP	SP, PP

Initiative	Mitigation Initiative	Critical Facility (Yes/No)	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
(former BTC-26)					and Drainage Department / NJOEM			being funded through City capital				
C. Burlington - 23 (former BTC-27)	Corrugated Metal Pipe (CMP) Drainage Pipe Upgrades (City-wide)	No	Flood	2, 3	Public Works with support from Sewer and Drainage Department / NJOEM	High	High	HMA Grants, Municipal Budget	Short Term DOF	High	SIP	SP, PP
C. Burlington - 24 (former BTC-28)	Assiscunk Creek Levee Upgrades to 500-Year Flood Level Elevation	No	Flood	1, 2, 3	Public Works with support with Sewer and Drainage Department / NJOEM	High	High	HMA Grants, Municipal Budget	Short Term DOF	High	SIP	SP, PP
C. Burlington - 25	Coordinate with the facilities managers at County Buildings in the City of Burlington to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected action based on available funding and local match ability.	Yes	All Hazards	1, 2, 6	Municipality with support from County	High	High	HMA Grants, Municipal Budget	Short Term DOF	Medium	SIP	SP, PP
C. Burlington - 26	Coordinate with the facilities managers at Municipal buildings (EOC, Municipal Hall) to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected	Yes	All Hazards	1, 2, 6	Municipality	High	High	HMA Grants, Municipal Budget	Short Term DOF	Medium	SIP	SP, PP

Initiative	Mitigation Initiative	Critical Facility (Yes/No)	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
	action based on available funding and local match ability.											
C. Burlington - 27	Coordinate with the facilities manager at Bordentown schools to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected action based on available funding and local match ability.	Yes	All Hazards	1, 2, 6	Municipality with support from schools	High	High	HMA Grants, Municipal Budget	Short Term DOF	Medium	SIP	SP, PP
C. Burlington - 28	Coordinate with the facilities managers at Bordentown Haz Mat facilities to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected action based on available funding and local match ability.	No	All Hazards	1, 2, 3, 4	Municipality with support from Haz Mat site operators	High	High	HMA Grants, Municipal Budget	Short Term DOF	Medium	SIP	SP, PP
C. Burlington - 29	Coordinate with the facilities managers at the Bordentown Emergency Response Facilities (Police Station, Fire Station, EMS Station) to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected	Yes	All Hazards	1, 2, 6	Municipality with support from Emergency Response Facilities	High	High	HMA Grants, Municipal Budget	Short Term DOF	Medium	SIP	SP, PP

Initiative	Mitigation Initiative	Critical Facility (Yes/No)	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
	action based on available funding and local match ability.											
C. Burlington - 30	Coordinate with the facilities managers at the Medical and Senior Care Facilities in Bordentown to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected action based on available funding and local match ability.	Yes	All Hazards	1, 2, 6	Municipality with support from Medical and Senior Care Facilities	High	High	HMA Grants, Municipal Budget	Short Term DOF	Medium	SIP	SP, PP
C. Burlington - 31	Coordinate with the facilities managers at Bordentown Water and Wastewater facilities to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected action based on available funding and local match ability.	Yes	All Hazards	1, 2, 4, 6	Municipality with support from Water and Wastewater facilities	High	High	HMA Grants, Municipal Budget	Short Term DOF	Medium	SIP	SP, PP
C. Burlington - 32	Coordinate with the facilities managers at Bordentown transportation (light rail, intermodal transit, airport) facilities to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option	Yes	All Hazards	1, 2, 3, 6	Municipality with support from Transportation facilities	High	High	HMA Grants, Municipal Budget	Short Term DOF	Medium	SIP	SP, PP

Initiative	Mitigation Initiative	Critical Facility (Yes/No)	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
	Phase 2: Work with facility manager to implement selected action based on available funding and local match ability.											
C. Burlington - 33	Coordinate with the facilities managers at Bordentown Historic sites to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected action based on available funding and local match ability.	No	All Hazards	1, 2	Municipality with support from Historic site managers.	High	High	HMA Grants, Municipal Budget	Short Term DOF	Medium	SIP	SP, PP
C. Burlington - 34	Coordinate with the facilities managers at Bordentown chemical and Tier II facilities to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected action based on available funding and local match ability.	Yes	All Hazards	1, 2, 3, 4	Municipality with support from Chemical and tier facilities	High	High	HMA Grants, Municipal Budget	Short Term DOF	Medium	SIP	SP, PP
C. Burlington - 35	Coordinate with the facilities managers at the Bordentown substations to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected	Yes	All Hazards	1, 2, 3, 6	Municipality with support from substation operators	High	High	HMA Grants, Municipal Budget	Short Term DOF	Medium	SIP	SP, PP

Initiative	Mitigation Initiative	Critical Facility (Yes/No)	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
	action based on available funding and local match ability.											
C. Burlington - 36	Coordinate with the facilities manager at the Bordentown shelter to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected action based on available funding and local match ability.	Yes	All Hazards	1, 2, 6	Municipality with support from shelter operators	High	High	HMA Grants, Municipal Budget	Short Term DOF	Medium	SIP	SP, PP
C. Burlington - 37	Require new developments to provide mitigation to insure that the cumulative rate of peak runoff is maintained at pre-development levels	No	All Hazards	2	Municipality	High	Low	Municipal Budget	Short Term DOF	High	LRP	PR
C. Burlington - 38	The City will continue to promote and support non-structural flood hazard mitigation alternatives for at risk properties within the floodplain, including those that have been identified as Repetitive Loss (RL) and Severe Repetitive Loss (SRL), such as acquisition/relocation or elevation depending on feasibility. The parameters for this initiative would be: funding, benefits versus cost, and willing participation of property owners	No	Flood	1, 2	Municipality	High	High	HMGP, PDM, Municipal Budget	Short Term DOF	High	SIP	PR PP
C. Burlington - 39	Repair compromised bulkhead and sidewalk on Burlington City Promenade.	No	Coastal Erosion, Flood	1, 2	City of Burlington Department of Housing and Community Development	High	High	Municipal budget. HMA Grants.	Short	High	SIP	SP

Notes:

Not all acronyms and abbreviations defined below are included in the table.

**Does this mitigation initiative reduce the effects of hazards on new and/or existing buildings and/or infrastructure? Not applicable (N/A) is inserted if this does not apply.*

Acronyms and Abbreviations:

CAV	Community Assistance Visit
CRS	Community Rating System
DPW	Department of Public Works
FEMA	Federal Emergency Management Agency
FPA	Floodplain Administrator
HMA	Hazard Mitigation Assistance
N/A	Not applicable
NFIP	National Flood Insurance Program
OEM	Office of Emergency Management

Potential FEMA HMA Funding Sources:

FMA	Flood Mitigation Assistance Grant Program
HMGP	Hazard Mitigation Grant Program
PDM	Pre-Disaster Mitigation Grant Program
RFC	Repetitive Flood Claims Grant Program (discontinued in 2015)
SRL	Severe Repetitive Loss Grant Program (discontinued in 2015)

Timeline:

Short	1 to 5 years
Long Term	5 years or greater
OG	On-going program
DOF	Depending on funding

Costs:

Where actual project costs have been reasonably estimated:

Low	< $10,000
Medium	$10,000 to $100,000
High	> $100,000

Where actual project costs cannot reasonably be established at this time:

Low	Possible to fund under existing budget. Project is part of, or can be part of an existing on-going program.
Medium	Could budget for under existing work plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
High	Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.

