



Section 4. County Profile

Profile information is presented and analyzed to develop an understanding of a study area, including the economic, structural, and population assets at risk and the particular concerns that may be present related to hazards analyzed later in this plan (e.g., areas prone to flooding or a high percentage of vulnerable persons in an area). This section describes the general profile of Monroe County (government, physical setting, population and demographics, general building stock, land use, and population trends) and critical facilities located within the county.

4.1 History

Formerly a portion of Genesee and Ontario Counties, Monroe County officially became its own county on February 23, 1821, a namesake of President James Monroe. Following the Revolutionary War, people from New England, Maryland, and Pennsylvania came to settle the Genesee River Valley, bringing their knowledge of agriculture and methods of raising cattle and sheep. The settlers built flour and grist mills on the numerous small streams and along the Genesee River.

Prior to American settlement, the Algonquin, Seneca, and Iroquois tribes inhabited the land that is currently Monroe County. The Seneca, who joined the League of the Iroquois, controlled the major east-west and north-south trade routes in that region and were thus known as the “Keepers of the Western Door.” Ownership of the land was taken from both tribes in the Phelps and Gorham Purchase in 1788 and the Treaty of Big Tree in 1797. The former was when the Iroquois sold all rights to their land between Seneca Lake and the Genesee River to Oliver Phelps and Nathaniel Gorham, both of Massachusetts, who later defaulted on the purchase. The latter agreement, the Treaty of Big Tree, was formed between the Seneca Nation and the United States, in which the Seneca signed over rights to all territory west of the Genesee River, excluding 12 small tracts of land, for the price of \$100,000 (SUNY Oswego, Date Unknown).

Early European settlement in the county was divided by the Genesee River, with settlements in the east becoming part of the Town of Northfield and those to the west becoming the Town of Northampton. Rapid population growth in the ensuing years altered both towns. On the eastern side of the river, Northfield became Boyle, which split in 1810 to form Penfield, then Perinton in 1812, both Brighton and Pittsford in 1814, and then Henrietta in 1818. Mendon was formed from Bloomfield in 1812 and Rush was created out of Avon in 1818. Irondequoit was formed in 1839 and Webster in 1840. Similar divisions took place on the west side of the river as Northampton split to form Parma and Riga in 1808, Gates in 1812, Sweden in 1813, Ogden in 1817, Clarkson in 1819, and Greece and Chili in 1822. Wheatland was formed in 1821 by a split from Southampton. Union was formed in 1853, and later became Hamlin in 1861.

Before 1821, the towns on both sides of the river were all part of either Ontario or Genesee counties, requiring all transactions to be recorded in the county seats, far from their homes and businesses. The City of Rochester (at that time, known as the Village of Rochesterville) was already a booming mill town, the focal point of settlements and economies in the surrounding towns and villages. At the time of the county’s founding, the Village of Rochesterville became the county seat and a Board of Supervisors was elected by the original 14 towns of the new county.

The year 1823 saw the birth of the City of Rochester, and was also the year that the first 800-foot (244 m) Erie Canal aqueduct was constructed over the Genesee River, linking north-south trade along the Hudson River in eastern New York State to the potential of larger east-west trade through the Great Lakes and beyond. The completion of the Erie Canal in 1825 created unprecedented economic opportunity for Monroe County farmers and mills in the City of Rochester. The importance of wheat farming grew as the Erie Canal facilitated the



shipment of products to the Port of New York, allowing goods and commodities to be shipped by water almost anywhere in the world. Monroe County's canal system is 42.8 miles long, and has supported many industries in the county's history, from flour, lumber, and nursery flowers to the modern industries of technology, recreation, and innovation.

Soon after the Erie Canal east to the Hudson River was opened in 1825, the county's economy boomed around the burgeoning industries in the Rochester area, and the population soared accordingly. By 1830, the population of the City of Rochester hit 9,200, and the city gained national recognition as "The Young Lion of the West." The prosperous economy soon led to another nickname for the city, the Flour City, based on the numerous flour mills lining the Genesee River within its borders. Less than a decade after the opening of the Erie Canal, roughly 20 mills were producing 44,000 tons of flour annually; the population of Rochester reached 13,500; and the city area expanded to 4,000 acres (16 km²). By the mid-19th Century, Rochester was the 21st largest city in the United States. Westward expansion had shifted the focus of farming out of New York State and Monroe County's importance as the center for flour milling had deteriorated. However, a nursery and seed industry (started decades earlier by William A. Reynolds in Rochester) began to flourish, and several Rochester seed companies had grown to some of the largest in the world, the largest of which was the Ellwanger & Barry Nursery Co. As a result, the City of Rochester took yet another nickname, and was thereafter known as the Flower City.

Monroe County played an important history in the American abolition movement, and in the Civil War. In 1847, former slave and abolitionist leader Fredrick Douglass began publishing a newspaper "The North Star" out of Rochester. Douglass gave some of his most famous anti-slavery speeches while in Rochester, as did other renowned abolitionists including Susan B. Anthony and William Lloyd Garrison. Elsewhere in the county in those years leading up to the Civil War, citizens were opening up their homes and places of business to shelter fugitive slaves as part of the Underground Railroad. Along with the City of Rochester, such safe houses were reportedly located in the Towns of Brighton, Pittsford, Mendon, Webster, and Chili (Coles 2005). Rochester had emerged as a center for culture, society, and education, and the University of Rochester was founded in 1850.

Later in the 19th century, another form of railroad made its mark on the county. Five freight and passenger railroads passed through Rochester by the middle of the 1890s, expanding on the county's already convenient systems of canals and roadways connecting Monroe County residents and businesses to cities and markets throughout the eastern United States. Inter-urban electric railroads came to Monroe County in the first decade of the 20th century, which included the Rochester, Lockport and Buffalo Railroad, and the Rochester, Syracuse and Eastern Rapid Railroad.

Modern-day Monroe County has come a long way from its early agricultural and milling start, and now prides itself on high-technology industries, manufacturing, and educational institutions. Both the Eastman Kodak and Bausch & Lomb Corporations have their world headquarters in the county, as do manufacturing facilities such as General Motors, Xerox, and ITT Automotive. Furthermore, the University of Rochester, the Rochester Institute of Technology, the National Institute for the Deaf, and five other institutions of higher learning are located in Monroe County.

Today, the county is comprised of 31 municipalities – one city, 20 towns, and ten villages (one of which, East Rochester, is conterminous with the town). The towns and villages of Monroe County are presented in Table 4-1.



Table 4-1. Monroe County Political Jurisdictions

City	Towns	Villages
City of Rochester	Town of Brighton Town of Chili Town of Clarkson Town/Village of East Rochester Town of Gates Town of Greece Town of Hamlin Town of Henrietta Town of Irondequoit Town of Mendon Town of Ogden Town of Parma Town of Penfield Town of Perinton Town of Pittsford Town of Riga Town of Rush Town of Sweden Town of Webster Town of Wheatland	Village of Brockport Village of Churchville Village of Fairport Village of Hilton Village of Honeoye Falls Village of Pittsford Village of Scottsville Village of Spencerport Village of Webster

4.2 Physical Setting

This section presents the physical setting of Monroe County, including its location, topography, hydrography and hydrology, climate, and land use and land cover.

4.2.1 Location

Monroe County lies in the north-central portion of western New York, northeast of Buffalo and northwest of Syracuse, sharing its northern border with the United States border marked by Lake Ontario. Orleans and Genesee Counties form its western boundary, Livingston County marks the southern border with Ontario County to the southeast, and Wayne County shares a border to the east. Figure 1-1 in Section 1 displays Monroe County and its municipalities.

Lake Ontario, one of the Great Lakes, is a predominant feature in Monroe County, as it forms the northern border of the City of Rochester and the Towns of Hamlin, Parma, Greece, Irondequoit, and Webster; and is an important aesthetic, economic, environmental, and cultural resource for the county. The Genesee River is also significant, as it bisects the county into eastern and western sections, running directly through the heart of the City of Rochester and draining to Lake Ontario in the Town of Irondequoit. Topography ranges from gentle rolling hills in the northern parts of the county to steeper slopes and moderately rolling hills in the southern sections.

Monroe County itself is 1,367 square miles with 4,648 miles of road that wind across the county. Interstates (I)-90, I-390, I-490, and I-590 are the primary routes of travel through Monroe County. I-90, built in Monroe County as part of the New York State Thruway in the 1950s, traverses the county from the east to the west through the southern section, passing through the Towns of Wheatland, Chili, Henrietta, Pittsford, and Mendon. In the Town of Henrietta, I-90 intersects with I-390, major north-south route carrying traffic up from Livingston County and other points south and bisecting Monroe County, skirting the City of Rochester to the west and ending near the shores of Lake Ontario where the road continues as the Lake Ontario State Parkway. I-490 is the third major route option for travelers in Monroe County, an auxiliary highway offering a direct route into the City of Rochester from where it splits from I-90 on both the southeastern and southwestern corners of the county. I-490 was constructed in the 1950s along the original path of the Erie Canal through the City of Rochester. It route serves the Villages of Churchville and Pittsford, among others. It connects with I-390 and New York State Route



390 (NY 390) just west of the City of Rochester and I-590 and NY 590 to the east of the city. Together, these roads comprise the southernmost portion of the Inner Loop Beltway, which circles around the interior of Rochester. State Route 531 connects I-490 to western suburbs including the Towns of Ogden and Gates, and the Villages of Brockport and Spencerport.

Additionally, State Routes 104, 33, 31, and 36 connect the county to its eastern western, and southern neighbors. SR 104 and SR 31 run east west through the northern and central section of the county, respectively. SR 36 begins at the terminus of SR 531 in the Town of Ogden and runs south through the Town of Riga and Wheatland before connecting with Livingston County. SR 33 connects SR 31 in the City of Rochester directly to the City of Buffalo to the west. Often paralleling I-490 along its segments in Monroe County, SR 33 is mostly a rural highway serving local traffic.

4.2.2 Topography and Geology

Topography

Consistent with the rest of western New York, the geography and topography of the land that encompasses Monroe County owes its formation to the thawing of glaciers during the last Ice Age. The region is marked by rolling and rounded hills, often elongated with steeper slopes towards the north and more gradual, gentle slopes towards the south. Elevation ranges from 928 feet above sea level at Baker Hill on the Ontario County line in Perinton Township to 246 feet above sea level along the shores of Lake Ontario and Irondequoit Bay, and the lower course of the Genesee River Soil Survey of Monroe (Crabb and others 1910).

Geology

Most of the geology in the county is the result of glacial debris and sediment left behind after the Ice Age. Bedrock in the area is layered by shale, dolomite, and sandstone, and is overlain by soils of sandy loam, silt loam, and gravelly loam. There is a sharp boundary between soils and bedrock in Monroe County, which is evidence of the glacial activity that characterized the region, as soils were transported to their present location rather than created by gradual weathering of rock over time. Soils in Monroe County originated from glacial rivers, flowing terraces and alluvial fans. Many boulders found in the region are foreign to the area, transported to Monroe County by the massive glaciers that covered the region. As glaciers receded, streams formed from the melting water and cut through the loose soils creating terraces that can be seen in the valleys of streams around the City of Rochester (Wishart, Date Unknown). As a result of more than a century of agricultural and foresting activity, very little of the original, native vegetation remains in the region.

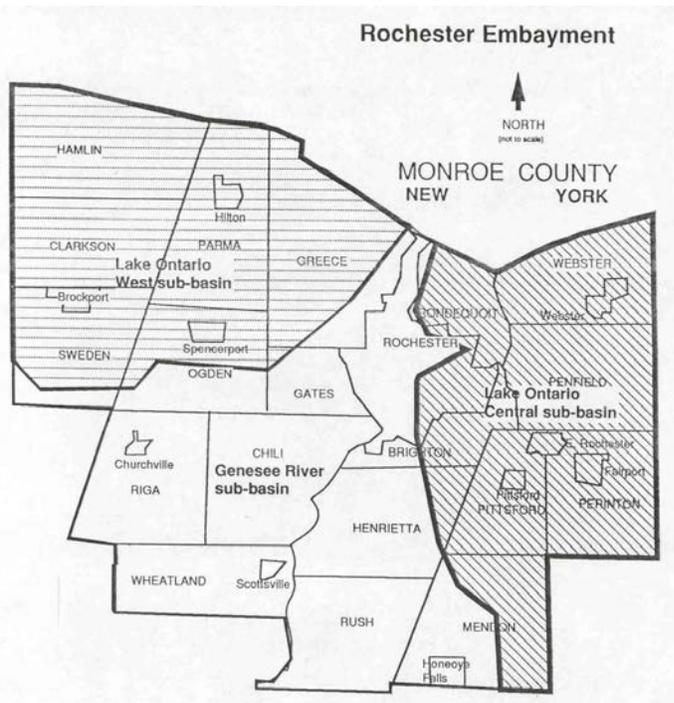
4.2.3 Hydrography and Hydrology

Monroe County creates the landward boundary of the Rochester Embayment of Lake Ontario, a 35-square-mile portion of Lake Ontario between Nine Mile Point in the Town of Webster and Bogus Point in the Town of Parma. At the mouth of the Genesee River, this bay drains approximately 3,000 square miles of upland, including all or parts of ten counties (nine in New York and one in Pennsylvania) including Monroe County. Monroe County drainage into the Rochester Embayment comes from three major sub-basins: The Genesee River Sub-Basin, the Lake Ontario Central Sub-Basin and the Lake Ontario West Sub-Basin.

Figures 4-1 and 4-2 present maps of watersheds in Monroe County.

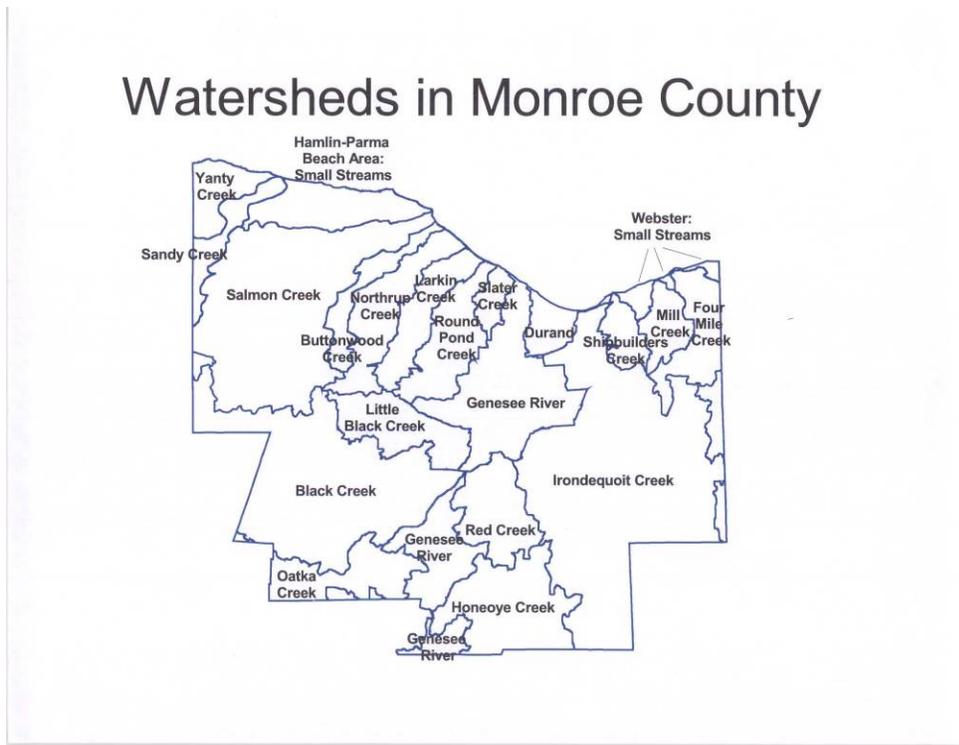


Figure 4-1. Rochester Embayment Watershed and Sub-Basins in Monroe County



Source: Monroe County GIS, 2015

Figure 4-2. Watersheds in Monroe County



Source: Monroe County GIS, 2015





4.2.4 Climate

The climate of Monroe County is fairly humid, and strongly influenced by its proximity to Lake Ontario and the other Great Lakes. Precipitation is regularly distributed across all seasons in terms of quantity, although the frequency of storms is much greater in the winter months when heavy snowfall events occur at highly irregular intervals over varied distances.

