

City of Oswego

Jurisdictional Annex

City of Oswego

1.0 Contacts

The contacts for the City of Oswego regarding this plan were identified as follows:

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2.0 Municipal Profile

Population

The 2016 American Community Survey estimated that 17,988 people live in the City of Oswego. The City's population has decreased since the 2000 Census population (17,954) by 0.4% (U.S. Census Bureau, 2016).

Location

The City of Oswego is located in the western portion of Oswego County and is bordered by Lake Ontario to the north, the Town of Oswego to the west, Minetto to the south, and Scriba to the east. State Routes 104, 481, and 48 provide direct access to the City.

Brief History

The City of Oswego was officially formed in 1848. The area was originally occupied by Native Americans. The first Europeans arrived in 1615 and settlement increased with the rise of the fur trade. Oswego was a critical location during the French and Indian War due to its strategic location on Lake Ontario and the Oswego River. Fort Oswego was built in 1726, and Fort Ontario was built in 1755. The Erie Canal in Oswego opened in 1829 and contributed to significant immigration and development within the City through the 1870s. The City remained an important trading location. Multiple railroads were constructed through the area (the Rome, Watertown, and Ogdensburg Railroad, Ontario & Western Railroad, and the Lackawanna & Western Railroad) and contributed to significant economic development within the City. A number of flour mills and other manufacturing facilities were located along the river. During World War II, Fort Ontario was the only location in the U.S. to host Holocaust refugees, housing nearly 1,000 people (Slosek, 2016).

Governing Body

The City of Oswego is governed by an eight (8) member City Council, led by the Mayor.

Future Growth

Since the County's 2012 HMP, multiple development projects have been completed or proposed in the City of Oswego. In 2012, St. Francis Commons, a new assisted living facility, was constructed. Premier Living Suites, a new student housing complex, was constructed in 2013. Two (2) new hotels, Holiday Inn Express and Home2 Suites by Hilton, were established in 2014 and 2016, respectively. None of these facilities are located in a 100-year or 500-year floodplain.

The City's Downtown Revitalization Initiative has been submitted for grant funding. Included in this initiative are six identified "anchor" projects:

- Midtown Plaza Redevelopment – Mixed Use Development Featuring 24 Market Rate Rental Apartments with Commercial/Retail/Office Spaces.
- Buckhout-Jones Building featuring Children's Museum of Oswego – Façade Improvement & further development of Children's Museum of Oswego.
- Cahill Building Restoration and Development – Mixed Use Development Featuring Market Rate & Upscale Rental Apartments with Restaurant Space.
- Flexo Wire Site Development – Potential Mixed Income Residential Development with Commercial/Retail Spaces.
- Oswego Business Incubator Center – Development of World Class Mixed Use Start Up Business Incubator Facility
- West Pier Landing Waterfront Development – Market Rate Housing Development Featuring Townhouses at 77 W. First St.

3.0 Hazard Vulnerabilities and Ranking

3.1. Risk Assessment

The following scale was developed to determine hazard vulnerability for the jurisdiction. Each event was given a ranking from one (1) through three (3) for the severity of impact based on extent, onset warning, impact in damages and injury, and frequency: three (3) represents the greatest impact (large area, no warning, severe damage, and regular occurrence); two (2) represents moderate impact (several locations, hours of warning, moderate damage, and infrequent occurrence); and one (1) represents low impact (one location, days of warning, minor damage, and rare occurrence). The scores for each of these four categories were used to assign an overall vulnerability for each hazard, as follows:

- Low: 5 or less
- Moderate: 6 to 8
- High: 9 or greater

Table 1: Hazard Vulnerability by Event						
Hazard Event	Extent	Onset	Impact (Damages and Injury)	Frequency	Vulnerability Rank	Jurisdiction Rank
Severe T-Storm/Wind/Tornado	3	2	3	3	High	1
Severe Winter Storm	3	1	2	3	High	2
Fire	1	3	2	2	Moderate	3
Ice Storm	3	1	2	3	High	4
Earthquake	3	3	3	1	High	5
Transportation Accident	1	3	2	1	Moderate	6
Utility Failure	3	3	2	2	High	7
HAZMAT Fixed	1	3	1	1	Moderate	8
Extreme Temps	3	1	2	3	High	9
Tornado	2	3	3	1	High	10
Epidemic	2	1	2	1	Moderate	11
Flood	2	2	2	1	Moderate	12
Civil Unrest	2	3	2	1	Moderate	13
Radiological Fixed	2	3	2	1	Moderate	14
Dam Failure	2	3	3	1	High	15
Ice Jam	1	2	2	1	Moderate	16

3.2. Critical Facilities

Critical facilities are defined as any facility that is critical for emergency response or that requires special emergency response in the event of hazardous incidents as identified by the City of Oswego. The table below denote the number and locations of critical facilities within the City.

Table 2: Critical Facilities in the City of Oswego			
Facility Name	Address	Parcel Located in Floodplain	Structure Located in Floodplain
Transportation Network			
Evacuation Routes	-	-	-
Bridges	-	-	-
Public Utilities			
Cell Tower	111 E 11 th Street, Oswego, NY 13126	100YR, 500YR	100YR
City of Oswego East Side Sewage Treatment Plant	71 Mercer Street, Oswego, NY 13126	100YR	No
City of Oswego West Side Sewage Treatment Plant	1 st Avenue, Oswego, NY 13126	100YR, 500YR	100YR, 500YR
City Sewage Treatment Plant	67 W 1 st Street, Oswego, NY 13126	No	-
National Grid substation	9 Paloma Street, Oswego, NY 13126	No	-
Oswego Harbor Power LLC	261 Washington Blvd, Oswego, NY 13126	100YR, 500YR	No
Oswego Water Dept./Highway Garage	114 Mitchell Street, Oswego, NY 13126	No	-
Verizon NY, Inc. property	235 W 3 rd Street, Oswego, NY 13126	No	-
Water Tower	Off of Duer Street	No	-
Water Tower	Off of Ellen Street	No	-
Water Tower	Off of Fairview Terrace	No	-
Municipal Services			
County Highway Property	111 E 11 th Street, Oswego, NY 13126	100YR, 500YR	100YR, 500YR
Oswego City Court	20 W Oneida Street, #200, Oswego, NY 13126	No	-
Oswego City Hall	13 W Oneida Street, Oswego, NY 13126	No	-
Oswego County Combined Courts	25 E Oneida Street, #1, Oswego, NY 13126	No	-
Oswego County DMV	384 E River Road, Oswego, NY 13126	100YR, 500YR	No
Oswego County Human Resources	46 E Bridge Street, Oswego, NY 13126	No	-
Oswego Post Office	391 W 1 st Street, Oswego, NY 13126	500YR	No

