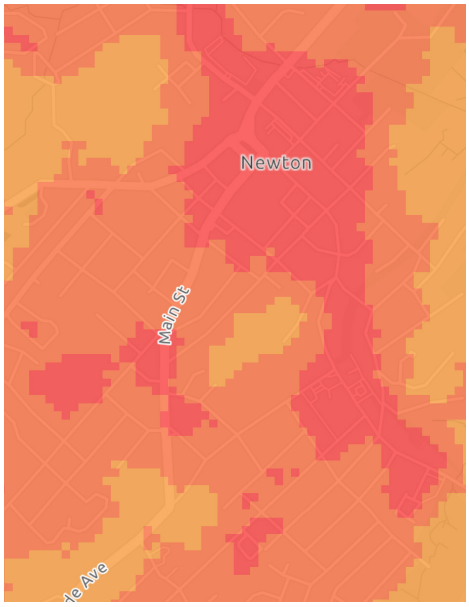
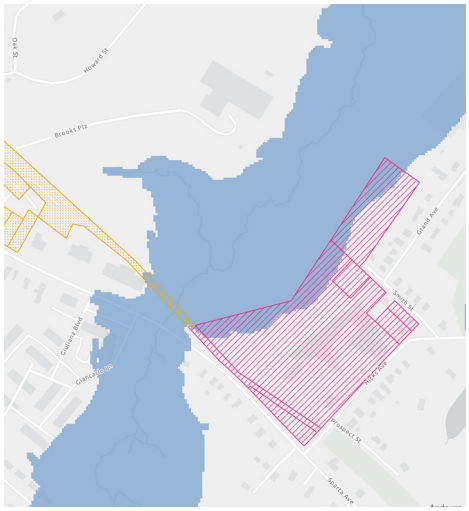
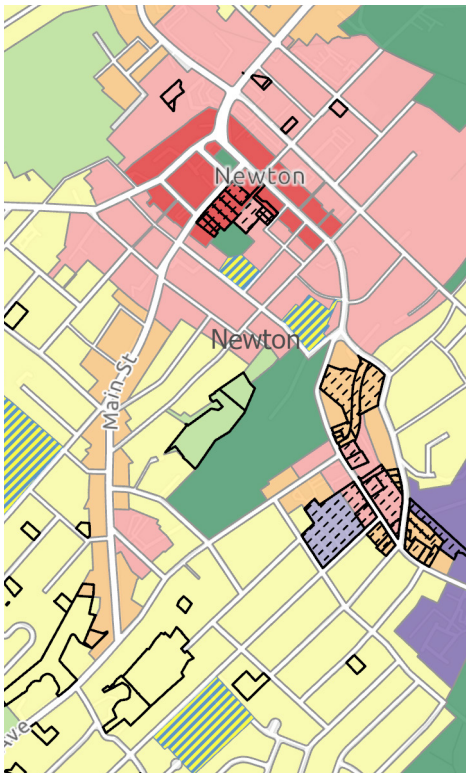






September 2026

Climate Change-Related Hazard Vulnerability Assessment

Town of Newton

RUTGERS–NEW BRUNSWICK
New Jersey Climate Change Resource Center

RESILIENT NJ

This Climate Change-Related Hazard Vulnerability Assessment (CCRHVA) was prepared by the NJ Climate Change Resource Center in collaboration with the Town of Newton and was funded by the New Jersey Department of Environmental Protection through the American Rescue Plan Act. This analysis was conducted in the summer and fall of 2025 and relies upon the best available data and local plans at that time. The version of CCRHVA adopted by the Town may be different than this document based on updated data and local plans, which may occur through their local master plan update process.