Average yearly temperature is about 48.4° Fahrenheit (F). Lake temperatures stabilize the climate through the spring months, resulting in a relatively dry period, although soils remain wet from winter precipitation. Monroe County's summers are typically warm and sunny, with average temperatures between 70 and 72° F and some rain every third or fourth day. Temperatures at any one place in the county normally exceed 90°F roughly nine times each summer. It is uncommon for air temperatures to reach triple digits; however, higher temperatures combined with humidity may lead to days that feel much hotter (NWS Buffalo 2015).

The stabilizing effect of lake waters again leads to mild and dry autumns, but cold weather moves in by late October bringing clouds and early frosts. Monroe County winters are generally cold, cloudy, and snowy. Cold temperatures prevail whenever arctic air masses, under high barometric pressure, flow southward from central Canada or from Hudson Bay (Cornell University, Date Unknown), and about half of the region's snowfall comes from the "lake effect" process, which creates localized, variable conditions. Lake effect snowfall impacts the eastern portion of the county the most, due to wind patterns coming off of Lake Ontario. Total season snowfall ranges from 70 inches in the southern portions of the county to about 90 inches in the City of Rochester, and over 120 inches along the shores of Lake Ontario in the north eastern part of the county. Monroe County's average annual low temperature is 39.5°F (US Climate Data 2015). On average, temperatures fall below 0°F six nights each winter, and temperatures below -10°F are uncommon (NWS Buffalo 2015).

4.2.5 Land Use and Land Cover

The original primeval forest in Monroe County was a mix of several different forest communities. In general, oak dominated on dry slopes while beech was most prevalent in wetter flatland sites. Other common species included shagbark hickory, tulip tree, red maple, and black cherry. Current vegetation consists of agriculture, deciduous hardwood forests such as sugar maple, beech, yellow birch, ash, red maple, and white oak (Ramsey Lab 2015).

Monroe County has four agricultural districts, the largest of which covers the towns of Henrietta, Mendon, Perinton, Penfield, Pittsford, Rush, and Webster; and consists of over 47,673 acres in the eastern portion of the county.

According to the 2014 Monroe Land Use Report published by the Monroe County Department of Planning and Development (MCDPD) Planning Division, the greatest share of land use in Monroe County is residential, with 85.69% of all land cover categorized as one of many residential land use categories. The next largest shares are agricultural with 20.80%, followed by vacant land and commercial, with 6.90% and 4.70%, respectively. Table 4.2 summarizes the land use categories by the total number of parcels, or properties, in each category (Monroe County Department of Planning and Development 2014).



Table 4-2. Monroe County 2014 Land Use Classification Table

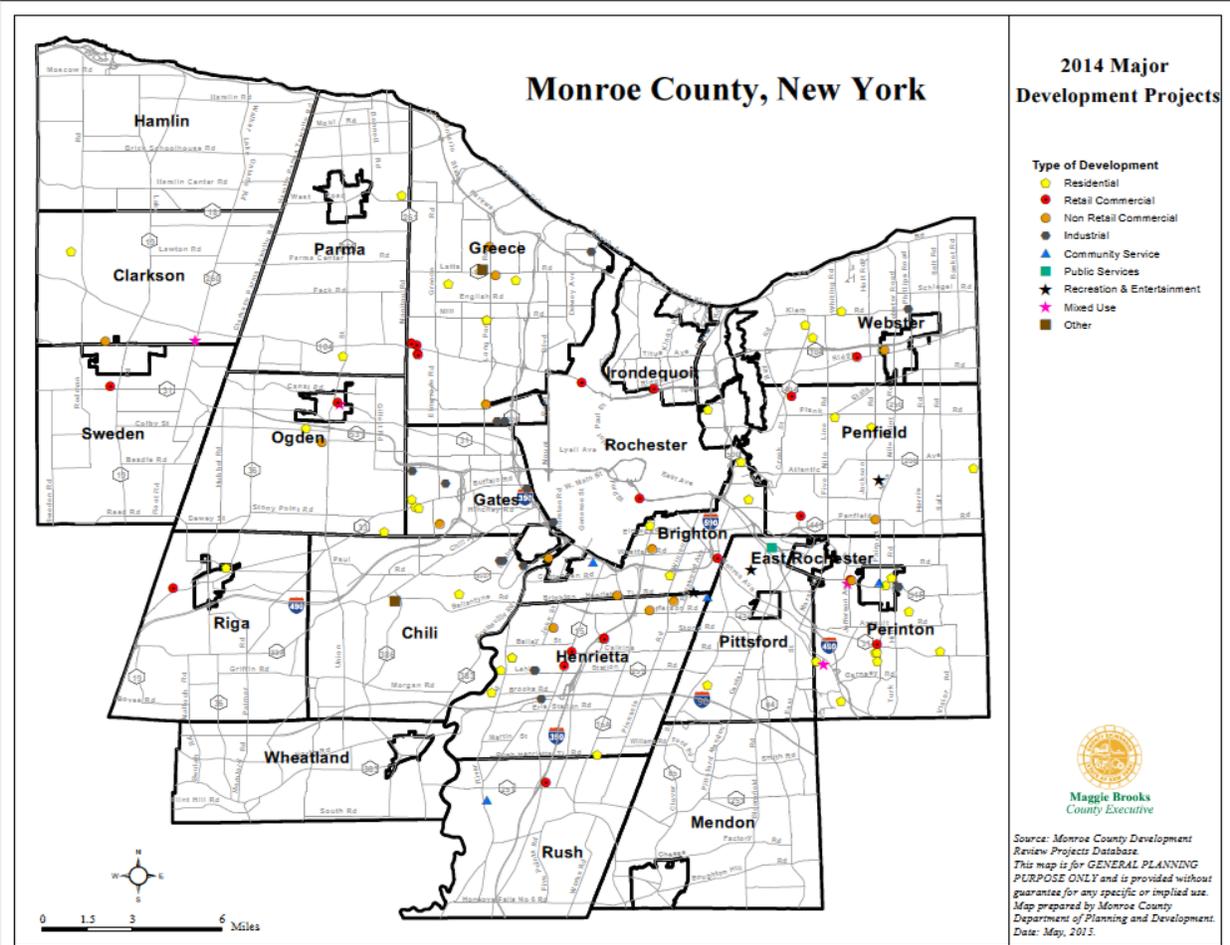
Property Code	Category Description	Property Count	Count %	Property Acreage	Acreage %
100	Agricultural	1,509	0.57%	80939.99314	20.80%
200	Residential	226,066	85.69%	154274.8748	39.65%
300	Vacant land	18,211	6.90%	68156.80262	17.52%
400	Commercial	12,409	4.70%	19103.4749	4.91%
500	Recreation and entertainment	583	0.22%	10636.64835	2.73%
600	Community services	2,002	0.76%	17232.91777	4.43%
700	Industrial	885	0.34%	7547.886552	1.94%
800	Public services	824	0.31%	7480.803416	1.92%
900	Wild, forested, conservation lands and public parks	313	0.12%	16634.73588	4.28%
No Data		1,029	0.39%	7075.767486	1.82%
Total		263,831	100%	389,083.9049	100%

Source: MCDPD 2014

In 2014, county municipalities issued 955 residential permits. There were 105 major projects proposed throughout the county in 2014, 20 of which were applications for rezoning (often indicating future development activity). Residential development made up 40 projects, and the remaining 65 projects were non-residential development. The Town of Henrietta was the host of the most projects, with 16, followed by the Towns of Greece with 15, Perinton with 13, and Brighton with 9. Figure 4-2 shows the major development projects from 2014. Individual development projects are detailed in Section 9 under each appropriate jurisdictional annex. The County uses best available data to avoid any potential hazard overlay. Additionally, the County intends to (1) discourage development within vulnerable areas, areas with high population density, and the Special Flood Hazard Area (SFHA); and (2) encourage higher regulatory standards at the local level.



Figure 4-2. 2014 Major Development Projects



Source: MCDPD 2014



Table 4-3 identifies the number of building permits issued in Monroe County in 2014, and Figure 4-3 shows the major non-residential development projects from 2014.

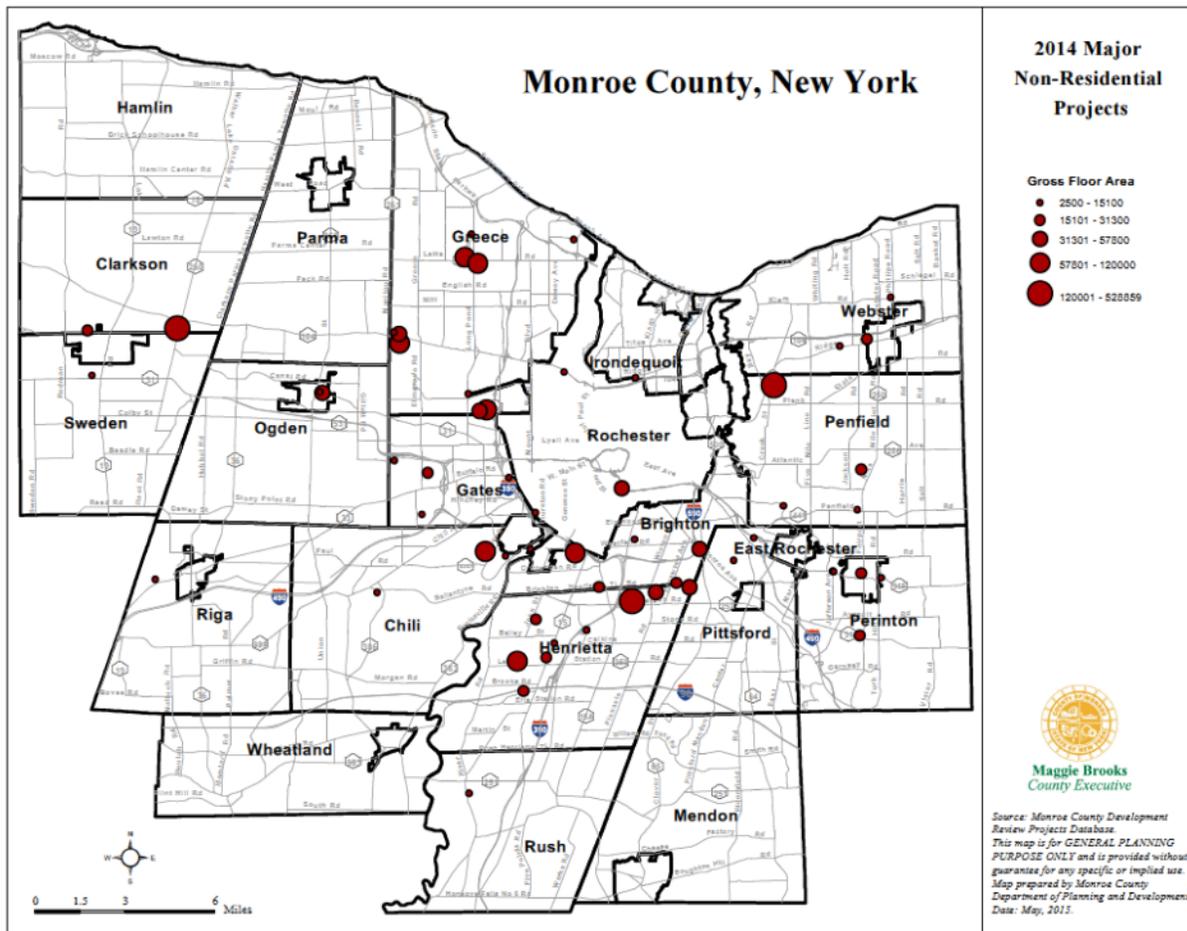
Table 4-3. Monroe County Residential Building Permits, by Municipality, 2014

Municipality	Residential			
	Single Family	Two (2) Family	Three (3) or Four (4) Family	Five (5) or More Family
City of Rochester	Unknown	Unknown	Unknown	Unknown
Town of Brighton	5	3	2	0
Town of Chili	58	0	0	0
Town of Clarkson	16	0	0	9
Town of East Rochester	0	0	0	0
Town of Gates	45	0	0	0
Town of Greece	77	13	0	0
Town of Hamlin	8	0	0	0
Town of Henrietta	111	0	0	0
Town of Irondequoit	4	0	0	0
Town of Mendon	10	0	0	0
Town of Ogden	33	0	0	0
Town of Parma	19	0	0	0
Town of Penfield	112	0	4	0
Town of Perinton	36	1	6	2
Town of Pittsford	33	0	0	0
Town of Riga	4	0	0	0
Town of Rush	3	0	0	0
Town of Sweden	9	0	0	0
Town of Webster	65	8	5	6
Town of Wheatland	9	0	0	0
Village of Brockport	4	0	0	0
Village of Churchville	0	9	0	0
Village of East Rochester	0	0	0	0
Village of Fairport	1	0	0	0
Village of Hilton	3	0	0	0
Village of Honeoye Falls	0	0	1	0
Village of Pittsford	0	0	0	0
Village of Scottsville	0	0	0	0
Village of Spencerport	3	0	2	0
Village of Webster	0	0	0	2
Total	668	34	20	19

Source: MCDPD 2014



Figure 4-3. 2014 Major Non-Residential Development Projects



Source: MCDPD 2014

4.3 Population and Demographics

According to the 2010 U.S. Census, Monroe County had a population of 744,344 people. Approximately 27.2% of that population resides in the City of Rochester. While the overall population of Monroe County has increased by approximately 1.2% since 2000, this growth is not geographically uniform throughout the county, with some areas actually having experienced a decline in population. In fact, the City of Rochester lost about 4% of its population between 2000 and 2013, compared to a 4% increase in the state over that same time. However, the 2010 U.S. Census data for Hazards-U.S. Multi-Hazard (HAZUS-MH) are believed to be sufficient and appropriate to support the risk assessment and mitigation planning efforts of this project.

Consistent with other counties in the region, Monroe County’s population is aging. The largest segment of the population is adults aged 40-59, a share that increased by 4% between 2000 and 2013. The number of people aged 60 to 84 years old increased over that time period by 28%, and the number of seniors over the age of 85 was up 36%. At the same time, the number of young adults is declining, most dramatically the number of people under 20 years old which decreased 11% from 2000 to 2013.

Federal Emergency Management Agency’s (FEMA) Disaster Mitigation Act of 2000 (DMA 2000) requires that hazard mitigation plans (HMP) consider socially vulnerable populations. These populations can be more





susceptible to hazard events based on a number of factors including their physical and financial ability to react or respond during a hazard, and the location and construction quality of their housing. This HMP considers two socially vulnerable population groups: (1) the elderly (persons over the age of 65) and (2) those living below the poverty level (as defined by the U.S. Census Bureau). Table 4-4 presents the population statistics for each municipality in the county based on the 2000 and 2010 Census data.