Benefits:

Where possible, an estimate of project benefits (per FEMA's benefit calculation methodology) has been evaluated against the project costs, and is presented as:

Low=	< $10,000
Medium	$10,000 to $100,000
High	> $100,000

Where numerical project benefits cannot reasonably be established at this time:

Low	Long-term benefits of the project are difficult to quantify in the short term.
Medium	Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.
High	Project will have an immediate impact on the reduction of risk exposure to life and property.

Mitigation Category:

- *Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.*
- *Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.*
- *Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.*
- *Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities*

CRS Category:

- *Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.*
- *Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.*

- *Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.*
- *Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.*
- *Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.*
- *Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities*

Table 9.6-13. Summary of Prioritization of Actions

Mitigation Action / Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
C. Burlington - 1 (former BTC-1)	WWTP Stormwater Pump Upgrades - Replace aging 60hp and 100 hp pumps with two new 150 hp pumps.	1	1	0	0	1	1	0	0	1	1	1	1	1	1	10	High
C. Burlington - 2 (former BTC-2)	Tide gate Mitigation - Install tide gate units on outfall pipes that do not have existing tide gates installed.	1	1	0	0	1	1	0	0	1	1	1	1	1	1	10	High
C. Burlington - 3 (former BTC-3)	PHASE 1 Assiscunk Creek Levee Improvements Phase 1 - including Columbus Park Storm Pipe tide gate replacement - Tide gate replacement and creek-side clearing	1	1	0	0	1	1	0	0	1	1	1	1	1	1	10	High
C. Burlington - 4 (former BTC-4)	PHASE 2 Assiscunk Creek Levee Mitigation - Armor the river side slopes and upgrade interior drainage pipes.	1	1	0	0	1	1	0	0	1	1	1	1	1	1	10	High
C. Burlington - 5 (former BTC-5)	Riverbank near Watkins Alley - Replace inlet and pipes, install a tidal shock valve and restore curbs and sidewalks.	1	1	0	0	1	1	0	0	1	1	1	0	1	1	9	Medium
C. Burlington - 6 (former BTC-6)	Riverbank and Wood Street - Replace inlet and pipes, and restore curbs, pavement and sidewalks	1	1	0	0	1	1	0	0	1	1	1	0	1	1	9	Medium
C. Burlington - 7 (former BTC-7)	Mitchell Court Outfalls (west side of Assiscunk Creek). Replace pipe, install tideflex check valves and restore disturbed areas.	1	1	0	0	1	1	0	0	1	1	1	0	1	1	9	Medium
C. Burlington - 8 (former BTC-8)	Mitchell Avenue Outfalls (east side of Assiscunk Creek) - Replace pipe, install tideflex check valves and restore disturbed areas.	1	1	0	0	1	1	0	0	1	1	1	0	1	1	9	High
C. Burlington -	Mitchell Avenue Pump Station Storm Event Bypass	1	1	0	0	1	1	0	0	1	1	1	0	1	1	9	Medium

Table 9.6-13. Summary of Prioritization of Actions

Mitigation Action / Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
9 (former BTC-9)	System - Provide bypass pumping to handle storm surges																
C. Burlington - 10 (former BTC-10)	Kennedy Lake Dredging - Dredge the lake at the low-end of the drainage area to maximize stormwater storage.	0	1	0	0	0	1	0	0	1	1	0	0	0	0	4	Low
C. Burlington - (former BTC-11)	Upgrade to various outfalls along the Delaware River and Assiscunk Creek - Replace aging flapper tide gates with tideflex check valves.	1	1	0	0	0	1	0	0	1	1	0	0	1	0	6	High
C. Burlington - 12 (former BTC-12)	Mobile Emergency Bypass Pump System - Purchase a 12" pump with trailer with associated hoses and piping.	0	1	0	0	0	1	0	0	1	1	0	0	1	0	5	Low
C. Burlington - 13 (former BTC-13)	Scott, Pine, McNeill Streets and Route 130 Drainage Improvements - Replace inlets and pipe including undersized pipe under Route 130 and restore curbs, sidewalks and pavement.	0	1	0	0	0	1	0	0	1	1	0	0	1	0	5	Low
C. Burlington - 14(former BTC-14)	Conduct and facilitate community and public education and outreach for residents and businesses to promote natural hazard risk reduction to include: • Disaster preparedness • Hazard mitigation • High water marks	1	1	1	1	1	1	1	1	1	1	1	1	1	0	13	High
C. Burlington - 15 (former BTC-16)	Obtain and install backup power sources at all critical facilities to include shelters.	1	0	0	1	1	1	0	0	1	1	1	0	1	0	8	Medium
C. Burlington -	Enhance resilience to severe storms by joining the NOAA "Storm Ready" program.	1	0	0	1	1	1	0	0	1	1	1	0	1	0	8	Medium

Table 9.6-13. Summary of Prioritization of Actions

Mitigation Action / Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
17 (former BTC-20)																	
C. Burlington - 18 (former BTC-21)	Provide public education and outreach on proper installation and/or use of backup power	1	1	1	1	1	1	1	1	1	1	1	1	1	0	13	High
C. Burlington - 19 (former BTC-23)	Develop study for identifying specific vulnerabilities associated with vulnerable critical facilities noted in Section 9.6.6.2 of this annex	1	1	0	1	1	1	0	1	1	1	1	1	1	0	11	High
C. Burlington - 20 (former BTC-24)	Appoint a committee of relevant stakeholders (e.g. police, fire, etc.) to explore feasible mitigation activities for the City's identified vulnerable critical facilities	1	1	1	1	1	1	1	1	1	1	1	1	1	0	13	High
C. Burlington - 21 (former BTC-25)	Kennedy Lake Outfall Pipe Upgrades	1	1	0	0	1	1	0	0	1	1	1	1	1	1	10	High
C. Burlington - 22 (former BTC-26)	Columbus Street Drainage Pipe and Outfall Upgrades	1	1	0	0	1	1	0	0	1	1	1	1	1	1	10	High
C. Burlington - 23 (former BTC-27)	Corrugated Metal Pipe (CMP) Drainage Pipe Upgrades (City-wide)	1	1	0	0	1	1	0	0	1	1	1	1	1	1	10	High
C. Burlington - 24 (former BTC-28)	Assiscunk Creek Levee Upgrades to 500-Year Flood Level Elevation	1	1	0	0	1	1	0	0	1	1	1	1	1	1	10	High
C. Burlington - 25	Coordinate with the facilities managers at County Buildings in the City of Burlington to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to	0	1	1	1	1	1	-1	0	1	1	0	0	1	0	7	Medium

Table 9.6-13. Summary of Prioritization of Actions

Mitigation Action / Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
	protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected action based on available funding and local match ability.																
C. Burlington - 26	Coordinate with the facilities managers at Municipal buildings (EOC, Municipal Hall) to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected action based on available funding and local match ability.	0	1	0	1	1	1	-1	0	1	1	1	0	1	0	6	Medium
C. Burlington - 27	Coordinate with the facilities manager at Bordentown schools to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected action based on available funding and local match ability.	0	1	1	1	1	1	-1	0	1	1	0	0	1	0	7	Medium