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I. Introduction

The New Jersey Municipal Land Use Law (MLUL) requires New Jersey municipalities to include a Climate Change-Related Hazard Vulnerability Assessment (CCRHVA) in the Land Use Element of the Municipal Master Plan. The New Jersey Climate Change Resource Center (CCRC) at Rutgers University, with funding from the New Jersey Department of Environmental Protection (NJDEP), developed this CCRHVA in coordination with the Town of Newton (henceforth, "Newton"), in accordance with the requirements of the MLUL, including the following components:

- Analysis of current and future threats to, and vulnerabilities of, the municipality associated with climate change-related natural hazards, including, but not limited to, increased temperatures, drought, flooding, hurricanes (Section III);
- A build-out analysis of future residential, commercial, industrial, and other development in the municipality, and an assessment of the threats and vulnerabilities related to that development (Section IV);
- Identification of critical facilities, utilities, roadways, and other infrastructure that is necessary for evacuation purposes and for sustaining quality of life during a natural disaster, to be maintained at all times in an operational state (Section V);
- Analysis of the potential impact of natural hazards on relevant components and elements of the master plan (Section VI);
- A specific policy statement on the consistency, coordination, and integration of the climate change-related hazard vulnerability assessment with any existing or proposed natural hazard mitigation plan, floodplain management plan, comprehensive emergency management plan, emergency response plan, post-disaster recovery plan, or capital improvement plan (Section VII).

Newton is the county seat of Sussex County, New Jersey. It is located in the northwestern part of the state in the Ridge and Valley Region, west of the Highlands Region. Newton features a mix of residential, commercial, and industrial land uses. Additional details about Newton are included in Appendix A.

II. Methodology

In accordance with the requirements of the MLUL, this assessment relies upon "the most recent natural hazard projections and best available science provided by the New Jersey Department of Environmental Protection." This assessment was conducted in summer 2025 and relies upon the best available data at that time. Publicly available datasets and data made available through various tools were utilized to analyze local climate change-related hazards and potential impacts to the Town at the three planning horizons below

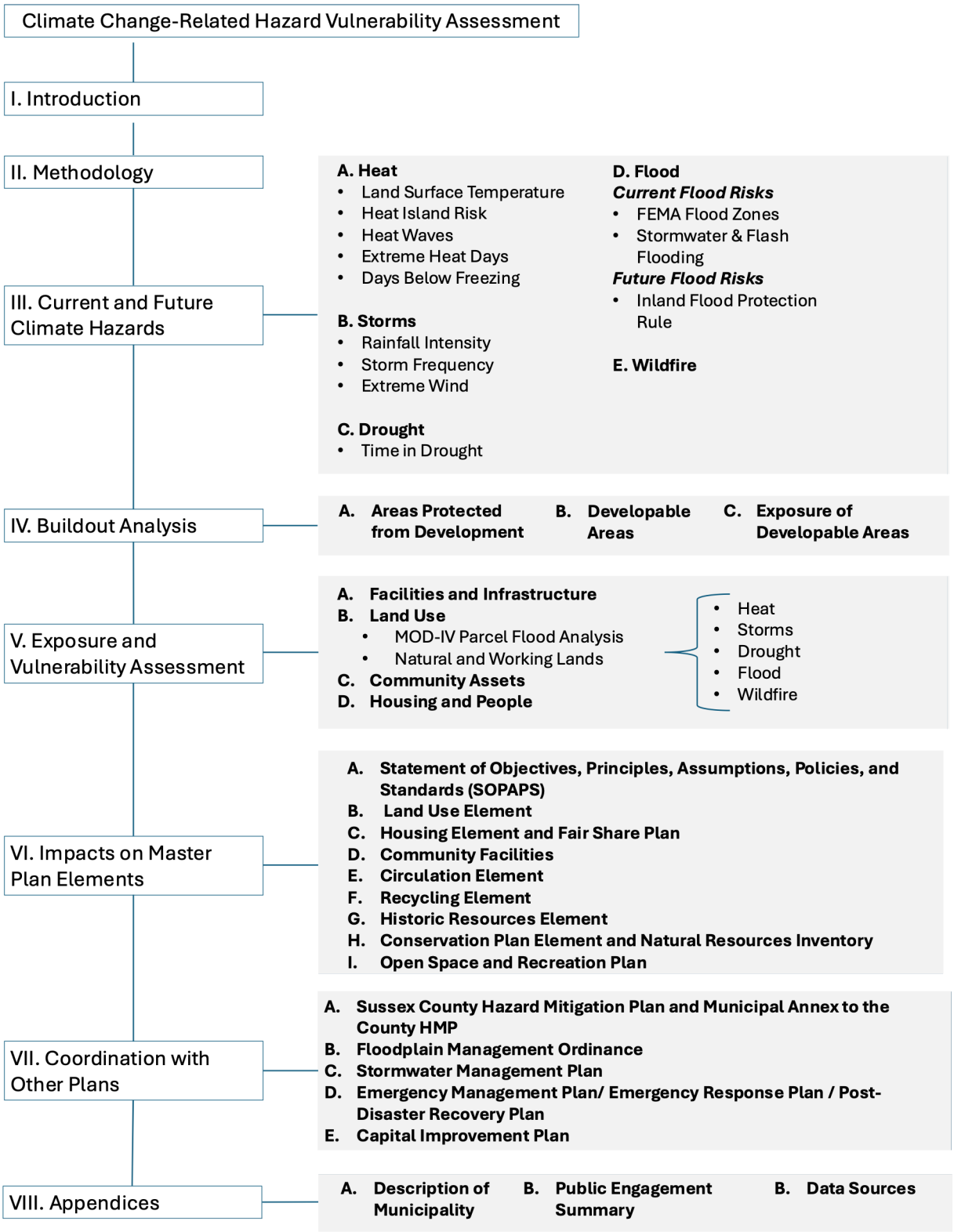
The hazard projections align with a moderate greenhouse gas emissions scenario representing a future with a reduction in fossil fuel use consistent with today's global policies. It should be noted that the projected changes would be slightly greater under a higher greenhouse gas emissions scenario (i.e., representing a future with continued growth of fossil fuel use).