Table 4-4. Monroe County Population and Demographic Statistics (2000 and 2010 Census)

Municipality	U.S. Census 2010					U.S. Census 2000*				
	Total	Pop. 65+	% Pop. 65+	Below Poverty Level	% Below Poverty Level	Total	Pop. 65+	% Pop. 65+	Below Poverty Level	% Below Poverty Level
City of Rochester	210,565	18,955	9.0%	29,978	14.2%	219,773	21,730	9.9%	34,389	15.6%
Brighton	36,609	6,421	17.5%	2,162	5.9%	35,588	6,899	19.4%	2,288	6.4%
Chili	28,625	4,229	14.8%	960	3.4%	27,638	3,380	12.2%	1,105	4.0%
Clarkson	6,588	851	12.9%	382	5.8%	5,928	667	11.3%	237	4.0%
East Rochester (Town/Village)	6,587	800	12.1%	544	8.3%	6,650	967	14.5%	630	9.5%
Gates	28,400	5,327	18.8%	1,790	6.3%	29,275	5,098	17.4%	2,082	7.1%
Greece	96,095	16,011	16.7%	5,208	5.4%	94,141	14,529	15.4%	5,202	5.5%
Hamlin	9,045	929	10.3%	459	5.1%	9,355	575	6.1%	427	4.6%
Henrietta	42,581	4,964	11.7%	2,509	5.9%	39,028	3,556	9.1%	1,757	4.5%
Irondequoit	51,692	9,802	19.0%	3,706	7.2%	52,354	11,865	22.7%	3,955	7.6%
Mendon	6,478	754	11.6%	18	0.3%	5,775	455	7.9%	126	2.2%
Ogden	16,255	1,971	12.1%	331	2.0%	14,933	1,209	8.1%	400	2.7%
Parma	9,747	1,360	14.0%	314	3.2%	8,966	906	10.1%	318	3.5%
Penfield	36,242	6,342	17.5%	1,094	3.0%	34,645	5,158	14.9%	1,324	3.8%
Perinton	41,109	6,940	16.9%	1,415	3.4%	40,350	4,642	11.5%	1,357	3.4%
Pittsford	28,050	4,909	17.5%	616	2.2%	25,801	3,986	15.4%	566	2.2%
Riga	3,629	434	12.0%	176	4.8%	3,550	322	9.1%	132	3.7%
Rush	3,478	588	16.9%	110	3.2%	3,603	394	10.9%	64	1.8%
Sweden	5,957	765	12.8%	376	6.3%	5,757	606	10.5%	384	6.7%
Webster	37,242	6,028	16.2%	1,424	3.8%	32,710	4,252	13.0%	1,214	3.7%
Wheatland	2,774	378	13.6%	154	5.6%	3,021	392	13.0%	166	5.5%
Village of Brockport	8,366	686	8.2%	661	7.9%	8,103	504	6.2%	634	7.8%
Village of Churchville	1,961	287	14.6%	96	4.9%	1,887	177	9.4%	69	3.7%
Village of Fairport	5,353	811	15.2%	344	6.4%	5,740	695	12.1%	293	5.1%
Village of Hilton	5,886	789	13.4%	164	2.8%	5,856	568	9.7%	220	3.8%
Village of Honeoye Falls	2,674	406	15.2%	191	7.1%	2,595	451	17.4%	191	7.4%
Village of Pittsford	1,355	231	17.0%	31	2.3%	1,418	266	18.8%	46	3.2%
Village of Scottsville	2,001	287	14.3%	68	3.4%	2,128	217	10.2%	90	4.2%
Village of Spencerport	3,601	497	13.8%	215	6.0%	3,559	437	12.3%	150	4.2%
Village of Webster	5,399	842	15.6%	342	6.3%	5,216	714	13.7%	474	9.1%
Monroe County	744,344	103,594	13.9%	55,838	7.5%	735,343	95,617	13.0%	60,290	8.2%

Source: HAZUS-MH 2.2; U.S. Census Bureau, Census 2010; U.S. Census Bureau, Census 2000

It is noted that the Census data for household income provided in HAZUS-MH includes two ranges (\$0-10,000 and \$10,000-\$20,000/year) that were totaled to provide the “low-income” data used in this study. This does not correspond exactly with the “poverty” thresholds established by the 2013 U.S. Census Bureau, which identifies

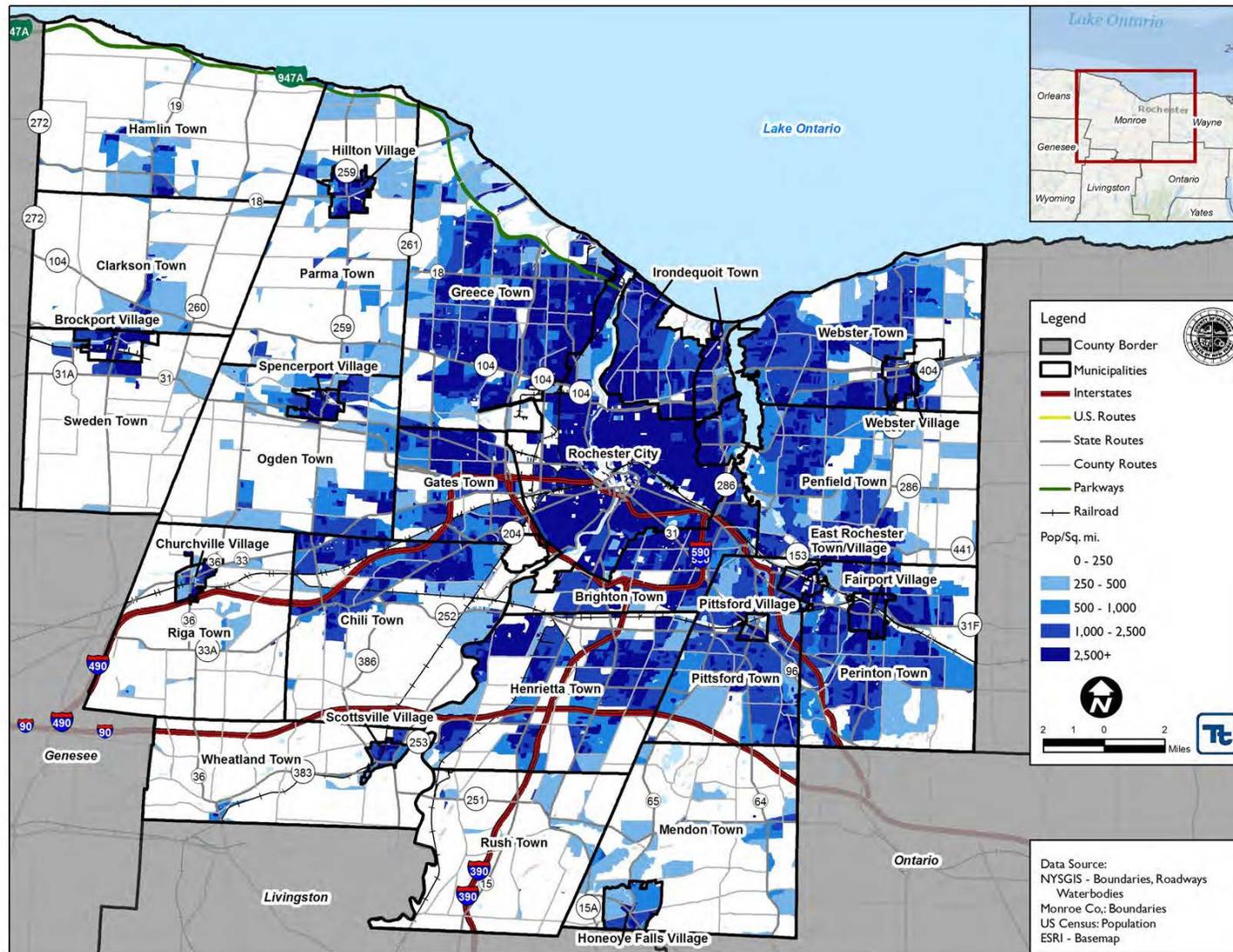


households with three adults and no children with an annual household income below \$18,222 per year, or households with one adult and two children with an annual household income below \$18,769 per year as “low income” for this region. This difference is not believed to be significant for the purposes of this planning effort.

The 2010 U.S. Census data also identified 24% of the 291,195 households as having an annual income of \$25,000 or less. The 2010 U.S. Census data indicate a total of 13.7% of all persons living in households fall below the poverty level. Figures 4-5 through 4-8 show the distribution of the general population density (persons per square mile), elderly population density, low-income population density, and the density of population for those under 16 years old.



Figure 4-4. Distribution of General Population by Census Block for Monroe County

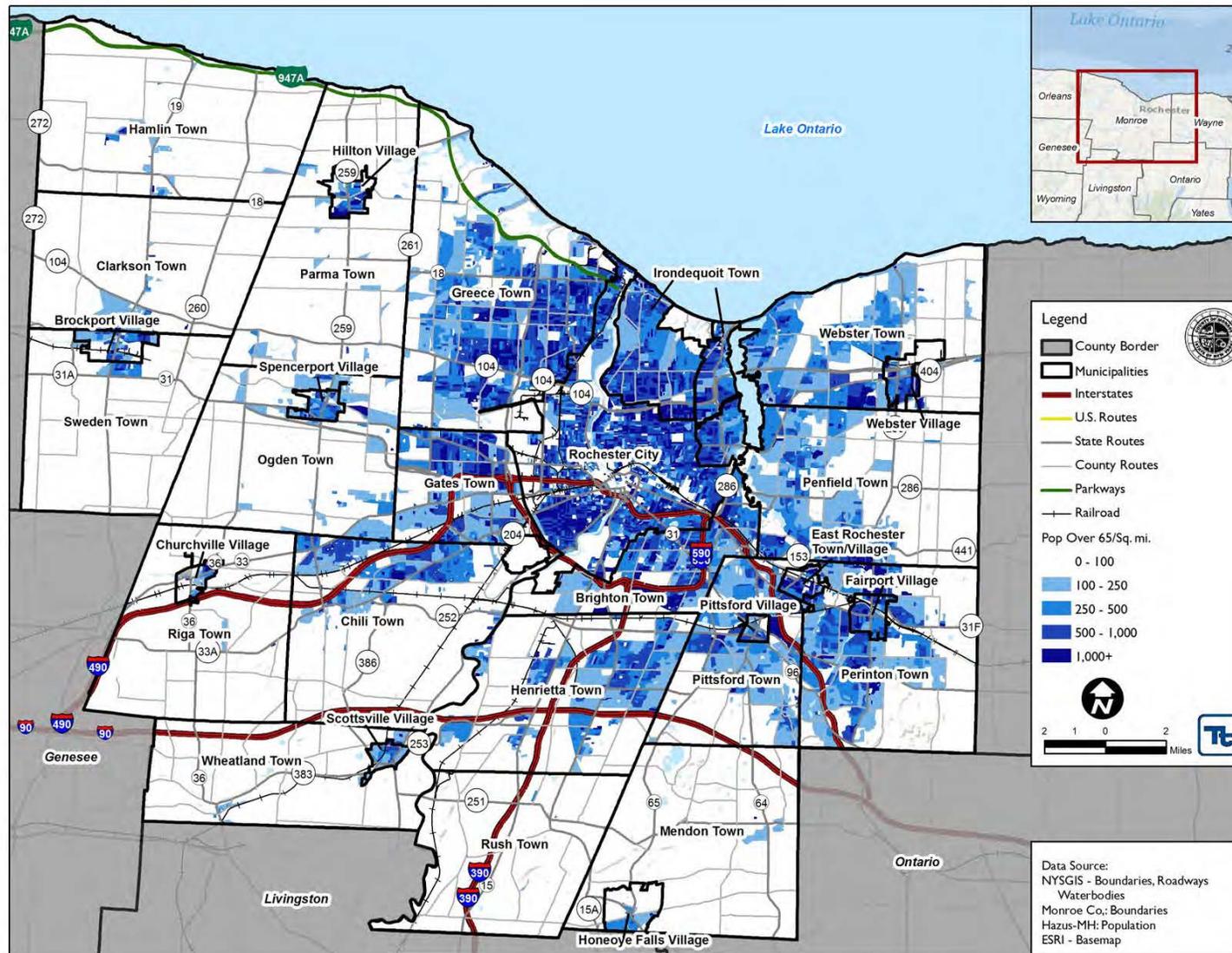


Source: US Census, 2010





Figure 4-5. Distribution of Persons Over 65 by Census Block for Monroe County

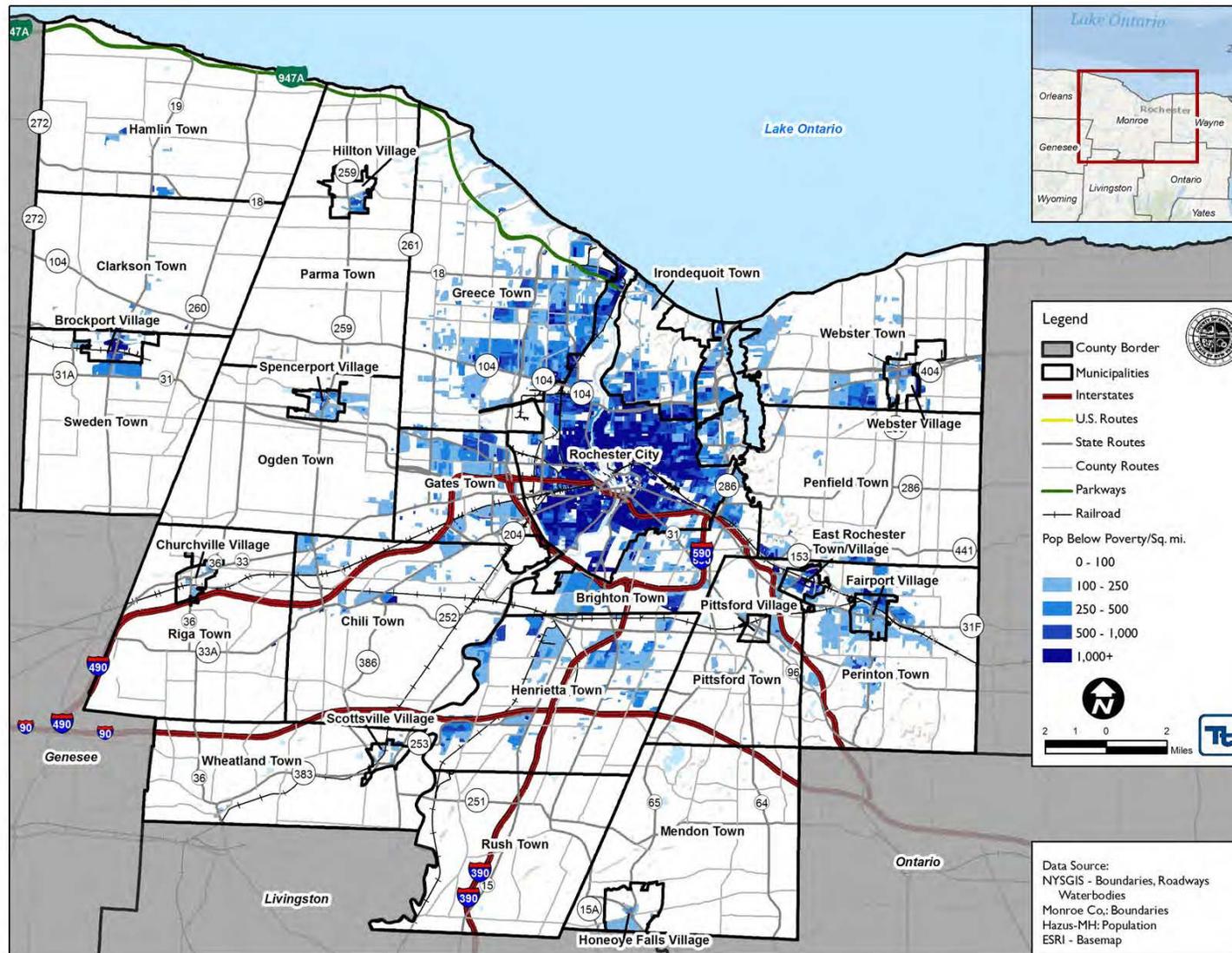


Source: HAZUS-MH 2.2





Figure 4-6. Distribution of Low-Income Population by Census Block for Monroe County