Table 9.6-13. Summary of Prioritization of Actions

Mitigation Action / Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
C. Burlington - 28	Coordinate with the facilities managers at Bordentown Haz Mat facilities to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected action based on available funding and local match ability.	0	1	0	1	1	1	-1	0	1	1	1	0	1	0	6	Medium
C. Burlington - 29	Coordinate with the facilities managers at the Bordentown Emergency Response Facilities (Police Station, Fire Station, EMS Station) to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected action based on available funding and local match ability.	0	1	1	1	1	1	-1	0	1	1	0	0	1	0	7	Medium
C. Burlington - 30	Coordinate with the facilities managers at the Medical and Senior Care Facilities in Bordentown to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or	0	1	0	1	1	1	-1	0	1	1	1	0	1	0	6	Medium

Table 9.6-13. Summary of Prioritization of Actions

Mitigation Action / Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
	relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected action based on available funding and local match ability.																
C. Burlington - 31	Coordinate with the facilities managers at Bordentown Water and Wastewater facilities to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected action based on available funding and local match ability.	0	1	1	1	1	1	-1	0	1	1	0	0	1	0	7	Medium
C. Burlington - 32	Coordinate with the facilities managers at Bordentown transportation (light rail, intermodal transit, airport) facilities to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected action based on	0	1	0	1	1	1	-1	0	1	1	1	0	1	0	6	Medium

Table 9.6-13. Summary of Prioritization of Actions

Mitigation Action / Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
	available funding and local match ability.																
C. Burlington - 33	Coordinate with the facilities managers at Bordentown Historic sites to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected action based on available funding and local match ability.	0	1	1	1	1	1	-1	0	1	1	0	0	1	0	7	Medium
C. Burlington - 34	Coordinate with the facilities managers at Bordentown chemical and tier facilities to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected action based on available funding and local match ability.	0	1	0	1	1	1	-1	0	1	1	1	0	1	0	6	Medium
C. Burlington - 35	Coordinate with the facilities managers at the Bordentown substations to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or	0	1	1	1	1	1	-1	0	1	1	0	0	1	0	7	Medium

Table 9.6-13. Summary of Prioritization of Actions

Mitigation Action / Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
	relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected action based on available funding and local match ability.																
C. Burlington - 36	Coordinate with the facilities manager at the Bordentown shelter to support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or relocation to protect structures from future damage. Phase 1: Identify most cost-effective mitigation option Phase 2: Work with facility manager to implement selected action based on available funding and local match ability.	0	1	0	1	1	1	-1	0	1	1	1	0	1	0	6	Medium
C. Burlington - 37	Require new developments to provide mitigation to insure that the cumulative rate of peak runoff is maintained at pre-development levels	0	1	0	1	1	1	-1	0	1	1	1	0	1	0	6	Medium
C. Burlington - 38	The City will continue to promote and support non-structural flood hazard mitigation alternatives for at risk properties within the floodplain, including those that have been identified as Repetitive Loss (RL) and Severe Repetitive Loss (SRL), such as acquisition/relocation or elevation depending on	1	1	0	1	1	1	-1	0	1	1	1	0	1	0	8	Medium

Table 9.6-13. Summary of Prioritization of Actions

Mitigation Action / Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
	feasibility. The parameters for this initiative would be: funding, benefits versus cost, and willing participation of property owners																
C. Burlington - 39	Repair compromised bulkhead and sidewalk on Burlington City Promenade.	1	1	1	1	1	1	1	0	1	1	1	1	1	1	13	High

Note: Refer to Section 6, which conveys guidance on prioritizing mitigation actions.

9.6.7 Future Needs To Better Understand Risk/Vulnerability

None at this time.

9.6.8 Hazard Area Extent and Location

Hazard area extent and location maps have been generated for the City of Burlington that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan, and are considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the City of Burlington has significant exposure. These maps are illustrated in the hazard profiles within Section 5.4, Volume I of this Plan.

9.6.9 Additional Comments

None at this time.