Table 2: Critical Facilities in the City of Oswego

Facility Name	Address	Parcel Located in Floodplain	Structure Located in Floodplain
Emergency and Medical Services			
911 Center	39 Churchill Road, Oswego, NY 13126	No	-
911 Tower	Off of Churchill Road	No	-
911 Tower	Off of E River Road	No	-
Oswego Co Fire/Emergency Response Training Center	720 E Seneca Street, Oswego, NY 13126	100YR	No
Oswego City Police Dept.	169 W 2 nd Street, Oswego, NY 13126	No	-
Oswego County Public Safety Center	36 Churchill Road, Oswego, NY 13126	No	-
County Health Dept. & Mental Health Clinic	74 Bunner Street, Oswego, NY 13126	No	-
Five Star Urgent Care	200 E 1 st Street, Oswego, NY 13126	No	-
Menter Ambulance	202 W 4 th Street, Oswego, NY 13126	No	-
Oswego Health Center	10 George Street, #1, Oswego, NY 13126	No	-
Oswego Hospital	110 W 6 th Street, Oswego, NY 13126	No	-
SAVAC, SUNY Oswego	53 Sheldon Avenue, Oswego, NY 13126	100YR, 500YR	No
Eastside Fire Station	35 E Cayuga Street, Oswego, NY 13126	No	-
Westside Fire Station	90 W 1 st Street, Oswego, NY 13126	No	-
Oswego County Correctional Facility	39 Churchill Road, Oswego, NY 13126	No	-
Port of Oswego Authority	1 E 2 nd Street, Oswego, NY 13126	100YR, 500YR	No
Educational Facilities			
Charles E. Riley Elementary School	269 E 8 th Street, Oswego, NY 13126	No	-
Fitzhugh Park Elementary School	195 E Bridge Street, Oswego, NY 13126	No	-
Frederick Leighton Elementary School	1 Buccaneer Blvd., Oswego, NY 13126	100YR, 500YR	100YR, 500YR
Kingsford Park Elementary School	275 W 5 th Street, Oswego, NY 13126	No	-
Oswego High School	2 Buccaneer Blvd., Oswego, NY 13126	100YR, 500YR	500YR
Oswego Middle School	100 Mark Fitzgibbons Drive, Oswego, NY 13126	No	-
Trinity Catholic High School	115 E 5 th Street, Oswego, NY 13126	No	-
Community Services			
Breitbeck Park	91 Lake Street, Oswego, NY 13126	100YR, 500YR	No
Fort Ontario Park	1 E 4 th Street, Oswego, NY 13126	No	-
Fort Ontario State Historic Site	29 W 1 st Street, Oswego, NY 13126	No	-
Adirondack Manor Adult Home	24 E Oneida Street, Oswego, NY 13126	No	-
Loretto Oswego Residential	132 Ellen Street, Oswego, NY 13126	No	-
Pontiac Care and Rehabilitation Center	303 E River Road, Oswego, NY 13126	No	-
Pontiac Terrace Apartments	225 W 1 st Street, Oswego, NY 13126	No	-
Simeon Dewitt Senior Apartments	150 E 1 st Street, Oswego, NY 13126	No	-

Table 2: Critical Facilities in the City of Oswego

Facility Name	Address	Parcel Located in Floodplain	Structure Located in Floodplain
St. Francis Commons Assisted Living Residence	12 Burkle Street, Oswego, NY 13126	No	-
St. Luke Apartments	4 Burkle Street, Oswego, NY 13126	No	-
St. Luke's Health Care Facility	299 E River Road, Oswego, NY 13126	No	-
Sunrise Nursing Home	17 Sunrise Drive, Oswego, NY 13126	No	-
Industrial Facilities			
Great Lakes Veneer Corp.	375 Mitchell Street, Oswego, NY 13126	No	-
Glider Oil	388 W 1 st Street, Oswego, NY 13126	No	-
Military Facilities			
U.S. Army Reserve	1 E 4 th Street, Oswego, NY 13126	No	-
U.S. Army Training Center	60 E 9 th Street, Oswego, NY 13126	No	-
U.S. Coast Guard	29 W 1 st Street, Oswego, NY 13126	100YR, 500YR	100YR, 500YR
Dams			
Brookfield Hydropower LP	Oswego River off of W 1 st Street	-	-
City Of Oswego Dam	Oswego River off of E Utica Street	-	-
Curved Dam-lock #7	Oswego River	-	-
High Dam-lock #6	Oswego River	-	-
Oswego Barge Canal Lock 8 Dam	Oswego River off of NY-104	-	-

4.0 Priority Hazard Events

The following sections details the fifteen (15) top priority hazard events identified by the jurisdiction. Additional information about County-selected hazards including frequency, history, and severity is included within Section 5.0 of the main body of the Plan.

The probability of climate-related hazard events is expected to increase in the future within the City of Oswego. Climate change is expected to cause an increase in weather volatility, rising sea level, and greater temperature extremes.

Past occurrences of hazard events are indicated in their respective profiles below. Some hazards may not have locally available documentation of past occurrence, but were included in this annex for future mitigation planning consideration.

4.1 Natural Hazards

Natural hazards selected to be profiled for the City of Oswego are described in detail below.

4.1.1 Severe Thunderstorm, Wind, Tornado

For a description of this hazard, please see Section 5.1.1 of the main body of the Plan.

Hazard Vulnerability

The entire City is susceptible to damages from a severe thunderstorm, wind, or tornado event. Fallen trees from severe winds can damage overhead utility lines, resulting in power outages. In addition, these events are likely to result in damages to private and public infrastructure and property.

Historical Hazard Occurrences and Damage Estimates

In addition to the 101 severe storm events reported within Oswego County, the NCDC reports twenty-eight (28) wind, lightning, and hail events that occurred in the City of Oswego from 1994 to 2017 (Table 3). It is important to note that these events were reported for the location Oswego and Oswego Center and may include the Town of Oswego in addition to the City. Actual damages were likely greater than those estimated by the NCDC.