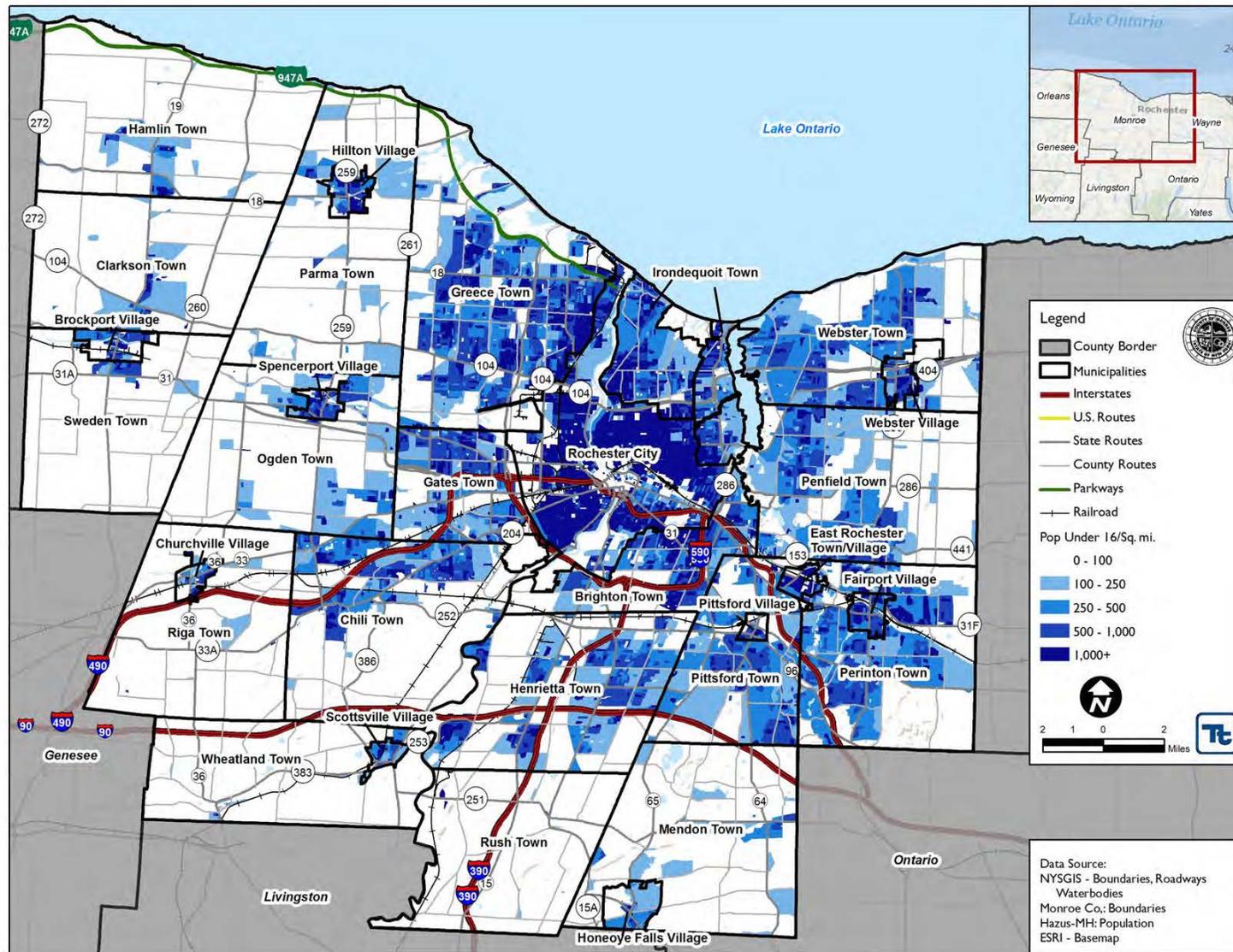


Source: HAZUS-MH 2.2





Figure 4-7. Distribution of Persons under 16 Years Old by Census Block for Monroe County



Source: HAZUS-MH 2.2





4.4 General Building Stock

According to 2010 Census data, 300,422 households are located in Monroe County. A household includes all the people who occupy a housing unit as their usual residence. The Census data identified 320,593 housing units in the county. A housing unit is a house, apartment, mobile home or trailer, a group of rooms, or a single room occupied as separate living quarters (or if vacant, intended for occupancy as separate living quarters). According to the 2009-2013 American Community Survey, the majority of housing units (63.3%) in Monroe County is classified as one-unit detached homes. The median price of a single-family home in Monroe County was estimated at \$136,000 based on the 2009-2013 American Community Survey (U.S. Census 2010; U.S. Census 2013).

For this update, the default general building stock in HAZUS-MH was updated and replaced with a custom building inventory for Monroe County both at the aggregate and structure level. The building stock update was performed using the most current parcel and the New York State Department of Taxation and Finance tax assessment data provided by Monroe County. The tax assessment data was joined to the spatial layer of structure footprints also provided by the county. The replacement cost value was calculated using the square footage value of each building and RS Means 2015 data.

For the purposes of this plan, approximately 240,974 structures were identified by the tax data and spatial data available. These structures account for a replacement cost value of approximately \$279 billion. Estimated content value was calculated by using 50% of the residential replacement cost value, and 100% of the non-residential replacement values. Using this methodology, approximately \$115 billion in contents exist within these properties. Approximately 95.6% of the total buildings in the county are residential, which make up approximately 51.9% of the total building stock value. Table 4-5 presents building stock statistics by occupancy class for Monroe County.



Table 4-5. Building Stock Count and Replacement Cost Value (RCV) by Occupancy Class

Municipality	Total		Residential		Commercial		Industrial	
	Count	RCV	Count	RCV	Count	RCV	Count	RCV
Brighton (T)	10,545	\$18,462,216,409	9,968	\$7,046,188,530	491	\$9,676,174,735	35	\$533,187,000
Brockport (V)	1,604	\$2,035,910,815	1,486	\$871,241,078	83	\$628,941,265	11	\$143,463,000
Chili (T)	9,774	\$8,342,622,610	9,378	\$5,338,237,949	213	\$1,327,791,560	72	\$994,899,000
Churchville (V)	807	\$920,696,714	758	\$410,076,823	28	\$170,997,631	10	\$135,330,000
Clarkson (T)	2,040	\$1,812,049,577	1,950	\$1,219,885,183	61	\$401,326,805	5	\$67,665,000
East Rochester (V/T)	2,495	\$2,846,820,718	2,352	\$1,231,446,161	95	\$877,019,222	25	\$250,236,000
Fairport (V)	2,056	\$2,449,020,743	1,965	\$1,284,895,165	53	\$563,267,726	17	\$233,970,000
Gates (T)	10,550	\$9,547,208,635	9,963	\$4,616,639,488	397	\$3,031,677,767	151	\$1,350,168,000
Greece (T)	32,375	\$25,595,860,286	31,644	\$17,050,053,320	524	\$5,081,446,035	88	\$1,272,135,000
Hamlin (T)	2,808	\$1,737,395,194	2,698	\$1,446,814,185	53	\$104,438,836	6	\$109,026,000
Henrietta (T)	12,657	\$13,259,007,785	11,891	\$6,131,134,132	553	\$3,659,059,970	108	\$1,348,794,000
Hilton (V)	1,884	\$1,664,654,730	1,811	\$908,448,055	50	\$285,747,840	7	\$115,602,000
Honeoye Falls (V)	922	\$1,119,568,668	844	\$526,253,874	49	\$128,415,150	14	\$189,495,000
Irondequoit (T)	19,765	\$16,075,218,322	19,297	\$10,375,160,021	354	\$3,436,559,269	38	\$692,055,000
Mendon (T)	2,366	\$2,996,719,632	2,237	\$2,117,747,616	62	\$665,963,344	7	\$127,197,000
Ogden (T)	5,331	\$4,469,332,464	5,170	\$3,182,295,127	66	\$272,657,680	43	\$499,611,000
Parma (T)	3,743	\$2,595,035,929	3,574	\$2,194,694,902	106	\$157,217,702	12	\$206,457,000
Penfield (T)	13,077	\$14,501,168,927	12,611	\$8,920,874,894	335	\$3,974,793,040	33	\$531,630,000
Perinton (T)	14,901	\$17,896,609,894	14,497	\$10,397,325,070	280	\$5,773,279,227	62	\$798,132,000
Pittsford (T)	9,159	\$12,295,191,719	8,929	\$7,896,872,675	138	\$2,704,811,933	33	\$415,680,000
Pittsford (V)	656	\$2,204,429,074	565	\$397,658,242	77	\$1,598,515,720	2	\$36,342,000
Riga (T)	1,271	\$1,283,085,436	1,188	\$741,007,777	30	\$28,924,073	14	\$219,609,000
Rochester (C)	58,996	\$94,424,953,585	55,232	\$37,268,163,781	2,627	\$38,062,250,027	569	\$7,022,214,000
Rush (T)	1,433	\$1,453,693,815	1,327	\$911,736,157	42	\$222,536,186	13	\$178,248,000
Scottsville (V)	747	\$706,870,704	708	\$375,688,565	22	\$19,290,188	7	\$75,798,000





Municipality	Total		Residential		Commercial		Industrial	
	Count	RCV	Count	RCV	Count	RCV	Count	RCV
Spencerport (V)	1,253	\$1,862,825,476	1,177	\$713,008,041	49	\$851,274,271	8	\$163,539,000
Sweden (T)	1,986	\$1,771,453,297	1,873	\$1,141,267,373	83	\$218,984,053	11	\$206,457,000
Webster (T)	13,477	\$11,420,618,527	13,145	\$8,688,367,650	230	\$1,098,665,365	45	\$645,327,000
Webster (V)	1,305	\$1,799,326,797	1,181	\$700,926,452	92	\$508,976,893	13	\$173,229,000
Wheatland (T)	991	\$1,061,455,206	883	\$523,460,652	38	\$64,564,167	21	\$278,793,000
Monroe County (Total)	240,974	\$278,611,021,689	230,302	\$144,627,568,939	7,281	\$85,595,567,677	1,480	\$19,014,288,000

Source: Monroe County

Notes: Industrial includes buildings associated with public utilities parcels (categorized as IND5)

C: City

T: Town

V: Village

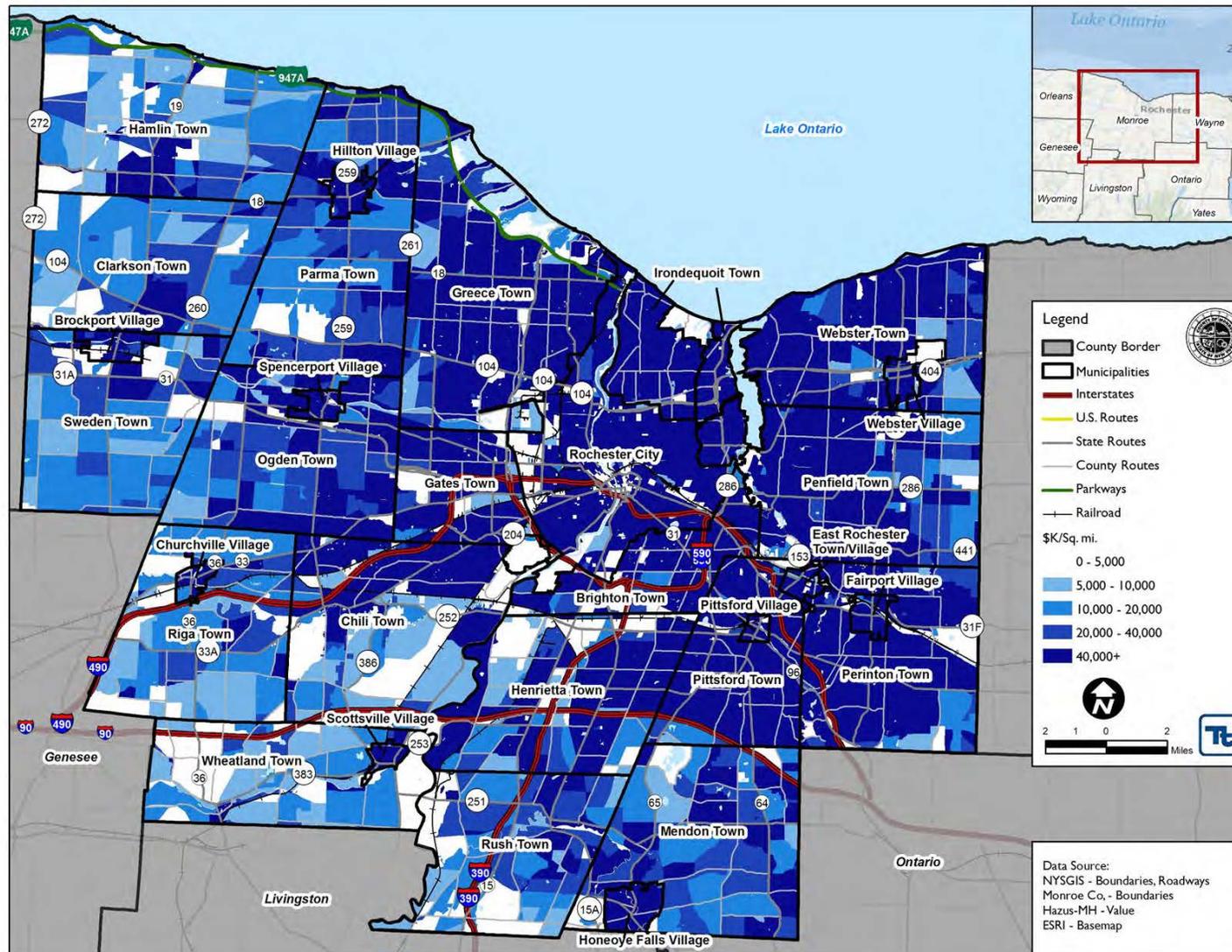


The 2013 American Community Survey data identified that the majority of housing units (63.3% or 203,031 units) in Monroe County are single-family detached units. The 2013 U.S. Census Bureau's County Business Patterns data identified 532,669 business establishments employing approximately 7.7 million people in Monroe County. The retail trade industry has the most number of establishments in the county, with 78,052. This is followed by the professional, scientific, and technical services industry with 60,406 establishments, and the health care and social assistance industry with 56,770 establishments (U.S. Census 2013).

Figure 4-9 through Figure 4-11 show the distribution and exposure density of residential, commercial, and industrial buildings in Monroe County based on the New York State Department of Taxation and Finance Property Class Code. Exposure density is the dollar value of structures per unit area, including building content value. The densities are shown in units of \$1,000 (\$K) per square mile. Viewing exposure distribution maps, such as those used for Figures 4-9 through 4-11, can assist communities in visualizing areas of high exposure and in evaluating aspects of the study area in relation to the specific hazard risks.