- Present day to assess current impacts and align with the shorter-term planning needs of the 10-year Master Plan Reexamination Report (MPRR) cycle.
- Mid-century to assess future impacts and align with longer-term community planning needs and visioning.
- Late-century to assess long-term planning needs and align with the NJDEP Protecting Against Climate Threats (PACT) Resilient Environments and Landscapes (REAL) rules. This rule is detailed in Section III.D.

The results of the web-based assessment were presented to Newton municipal staff and residents to obtain feedback and confirm results. Meetings included a municipal staff feedback session on January 12, 2026, and a public meeting on March 23, 2026. These stakeholders also provided input on hazards for which web-based data was not available, including stormwater and flash flooding. Details on the public engagement are included in Appendix B.

This document is organized into eight sections, depicted in Figure II-1. Each section addresses a required component as set forth by the MLUL.

Figure II-1. Newton CCRHVA document organization



III. Current and Future Climate Hazards

New Jersey Municipal Land Use Law (MLUL) requires a CCRHVA to include an "analysis of current and future threats to, and vulnerabilities of, the municipality associated with climate change-related natural hazards, including, but not limited to increased temperatures, drought, flooding, hurricanes, and sea-level rise." This section addresses that requirement and includes analysis of the additional hazards of extreme precipitation, wind, and wildfire.

Local stakeholders were asked via an online survey to rank their level of personal concern for Newton from the hazards of heat, drought, flooding, extreme precipitation, wind, and wildfire. Most respondents indicated that heat was their greatest concern for the town, followed by extreme precipitation and wind. Flooding and wildfire were of less concern. Local stakeholders were also asked to report how frequently they are personally affected by each hazard. Respondents indicated being most frequently affected by wind in Newton, followed by heat, and extreme precipitation. Less frequent impacts were reported from drought, flooding, and wildfire (see Appendix B for details).

A. Heat

Average annual temperatures in New Jersey have risen by about 4 °F since 1900. By 2100, the annual average temperature in New Jersey is projected to increase an additional 3.7–6.2 °F.[1] Increased temperatures can have adverse impacts on public health, infrastructure, and plants (see Section V). Urbanized areas are disproportionately affected by increasing temperatures due to population density, more impervious surfaces, and fewer natural landscapes. Over half of the local stakeholders who responded to the survey (60%) indicated being personally affected by heat in Newton "many times" or "a few times" each year (Appendix B).