Figure 9.6-1. City of Burlington Hazard Area Extent and Location Map 1

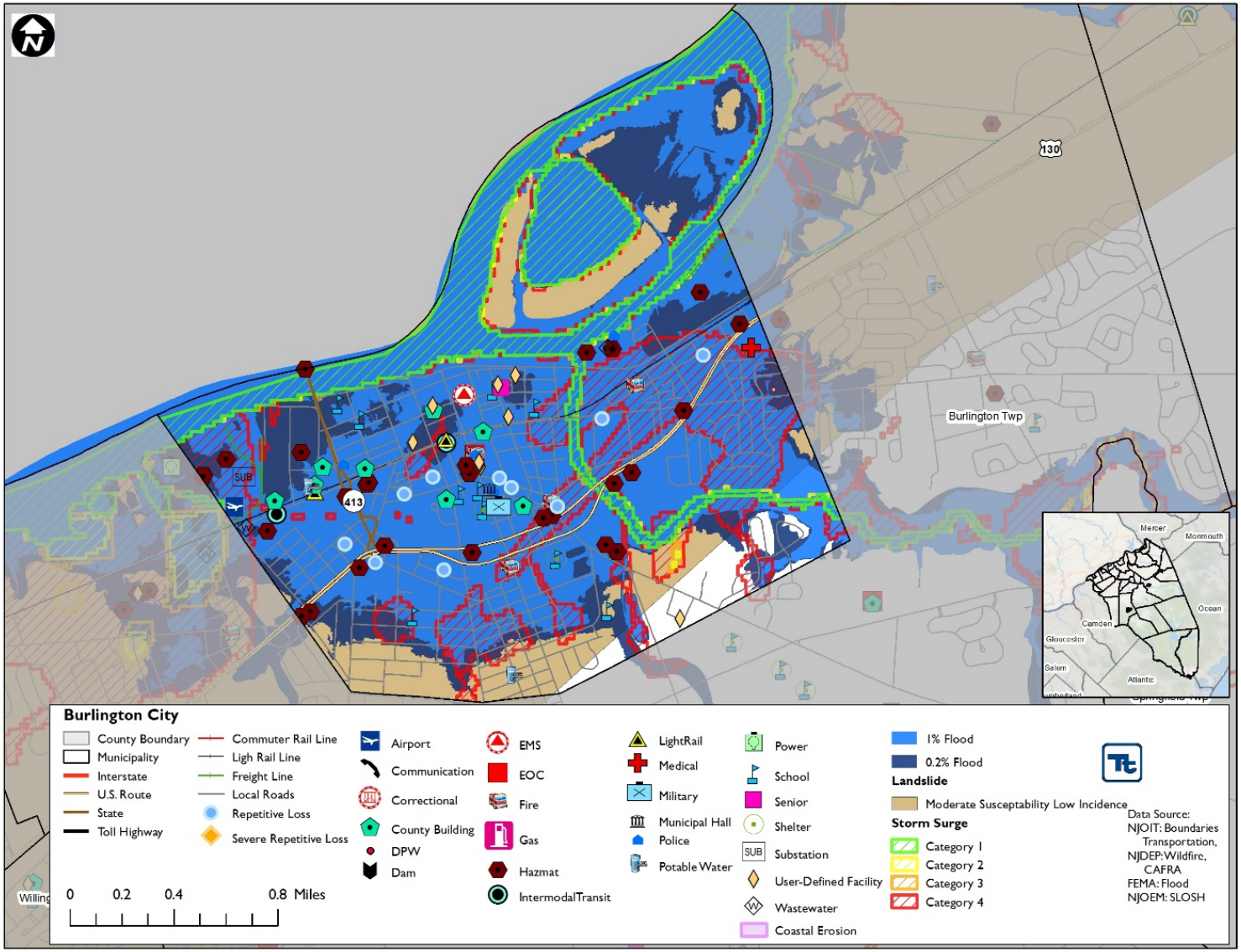
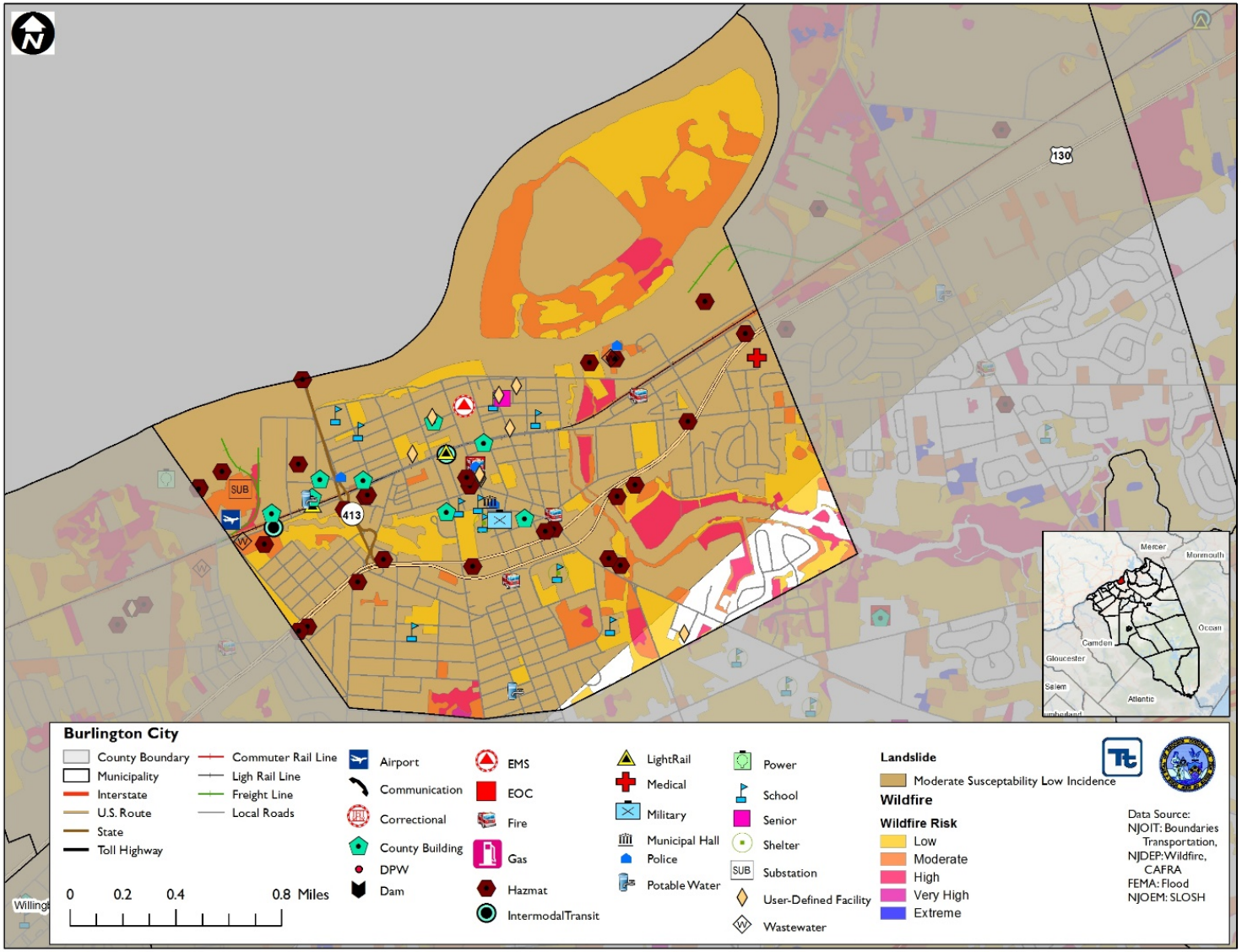


Figure 9.6-2. City of Burlington Hazard Area Extent and Location Map 2



Action Number: C. Burlington - 1

Mitigation Action/Initiative: WWTP Stormwater Pump Upgrades - Replace aging 60hp and 100 hp pumps with two new 150 hp pumps.

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm
Specific problem being mitigated:	Stormwater pumps are outdated and undersized.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action - Problem remains 2. Replace with newer, same sized pumps – Inadequate capacity remains 3. Relocate wastewater treatment plant – Cost prohibitive
Action/Project Intended for Implementation	
Description of Selected Action/Project	The stormwater pumps at the wastewater treatment plant are outdated and undersized. The pumps will be replaced with two new pumps at 150 hp.
Action/Project Category	SIP
Goals Met	1, 3, 4
Critical Facility (Y/N)	Yes
Benefits (losses avoided)	High
Estimated Cost	High ($780,000)
Priority*	High
Plan for Implementation	
Responsible Organization	Public Works with support from Sewer and Drainage Department / NJOEM
Local Planning Mechanism	Hazard mitigation planning, stormwater management planning
Potential Funding Sources	HMGP, NJEIT
Timeline for Completion	Short Term DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	

Action Number: C. Burlington - 1

Mitigation Action/Initiative: WWTP Stormwater Pump Upgrades - Replace aging 60hp and 100 hp pumps with two new 150 hp pumps.

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Continuity of operations; pumps will continue to function
Property Protection	1	Increased pump size will allow WWTP to function properly during periods of heavy rain; reduce or eliminate damages as a result of inadequate capacity
Cost-Effectiveness	0	
Technical	0	
Political	1	
Legal	1	
Fiscal	0	Need funding to complete project
Environmental	0	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, severe storm
Timeline	1	
Agency Champion	1	
Other Community Objectives	1	
Total	10	
Priority (High/Med/Low)	High	

Action Number: C. Burlington – 2

Mitigation Action/Initiative: Tide gate Mitigation - Install tide gate units on outfall pipes that do not have existing tide gates installed.

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm
Specific problem being mitigated:	Numerous outfall pipes lack tide gates, allowing inflow of water at higher tidal levels
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action - Problem continues 2. Raise outfall pipes – Not technically feasible 3. Remove and install new outfall pipes – Cost-prohibitive
Action/Project Intended for Implementation	
Description of Selected Action/Project	Stormwater outfall pipes will be inspected to determine if they have functional tide gates installed to prevent backflow. Tide gates will be installed on any outfall pipes that lack them or have non-functional tide gates.
Action/Project Category	SIP
Goals Met	2, 3
Critical Facility (Y/N)	No
Benefits (losses avoided)	High
Estimated Cost	High ($267,000)
Priority*	High
Plan for Implementation	
Responsible Organization	Public Works with support from Sewer and Drainage Department / NJOEM
Local Planning Mechanism	Hazard mitigation planning, stormwater management planning
Potential Funding Sources	HMGP
Timeline for Completion	Short Term DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	

Action Number: C. Burlington – 2

Mitigation Action/Initiative: Tide gate Mitigation - Install tide gate units on outfall pipes that do not have existing tide gates installed.