Figure 4-8. Distribution of Residential Building Stock and Value Density in Monroe County

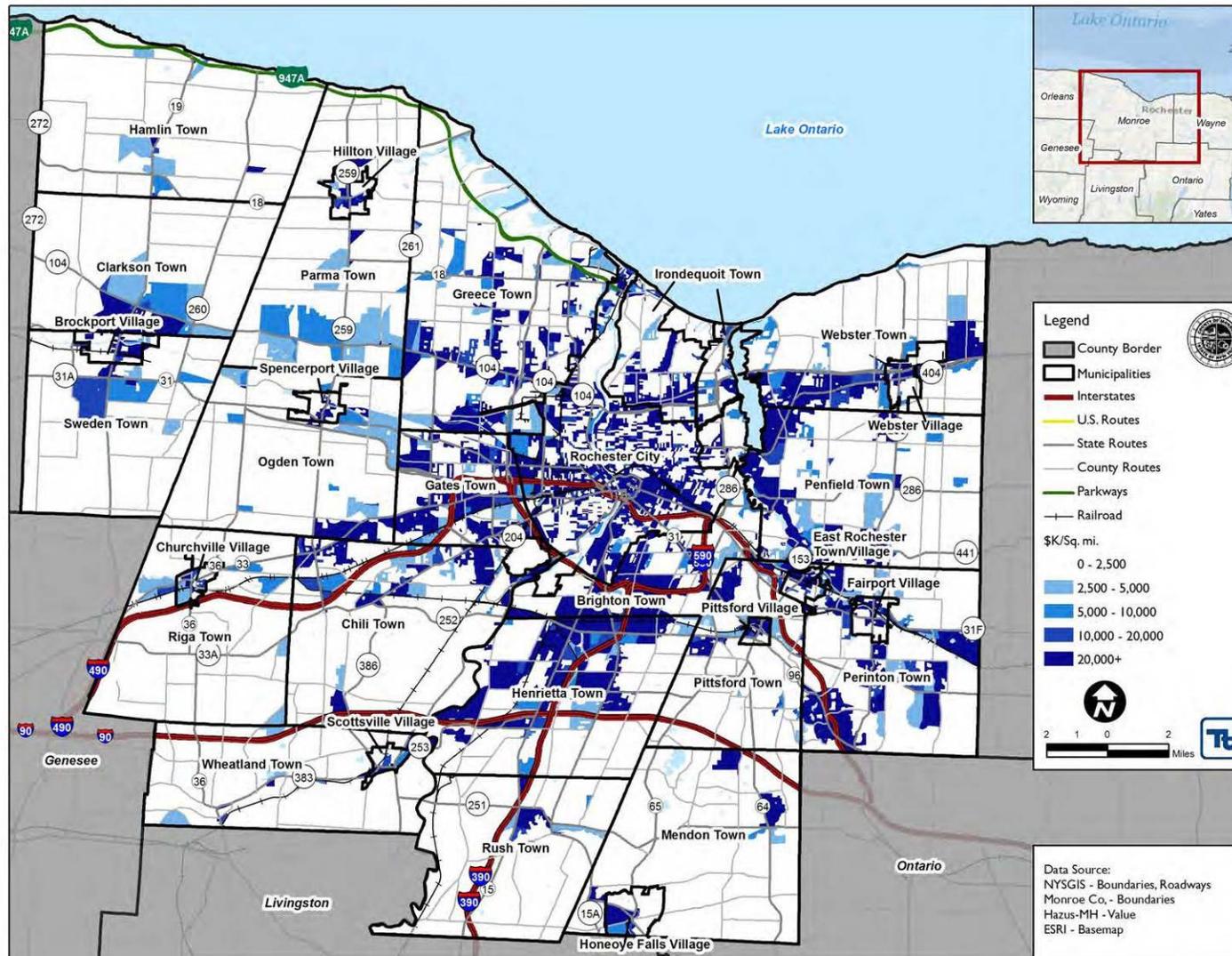


Source: HAZUS-MH 2.2





Figure 4-9. Distribution of Commercial Building Stock and Value Density in Monroe County

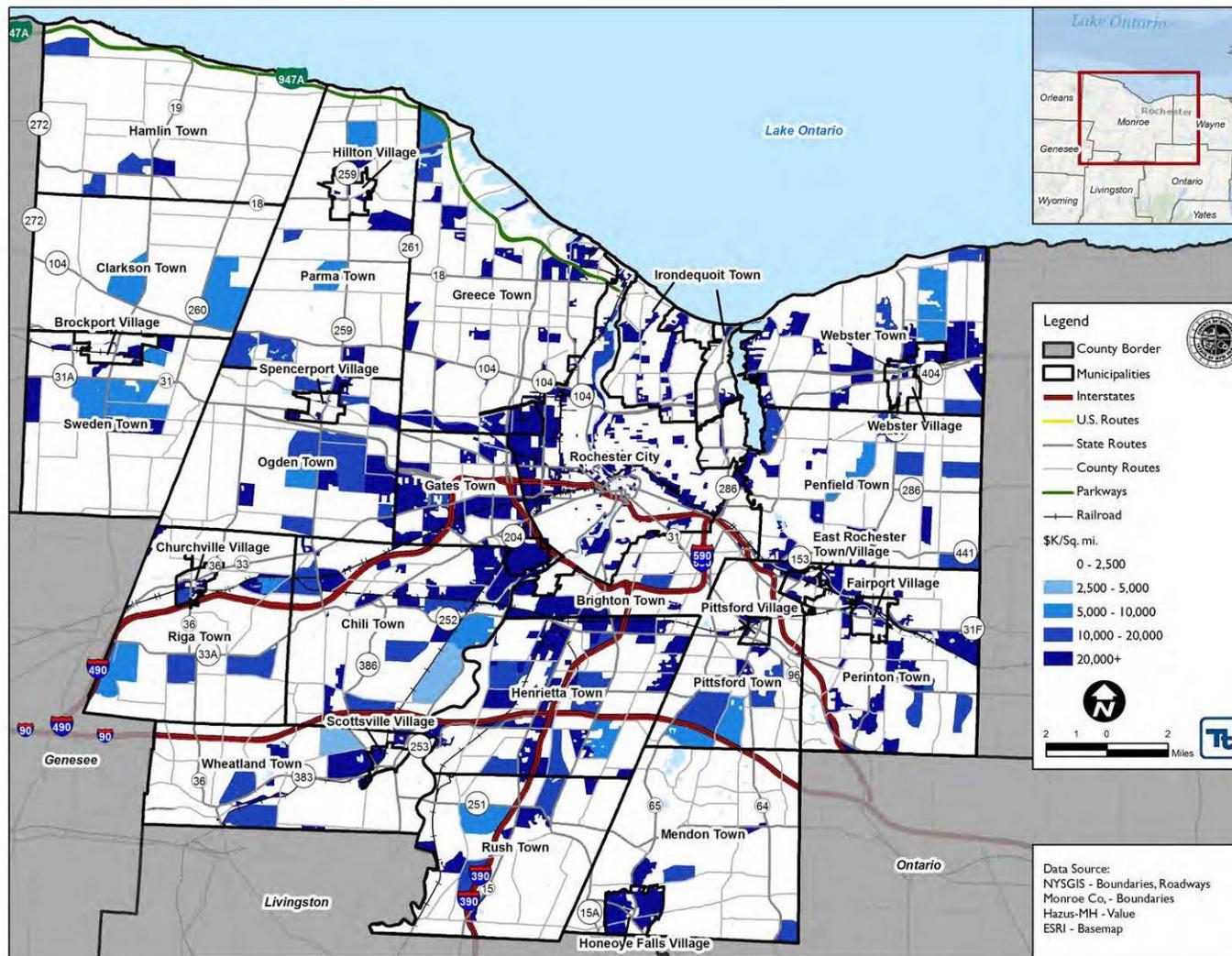


Source: HAZUS-MH 2.2





Figure 4-10. Distribution of Industrial Building Stock and Value Density in Monroe County



Source: HAZUS-MH 2.2

Notes: Industrial includes buildings associated with public utilities parcels (categorized as IND5)





4.5 Land Use and Population Trends

In New York State, land use regulatory authority is vested in towns, villages, and cities. However, many development and preservation issues transcend local political boundaries. DMA 2000 requires that communities consider land use trends, which can impact the need for, and priority of, mitigation options over time. Land use trends can also significantly impact exposure and vulnerability to various hazards. For example, significant development in a hazard area increases the building stock and population exposed to that hazard.

This section provides a general overview of land use and population trends, and types of development occurring within the county. An understanding of these development trends can assist in planning for further development and ensuring that appropriate mitigation, planning, and preparedness measures are in place to protect human health and community infrastructure.

4.5.1 Land Use Trends

Monroe County is an urbanizing county, and the most populated county in the nine-county Genesee/Finger Lakes region. Monroe County contains major employers, human services providers, schools and colleges, retail and service businesses, recreational sites, and tourist attractions. Most county and state facilities, as well as regional and national retailers, are located in and around the City of Rochester. The county is home to two Fortune 500 companies – Kodak and Xerox – both of which have significant holdings and operations in the county. The headquarters of both Kodak and Bausch & Lomb, widely known for high quality optical equipment, are located in the City of Rochester. Agriculture is also a major business in Monroe County.

Monroe County municipalities have roughly 13,400 acres of land available for development, and approximately 3.6 million square feet allowed for commercial development. The 2014 Genesee/Finger Lakes Regional Planning Council (GFLRPC) Regional Development Analysis states that between 27.4 and 33 percent of those available acres are projected to be developed as residential lots, and between 525,000 and 1.2 million square feet of commercial space is projected to be developed by 2020 (GFLRPC 2014).

Agriculture

Agriculture in Monroe County has undergone significant changes in recent decades as expanding non-farm development put pressure on land owners for farmland conversion, profitability of certain agricultural markets decreased, and more. According to the 2012 Census of Agriculture, the number of farms in Monroe County has decreased 19%, total farm land is down 26%, and the average size of each farm is down 8% since 2007. Between 2007 and 2012, the number of farms dropped from 585 to 475, for a total reduction of land in farms of 34,365 acres. Even so, the market value of products sold in the Monroe County agricultural economies increased by 25% between 2007 and 2012. Combined with a reduced number of farms operating, this increase marked a 54% increase in average market value of products sold per farm.

The county has a well-developed vegetables, melons, potatoes, and sweet potatoes sector, and is ranked sixth in the state on value of sales by this commodity group. Additionally, Monroe County ranks fourth in the state, and 87th in the nation, for the value of its cut Christmas trees and short rotation woody crops sales (Census of Agriculture 2012).

Monroe County is divided in four agricultural districts that are made up of nearly 140,000 acres of farmland. The 1999 Monroe County Farmland Protection Plan states that these districts contain 73 percent (81,507 acres) of Monroe County's agricultural land, as well as much of the land identified as having high-to-medium viability for farming. These districts also contain 76 percent of all field crop land, 73 percent of all agricultural vacant land, and 63 percent of all truck crop land, and have been identified in this plan as the agricultural lands under



the most conversion pressure. The purpose of the Agricultural Districts Program is to keep farmland in agricultural production by providing agricultural landowners with benefits and protections (Monroe County 2015).

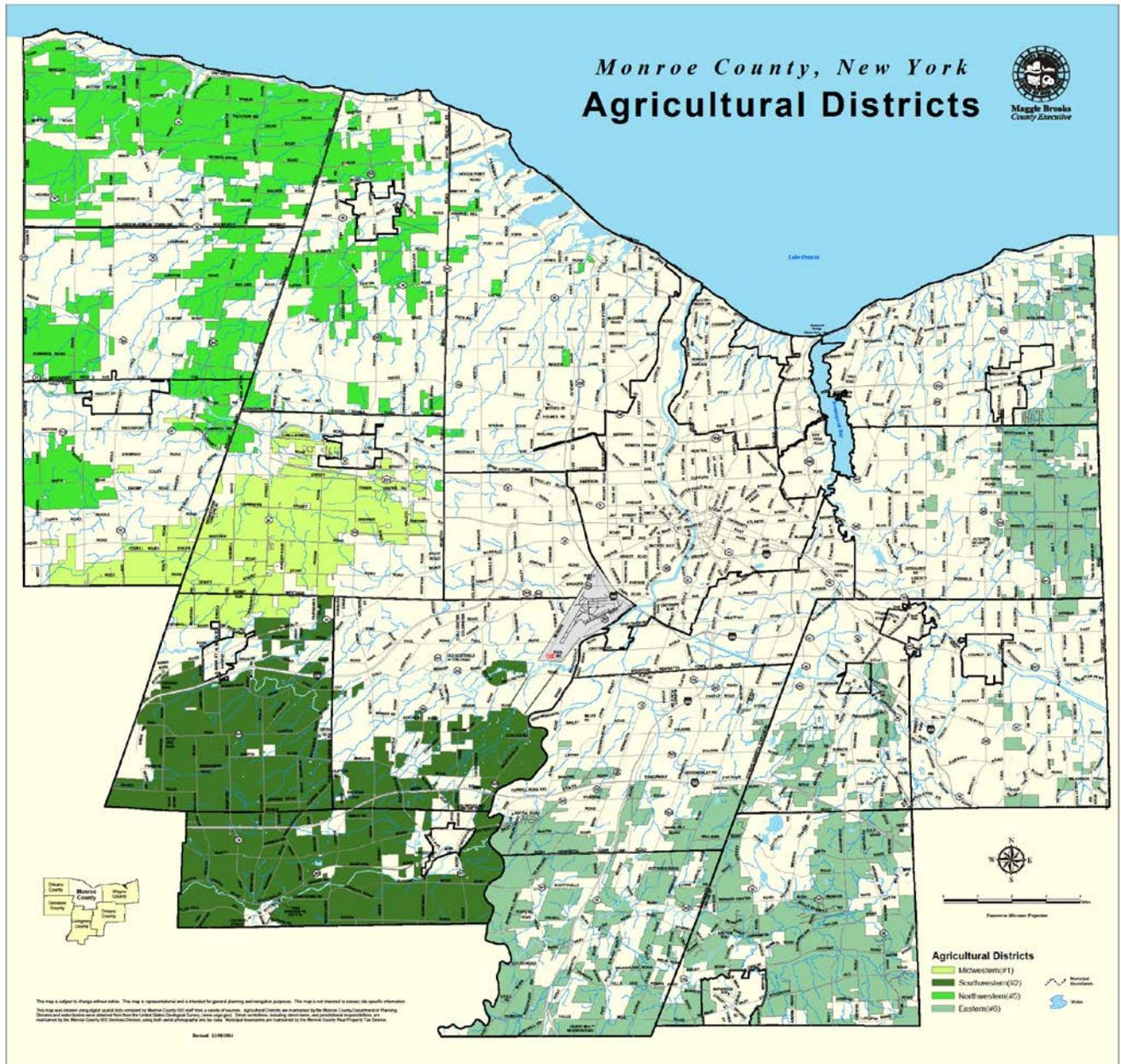
The Districts include:

- Midwestern Agricultural District (#1) – includes 16,112 acres in the Towns of Sweden (part), Ogden (part) and Riga (part)
- Southwestern Agricultural District (#2) – includes 36,689 acres Towns of Chili, Riga (part) and Wheatland
- Northwestern Agricultural District (#5) – includes 38,570 acres Hamlin, Clarkson, Sweden (part), Parma, Greece and Ogden (part)
- Eastern Agricultural District (#6) –includes 47,673 acres in the Towns of Henrietta, Mendon, Perinton, Penfield, Pittsford, Rush, Webster (Monroe County 2015).

Figure 4-12 illustrates the districts across the county.



Figure 4-12. Monroe County Agricultural Districts



Source: Monroe County 2015

Economy

Monroe County supplied 68% of the region’s jobs in 2013, anchoring the region’s economy. Overall, Monroe County lost 1% of its jobs since 2000; however 2013 was the third consecutive year in which the number of jobs increased slightly. In 2013, the largest sectors in Monroe County each supplied about 15% of the county’s jobs: health care and social assistance, trade, transportation and utilities, and professional and business services. The fifth largest sector was manufacturing, though the county lost 45% of its manufacturing jobs from 2000 to 2013, reflecting the steady shrinkage of such jobs around the region and state. Most of the losses in the manufacturing sector were made up in the burgeoning educational services sector, which grew by roughly 39% to constitute 7% of the county’s jobs in 2013 (Center for Governmental Research 2015).





4.5.2 Population Trends

This section discusses population trend information used to estimate future shifts that could significantly change the character of the area. Population trends can provide a basis for making decisions on the type of mitigation approaches to consider and the locations in which these approaches should be applied. This information can also be used to support planning decisions regarding future development in vulnerable areas.