Table 3: Severe Storm Event Records for the City of Oswego				
Event Type	Date	Magnitude	Estimated Property Damage	Estimated Crop Damage
Thunderstorm Wind	5/1/2017	52 kts	\$8,000	-
Thunderstorm Wind	5/1/2017	52 kts	\$5,000	-
Hail	6/20/2016	0.75 inches	-	-
Thunderstorm Wind	6/20/2016	50 kts	\$10,000	-
Thunderstorm Wind	9/9/2015	65 kts	\$35,000	-
Thunderstorm Wind	8/18/2015	50 kts	\$25,000	-
Hail	5/13/2014	1 inch	\$10,000	-
Thunderstorm Wind	9/2/2013	50 kts	\$15,000	-
Hail	9/2/2013	0.75 inches	-	-
Hail	9/2/2013	1 inch	\$5,000	-
Thunderstorm Wind	9/2/2013	52 kts	\$15,000	-
Thunderstorm Wind	7/19/2013	50 kts	\$10,000	-
Thunderstorm Wind	7/31/2012	50 kts	\$10,000	-
Hail	8/10/2008	1 inch	\$10,000	-
Thunderstorm Wind	6/10/2008	50 kts	\$75,000	-
Thunderstorm Wind	7/9/2007	50 kts	\$10,000	-
Thunderstorm Wind	6/8/2007	50 kts	\$10,000	-
Lightning	11/9/2005	-	\$25,000	-
Hail	4/29/2004	0.75 inches	\$5,000	-
Thunderstorm Wind	8/29/2003	50 kts	\$10,000	-

Table 3: Severe Storm Event Records for the City of Oswego				
Event Type	Date	Magnitude	Estimated Property Damage	Estimated Crop Damage
Thunderstorm Wind	5/11/2003	50 kts	\$35,000	-
Thunderstorm Wind	6/27/2002	54 kts	\$20,000	-
Hail	3/9/2000	0.75 inches	\$15,000	-
Thunderstorm Wind	7/31/1999	-	\$25,000	-
Thunderstorm Wind	8/23/1998	51 kts	\$12,000	-
Thunderstorm Wind	5/29/1998	-	\$10,000	-
Thunderstorm Wind	7/6/1995	-	\$5,000	-
Thunderstorm Wind	7/18/1994	-	\$5,000	-
Total			\$420,000	-

Future Potential Impacts

Severe storms are a common event in the City of Oswego and will continue to occur in the future. The frequency and magnitude of severe storm events may be increased due to climate change.

4.1.2 Severe Winter Storm

For a description of this hazard, please see Section 5.1.4 of the main body of the Plan.

Hazard Vulnerability

Severe winter storms typically occur about eleven (11) times annually in Oswego County. These storms typically affect most or all of the County. The entire City of Oswego is susceptible to damages from a severe winter storm event. The City Public Works department clears City streets during heavy snow events, and the City works with the Oswego County Highway Dept. and NYS Dept. of Transportation for clearing of other roadways. Roadway safety is a major concern during severe winter storm events.

Historical Hazard Occurrences and Damage Estimates

The City of Oswego has been affected by a number of county-wide severe winter storm events, described in Section 5.1.4 of the main body of the Plan. Severe winter storms typically occur several times annually in Oswego County. These storms typically affect most or all of the County. A notable winter storm occurred in the City on 12/26/2017, with a snow total of thirty (30) inches in less than twenty-four (24) hours. The City declared a local state of emergency for this event. The NCDC does not report any winter storm records or damage estimates specific to the City of Oswego.

Future Potential Impacts

The City of Oswego will continue to experience severe winter storm events in the future. Severe winter storms are common throughout Oswego County and occur about eleven (11) times annually.

4.1.3 Ice Storm

For a description of this hazard, please see Section 5.1.3 of the main body of the Plan.

Hazard Vulnerability

Historically, ice storms have occurred about once every seven (7) years in Oswego County. These storms typically affect most or all of the County. The entire City of Oswego is susceptible to damages from an ice storm event.

Historical Hazard Occurrences and Damage Estimates

The City of Oswego was affected by the three (3) county-wide ice storm events recorded by the NCDRC, which are described in Section 5.1.3 of the main body of the Plan. No damage estimates or records related to ice storms are reported specifically for the City of Oswego.

Future Potential Impacts

The City of Oswego will continue to experience ice storm events in the future, as will the rest of Oswego County. The City Public Works department completes tree maintenance within City road right of ways to minimize potential damages to overhead utility lines, which is common during ice storms. Private utility right of ways are generally maintained by the individual utility companies.

4.1.4 Earthquake

An earthquake is a sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of Earth's tectonic plates. They usually occur without warning and after just a few seconds can cause massive damage and extensive casualties. The most seismically active regions in New York State are in the Adirondacks and near the Canadian border along the St. Lawrence River followed by the New York City and the Buffalo, Niagara, and Attica regions.

Hazard Vulnerability

Earthquakes are a rare occurrence, and there are no records of earthquakes originating in Oswego County. An inactive fault line runs underneath the county. Earthquakes originating in

other portions of the state have been felt in Oswego County. The City of Oswego is moderately susceptible to a potential earthquake event, due to the lack of warning and moderate extent and damages associated with this hazard.

Historical Hazard Occurrences and Damage Estimates

There are no historical records of earthquakes occurring in the City of Oswego. The Town of Amboy, located approximately thirty (30) miles southeast of the City, experienced damages to their fire station due to an earthquake originating in Au Sable Forks, NY on April 20, 2002. An earthquake has the potential to cause hundreds of thousands of dollars in damages.

Future Potential Impacts

The City of Oswego is susceptible to future earthquake events affecting Oswego County. However, earthquakes are expected to remain a rare event in Oswego County and pose a very low risk to the County and its jurisdictions.

4.1.5 Extreme Temperatures

For a description of this hazard, please see Section 5.1.5 of the main body of the Plan.

Hazard Vulnerability

Historically, extreme cold events have occurred about every other year in Oswego County. These events typically affect most or all of the County. The entire City of Oswego is susceptible to an extreme temperature event. Vulnerable populations, including people under the age of five (5) or over the age of sixty-five (65), along with low income populations and people with health problems are most vulnerable. The City was determined to have a moderate vulnerability to extreme temperature events due to their widespread nature, and relatively common occurrence.

Historical Hazard Occurrences and Damage Estimates

The City of Oswego was affected by the county-wide extreme cold events recorded by the NCDC, which are described in Section 5.1.5 of the main body of the Plan. No damage estimates or records related to extreme temperature events are reported specifically for the City of Oswego. Extreme temperature events are unlikely to cause significant property damage, though crop damages are possible depending on the time of year. Significant injuries or loss of life due to extreme temperature events are possible, but in small numbers.

Future Potential Impacts

The City of Oswego will continue to experience extreme temperature events in the future, as will the rest of Oswego County. Extreme temperature events are likely to increase in frequency due to climate change. The City has emergency shelters established, several of which are designated warming stations that residents may use during extreme cold events.

4.1.6 Flood

For a description of this hazard, please see Section 5.1.2 of the main body of the Plan.

Hazard Vulnerability

The City is predominantly drained by the Oswego River in the Lake Ontario drainage basin. FEMA's Flood Insurance Mapping Program designates areas that are at risk for flooding. Low flood risk are areas unlikely to flood, moderate risk are areas within the 500-year floodplain (0.2% likely to flood in any given year), and high risk are areas that frequently flood, up to the 100-year flood risk zone (1% likely to flood in any given year). Table 4 summarizes the amount of land within the City of Oswego that is located within 100-year and 500-year floodplains and low-risk flood areas.