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Prevent backflow to homes and businesses; ensuring sanitary conditions
Property Protection	1	
Cost-Effectiveness	0	
Technical	0	
Political	1	
Legal	1	
Fiscal	0	Need grant funding
Environmental	0	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	1	
Agency Champion	1	
Other Community Objectives	1	
Total	10	
Priority (High/Med/Low)	High	

Action Number: C. Burlington - 3

Mitigation Action/Initiative: PHASE 1 Assiscunk Creek Levee Improvements Phase 1 - including Columbus Park Storm Pipe tide gate replacement – Tide gate replacement and creek-side clearing

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm
Specific problem being mitigated:	Tide gate is in need of replacement and creek needs to be cleared
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action: Problem remains 2. Replace tide gate without clearing creek: Debris likely to damage tide gate, flooding increased 3. Debris cleanup program – Will not address faulty tide gate
Action/Project Intended for Implementation	
Description of Selected Action/Project	Assicunk Creek Levee will be improved in two phases. In phase 1, the Columbus Park storm pipe tide gate will be replaced. The creek will be cleared of debris to reduce flooding risk and risk of debris damaging or clogging storm pipe.
Action/Project Category	SIP
Goals Met	2, 3
Critical Facility (Y/N)	No
Benefits (losses avoided)	High
Estimated Cost	High ($425,730)
Priority*	High
Plan for Implementation	
Responsible Organization	Public Works with support from Engineering
Local Planning Mechanism	Hazard mitigation planning, stormwater management planning
Potential Funding Sources	CDBG
Timeline for Completion	Design in process
Reporting on Progress	
Date of Status Report/ Report of Progress	

Action Number: C. Burlington - 3

Mitigation Action/Initiative: PHASE 1 Assiscunk Creek Levee Improvements Phase 1 - including Columbus Park Storm Pipe tidegate replacement - Tidegate replacement and creek-side clearing

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	Reduces flooding and protects surrounding properties and infrastructure from flood damage
Cost-Effectiveness	0	
Technical	0	
Political	1	
Legal	1	
Fiscal	0	Need funding to complete project
Environmental	0	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	1	
Agency Champion	1	
Other Community Objectives	1	
Total	10	
Priority (High/Med/Low)	High	

Action Number: C. Burlington - 4

Mitigation Action/Initiative: PHASE 2 Assiscunk Creek Levee Mitigation - Armor the river side slopes and upgrade interior drainage pipes.

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm
Specific problem being mitigated:	River side slopes and interior drainage pipes on levee are degraded
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action: problem continues 2. Rebuild levee - cost prohibitive 3. Remove levee and institute green infrastructure – May not be entirely effective in reducing flood risk
Action/Project Intended for Implementation	
Description of Selected Action/Project	Assicunk Creek Levee will be improved in two phases. In phase 2, the river side slopes will be rehabilitated and armored using rip rap and other hardening techniques. Interior drainage pipes will be replaced with modern pipes.
Action/Project Category	SIP
Goals Met	2, 3
Critical Facility (Y/N)	No
Benefits (losses avoided)	High
Estimated Cost	High ($2,171,735)
Priority*	High
Plan for Implementation	
Responsible Organization	Public Works with support from Sewer and Drainage Department / NJOEM
Local Planning Mechanism	Hazard mitigation planning
Potential Funding Sources	HMGP, NJEIT
Timeline for Completion	Short Term DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	

Action Number: C. Burlington - 4

Mitigation Action/Initiative: PHASE 2 Assiscunk Creek Levee Mitigation - Armor the river side slopes and upgrade interior drainage pipes.

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	Reduces flooding and protects surrounding properties and infrastructure from flood damage
Cost-Effectiveness	0	
Technical	0	
Political	1	
Legal	1	
Fiscal	0	Need funding to complete project
Environmental	0	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	1	
Agency Champion	1	
Other Community Objectives	1	
Total	10	
Priority (High/Med/Low)	High	

Action Number: C. Burlington - 5

Mitigation Action/Initiative: Riverbank near Watkins Alley - Replace inlet and pipes, install a tidal shock valve and restore curbs and sidewalks.

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm
Specific problem being mitigated:	Riverbank near Watkins Alley is degraded
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action: problem continues 2. Relocate sidewalk and road: not feasible 3. Elevate roadway to reduce effects from water backflow – Short-term fix, not a long-term solution
Action/Project Intended for Implementation	
Description of Selected Action/Project	The stormwater inlet and pipes will be replaced with a tidal shock valve added to prevent backflow. Curbs and sidewalks will be restored following stormwater work.
Action/Project Category	SIP
Goals Met	2, 3
Applies to existing and or new development, or not applicable	Existing
Benefits (losses avoided)	High
Estimated Cost	High ($300,000)
Priority*	High
Plan for Implementation	
Responsible Organization	Public Works with support from Sewer and Drainage Department / NJOEM
Local Planning Mechanism	Hazard mitigation planning, stormwater management planning
Potential Funding Sources	HMA grants
Timeline for Completion	Short Term DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	

Action Number: C. Burlington - 5

Mitigation Action/Initiative: Riverbank near Watkins Alley - Replace inlet and pipes, install a tidal shock valve and restore curbs and sidewalks.

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	
Cost-Effectiveness	0	
Technical	0	
Political	1	
Legal	1	
Fiscal	0	Need grant funding to complete project
Environmental	0	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	0	Depends on funds – if funding received, project completed within five years
Agency Champion	1	
Other Community Objectives	1	
Total	9	
Priority (High/Med/Low)	Medium	

Action Number: C. Burlington - 6

Mitigation Action/Initiative: Riverbank and Wood Street - Replace inlet and pipes, and restore curbs, pavement and sidewalks

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm
Specific problem being mitigated:	Stormwater system at Riverbank and Wood Street is degraded.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action: problem continues 2. Relocate sidewalk and road: not feasible 3. Elevate roadway to reduce effects from water backflow – Short-term fix, not a long-term solution
Action/Project Intended for Implementation	
Description of Selected Action/Project	The stormwater inlet and pipes will be replaced. Curbs and sidewalks will be restored following stormwater work.
Action/Project Category	SIP
Goals Met	2, 3
Critical Facility (Y/N)	No
Benefits (losses avoided)	High
Estimated Cost	High ($115,000)
Priority*	High
Plan for Implementation	
Responsible Organization	Public Works with support from Sewer and Drainage Department / NJOEM
Local Planning Mechanism	Hazard mitigation planning, stormwater management planning
Potential Funding Sources	HMA grant funding
Timeline for Completion	Short Term DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	

Action Number: C. Burlington - 6

Mitigation Action/Initiative: Riverbank and Wood Street - Replace inlet and pipes, and restore curbs, pavement and sidewalks

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	
Cost-Effectiveness	0	
Technical	0	
Political	1	
Legal	1	
Fiscal	0	Need grant funding to complete project
Environmental	0	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	0	Depends on funds – if funding received, project completed within five years
Agency Champion	1	
Other Community Objectives	1	
Total	9	
Priority (High/Med/Low)	Medium	

Action Number: C. Burlington - 7

Mitigation Action/Initiative: Mitchell Court Outfalls (west side of Assiscunk Creek). Replace pipe, install tideflex check valves and restore disturbed areas.