According to both the 2000 and the 2010 U.S. Census figures described by the Genesee/Finger Lakes Regional Planning Council (Genesee/Finger Lakes Regional Planning Council 2013), Monroe County experienced a 1.2% increase in population, from 735,343 in 2000 to 744,344 in 2010. The change in population and demographics since 2000 has not been consistent across the county. Municipal population changes in Monroe County have ranged from +13.9% (Town of Webster) to -8.2% (Town of Wheatland).

Monroe County’s population has increased over most decades since 1960, having gained 21.4% of its population from 1960 to 1970, losing 1.4% between 1970 to 1980, gaining 1.7% by 1990, 3.0% between 1990 and 2000, and 1.2% between 2000 and 2010. This gradual overall increase in population is expected to continue, though at a lower rate, through 2050, as shown in Table 4-6. The regional population estimates used a log-linear projection of population to forecast future population trends. The mathematical model is described in the methodology section of the Regional Population Forecasts document (Genesee/Finger Lakes Regional Planning Council 2013).

Table 4-6. Population Growth Projections

Population and Projections	Historical						Projected			
	1960	1970	1980	1990	2000	2010	2020	2030	2040	2050
Monroe County	586,387	711,917	702,238	713,968	735,343	744,344	751,697	757,932	763,343	768,124
Town of Brighton	27,849	35,065	35,776	34,455	35,588	36,609	36,754	36,877	36,984	37,078
Town of Chili	11,237	19,609	23,676	25,178	27,638	28,625	29,443	30,138	30,742	31,277
Town of Clarkson	2,339	3,642	4,016	4,417	5,928	6,588	6,627	6,660	6,688	6,714
Village of Brockport (Part)	0	0	0	100	144	148	166	183	196	208
T/V of East Rochester	8,152	8,347	7,596	6,932	6,650	6,587	6,479	6,386	6,306	6,234
Town of Gates	13,755	26,442	29,756	28,583	29,275	28,400	29,647	30,705	31,626	32,441
Town of Greece	48,670	75,136	81,367	90,106	94,141	96,095	97,929	99,486	100,840	102,035
Town of Hamlin	2,755	4,167	7,675	9,203	9,355	9,045	9,627	10,122	10,552	10,933
Town of Henrietta	11,598	33,017	36,134	36,376	39,028	42,581	44,290	45,741	47,003	48,120
Town of Irondequoit	55,337	63,675	57,648	52,377	52,354	51,692	51,427	51,200	51,002	50,825
Town of Mendon	1,759	2,293	3,024	4,505	5,775	6,478	6,554	6,620	6,676	6,726
Village of Honeoye Falls	2,143	2,248	2,410	2,340	2,595	2,674	2,677	2,681	2,682	2,685
Town of Ogden	4,801	8,807	11,269	13,306	14,933	16,255	16,576	16,849	17,087	17,297
Village of Spencerport	2,461	2,929	3,424	3,606	3,559	3,601	3,667	3,722	3,771	3,813
Town of Parma	4,943	8,308	8,434	8,657	8,966	9,747	9,777	9,801	9,823	9,843
Village of Hilton	1,334	2,440	4,151	5,216	5,856	5,886	6,202	6,470	6,703	6,909
Town of Penfield	12,601	23,782	27,201	30,219	34,645	36,242	37,239	38,085	38,822	39,472
Town of Perinton	7,593	21,609	32,359	37,072	40,350	41,109	43,202	44,980	46,528	47,896
Village of Fairport	5,507	6,474	5,970	5,943	5,740	5,353	5,397	5,435	5,467	5,497
Town of Pittsford	8,469	18,441	21,052	23,009	25,801	28,050	28,558	28,989	29,364	29,695
Village of Pittsford	1,749	1,755	1,568	1,488	1,418	1,355	1,346	1,338	1,330	1,324
Town of Riga	1,797	2,681	2,910	3,383	3,550	3,629	3,724	3,805	3,874	3,936



Population and Projections	Historical						Projected			
	1960	1970	1980	1990	2000	2010	2020	2030	2040	2050
Village of Churchville	1,003	1,065	1,399	1,731	1,887	1,961	2,004	2,041	2,072	2,100
City of Rochester	318,611	296,233	241,741	231,636	219,773	210,565	206,076	202,253	198,925	195,975
Town of Rush	2,555	3,287	3,001	3,217	3,603	3,478	3,569	3,647	3,715	3,775
Town of Sweden	1,968	3,583	5,083	5,432	5,757	5,957	6,166	6,345	6,500	6,637
Village of Brockport (Part)	5,256	7,878	9,776	8,749	7,959	8,218	7,642	7,152	6,725	6,348
Town of Webster	13,374	19,702	23,426	26,175	32,710	37,242	38,465	39,503	40,406	41,205
Village of Webster	3,060	5,037	5,499	5,464	5,216	5,399	5,488	5,565	5,631	5,690
Town of Wheatland	1,848	2,298	3,108	3,181	3,021	2,774	2,931	3,065	3,181	3,284

Source: Genesee/Finger Lakes Regional Planning Council 2013

4.6 Critical Facilities

A comprehensive inventory of critical facilities in Monroe County was developed from various sources including input from the Planning Committees. The inventory of critical facilities presented in this section represents the current state of this effort at the time of publication of the HMP, and was used for the risk assessment in Section 5. Where analysis determined a jurisdiction to contain critical facilities within the 1% and 0.2% annual chance floodplain or otherwise at risk from flood damage, mitigation actions were developed to reduce the risk to these facilities. Each relevant jurisdictional annex contains information on critical facility loss estimates and where appropriate, mitigation actions for critical facilities in the floodplain or other hazard areas. For full detailed lists of the critical facilities, please refer to Appendix H.

4.6.1 Essential Facilities

This section provides information on emergency facilities, hospital and medical facilities, schools, shelters and senior care and living facilities. For the purposes of this Plan, emergency facilities include police, fire, emergency medical services (EMS) and emergency operations centers (EOC).

Figure 4-11 displays the location of the essential facilities in Monroe County.

Emergency Facilities

The Monroe County Office of Emergency Management (OEM) is organized into four main tiers: Operations, Planning, Logistics, and Administrative/Financial. The operations tier includes all emergency operations including police, fire/EMS, public works, transportation, and sheltering. The OEM is responsible for aiding communities in emergency planning and response, as well as providing the training and equipment for the county’s first responders and volunteers. OEM operates an Emergency Operations Center in the City of Rochester, which is a specially designed facility where public organizations and private-sector agencies meet to decide and coordinate emergency response to community-wide disasters. Additionally, the OEM funds a 24-hour 9-1-1 Center and oversees the operation of the Emergency Communications Department (ECD), operated by the City of Rochester under contract with the county.

The OEM develops, maintains, and executes Monroe County’s Comprehensive Emergency Management Plan for disaster relief before, during, and after any type of natural or man-made disaster (or a war-time situation). The OEM also assists towns and villages in the preparation of their emergency response plans. With guidance from FEMA, OEM develops and continually reviews the Monroe County Radiological Emergency Preparedness Plan (MCREPP) in case of an incident at the Ginna nuclear power plant, and conducts multiple exercises annually to test its REPP.



There are 52 fire departments in Monroe County serving all of the county's municipalities. Police enforcement and public safety is maintained by the New York State Police Department, Monroe County Police and local departments. The Monroe County Sheriff's Office operates two jails and six stations; it also has three boats. The Sheriff's Office patrols towns within Monroe County that do not have their own police patrols, and is responsible for primary police patrols at the Greater Rochester International Airport as well as the many parks throughout the county.

Hospitals and Medical Facilities

The county has multiple hospitals and health care facilities ranging in size and primary function to include smaller community health centers and the larger, regional Strong Memorial Hospital. Hospitals in Monroe County consist of three "systems" – University of Rochester Medical Center, including Strong Memorial Hospital and Highland Hospital; Rochester General Health System, including Rochester General Hospital; and Unity Health System, including Unity Hospital (former Park Ridge Hospital) and the Genesee Street campus (formerly St. Mary's Hospital). All three systems have associated nursing homes, health centers or clinics, and hospital-sponsored medical practices (Monroe County 2013).

Monroe County is also served by a network of federally qualified Community Health Centers (FQHCs) – Jordan, (sites at Holland Street, Woodward, and Brown Square) and Oak Orchard. Inner-city Rochester FQHCs include Clinton Family Health Center, Genesee Health Center, Northeast Health Services, Orchard Street Community Health Center, and Unity Family Medicine Center. St. Joseph's Neighborhood Center and the Mercy Outreach Center, also in the city, are free clinics primarily serving individuals who are uninsured (Monroe County 2013b).

For non-emergency health care needs, a number of "urgent care centers" are located throughout the county. Some of these clinics are open 24 hours per day, and most have evening and weekend hours. In 2013, there were 28 Urgent Care Centers in Monroe County (Monroe County 2013b).

Schools

There are 163 public and 61 private primary educational facilities (elementary, middle and high schools) and 20 secondary educational facilities (colleges and universities) located in Monroe County. In times of need, schools can function as shelters and are an important resource to the community. For information regarding shelters, see the Shelters subsection of this document below.

Senior Care and Living Facilities

The county has an extensive system of programs and services for the senior population, including 28 adult residential care homes, 78 nursing facilities, and 28 assisted living facilities (NYS 2015). These facilities are highly vulnerable to potential impacts from disasters, and knowing the location and numbers of these types of facilities will be effective in managing a response plan pre- and post-disaster.

Shelters

With support and cooperation of the American Red Cross and local jurisdictions, the county references an inventory of suitable shelter locations and can assist with the coordination and communication of shelter availability as necessitated by the execution of local municipal emergency operation plans. There are 70 designated shelter facilities in Monroe County, with a total evacuation capacity of 32,122 and a post-evacuation capacity of 16,005. County-wide sheltering policies and procedures are documented in the following plans, which are maintained by the Monroe County OEM:

- Monroe County Comprehensive Emergency Management Plan



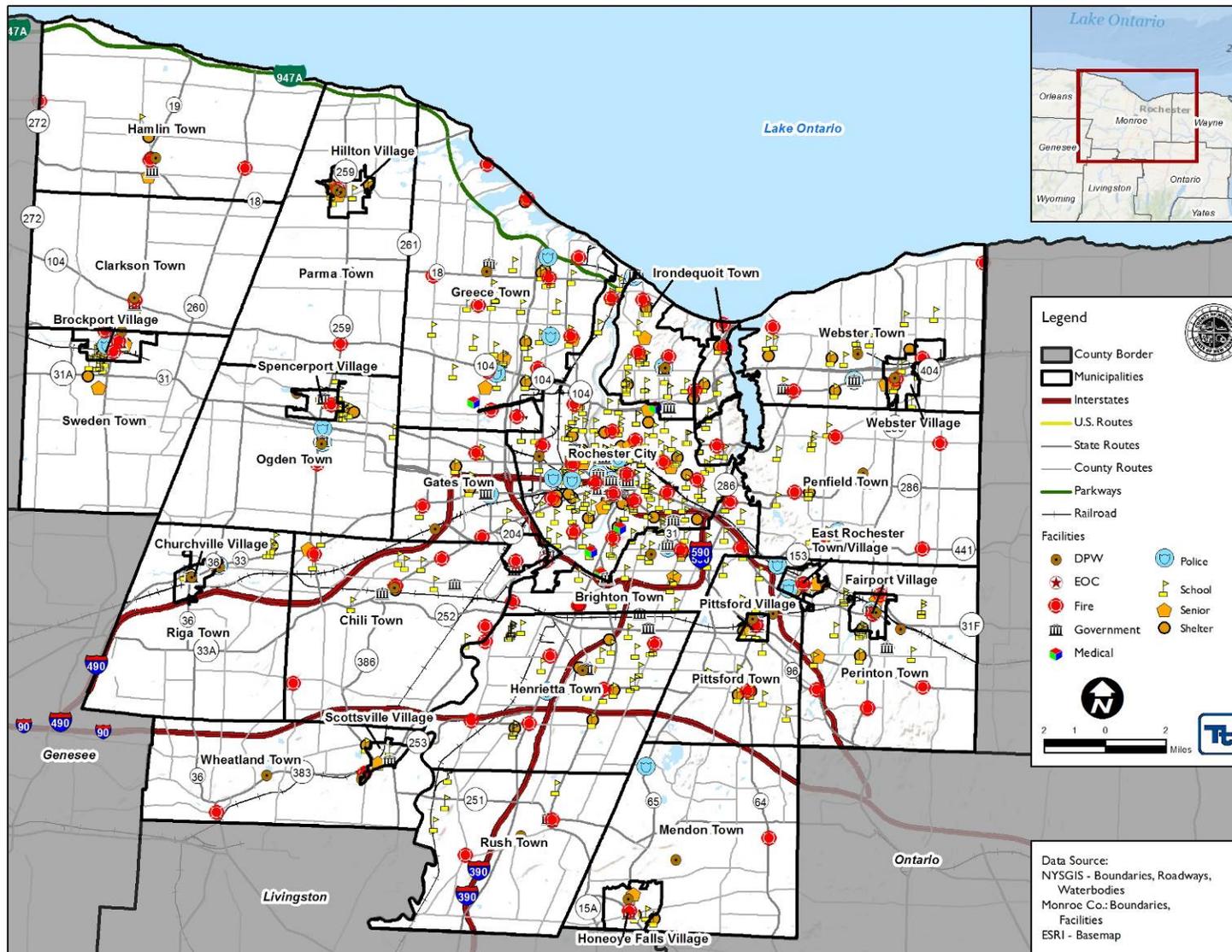
- Monroe County Comprehensive Emergency Management Plan, Mass Sheltering Plan Annex – January, 2013
- Monroe County Radiological Emergency Preparedness Plan (MCREPP)

Evacuation Routes

The county has identified evacuation zones for severe weather, maintains specific evacuation plans for radiological emergencies associated with the Ginna Nuclear Power Plant, and can assist with the coordination and communication of evacuation routing as necessitated by the execution of local municipal emergency operation plans.



Figure 4-11. Essential Facilities in Monroe County



Source: Monroe County, HAZUS-MH





4.6.2 Transportation Systems

Monroe County's location and extensive transportation network offer residents and employees various options for transportation throughout the county and the region. The transportation system includes an extensive network of roads, access to national and commuter rail, countywide bus service, an airport providing domestic and international flights, and a commercial shipping port. Figure 4.614 shows the regional transportation systems found in Monroe County.

Major transportation routes through Monroe County include Interstate Routes 90, 490, 590, 390, and 531 (see Figure 4.6 below); and navigable waterways including the Erie Canal and Lake Ontario.