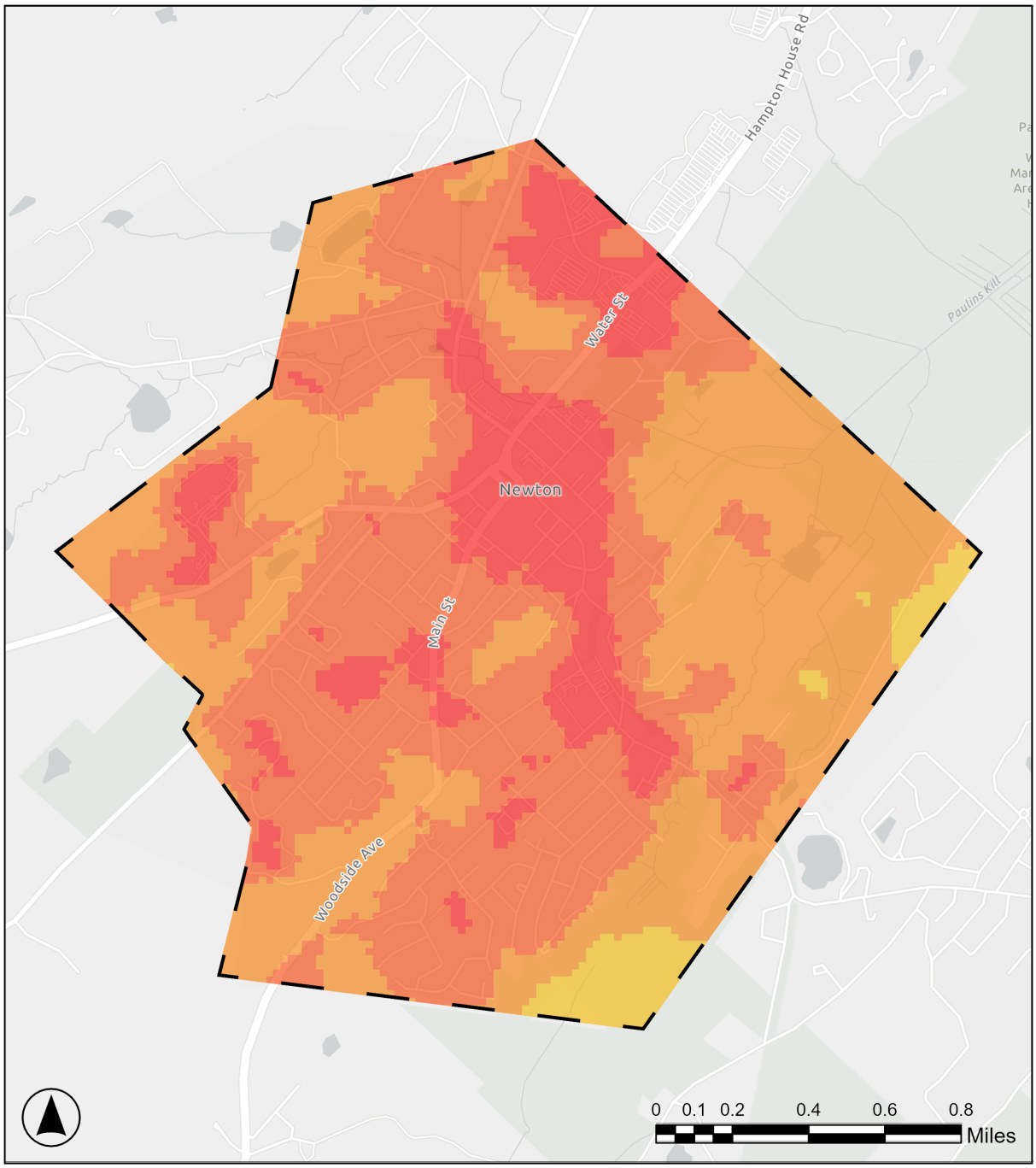
Land Surface Temperature

Map III-1 depicts the land surface temperature, or temperature of the ground, in Newton in the summer of 2022. This data was collected by satellites at 100-square-foot resolution. Impervious surfaces and structures, such as buildings and roads, absorb more solar radiation, increase land surface temperatures, and emit more heat than natural surfaces such as trees and water.