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm
Specific problem being mitigated:	Mitchell Court outfalls are degraded
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action: current problem continues 2. Install tideflex check valve without pipe replacement: Check valve not likely to function properly 3. Elevate outfall pipes – Not technically feasible/cost-prohibitive
Action/Project Intended for Implementation	
Description of Selected Action/Project	The Mitchell Court outfalls on the west side of Assicunk Creek will be replaced with tideflex check valves installed. Areas disturbed from pipe replacement will be restored to prevent soil erosion.
Action/Project Category	SIP
Goals Met	2, 3
Critical Facility (Y/N)	No
Benefits (losses avoided)	High
Estimated Cost	High ($300,000)
Priority*	Medium
Plan for Implementation	
Responsible Organization	Public Works with support from Sewer and Drainage Department / NJOEM
Local Planning Mechanism	Hazard mitigation planning, stormwater management planning
Potential Funding Sources	HMA grant funding
Timeline for Completion	Short Term DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	

Action Number: C. Burlington - 7

Mitigation Action/Initiative: Mitchell Court Outfalls (west side of Assiscunk Creek). Replace pipe, install tideflex check valves and restore disturbed areas.

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	
Cost-Effectiveness	0	
Technical	0	
Political	1	
Legal	1	
Fiscal	0	Need grant funding to complete project
Environmental	0	Reduces erosion and runoff into the creek
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	0	Depends on funds – if funding received, project completed within five years
Agency Champion	1	
Other Community Objectives	1	
Total	9	
Priority (High/Med/Low)	Medium	

Action Number: C. Burlington – 8

Mitigation Action/Initiative: Mitchell Avenue Outfalls (east side of Assiscunk Creek) - Replace pipe, install tideflex check valves and restore disturbed areas.

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm
Specific problem being mitigated:	Mitchell Court outfalls are degraded
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action: current problem continues 2. Install tideflex check valve without pipe replacement: Check valve not likely to function properly 3. Elevate outfall pipes – Not technically feasible/cost-prohibitive
Action/Project Intended for Implementation	
Description of Selected Action/Project	The Mitchell Court outfalls on the east side of Assicunk Creek will be replaced with tideflex check valves installed. Areas disturbed from pipe replacement will be restored to prevent soil erosion.
Action/Project Category	SIP
Goals Met	2, 3
Critical Facility (Y/N)	No
Benefits (losses avoided)	High
Estimated Cost	High ($300,000)
Priority*	Medium
Plan for Implementation	
Responsible Organization	Public Works with support from Sewer and Drainage Department / NJOEM
Local Planning Mechanism	Hazard mitigation planning, stormwater management planning
Potential Funding Sources	HMA grant funding
Timeline for Completion	Short Term DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	

Action Number: C. Burlington - 8

Mitigation Action/Initiative: Mitchell Court Outfalls (east side of Assiscunk Creek). Replace pipe, install tideflex check valves and restore disturbed areas.

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	
Cost-Effectiveness	0	
Technical	0	
Political	1	
Legal	1	
Fiscal	0	Need grant funding to complete project
Environmental	0	Reduces erosion and runoff into the creek
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	0	Depends on funds – if funding received, project completed within five years
Agency Champion	1	
Other Community Objectives	1	
Total	9	
Priority (High/Med/Low)	Medium	

Action Number: C. Burlington - 9

Mitigation Action/Initiative: Mitchell Avenue Pump Station Storm Event Bypass System - Provide bypass pumping to handle storm surges

Assessing the Risk	
Hazard(s) addressed:	Flood
Specific problem being mitigated:	Storm surges cause failure of pump station
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action: Current problem continues 2. Purchase mobile pump station: cost prohibitive 3. Construct floodwall around pump station to prevent facility flooding
Action/Project Intended for Implementation	
Description of Selected Action/Project	A Storm Event bypass system at the Mitchell Avenue Pump Station will be installed. This bypass system will be designed to allow continued function of the pump station during storm surge events.
Action/Project Category	SIP
Goals Met	2, 3
Critical Facility (Y/N)	Yes
Benefits (losses avoided)	High
Estimated Cost	High ($260,000)
Priority*	Medium
Plan for Implementation	
Responsible Organization	Public Works with support from Sewer and Drainage Department / NJOEM
Local Planning Mechanism	Hazard mitigation planning, stormwater management planning
Potential Funding Sources	HMA grant funding
Timeline for Completion	Short Term DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	

Action Number: C. Burlington - 9

Mitigation Action/Initiative: Mitchell Avenue Pump Station Storm Event Bypass System - Provide bypass pumping to handle storm surges

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	Continuity of operations at pump station; station will no longer fail during storm surges
Cost-Effectiveness	0	
Technical	0	
Political	1	
Legal	1	
Fiscal	0	Need grant funding to complete project
Environmental	0	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	0	Depends on funding – project could be completed within five years if funding received
Agency Champion	1	
Other Community Objectives	1	
Total	9	
Priority (High/Med/Low)	Medium	

Action Number: C. Burlington – 10

Mitigation Action/Initiative: Kennedy Lake Dredging - Dredge the lake at the low-end of the drainage area to maximize stormwater storage.

Assessing the Risk	
Hazard(s) addressed:	Flood
Specific problem being mitigated:	Lake is filled with silt, lowering possible stormwater storage capability
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action - Current problem continues 2. Raise banks of lake to increase storage capacity - Cost prohibitive 3. Expand lake – Cost prohibitive
Action/Project Intended for Implementation	
Description of Selected Action/Project	Kennedy Lake will be dredged, targeting the low end of the drainage area in order to maximize stormwater storage. Debris will also be removed where possible.
Action/Project Category	NSP
Goals Met	2, 3, 4
Applies to existing and or new development, or not applicable	N/A
Benefits (losses avoided)	High
Estimated Cost	High ($4,000,000)
Priority*	Low
Plan for Implementation	
Responsible Organization	Public Works with support from Sewer and Drainage Department / NJOEM
Local Planning Mechanism	Hazard mitigation planning, stormwater management planning
Potential Funding Sources	HMA grant funding
Timeline for Completion	Short Term DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	

Action Number: C. Burlington – 10

Mitigation Action/Initiative: Kennedy Lake Dredging - Dredge the lake at the low-end of the drainage area to maximize stormwater storage.

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Increase stormwater capacity and storage; protect surrounding areas
Cost-Effectiveness	0	
Technical	0	
Political	0	
Legal	1	
Fiscal	0	Need grant funding to complete
Environmental	0	
Social	1	
Administrative	1	
Multi-Hazard	0	Flood
Timeline	0	
Agency Champion	0	
Other Community Objectives	0	
Total	4	
Priority (High/Med/Low)	Low	

Action Number: C. Burlington - 11

Mitigation Action/Initiative: Upgrade to various outfalls along the Delaware River and Assiscunk Creek - Replace aging flapper tide gates with tideflex check valves.

Assessing the Risk	
Hazard(s) addressed:	Flood
Specific problem being mitigated:	Flapper tide gates are outdated and in need of replacement
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action: current problem continues 2. Replace flapper tide gates with new flapper tide gates: Not as efficient as tideflex check valves 3. Elevate outfalls – Not technically feasible/cost prohibitive
Action/Project Intended for Implementation	
Description of Selected Action/Project	Aging flapper tide gates will be replaced with more efficient tideflex check valves on the various outfall pipes along the Delaware River and Assicunk Creek.
Action/Project Category	SIP
Goals Met	2, 3
Critical Facility (Y/N)	No
Benefits (losses avoided)	High
Estimated Cost	High ($1,500,000)
Priority*	Low
Plan for Implementation	
Responsible Organization	Public Works with support from Sewer and Drainage Department / NJOEM
Local Planning Mechanism	Hazard mitigation planning, stormwater management planning
Potential Funding Sources	HMA grant funding
Timeline for Completion	Short Term DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	

Action Number: C. Burlington - 11

Mitigation Action/Initiative: Upgrade to various outfalls along the Delaware River and Assiscunk Creek - Replace aging flapper tide gates with tideflex check valves.