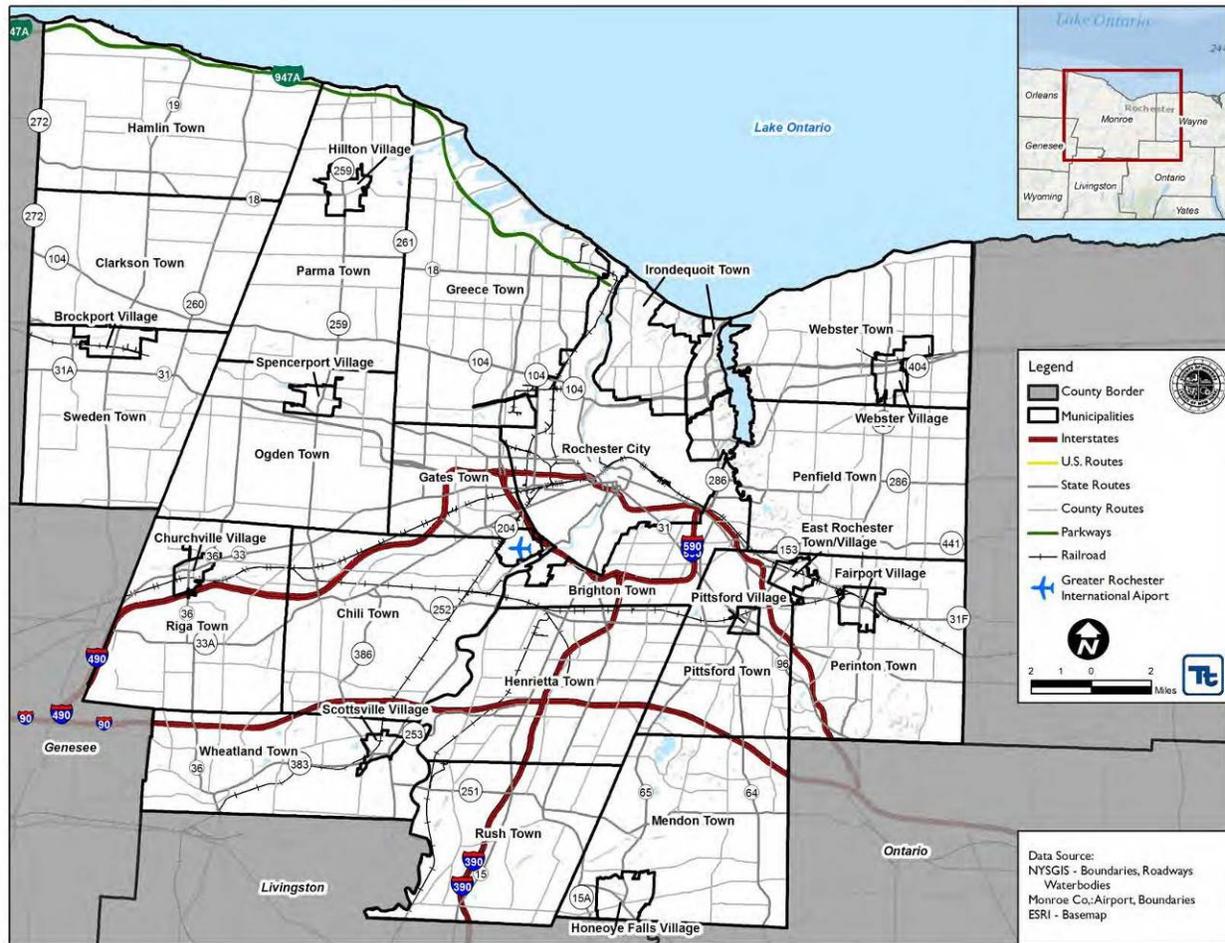
There are 4,648 miles of roadway in Monroe County. The County Department of Transportation is responsible for roughly 665 miles of county-owned highways, 180 bridges, and 275 major culverts, and 785 traffic signals as part of the Monroe County highway system.

Interstates (I)-90, I-390, I-490 and I-590 are the primary routes of travel through Monroe County. I-90 traverses the county from the east to the west through the southern section, passing through the Towns of Wheatland, Chili, Henrietta, Pittsford, and Mendon. In the Town of Henrietta, I-90 intersects with I-390, which is a major north-south route carrying traffic up from Livingston County and other points south. I-390 bisects Monroe County, skirting the City of Rochester to the west and ending near the shores of Lake Ontario where the road continues as the Lake Ontario State Parkway. I-490 is the third major route option, and is an auxiliary highway offering a direct route into the City of Rochester from where it splits from I-90 on both the southeastern and southwestern corners of the county. I-490 runs along the original path of the Erie Canal through the City of Rochester; it also serves the Villages of Churchville and Pittsford, among others. I-490 connects with I-390 and New York State Route 390/NY 390 just west of the City of Rochester, and with I-590/NY 590 to the east of Rochester. Together, these roads comprise the southernmost portion of the Inner Loop Beltway, which circles around the interior of Rochester. State Route 531 connects I-490 to western suburbs including the Towns of Ogden and Gates, and the Villages of Brockport and Spencerport.

Additionally, State Routes 104, 33, 31, and 36 connect the county to its eastern western, and southern neighbors. SR 104 and SR 31 run east west through the northern and central section of the county, respectively. SR 36 begins at the terminus of SR 531 in the Town of Ogden and runs south through the Town of Riga and Wheatland before connecting with Livingston County. SR 33 connects SR 31 in the City of Rochester directly to the City of Buffalo to the west. SR 33 is mostly a rural highway serving local traffic and it often parallels I-490.



Figure 4.6. Major Transportation Routes and Railways in Monroe County



Source: Monroe County 2015

Bus and Other Transit Facilities

Residents of Monroe County have the option of using public transportation through the Regional Transit Service (RTS), the largest subsidiary of the Rochester Genesee Regional Transportation Authority (RGRTA), which includes 253 buses and 41 fixed routes serving an a population of nearly 750,000 throughout Monroe County and the surrounding region. The majority of riders on the RGRTA system, or roughly 61%, live in Monroe County and the City of Rochester, and an even greater percentage work in the county (RGRTA 2015).

RTS provides affordable public transportation to urban, suburban, and rural areas, as well as complimentary paratransit service throughout the region, and currently serves a ridership of over 17 million. In addition, RTS provides service to local institutions, including fixed route service to and from Monroe Community College’s Brighton and Downtown campuses, with connections to countless community destinations. The RTS is currently in the process of completing construction of a new Mt. Hope transit station project, which will incorporate transit as part of the University of Rochester’s College Town project, adjacent to the University of Rochester Medical Center Complex, providing six mini transit stations in and around the campus (RGRTA 2015).





Railroad Facilities

There are two types of rail systems in Monroe County, freight and passenger. There are a total of 10 junctions or freight stations throughout the Rochester area, including Charlotte Yard in the north, Goodman St. Yard in the east, West Ave. Yard near the city center, and Brooks Ave. Yard along the city's southwestern border. These stations and yards serve a number of transportation and freight companies, including CSX Transportation, Inc. (CSXT); CSXT Amtrak; Livonia, Avon & Lakeville Railroad Corp (LAL); and Rochester & Southern Railroad (RSR). As these lines spread out from Rochester, they provide passenger and freight rail at points in Webster (Ontario Midland Railroad Corp [OMID]), Fairport (CSXT Amtrak), Henrietta (LAL), and Chili (CSXT Amtrak and CSXT) (NYSDOT 2013).

Amtrak provides passenger service from Chicago to Washington DC, and also connects through the City of Rochester, where a state-of-the-art intermodal Amtrak transit station is slated to open in 2017 to serve the nearly 150,000 passengers per year (<http://reconnectrochester.org/blog/tag/rochester-amtrak-station/>). The Rochester station is located along Amtrak's Empire Service and provides regional service to New York City, Albany, Syracuse, Buffalo, and Niagara Falls.

The Rochester & Southern Railroad (RSR), owned and operated by Genesee & Wyoming (G&W), is a 58-mile short line freight railroad that interchanges with the Buffalo & Pittsburgh Railroad; Canadian National; Canadian Pacific; CSX Transportation; Livonia, Avon & Lakeville Railroad; and Norfolk Southern. RSR tracks originate in the City of Rochester, sending one line to Buffalo where it connects with a larger network of G&W trains to points south and west; and another to a terminus in Dansville, south of Rochester. Commodities transported by rail include aggregates, brick and cement, chemicals, coal, food and feed products, forest products, and steel and scrap (GWRR 2015).

Airports

The Greater Rochester International Airport (ROC) is located 4 miles southwest of downtown Rochester and 12 miles south of Lake Ontario (see Figure 4-14). The airport contains a 380,000-square-foot terminal with 22 passenger gates. ROC is a small hub airport primarily connecting to cities in the northeast and to major hubs in the midwest with approximately 150 flights per day to over 17 cities (Monroe County 2015c).

Ferry Service and Ports

The Rochester-Monroe County Port Authority operates a small deep draft commercial harbor at the Genesee River's confluence with Lake Ontario, serving commercial shipping traffic at depths up to 24 feet across a 2.7-mile stretch that includes the Lake Ontario approach, harbor entrance, and Genesee River federal channels. Major partners and operators at port include the Port of Rochester, U.S. Coast Guard, Essroc Cement Corporation and Shellet-Genesee Shipping Group. According to a 2015 report by the U.S. Army Corps of Engineers (USACE), bulk commodities passing through the port generate \$1.2M annually in direct revenue while supporting 95 direct, indirect, and induced jobs that produce over \$6.2M per year in personal income (USACE 2015).

4.6.3 Lifeline Utility Systems

This section presents data and information on potable water, wastewater, energy resource, and communication utility systems. Due to heightened security concerns, local utility lifeline data sufficient to complete the analysis have only partially been obtained. Monroe County is served by a variety of communications systems, including traditional land line, fiber optic, and cellular service provided by multiple companies, such as Time Warner Cable, Verizon, and Frontier Online. Each carrier has individual plans for emergency situations during hazard events and post-disaster recovery efforts. In addition to land line, fiber optic and cellular communications systems, Monroe County has an extensive radio communications network that is utilized by emergency services



agencies, hospitals, law enforcement, public works, transportation and other supporting organizations. There are seven lifeline utility system facilities in Monroe County identified as a critical facilities.

Figure 4-12 shows the locations of the facilities for these various lifeline utility systems.

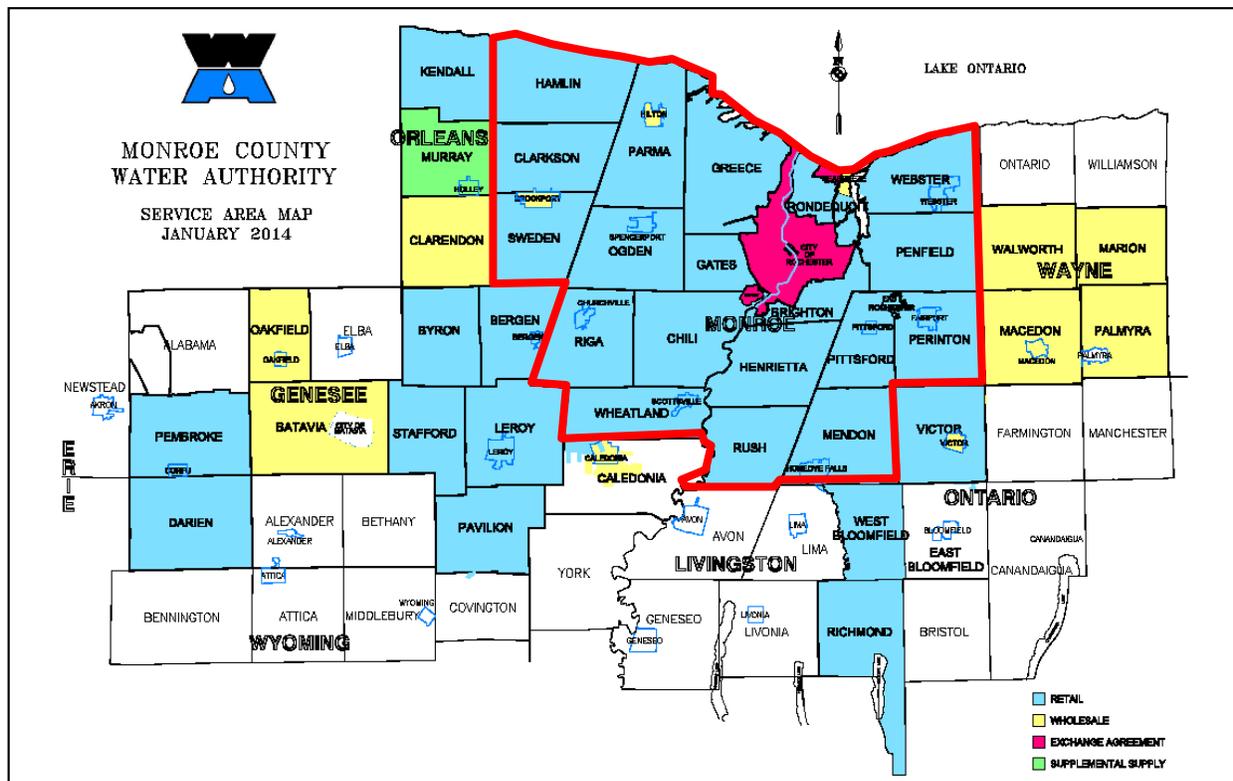
Potable Water

In Monroe County, water is provided from various facilities as a public service or through private supplies, such as wells. Community water suppliers serve most of the county’s population while a small portion of the population relies on on-site wells.

Monroe County’s public water supply comes from Lake Ontario, two of the Finger Lakes (Hemlock Lake and Canadice Lake), and from private wells. There are two producers of public drinking water within Monroe County: Monroe County Water Authority (MCWA) and City of Rochester Bureau of Water and Lighting. The Villages of Brockport and Hilton, as well as the Seabreeze Water District community in the Town of Irondequoit, purchase water from MCWA for re-sale to their customers.

Figure 4-15 identifies the areas served by public supply and private wells in Monroe County. Water treatment facilities and distribution systems are not identified for security purposes. Many of the rural areas are dependent on private wells. Several large industries have their own supply source and treatment facilities. Many fire departments have an alternate water source for firefighting. For instance, the City of Rochester has a parallel supply for fire suppression within the downtown area called the “Holley System,” and many suburban and rural departments have standpipes on natural waterways.

Figure 4-15. Monroe County Public Water Service Area



Source: MCWA 2014
Note: Monroe County is indicated with the red outline.



Water from Lake Ontario, its primary source, is treated at MWCA's Shoremont plant in the Town of Greece and another plant in the Town of Webster. MCWA also operates the Corfu plant, which is a small well supply in the Village of Corfu in Genesee County, and purchases water from the City of Rochester and the Erie County Water Authority (ECWA).

Wastewater Facilities

The Monroe County Division of Pure Waters was established by the county's legislature to implement the 1969 Pure Waters Master Plan to reduce the levels of pollution in Irondequoit Bay, the Genesee River, areas of Lake Ontario, and other waters of Monroe County to safe and healthy levels. Today, the county's four sewer districts contain several miles of major interceptor tunnel, two wastewater treatment facilities, pump stations and the sewer collection systems for the Rochester and Gates-Chili-Ogden districts.

The sewer system operated by Monroe County is spread over four sewer districts (Northwest, Gates Chili Ogden, Rochester, and Irondequoit Bay) and serves a population of over 500,000 people. Collection sewers in other districts are operated, maintained, and funded by local municipalities. The districts obtain the majority of their revenue from user charges. In Monroe County, wastewater is collected by a system of underground pipes, or sewers, which carry it to wastewater treatment facilities (WWTF).

Monroe County contains five treatment facilities, most of which are located near bodies of water into which the treated wastewater is discharged. Other wastewater treatment plants that discharge into the Genesee River include those from the Village of Honeoye Falls and Kodak's King's Landing. The county's VanLare and Northwest Quadrant plants are located on the south shore of Lake Ontario. The VanLare plant, first opened in 1916, is the largest WWTF in the county with a permitted flow of 135 million gallons per day (mgd). The VanLare plant is capable of handling 660 mgd during storm events. The Northwest Quadrant facility is located in the Town of Hilton, and has an operating permit for flow of 22 mgd and handles 14 mgd of primarily residential wastewater.