Land surface temperature is higher in Newton's developed areas. The Sparta Avenue and Mill Street commercial corridor, running from the northernmost part of town to the southwest, reaches surface temperatures over 110 °F. Residential areas, primarily south of downtown, can reach temperatures between 100 and 110 °F. The industrial zone in eastern Newton reaches temperatures ranging from 90 to 100 °F. Areas characterized by wetlands and agriculture, while typically cooler, still reach temperatures ranging from 90 to 100 °F.

[1] Davies, K., Shope, J., Broccoli, A., Gerbush, M., Kaplan, M., Robinson, D., Nikolopoulos, E., Araujo, D., Kopp, R., Herb, J. & Spector, A. 2025. State of the Climate: New Jersey 2024. Rutgers, The State University of New Jersey, New Brunswick, NJ. DOI: 10.7282/00000539.

Map III-1. Land surface temperature – Summer 2022



LEGEND

Land Surface Temperature (°F)

- Below 80
- 80 - 90
- 90 - 100
- 100 - 110
- Over 110

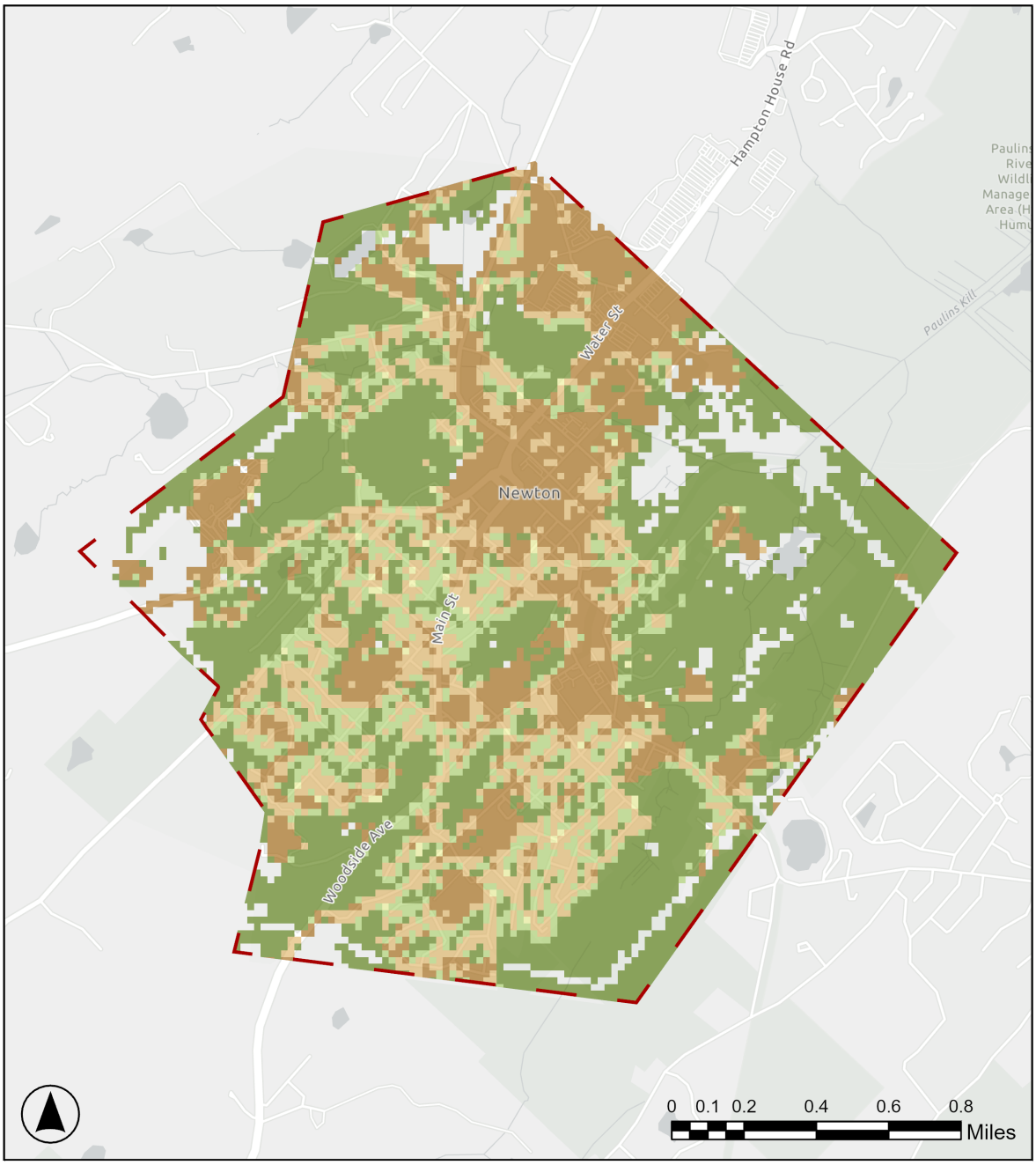
(Sources: NJDEP and NJ Public Health Adapt)