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Increase capacity of outfalls; more efficient
Cost-Effectiveness	0	
Technical	0	
Political	0	
Legal	1	
Fiscal	0	Need funds to complete project
Environmental	0	
Social	1	
Administrative	1	City has the administrative capabilities to complete project
Multi-Hazard	0	Flood
Timeline	0	
Agency Champion	1	
Other Community Objectives	0	
Total	5	
Priority (High/Med/Low)	Low	

Action Number: C. Burlington - 12

Mitigation Action/Initiative: Mobile Emergency Bypass Pump System - Purchase a 12" pump with trailer with associated hoses and piping.

Assessing the Risk	
Hazard(s) addressed:	Flood
Specific problem being mitigated:	The City lacks an emergency mobile pump systems
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action: Current problem continues 2. Purchase larger pump: Cost prohibitive 3. Construct green infrastructure collection areas to reduce the need for pumping. – Not technically feasible
Action/Project Intended for Implementation	
Description of Selected Action/Project	The City will purchase a mobile emergency bypass pump system to handle emergency pump needs. The system will include a 12" pump with trailer and associated hoses and piping.
Action/Project Category	SIP
Goals Met	2, 3
Critical Facility (Y/N)	No
Benefits (losses avoided)	Medium
Estimated Cost	High ($405,000)
Priority*	Low
Plan for Implementation	
Responsible Organization	Public Works with support from Sewer and Drainage Department / NJOEM
Local Planning Mechanism	Hazard mitigation planning, stormwater management planning
Potential Funding Sources	HMA grant funding
Timeline for Completion	Short Term DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	

Action Number: C. Burlington - 12

Mitigation Action/Initiative: Mobile Emergency Bypass Pump System - Purchase a 12" pump with trailer with associated hoses and piping.

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Support city pump systems during an emergency; allows for continuity of operations
Cost-Effectiveness	0	
Technical	0	
Political	0	
Legal	1	City has legal authority to complete project
Fiscal	0	Need grant funding to purchase system
Environmental	0	
Social	1	
Administrative	1	City has administrative capabilities to complete project
Multi-Hazard	0	Flood
Timeline	0	
Agency Champion	1	
Other Community Objectives	0	
Total	5	
Priority (High/Med/Low)	Low	

Action Number: C. Burlington - 13

Mitigation Action/Initiative: Scott, Pine, McNeill Streets and Route 130 Drainage Improvements - Replace inlets and pipe including undersized pipe under Route 130 and restore curbs, sidewalks and pavement.

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm
Specific problem being mitigated:	Stormwater components are in need of replacement/undersized.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action: Problem continues 2. Replace stormwater components without upgrading pipe size: Flooding risk continues 3. Add more drainage pipes to supplement existing drainage infrastructure. – Cost prohibitive
Action/Project Intended for Implementation	
Description of Selected Action/Project	Inlets and pipe at Scott, Pine, McNeill Streets and Route 130 will be replaced. The undersized pipe under Route 130 will be replaced with a larger size. After the replacements, impacted curbs, sidewalks and pavement will be restored.
Action/Project Category	SIP
Goals Met	2, 3
Critical Facility (Y/N)	No
Benefits (losses avoided)	High
Estimated Cost	High ($405,000)
Priority*	Low
Plan for Implementation	
Responsible Organization	Public Works with support from Sewer and Drainage Department / NJOEM
Local Planning Mechanism	Hazard mitigation planning, stormwater management planning
Potential Funding Sources	HMA grand funding
Timeline for Completion	Short Term DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	

Action Number: C. Burlington - 13

Mitigation Action/Initiative: Scott, Pine, McNeill Streets and Route 130 Drainage Improvements - Replace inlets and pipe including undersized pipe under Route 130 and restore curbs, sidewalks and pavement.

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Increase capacity of pipes along roadways
Cost-Effectiveness	0	
Technical	0	
Political	0	
Legal	1	The city has legal authority to complete the project
Fiscal	0	Need grant funding to complete project
Environmental	0	
Social	1	
Administrative	1	City has the administrative capacity to complete the project
Multi-Hazard	0	Flood, Severe Storm
Timeline	0	
Agency Champion	1	
Other Community Objectives	0	
Total	5	
Priority (High/Med/Low)	Low	

Action Number: C. Burlington - 15

Mitigation Action/Initiative: Obtain and install backup power sources at all critical facilities to include shelters.

Assessing the Risk	
Hazard(s) addressed:	All Hazards
Specific problem being mitigated:	Critical facilities and shelters require back up power source
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action: Current problem continues 2. Purchase mobile generator for sharing among critical facilities: Only capable of providing backup power to one facility 3. Install solar panels on all facilities. – Weather dependent and cost prohibitive
Action/Project Intended for Implementation	
Description of Selected Action/Project	Backup power sources (generators) will be obtained and installed at critical facilities including City shelters to maintain critical functions during power outages.
Action/Project Category	SIP
Goals Met	1, 3, 6
Critical Facility (Y/N)	Yes
Benefits (losses avoided)	Medium
Estimated Cost	Medium
Priority*	Medium
Plan for Implementation	
Responsible Organization	Municipality engineering with support from OEM, County, NJOEM and FEMA
Local Planning Mechanism	Hazard mitigation planning, emergency management planning
Potential Funding Sources	Municipal budget
Timeline for Completion	Short Term
Reporting on Progress	
Date of Status Report/ Report of Progress	

Action Number: C. Burlington - 15

Mitigation Action/Initiative: Obtain and install backup power sources at all critical facilities to include shelters.

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Increase continuity of operations of critical facilities; provide a shelter for residents
Property Protection	0	
Cost-Effectiveness	0	
Technical	1	
Political	1	There is political support to complete the project
Legal	1	The city has legal authority to complete the project
Fiscal	0	Need grant funding to complete project
Environmental	0	
Social	1	
Administrative	1	City has the administrative capacity to complete the project
Multi-Hazard	1	All hazards
Timeline	0	
Agency Champion	1	
Other Community Objectives	0	
Total	8	
Priority (High/Med/Low)	Medium	

Action Number: C. Burlington – 21

Mitigation Action/Initiative: Kennedy Lake Outfall Pipe Upgrades

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm
Specific problem being mitigated:	Outfall pipe is outdated and requires upgrade
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action: Current problem continues 2. Replace outfall pipe without upgrade: Current flooding risk is maintained 3. Remove outfall pipes altogether in favor of green infrastructure drainage – May cause increased risk for flooding
Action/Project Intended for Implementation	
Description of Selected Action/Project	The outfall pipe at Kennedy Lake will be replaced with an upgraded pipe to lessen flooding risk.
Action/Project Category	SIP
Goals Met	2, 3, 4
Critical facility	No
Benefits (losses avoided)	High
Estimated Cost	High
Priority*	High
Plan for Implementation	
Responsible Organization	Public Works with support from Sewer and Drainage Department / NJOEM
Local Planning Mechanism	Hazard mitigation planning, stormwater management planning
Potential Funding Sources	Preliminary project scoping being funded through City capital
Timeline for Completion	Short Term
Reporting on Progress	
Date of Status Report/ Report of Progress	