Table 4: Summary of Areas in Floodplains (Source: FEMA DFIRM 2011)			
City of Oswego Total Area	Percent of Total Area		
	100-Year Floodplain	500-Year Floodplain	Area of Minimal Flood Hazard
7,247 acres	36.22%	0.42%	63.36%

Table 5 below summarizes the value of properties in the City of Oswego that are located within the 100-year floodplain and is categorized by land use type. This table was derived from FEMA floodplain mapping and parcel data from the Oswego County Real Property Tax Office.

Table 5: Parcels within to 100-year Flood Events and Their Estimated Structure Values				
Type of Structure	# Parcels in 100-Year Floodplain	Approx. Structure Value* in 100-Year Floodplain	# Parcels in 500-Year Floodplain	Approx. Structure Value* in 500-Year Floodplain
Commercial	31	\$28,360,600	22	\$20,654,700
Community Services	13	\$16,479,800	13	\$17,535,700
Industrial	5	\$1,773,656	3	\$1,126,456
Residential	117	\$8,787,040	59	\$5,068,700
Utility	22	\$175,157,601	17	\$159,125,900
Other**	56	\$24,249,300	39	\$24,290,900
Total	244	\$254,807,997	153	\$227,802,356
*Structure Value estimated by subtracting parcel's Land Assessed Value from Total Assessed Value (Oswego County Real Property Tax Office, 2018)				
**Includes parcels classified as vacant; recreational; and wild forest/conservation land/parks.				

Historical Hazard Occurrences and Damage Estimates

According to NOAA's Storm Events Database, in the past ten (10) years, no flood records were noted to specifically impact the City of Oswego.

According to local records, the shoreline of Lake Ontario received record flooding during May 1 to August 31, 2017 due to heavy rainfall. The Port and City of Oswego sustained major damage, with a county total damage of \$23 million. A Presidential Declaration in November 2017 provided Public Assistance for damages attributed to this high water period.

As described in Section 6.0 of this annex, eleven (11) NFIP loss claims have been paid as of July 2018 in the City of Oswego totaling \$381,869.07. There is one (1) repetitive loss property in the City of Oswego, identified as a non-residential property. The total calculated payments over four events for this property is \$318,147.46.

Future Potential Impacts

Properties along the Oswego River and shoreline of Lake Ontario and their tributaries are vulnerable to flooding. Multiple critical facilities are located on parcels that intersect the 100-year and/or 500-year floodplain. Six (6) of the City's critical facilities appear to have structures within a mapped floodplain (Table 2), including:

- Cell Tower and County Highway Dept. Property (111 E 11th St)
- City of Oswego West Side Sewage Treatment Plant (1st Ave)
- Leighton Elementary School (1 Buccaneer Blvd)

- Oswego High School (2 Buccaneer Blvd)
- U.S. Coast Guard Facility (29 W 1st St)

Together, the approximate structure value of these facilities totals to \$16,382,000.

4.2 *Technological Hazards*

Technological hazards selected to be profiled by the City of Oswego are described in detail below.

4.2.1 Fire

Hazard Vulnerability

The City of Oswego had a moderate vulnerability ranking for fires. These events tend to be more localized, affecting one (1) to several structures at a time. However, there is little to no warning and substantial structural damages and injuries or deaths are likely to occur. The central portion of the City, which is most densely developed, would be the most vulnerable area for a fire event.

Historical Hazard Occurrences and Damage Estimates

Structural fires occur occasionally within the City. In May 2017, A fire in a two-story building on West Third Street led to a building collapse, with fifteen (15) fire companies responding. The building was a commercial structure and caused no reported injuries. No damage estimates were available.

Future Potential Impacts

The developed portions of the City of Oswego, particularly along main roadways, remain susceptible to structure fires.

4.2.2 Transportation Accident

Hazard Vulnerability

For the purposes of hazard mitigation, a transportation accident is defined as an accident on land, water, or in the air resulting in mass casualties or a substantial loss of property. The City of Oswego contains several major transportation routes (NYS Route 104, County Route 48, County Route 4, and NYS Route 481) run into the center of the City. NYS Route 104 runs approximately east-west through the central portion of the City. County Route 48 and NYS

Route 481 run parallel to the Oswego River, traveling south to north into the City. County Route 4 travels northwest/southeast between NYS Route 104 and County Route 3. A transportation accident on any of these routes has the potential to impact a portion of the City of Oswego.

Historical Hazard Occurrences and Damage Estimates

While minor vehicular accidents are relatively common throughout the County, there are no specific records of major transportation accidents in the City of Oswego (accidents involving mass casualties or substantial loss of property). The City elected to profile this hazard due to the increased risk of this hazard occurring along major transportation routes.

Future Potential Impacts

While major transportation accidents are infrequent, but the City remains susceptible to future incidents along major transportation routes, particularly as a result of natural hazards such as a severe winter storm or ice storm. Transportation accidents do not pose a large risk to infrastructure, however, they are likely to cause injuries or loss of life. Maintaining roadway safety and clearly designating evacuation routes can aid in prevention of transportation accidents.

4.2.3 Utility Failure

Hazard Vulnerability

A utility failure involves the loss of electricity, natural gas supply, phone service, or water supply as a result of an internal system failure. While utility failures are often associated with natural hazard events, this hazard on its own does not include loss of utility access due to other disaster events. The City of Oswego primarily has overhead utility lines, including electric, phone, and cable networks and also has underground natural gas lines and a public water supply system. A utility failure could impact the entire developed portion of the City. The City's vulnerability to utility failures was determined to be high due to the widespread extent and fast onset of a utility failure.

Historical Hazard Occurrences and Damage Estimates

The City of Oswego was impacted by a widespread electricity failure in 2003 that impacted much of the northeastern U.S., which resulted in power outages for about one (1) day. No specific utility failure records are available for the City itself. The City is more likely to experience utility failures associated with a severe storm, ice storm, or severe winter storm than a purely technologically-caused utility failure.

Brookfield Renewable Power operates several hydroelectric units on the Oswego River, including in the City of Oswego. Natural hazards, particularly flooding, storm events, and ice jams could contribute to failure of this facility.

Future Potential Impacts

The City will remain susceptible to utility failures in the future. However, the City is more likely to encounter utility failures due to a natural hazard event than this hazard occurring on its own.