Heat Island Risk

While land surface temperature provides a granular depiction of potential heat impacts in the municipality, analysis of heat island risk offers a broader understanding of how heat can impact communities. A heat island is an area that is significantly warmer than the surrounding region. Areas with more impervious surface than tree canopy are at risk of the heat island effect. Heat islands can increase daytime temperatures, reduce nighttime cooling, and cause more air pollution. Land use and zoning ordinances can mitigate heat island effects by setting standards for tree cover, vegetation, and impervious surface

Map III-2 depicts the ratio between tree canopy cover and impervious surface in Newton. The heat island risk in Newton closely reflects land use patterns. The residential and commercial areas along Sparta Avenue and Water Street have higher ratios of impervious surface coverage and increased potential for heat island effects. On the other hand, heat island risk is reduced by natural areas in the west and east parts of the municipality.

Map III-2. Heat island risk



LEGEND

Tree Canopy Cover to Impervious Surface

- Higher Canopy Cover
- Moderately High Canopy Cover
- Equivalent Canopy/Impervious Surface
- Moderately High Impervious Cover
- High Impervious Cover

(Source: NJ Climate Change Resource Center)

Heat Waves

A heat wave is a period of unusually hot weather. Typically, heat waves are warmer than the historical averages for the area and are also much warmer than the temperatures before and after the heat wave event. Heat waves have a direct impact on human health, the local environment, and the economy (see Section V). Climate change is projected to drive longer and more frequent heat waves in the New Jersey region.[2]

Table III-1 provides a measure of change in future heat wave number and duration compared to a historical period of 1981–2010 at the county level. The threshold for a heat wave in Sussex County is three days with average daily temperature meeting or exceeding 76.9 °F. This threshold is the 95th percentile of 30 years (1981–2010) of daily average temperature during the warm season (May 1 to September 30). Average temperature is a synthesis of the daily maximum and minimum temperatures. Daily maximums emphasize the highest heat conditions a person may be exposed to, but daily minimums have been shown to be more important for heat stress and illness when elevated for an extended period.

Table III-1. Heat waves in Sussex County

	Baseline 1981-2010	Moderate Emissions	
		Mid-century 2036-2065	Late-century 2070-2099
Average annual number of heat waves	1.1	3.8	4.8
Average days of heat wave duration	3.2	7.6	9.6
Maximum days of heat wave duration	7.8	16.1	19.9

(Source: NJ Public Health Adapt–Climate Conditions that Impact Health)

The data for Sussex County indicates that the average number of heat waves each year may increase from about one annually to 4–5 per year throughout the century. The average length of heat waves is projected to increase from 3 days to 8–10 days throughout the century. The typical maximum duration of heat waves may increase from around 8 days to 16–20 days throughout the century.

Extreme Heat Days

Table III-2 provides a measure of change in future extreme heat days compared to a historical period of 1981–2010 at the municipal level. The total number of days per year with maximum temperature above 95 °F is an indicator of how often very hot conditions occur. July is historically the hottest month in New Jersey. Higher maximum temperatures exceed thresholds of comfort, increasing the occurrence of heat-related illnesses, energy demand, and harmful impacts on plants and animals.