Action Number: C. Burlington – 21

Mitigation Action/Initiative: Kennedy Lake Outfall Pipe Upgrades

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	Increase capacity of drainage systems
Cost-Effectiveness	0	
Technical	0	
Political	1	There is political support to complete the project
Legal	1	The city has legal authority to complete the project
Fiscal	0	
Environmental	0	
Social	1	
Administrative	1	City has the administrative capacity to complete the project
Multi-Hazard	1	Flood, Severe Storm
Timeline	1	
Agency Champion	1	
Other Community Objectives	1	
Total	10	
Priority (High/Med/Low)	High	

Action Number: C. Burlington - 22

Mitigation Action/Initiative: Columbus Street Drainage Pipe and Outfall Upgrades

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm
Specific problem being mitigated:	Drainage Pipe and Outfall Pipe are outdated
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action: Current problem continues 2. Replace pipes without upgrade: Current flooding risk is maintained 3. Remove outfall pipes altogether in favor of green infrastructure drainage – May cause increased risk for flooding
Action/Project Intended for Implementation	
Description of Selected Action/Project	Drainage Pipe and Outfall Pipe at Columbus Street will be replaced with updated versions to reduce flooding risk.
Action/Project Category	SIP
Goals Met	2, 3
Critical Facility (Y/N)	No
Benefits (losses avoided)	High
Estimated Cost	High
Priority*	High
Plan for Implementation	
Responsible Organization	Public Works with support from Sewer and Drainage Department / NJOEM
Local Planning Mechanism	Hazard mitigation planning, stormwater management planning
Potential Funding Sources	Preliminary project scoping being funded through City capital
Timeline for Completion	Short Term
Reporting on Progress	
Date of Status Report/ Report of Progress	

Action Number: C. Burlington - 22

Mitigation Action/Initiative: Columbus Street Drainage Pipe and Outfall Upgrades

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	Increase capacity of drainage systems
Cost-Effectiveness	0	
Technical	0	
Political	1	There is political support to complete the project
Legal	1	The city has legal authority to complete the project
Fiscal	0	
Environmental	0	
Social	1	
Administrative	1	City has the administrative capacity to complete the project
Multi-Hazard	1	Flood, Severe Storm
Timeline	1	
Agency Champion	1	
Other Community Objectives	1	
Total	10	
Priority (High/Med/Low)	High	

Action Number: C. Burlington - 23

Mitigation Action/Initiative: Corrugated Metal Pipe (CMP) Drainage Pipe Upgrades (City-wide)

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm
Specific problem being mitigated:	Current drainage pipes are outdated
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action: Drainage pipes continue to degrade 2. Replace drainage pipes with non-corrugated piping: Piping not as strong. 3. Install green infrastructure/flood storage. -Sufficient space may not be available to meet storage.
Action/Project Intended for Implementation	
Description of Selected Action/Project	Throughout the City, based on available funding, drainage pipes will be replaced with Corrugated Metal Pipes (CMP).
Action/Project Category	SIP
Goals Met	2, 3
Applies to existing and or new development, or not applicable	Existing
Benefits (losses avoided)	High
Estimated Cost	High
Priority*	High
Plan for Implementation	
Responsible Organization	Public Works with support from Sewer and Drainage Department / NJOEM
Local Planning Mechanism	Hazard mitigation planning, stormwater management planning
Potential Funding Sources	HMA Grants, Municipal Budget
Timeline for Completion	Short Term DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	

Action Number: C. Burlington - 23

Mitigation Action/Initiative: Corrugated Metal Pipe (CMP) Drainage Pipe Upgrades (City-wide)

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	Increase capacity of drainage systems
Cost-Effectiveness	0	
Technical	0	
Political	1	There is political support to complete the project
Legal	1	The city has legal authority to complete the project
Fiscal	0	
Environmental	0	
Social	1	
Administrative	1	City has the administrative capacity to complete the project
Multi-Hazard	1	Flood, Severe Storm
Timeline	1	
Agency Champion	1	
Other Community Objectives	1	
Total	10	
Priority (High/Med/Low)	High	

Action Number: C. Burlington – 24

Mitigation Action/Initiative: Assiscunk Creek Levee Upgrades to 500-Year Flood Level Elevation

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm
Specific problem being mitigated:	Assicunk Creek Levee is not built to 500 year flood level elevation
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action: current problem continues 2. Rebuild Assicunk Creek Levee to current standards: Still below 500-year level 3. Remove levee and install green infrastructure to restore natural floodplain functions. – May not be technically feasible/cost prohibitive
Action/Project Intended for Implementation	
Description of Selected Action/Project	The Assicunk Creek Levee will be lifted to the 500 year flood level elevation with necessary upgrades to components to support the increased protection level.
Action/Project Category	SIP
Goals Met	1, 2, 3
Critical Facility (Y/N)	No
Benefits (losses avoided)	High
Estimated Cost	High
Priority*	High
Plan for Implementation	
Responsible Organization	Public Works with support from Sewer and Drainage Department / NJOEM
Local Planning Mechanism	Hazard mitigation planning
Potential Funding Sources	HMA Grants, Municipal Budget
Timeline for Completion	Short Term DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	

Action Number: C. Burlington – 24

Mitigation Action/Initiative: Assiscunk Creek Levee Upgrades to 500-Year Flood Level Elevation

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	Protect the surrounding areas from flood events; protect the levee from a 500-year event
Cost-Effectiveness	0	
Technical	0	
Political	1	There is political support to complete the project
Legal	1	
Fiscal	0	
Environmental	0	
Social	1	
Administrative	1	City has the administrative capacity to complete the project
Multi-Hazard	1	Flood, Severe Storm
Timeline	1	
Agency Champion	1	
Other Community Objectives	1	
Total	10	
Priority (High/Med/Low)	High	

Action Number: C. Burlington – 39

Mitigation Action/Initiative: Repair compromised bulkhead and sidewalk on Burlington City Promenade.

Assessing the Risk	
Hazard(s) addressed:	Flood, Coastal Erosion
Specific problem being mitigated:	Bulkhead has failed allowing influx of floodwaters and causing erosion landward of bulkhead line.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No action - current problem continues 2. Living shoreline - Erosion may decrease but flood risk remains. 3. Reconstruct entire bulkhead – Cost prohibitive
Action/Project Intended for Implementation	
Description of Selected Action/Project	Ground penetrating radar will search for voids which may have caused initial ground failure. Voids will be filled. Bulkhead will be repaired with welded steel plates by a diver. Sidewalk will be repaired. Bulkhead will be inspected annually on a low tide to monitor for integrity.
Action/Project Category	SIP
Goals Met	1, 2
Critical Facility (Y/N)	No
Benefits (losses avoided)	High
Estimated Cost	High
Priority*	High
Plan for Implementation	
Responsible Organization	City of Burlington Department of Housing and Community Development
Local Planning Mechanism	Hazard mitigation planning
Potential Funding Sources	HMA Grants, Municipal Budget
Timeline for Completion	Short Term
Reporting on Progress	
Date of Status Report/ Report of Progress	

Action Number: C. Burlington – 39

Mitigation Action/Initiative: Repair compromised bulkhead and sidewalk on Burlington City Promenade.

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	
Cost-Effectiveness	1	
Technical	1	The project is technically feasible
Political	1	There is political support to complete the project
Legal	1	
Fiscal	1	
Environmental	0	
Social	1	
Administrative	1	City has the administrative capacity to complete the project
Multi-Hazard	1	Flood, Coastal Erosion
Timeline	1	
Agency Champion	1	
Other Community Objectives	1	
Total	13	
Priority (High/Med/Low)	High	