4.2.4 HAZMAT Fixed Sites

Hazard Vulnerability

A fixed-site hazardous materials incident could occur at sites that store petroleum products or other chemicals for industrial or commercial use. The NYSDEC lists nine (9) chemical bulk storage (CBS) sites, thirty-five (35) petroleum bulk storage (PBS) sites, and three (3) Major Oil Storage Facilities (MOSF) as active in the City of Oswego (Figure 1 of this annex). These sites include industrial sites, manufacturing facilities, gas stations, and community services. If a large petroleum spill were to occur at any of these locations, nearby properties may need to be evacuated to prevent human exposure and facilitate cleanup.

Historical Hazard Occurrences and Damage Estimates

There are no available records for major HAZMAT events specifically in the City of Oswego. The City elected to profile this hazard due to the presence of hazardous material storage facilities that store or use hazardous materials.

Future Potential Impacts

The City remains susceptible to fixed-site hazardous material events, though they are a rare occurrence. Properties close to bulk storage facilities that store petroleum products or chemicals are at the most risk of being affected by a fixed-site hazardous materials incident.

4.2.5 Epidemic

Hazard Vulnerability

Epidemics are defined as an outbreak of disease to an unusually large number of individuals or proportion of the population. Epidemics may include both human and animal illnesses. The City of Oswego was determined to have a low vulnerability risk for an epidemic event, since it has a relatively long onset, very low frequency, low damage potential, and may impact a moderate amount of the City's population. The most vulnerable populations include young children under the age of five (5), older adults over the age of sixty-five (65), and those with existing medical conditions.

Historical Hazard Occurrences and Damage Estimates

There are no historical occurrences or impact estimates of epidemics specific to the City of Oswego. However, the City elected to include this hazard in order to account for potential widespread illnesses such as influenza.

Future Potential Impacts

The risk of an epidemic occurring in the City of Oswego remains low, but it is possible and could affect a portion of the City's population.

4.2.6 Civil Unrest

Hazard Vulnerability

The City of Oswego had a low vulnerability ranking for civil unrest. Civil unrest can occur due to a variety of causes, including financial hardships, social issues, politics, and perceived injustices. The central portion of the City, which is most densely developed, would be the most vulnerable area for a civil unrest event.

Historical Hazard Occurrences and Damage Estimates

There are no historical occurrences or impact estimates of civil unrest specific to the City of Oswego. However, the City elected to include this hazard in order to account for potential widespread protest events, particularly those that have potential to become violent.

Future Potential Impacts

The developed portions of the City of Oswego, particularly along main roadways, remain susceptible to damages as a result of civil unrest.

4.2.7 Radiological Fixed Site

Hazard Vulnerability

A fixed-site radiological incident could occur at the Exelon Fitzpatrick Nuclear Power Plant or Ninemile Point Nuclear Power Plant which are located in the Town of Scriba, about four (4) miles west of the City of Oswego. An accident at either nuclear plant would affect residents in the City of Oswego.

Historical Hazard Occurrences and Damage Estimates

There are no available records for radiological fixed site events in the City or Oswego County. The City of Oswego elected to profile this hazard due to the nearby nuclear power plants and potential for numerous injuries or loss of life to occur.

Future Potential Impacts

The City remains susceptible to radiological fixed-site events, though the risk is low.

4.2.8 Dam Failure

Hazard Vulnerability

Dam failures can be attributed to natural or man-made hazards. The impoundment of large volumes of water poses a threat; the failure of a dam can lead to catastrophic flooding.

The New York State Department of Environmental Conservation (NYSDEC) maintains a database to classify dams based on the event of a failure. Explanations of dam classifications are noted in Table 5.8 (Appendix A of the main body of the Plan).

The City of Oswego contains three (3) dams on the Oswego River. Two are Class A (low hazard) dams. The Oswego Barge Canal Lock 8 Dam is a concrete gravity dam with an unlisted purpose. South of this, the City of Oswego Dam is also a concrete gravity dam utilized for hydroelectric power. The third dam, identified as Curved Dam – Lock 7 is a masonry and concrete gravity dam with hydroelectric, navigation, and recreational purposes listed. This dam is identified as a Class C (high hazard) dam.

Historical Hazard Occurrences and Damage Estimates

There are no records of dam failures occurring in the City of Oswego. The City elected to include this hazard due to the potential for moderate damages to occur should either dam fail, particularly as the Lock 7 dam is identified as a high hazard dam.

Future Potential Impacts

Should any dams within the City fail, properties immediately downstream of the dam would be susceptible to flooding.

5.0 Capability Assessment

5.1 Planning and Regulatory Capability

The City's HMP update will be incorporated into and referenced by future updates of the plans, policies, ordinances, programs, studies, and reports listed in Table 6, below.

Table 6. Planning Mechanisms and Capabilities		
Planning Mechanism	City of Oswego	Notes
Plans		
Comprehensive/Land Use Plan	X	Adopted in 2003
Comprehensive Emergency Management Plan	X	In place.
Economic Development Plan	X	2015
Post-disaster Recovery Plan	X	In place.
Watershed Protection Plan	X	In place.
Policies/Ordinances		
Building Codes	<ul style="list-style-type: none"> • 2010 Residential Code of NYS • 2010 Fire Code of NYS • 2010 Building Code of NYS • 2010 Existing Building Code of NYS • 2010 Energy Conservation Construction Code of NYS • 2010 Plumbing Code of NYS • 2010 Mechanical Code of NYS • 2010 Fuel Gas Code of NYS 	Code Enforcement Officer
Zoning/Land Use Codes/Restriction	X	Ch. 7 and Ch. 123 of the 1980 Code. Update in progress.
Subdivision Regulations	X	Included in zoning ordinance
Property Set-back Ordinance	X	Included in zoning ordinance
Flood Regulations	X	L.L. No. 2-2013
Site Plan Review Requirements	X	City Planning Board responsible
Real Estate Disclosure Requirement	X	In place.
Programs		
NFIP Participant	X	Current participant.
Storm Drainage Maintenance Program	X	DPW Responsible
Mutual Aid Agreements	X	Agreements with neighboring jurisdictions and Oswego County
Studies/Reports		
Hazard Analysis/Risk Assessment	X	Oswego County HMP- 2012
Floodplain Maps and/or Studies	X	FEMA- 2013

Table 6. Planning Mechanisms and Capabilities		
Planning Mechanism	City of Oswego	Notes
Staff/Development		
Development Planner	X	City Planning Board
Building Code Official	X	Code Enforcement Officer
Engineer/Public Works Official	X	City DPW
Local Floodplain Administrator	X	Code Enforcement Officer
Public Information Official	X	Mayor

5.2 Emergency Communications, Routes, and Shelters

The City of Oswego, along with Oswego County, utilizes the HyperReach emergency communications system. Major transportation routes within the City include NYS Route 104, County Route 48, County Route 4, and NYS Route 481. The City of Oswego has one (1) established emergency shelters:

- SUNY Oswego – Laker Hall: Barnes Drive, Oswego NY 13126

Laker Hall is ADA-compliant. The City has a shelter that may be used to house pets during emergencies if space is available.