[2] Davies, K., Shope, J., Broccoli, A., Gerbush, M., Kaplan, M., Robinson, D., Nikolopoulos, E., Araujo, D., Kopp, R., Herb, J. & Spector, A. 2025. State of the Climate: New Jersey 2024. Rutgers, The State University of New Jersey, New Brunswick, NJ. DOI: 10.7282/00000539.

Table III-2. Extreme heat days in Newton

	Baseline 1981-2010	Moderate Emissions		
		Change from Baseline		
		2030	2060	2090
Days greater than 95˚F	0	+ 2	+ 6	+ 8 - 10
Average daily high temp. in July (˚F)	80	+ 2	+ 4	+ 4

(Source: NJ Public Health Adapt–Climate Conditions that Impact Health)

Newton experienced an average of zero days above 95 °F annually from 1981–2010. By 2030, this may increase by 2 days annually. By the end of the century, the number of extreme heat days may increase by 8–10 days annually. Newton experienced an average daily high temperature of 80 °F in July from 1981–2010. By 2030, the average daily high in July may increase by 2 °F. By the end of the century, it may increase by 4 °F.

Days Below Freezing

Table III-3 provides a measure of change in the future annual number of days below 32 °F compared to a historical period of 1981–2010 at the municipal level. Fewer very cold days mean fewer "code blue" situations, but also potential impacts to agriculture, infrastructure, and disease vectors (e.g., mosquitoes and ticks).

Table III-3. Days below freezing in Newton

	Baseline 1981-2010	Moderate Emissions	
		Mid-century 2050-2070	Late-century 2080-2090
Average number of days below freezing	137	126	120

(Source: NJ Climate Change Resource Center)

Newton experienced an average of 137 days below 32 °F annually from 1981–2010. By the middle of the century, the average number of days below freezing each year may decrease by 11 days. By the end of the century, the average number of days below freezing may decrease by 17 days annually.

B. Storms

Storms in New Jersey bring heavy precipitation, flooding, and strong winds. Extreme events are those where conditions substantially exceed what is considered a normal amount for a location. The New Jersey CCRC's *State of the Climate: New Jersey 2024* reports that the frequency and intensity of extreme precipitation in New Jersey are expected to increase with climate change. The total annual

rainfall within the state has increased by ~7% since the early 1900s, with the most intense events generating more rainfall compared to historical episodes. An increase in total annual rainfall of about 3–13% may occur by the end of the century with moderate greenhouse gas emissions; additionally, extreme 24-hour rainfall is projected to increase about 5–15%. Heavy rainfall can cause flooding and increase the likelihood of waterborne disease outbreaks. Heavy winds associated with storms can damage structures and vegetation, including impacts to agriculture.

Extreme precipitation and wind ranked second and third, respectively, in local stakeholder concern as reported in survey responses, suggesting that storm-related hazards represent key community concerns (see Appendix B).

Rainfall Intensity

More intense rainfall means more rain within a given timespan, which can overwhelm stormwater infrastructure and cause flash flooding. Table III-4 provides a measure of change in rainfall over a 24-hour period for various annual storm probability events compared to a historical period of 1981–2010 at the municipal level. A storm with a lower percentage chance of occurring represents a greater intensity of rainfall (although it occurs less frequently).

Table III-4. Rainfall (in inches) over 24-hours by annual storm probability in Newton

		Moderate Emissions	
	Baseline 1981-2010	Mid-century 2036-2065	Late-century 2070-2099
50% chance storm	3.21	3.53	3.63
20% chance storm	4.01	4.41	4.57
10% chance storm	4.68	5.20	5.38
4% chance storm	5.68	6.30	6.64
2% chance storm	6.53	7.31	7.83
1% chance storm	7.47	8.44	9.04

(Source: NJ Climate Change Resource Center)

The baseline amount of rainfall in a 24-hour period in Newton ranges from 3.21 inches (50% chance storm) to 7.47 inches (1% chance storm) for the period between 1981–2010. Throughout the century, this may increase by approximately one-quarter of an inch (50% chance storm in the mid-century) to over 1.5 inches (1% storm in the late-century).