Energy Resources

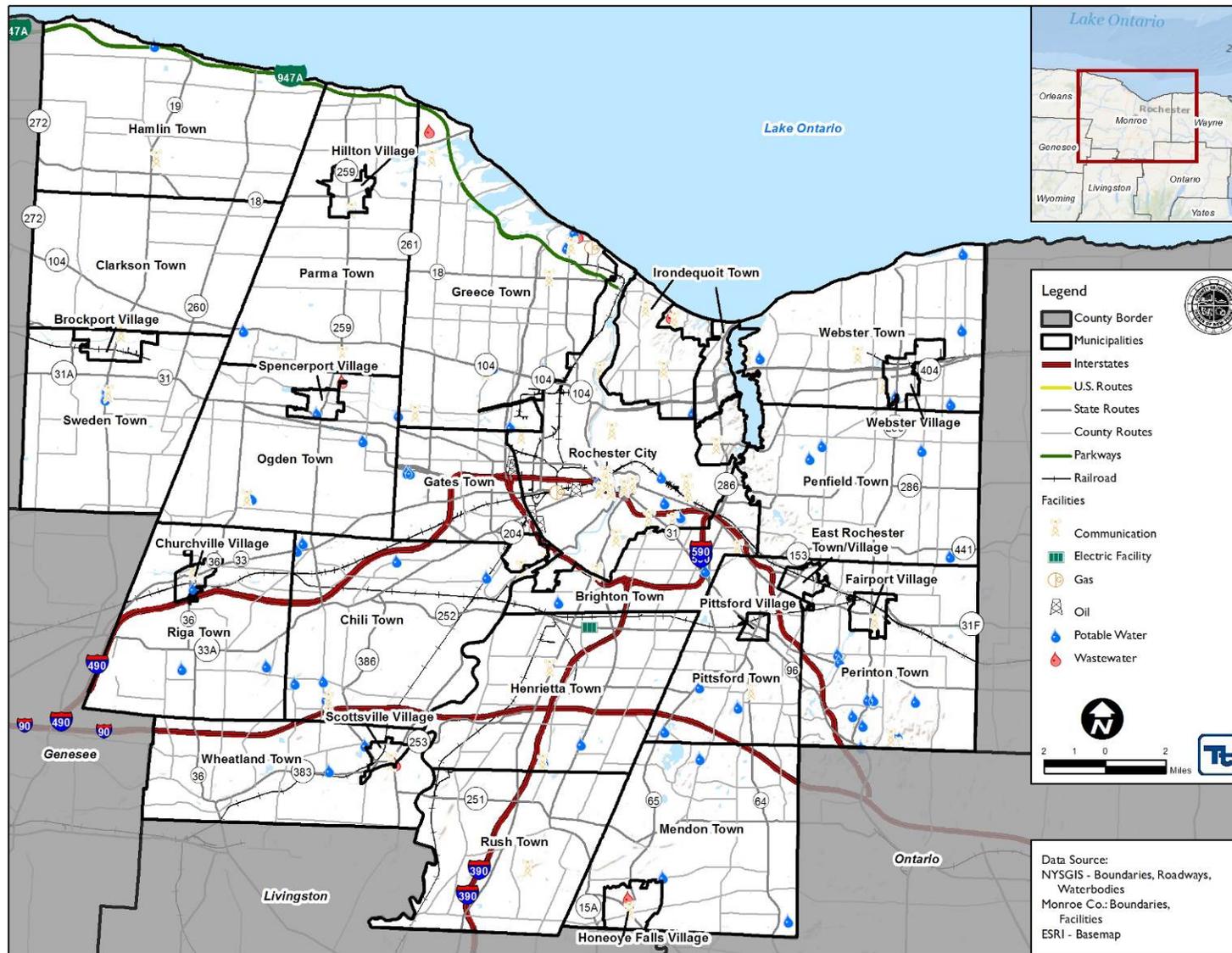
Gas and electric power in Monroe County are transmitted and distributed by three companies: Rochester Gas and Electric Corporation (RG&E), New York State Gas and Electric Corporation (both Energy East companies), and National Grid. Homes in the county are heated by many different sources, with a majority using utility gas or fuel oil. In addition, there are three municipal electric providers and one municipal natural gas provider. Some areas are dependent on residential propane tanks for gas service.

Communications

Monroe County is served by a variety of communications systems, including traditional land line, fiber optic, and cellular service provided by multiple companies, such as Verizon, Direct TV, and Cablevision and Frontier Communications. Each carrier has individual plans for emergency situations during hazard events and post-disaster recovery efforts. In addition to land line, fiber optic and cellular communications systems, Monroe County has an extensive radio communications network that is utilized by emergency services agencies, hospitals, law enforcement, public works, transportation, and other supporting organizations. There are 41 communication facilities in Monroe County identified as a critical facilities.



Figure 4-12. Utility Lifelines in Monroe County



Source: Monroe County





4.6.4 High-Potential Loss Facilities

High-potential loss facilities include dams, levees, hazardous materials (HAZMAT) facilities, nuclear power plants, and military installations. The Ginna Nuclear Power Station is located in Wayne County near the northeastern border of Monroe County. Dams are also discussed below.



Figure 4-13 shows the locations of the High-Potential Loss Facilities in the county.

Military Installations

The 42nd Infantry Division and 53rd Troop Command of the National Guard have guardsmen that report to locations throughout the county. The only other noteworthy military installation in the county is a U.S. Coast Guard station near Lake Ontario and the Genesee River.

HAZMAT Facilities

The U.S. Environmental Protection Agency (EPA) Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) (Superfund) Public Access Database (CPAD) reports that there are currently 21 Superfund sites in Monroe County. Superfund sites are polluted locations requiring a long-term response to clean up hazardous material contaminations.

Abandoned hazardous waste sites placed on the federal National Priorities List (NPL) include those that the EPA has determined present “a significant risk to human health or the environment,” with the sites being eligible for remediation under the Superfund Trust Fund Program. As of 2015, Monroe County has no inactive hazardous sites in the federal Superfund Program that are listed on the NPL (CERCLIS 2015).

In addition to the hazardous waste sites, there are numerous hazardous facilities in Monroe County cataloged by the NYS DEC’s Bulk Storage Program Database. The Bulk Storage Program includes three types of facilities; Petroleum Bulk Storage (PBS), Major Oil Storage Facilities (MOSF), and Chemical Bulk Storage (CBS). Registration with NYS DEC is mandatory for all PBS facilities with a total storage capacity of 1,100 gallons or more; all CBS underground tanks and all stationary aboveground tanks with a capacity of 185 gallons or more; and all MOSF sites storing more than 400,000 gallons of petroleum products. As of November 2015, there are 2,048 sites in the DEC’s Bulk Storage Program Database in Monroe County, NY (New York State Department of Environmental Conservation (NYSDEC) 2015).

Dams and Levees

According to the NYSDEC Division of Water Bureau and Flood Protection and Dam Safety, there are three hazard classifications of dams in New York State. The dams are classified in terms of potential for downstream damage if the dam were to fail. The hazard classifications are as follows:

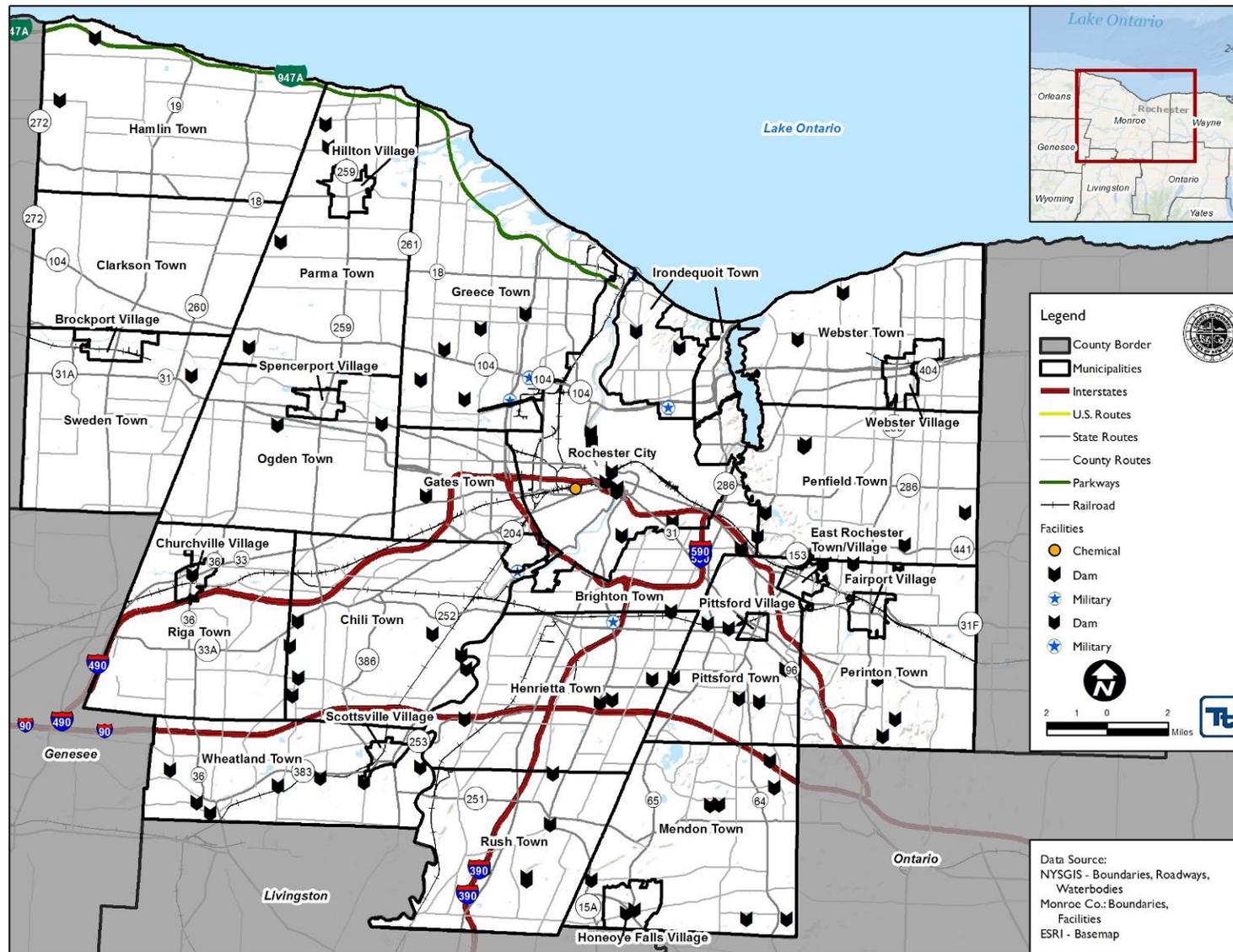
- *Low Hazard (Class A)* is a dam located in an area where failure will damage nothing more than isolated buildings, undeveloped lands, or township or county roads and/or will cause no significant economic loss or serious environmental damage. Failure or mis-operation would result in no probable loss of human life. Losses are principally limited to the owner's property
- *Intermediate Hazard (Class B)* is a dam located in an area where failure may damage isolated homes, main highways, and minor railroads; interrupt the use of relatively important public utilities; and will cause significant economic loss or serious environmental damage. Failure or mis-operation would result in no probable loss of human life, but can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns. Class B dams are often located in predominantly rural or agricultural areas, but could be located in areas with population and significant infrastructure.
- *High Hazard (Class C)* is a dam located in an area where failure may cause loss of human life; serious damage to homes, industrial, or commercial buildings; important public utilities; main highways or railroads; and will cause extensive economic loss. This is a downstream hazard classification for dams in which excessive economic loss (urban area including extensive community, industry, agriculture, or outstanding natural resources) would occur as a direct result of dam failure.



According to the USACE National Inventory of Dams (NID), there are 23 dams located within Monroe County. This differs from the National Performance of Dam Program (NPDP) which indicates that there are 20 dams in Monroe County (with eight listed as high hazard, six listed as significant hazard, and six listed as low hazard). For the purpose of this plan, the NYSDEC data from the New York State GIS Clearinghouse will be used. According to the GIS data, there are 82 dams located in Monroe County (44 Class A, 6 Class B, 9 Class C, 17 Class D and 6 unclassified). According to the National Levee Database maintained by USACE, there are no levees in Monroe County. Refer to Appendix H for the names and locations of the dams found in the county.



Figure 4-13. High-Potential Loss Facilities in Monroe County



Source: Monroe County



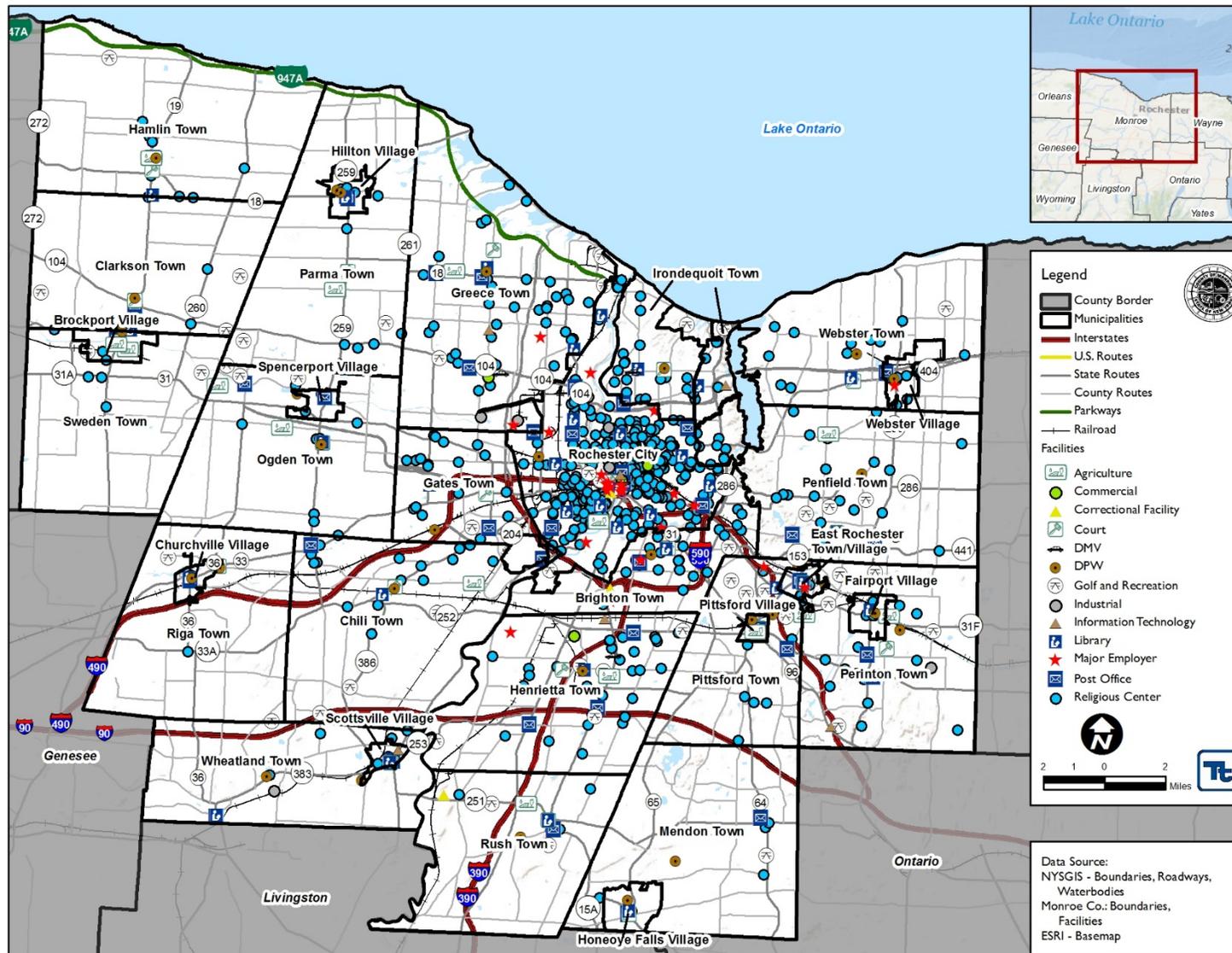


4.6.5 Other Facilities

The Planning Committee identified 1,922 additional facilities (user-defined facilities) as critical facilities. Some of these fall under categories previously defined above; however, 1,093 additional facilities (user-defined facilities) fall under other critical categories, including municipal buildings, government facilities, major employers, and more. These facilities were included in the risk assessment conducted for the county. Figure 4-14 shows the locations of these facilities in the county.



Figure 4-14. Other Facilities in Monroe County



Source: Monroe County