5.3 Temporary and Permanent Housing Locations

The potential temporary and permanent housing locations listed below were identified for displaced residents in the City of Oswego based on the 2017 NYS Hazard Mitigation Planning Standards.

- **Potential Temporary Housing Locations**
 - Fort Ontario Park – 1 E. 4th Street
 - Charles E. Riley Elementary Athletic Fields – 269 E. 8th Street
 - Oswego High School & Leighton Elementary Athletic Fields – 2 Buccaneer Boulevard
 - Oswego Softball Fields – 99 Churchill Road
 - SUNY Oswego Athletic Fields – 2700 Johnson Road
 - Oswego Middle School Athletic Fields – 100 Mark Fitzgibbons Drive
- **Potential Permanent Housing Locations**
 - Oswego Softball Fields – 99 Churchill Road

6.0 National Flood Insurance Program

Long-term mitigation of potential flood impacts can be best achieved through comprehensive floodplain management regulations and enforcement at a local level. The National Flood Insurance Program (NFIP), regulated by FEMA, aims to reduce the impact of flooding on private and public structures by providing affordable insurance for property owners. The program encourages local jurisdictions to adopt and enforce floodplain management regulations in order to mitigate the potential effects of flooding on new and existing infrastructure (FEMA, 2015).

Communities that participate in the NFIP adopt floodplain ordinances. If an insured structure incurs damage costs that are over 50% of its market value, the owner must comply with the local floodplain regulations when repairing or rebuilding the structure. A structure could be rebuilt at a higher elevation, or it could be acquired and demolished by the municipality or relocated outside of the floodplain. Insured structures that are located within floodplains identified on FEMA's Flood Insurance Rate Maps (FIRMs) may receive payments for structure and content losses if impacted by a flood event.

The NFIP and other flood mitigation actions are important for the protection of public and private property and public safety. Flood mitigation is valuable to communities because it:

- Creates safer environments by reducing loss of life and decreasing property damage;
- Allows individuals to minimize post-flood disaster disruptions and to recover quicker (homes built to NFIP standards generally experience less damage from flood events, and when damage does occur, the flood insurance program protects the homeowner's investment); and
- Lessens the financial impacts on individuals, communities, and other involved parties (FEMA, 2015).

The City of Oswego currently participates in the NFIP. As of July 2018, the City had twenty-two (22) flood insurance policies in-force, with a total coverage amount of \$3,434,300.00, and thirteen (13) claims have been filed to date. All of these claims are closed, two (2) of which were closed without payment. Paid claims totaled \$381,869.07. There is one (1) repetitive loss property within the City of Oswego, a non-residential site that has seen four (4) losses with total payments equaling \$318,147.46.

The City's Code Enforcement Officer serves as the Local Floodplain Administrator, and flood maps are available for viewing and copying at the City Hall (13 West Oneida Street, Oswego). The City has been maintaining NFIP participation by performing the duties and actions that were listed in the local laws adopted by the City Council. The City will continue to comply with the NFIP by enforcing floodplain management requirements and regulating new development in Special Flood Hazard Areas, in addition to other required duties. The City will

also consider potential mitigation efforts for the one (1) property in its limits that has experienced multiple flood-related losses.

7.0 Mitigation Strategy and Prioritization

7.1 Past, Completed, and Ongoing Initiatives

The City of Oswego proposed four (4) mitigation actions in the 2012 Oswego County HMP. The details and status of those actions are described in Table 7 below.

Table 7. 2012 Hazard Mitigation Actions City of Oswego				
Proposed Mitigation Action	Hazard(s) Mitigated	2012 Goals & Objectives Met	Implementing Agency	Status
Implement response protocols to remove debris jams from waterways	Flood	3-c	County DPW, Municipal DPW/Highway, Fire Depts., Canal Corps, USACE	No progress to date due to limited funding/staff availability
Implement response protocols to remove ice jams from waterways	Ice jam	4-d, 4-e, 5-a, 5-e	County DPW, Municipal DPW/Highway, Fire Depts., Canal Corps, USACE	No progress to date due to limited funding/staff availability
Review SUNY Oswego response plan protocol regarding acts of terrorism, sporting events, and an epidemic event – update annually	Terrorism, epidemic	5-e	SUNY Oswego (lead), Oswego municipal board, County EMO (advisory)	No progress to date due to limited funding/staff availability
Increase building setbacks along Lake Ontario to reduce erosion potential and impacts	Severe storm, landslide	4-b, 4-d	Oswego planning & zoning board	This action was determined to no longer be applicable for the City. The majority of the shore of Lake Ontario within the City limits is already developed, aside from County parkland on the northeastern end of the City.

7.2 Proposed Mitigation Actions

The City proposed four (4) new mitigation actions to be included in the HMP update. These actions are described in Table 8, below and on worksheets included in Attachment A.

Table 8. 2018 Proposed Mitigation Actions City of Oswego									
Action ID	Mitigation Action	Hazard(s) Mitigated	Implementing Agencies (Lead* & Support)	Planning Mechanism	Timeframe	New or Existing Development	Estimated Cost	Funding Source(s)	Priority
C-Oswego 1	Improve sheltering capability for City, expand beyond American Red Cross facilities & coordinate with other organizations	All	City of Oswego Fire Dept*, American Red Cross, Oswego County EMO, Oswego City School District, Oswego County Opportunities	Comprehensive Emergency Management Plan	5 years	Existing	Low	FEMA- PDM	1
C-Oswego 2	Provide backup power for critical City facilities (City Hall, City DPW)	All	City of Oswego Fire Dept*	Comprehensive Emergency Management Plan	5 years	Existing	\$100,000	FEMA- PDM; Local budget	2
C-Oswego 3	East side wastewater treatment plant shoreline stabilization and outfall improvements	Flood	City of Oswego DPW*	Comprehensive Emergency Management Plan	5 years	Existing	\$100,000	FEMA- PDM	3
C-Oswego 4	West side wastewater treatment plant outfall and breakwall improvements	Flood	City of Oswego DPW*	Comprehensive Emergency Management Plan	5 years	Existing	\$1 million	FEMA- PDM	4
Potential Funding Sources									
FEMA PDM: https://www.fema.gov/pre-disaster-mitigation-grant-program									

7.3 Cost-Benefit Analysis

Each of the City's proposed mitigation actions were evaluated and prioritized using the STAPLEE cost-benefit analysis. The City's STAPLEE worksheet is provided in Attachment B. The STAPLEE analysis includes the following lenses of evaluation: social, technological, administrative, political, legal, economic, and environmental.

8.0 Works Cited

Slosek, Mark. 2016. "City of Oswego". History of Oswego County, New York, Marking the Bicentennial. Eds Shawn Doyle, Roy Reehil, Debra Allen, Justin White, Janet Clerkin, Kelly Jordal, and Kara Alheim. Oswego, NY: Oswego County, New York, 2016. 32-38. Print.

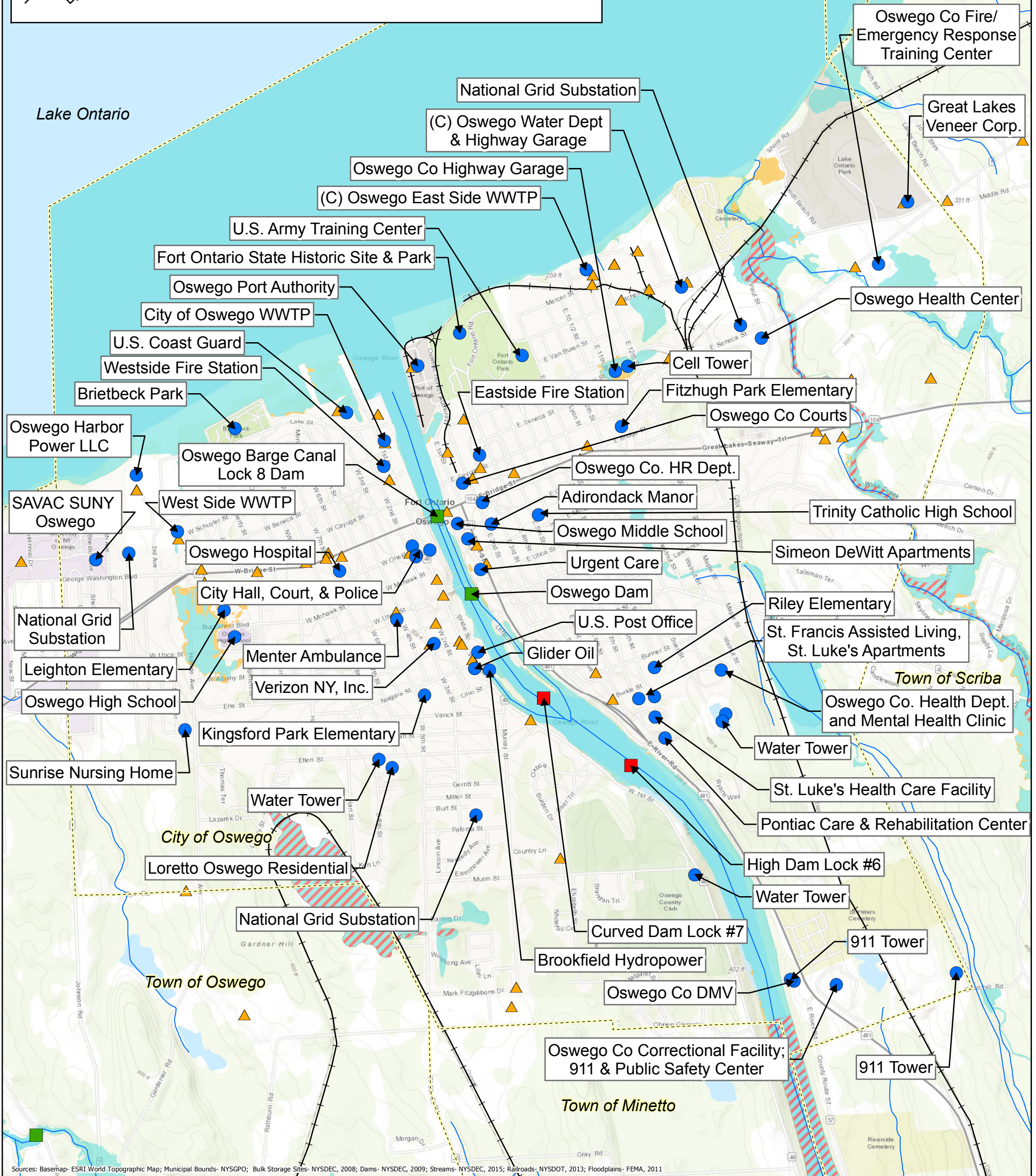
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Figure 1

**Hazard Area Extent and Location Map –
City of Oswego**

Legend:

- Municipal Boundaries
- FEMA 100-Year Floodplain
- FEMA 100-Year Floodplain-Floodway
- FEMA 500-Year Floodplain
- Streams
- Active Railroads
- Critical Facilities
- NYSDEC Bulk Storage Facilities
- Dams**
 - Class A (Low Hazard)
 - Class B (Intermediate Hazard)
 - Class C (High Hazard)



Attachment A

**Mitigation Action Worksheets –
City of Oswego**

Oswego County Multi-Jurisdictional Hazard Mitigation Plan

Name of Jurisdiction:	City of Oswego
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Mitigation Action Worksheet	
Project Name:	Improve sheltering options for City residents
Project Number:	Oswego City 1
Risk/Vulnerability	
Hazard of Concern:	All
Description of the Problem:	Lack of knowledge of the existing capabilities of different sheltering locations within the City.
Action of Project Intended for Implementation	
Description of the Solution:	Inventory the abilities of existing sheltering locations (i.e., utilities available, backup power, accommodations for people with special needs, pets). Coordinate with the American Red Cross as well as other non-government organizations to improve shelter capabilities.

Is this project related to a Critical Facility? Yes X No

(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)

Level of Protection:	Medium	Estimated Benefits (losses avoided):	Proactive coordination regarding sheltering options will provide better protection to residents during hazard situations when shelters need to be used.
Useful Life:	5 years, ongoing coordination		
Estimated Cost:	Low- \$5,000		

Plan for Implementation			
Prioritization:	Medium (#2)	Desired Timeframe for Implementation:	1-5 years
Estimated Time Required for Project Implementation:	1 year	Potential Funding Sources:	FEMA- PDM, City budget
Responsible Organization:	City of Oswego Fire Dept.	Local Planning Mechanisms to be used in Implementation, if any:	Comprehensive Emergency Management Plan

Three Alternatives Considered (Including No Action)			
	Action	Estimated Cost	Evaluation
Alternatives:	No Action	\$0	Lack of sheltering abilities/coordination remains.
	Create an inventory of existing shelters and abilities to serve different populations.	\$3,000	Improvement upon existing conditions but need to coordinate with other agencies.
	Create an inventory of existing shelters and abilities to serve different populations. Coordinate with ARC to improve these conditions as needed.	\$5,000	More complete solution- involving other agencies will maximize benefits

Progress Report (for Plan Maintenance)	
Date of Status Report:	
Report of Progress:	
Update Evaluation of the Problem and/or Solution:	

Oswego County Multi-Jurisdictional Hazard Mitigation Plan

Name of Jurisdiction:	City of Oswego
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Mitigation Action Worksheet	
Project Name:	Provide backup power for critical City facilities (City Hall, City DPW)
Project Number:	Oswego City 2
Risk/Vulnerability	
Hazard of Concern:	All
Description of the Problem:	Currently, City Hall and the City Dept. of Public Works lack backup power and are susceptible to power outages during hazard events.
Action of Project Intended for Implementation	
Description of the Solution:	Install generators at City Hall and the Dept. of Public Works to maintain continuity of critical operations during hazard events.

Is this project related to a Critical Facility? Yes X No

(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)

Level of Protection:	Medium	Estimated Benefits (losses avoided):	Prevent widespread power outages and protect critical infrastructure.
Useful Life:	15 years		
Estimated Cost:	\$100,000		

Plan for Implementation			
Prioritization:	High (#1)	Desired Timeframe for Implementation:	1-5 years
Estimated Time Required for Project Implementation:	1 year	Potential Funding Sources:	FEMA- PDM
Responsible Organization:	City of Oswego Fire Dept.	Local Planning Mechanisms to be used in Implementation, if any:	Comprehensive Emergency Management Plan

Three Alternatives Considered (Including No Action)			
	Action	Estimated Cost	Evaluation
Alternatives:	No Action	\$0	Power outages remain a concern for critical facilities
	Install generator at City Hall	\$50,000	Partial protection
	Install generator at City Hall and DPW	\$100,000	More complete protection

Progress Report (for Plan Maintenance)	
Date of Status Report:	
Report of Progress:	
Update Evaluation of the Problem and/or Solution:	

Oswego County Multi-Jurisdictional Hazard Mitigation Plan

Name of Jurisdiction:	City of Oswego
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Mitigation Action Worksheet	
Project Name:	East side wastewater treatment plant shoreline stabilization and outfall improvements
Project Number:	Oswego City 3
Risk/Vulnerability	
Hazard of Concern:	Flood
Description of the Problem:	Continued high lake levels and flooding are accelerating erosion along the shore and will eventually impact the facility grounds and aeration ponds. Erosion of the shoreline is currently within 2 feet of the perimeter fencing. In addition, the outfall for treated effluent may be affected by higher lake levels and wave action from storms in the future. The structural integrity of the outfall should be assessed in order to prevent
Action of Project Intended for Implementation	
Description of the Solution:	Reinforce the shoreline with heavy stone revetments to prevent further erosion and protect the WWTP. Investigate the condition of the outfall pipes and make necessary improvements.

Is this project related to a Critical Facility? Yes X No

(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)

Level of Protection:	Medium	Estimated Benefits (losses avoided):	Protection of WWTP infrastructure, decrease in flood related damages
Useful Life:	Medium		
Estimated Cost:	\$100,000		

Plan for Implementation			
Prioritization:	Medium (#3)	Desired Timeframe for Implementation:	1-5 years
Estimated Time Required for Project Implementation:	1 year	Potential Funding Sources:	FEMA- PDM
Responsible Organization:	City DPW	Local Planning Mechanisms to be used in Implementation, if any:	Comprehensive Plan

Three Alternatives Considered (Including No Action)			
	Action	Estimated Cost	Evaluation
Alternatives:	No Action	\$0	No change in public awareness regarding property resilience.
	Install stone revetments along shoreline	\$100,000	Protects shoreline but does not address outfall. Outfall may be damaged during future high water/flood events
	Install stone revetments along shoreline and investigate outfall condition	\$120,000	More comprehensive approach to protect WWTP infrastructure.

Progress Report (for Plan Maintenance)	
Date of Status Report:	
Report of Progress:	
Update Evaluation of the Problem and/or Solution:	

Oswego County Multi-Jurisdictional Hazard Mitigation Plan

Name of Jurisdiction:	City of Oswego
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Mitigation Action Worksheet

Project Name:	West side wastewater treatment plant outfall and breakwall improvements
Project Number:	Oswego City 4

Risk/Vulnerability

Hazard of Concern:	Flood
Description of the Problem:	High lake levels and an ineffective breakwall have led to storm driven sediment build-up in the treated effluent outfall which has at times reduced the treatment capacity of the plant.

Action of Project Intended for Implementation

Description of the Solution:	Reconstruct the breakwall to prevent further flood damages; raise the outfall to prevent sediment buildup.
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Is this project related to a Critical Facility? Yes X No

(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater.)

Level of Protection:	Medium	Estimated Benefits (losses avoided):	Protection of WWTP infrastructure, decrease in flood related damages
Useful Life:	Medium		
Estimated Cost:	\$1 million		

Plan for Implementation

Prioritization:	Medium (#4)	Desired Timeframe for Implementation:	1-5 years
Estimated Time Required for Project Implementation:	3 years	Potential Funding Sources:	FEMA- PDM
Responsible Organization:	City DPW	Local Planning Mechanisms to be used in Implementation, if any:	Comprehensive Plan

Three Alternatives Considered (Including No Action)

	Action	Estimated Cost	Evaluation
Alternatives:	No Action	\$0	No change in public awareness regarding property resilience.
	Reconstruct outfall to prevent sediment buildup	\$50,000	Protects outfall but breakwall is still ineffective against flooding/wave action
	Reconstruct outfall and breakwall	\$1 million	More comprehensive approach to prevent flood related damages.

Progress Report (for Plan Maintenance)

Date of Status Report:	
Report of Progress:	
Update Evaluation of the Problem and/or Solution:	

Attachment B

City of Oswego - STAPLEE

Jurisdiction City of Oswego

Action ID	Action									Can action be easily implemented?	Does action achieve multiple plan objectives?	Can action be quickly implemented?	Level of action benefits	Level of action overall costs	Priority ranking
		S	T	A	P	L	E	E							
		+ = Benefit (favorable), - = Cost (unfavorable), 0 = Neutral or N/A							Levels = High, Medium, or Low						
C-Oswego 1	Improve sheltering capability for City, expand beyond American Red Cross facilities & coordinate with other organizations	+	+	-	+	+	+	0	+	+	+	High	Low	High (#1)	
C-Oswego 2	Provide backup power for critical City facilities (City Hall, City DPW)	+	0	-	0	+	-	0	-	+	-	Med	High	Med (#2)	
C-Oswego 3	East side wastewater treatment plant shoreline stabilization and outfall improvements	+	+	+	+	+	-	0	0	+	0	Med	High	Med (#3)	
C-Oswego 4	West side wastewater treatment plant outfall and breakwall improvements	+	+	+	+	+	-	0	-	+	-	Med	High	Med (#4)	