Storm Frequency

More frequent rainfall means that a given storm will occur more frequently in the future than it has historically. Table III-5 provides a measure of change in the frequency of the 10% chance (10-year) and 1% chance (100-year) storms compared to a historical period[3] of 1950-2000 at the municipal level.

Table III-5. Increase in probability for the 10% and 1% chance storm in Newton

	Historical 1950-2000	Moderate emissions	
		Mid-century 2020-2069	Late-century 2050-2099
10% chance storm	11.30%	16.69%	19.02%
1% chance storm	0.99%	2.03%	2.82%

(Source - Northeast Regional Climate Center, unpublished data)

The frequency of extreme rainfall events in Newton is projected to increase throughout the century. The probability of the 10% chance (10-year) storm may increase to a 16.69% chance annually by the mid-century and a 19.02% chance by the late-century. The probability of a 1% chance (100-year) storm may increase to a 2.03% chance annually by mid-century and a 2.82% chance by the late-century.

Extreme Wind

Extreme wind can be a standalone hazard but often occurs as a secondary effect of other severe weather events, such as thunderstorms, tropical cyclones, tornadoes, and hailstorms. Wind hazards in Newton were assessed using historic data on the occurrence of wind events and tornadoes. [4,5] Since 1950, wind events have been recorded on 307 days in Sussex County, with approximately 13 events reported in the Town. These include events designated by NOAA as “High Wind” (speeds of 40 mph or greater lasting for one hour or longer, or winds of 58 mph or greater for any duration), “Strong Wind” (gusts between 39 and 57 mph), and “Thunderstorm Wind” (speeds equal to or greater than 40 mph in association with a thunderstorm). Since 1950, four tornadoes ranging in magnitude from F0–F2[6] have been documented in Sussex County, although none within Newton. The town’s exposure to high winds is influenced by its location within a unique topography of low ridges and valley corridors.

[3] National Weather Service, National Oceanic and Atmospheric Administration. 2025. Precipitation Frequency Data Server. Atlas 14 precipitation frequency estimates.

[4] Rutgers New Jersey Agricultural Experiment Station. 2025. Tornadoes in New Jersey: 1950 to Present.

[5] National Centers for Environmental Information, National Oceanic and Atmospheric Administration. 2025. Storm Events Database.

[6] National Weather Service, National Oceanic and Atmospheric Administration. 2025. The Fujita Scale.

Most local stakeholders who responded to the survey (65%) indicated being personally affected by wind "many times" or "a few times" each year within Newton. Residents across the town reported widespread wind damage, with common impacts including downed trees affecting power lines and blocking roads, lost roof shingles, siding damage, and repeated power outages (see Appendix B).

C. Drought

The New Jersey CCRC's *State of the Climate: New Jersey 2024* reports that New Jersey is projected to receive more of its rainfall from extreme precipitation events, with longer and drier periods between these large events, resulting in more short-term drought conditions. Drought can have impacts across many sectors including public health, water supply management, agriculture, and the environment. Drought also increases the risk of wildfire (see Section III.E), especially in combination with high temperatures (Section III.A). [7]

Time in Drought

Table III-6 provides a measure of change in the percent of time spent in drought conditions annually for Sussex County, compared to a historical period from 1981 to 2014. Droughts occur when evapotranspiration exceeds rainfall over a period of time that is considered abnormal for the region. Severe drought is when this imbalance becomes even more extreme due to severe heat or long periods without rainfall. These projections were developed based on modeled changes in precipitation and temperature, and do not account for variables such as soil moisture or reservoir levels.

Table III-6. Annual* percent time in drought Sussex County

	Historical 1981-2014	Moderate emissions	
		Mid-century 2041-2070	Late-century 2071-2100
Drought	15.4%	+0.6%	+7.3%
Severe Drought	0%	+2.1%	+3.7%

(Source: Forthcoming dataset by Shope. J. Nikolopoulos, E., and Araujo DSD[8])
**In the northern hemisphere, the hydrological "water year" is the 12-month period from October to September.*

Historically, drought conditions have affected Sussex County approximately 15% (1–2 months) of the year. By the mid-century, time spent in drought may increase by 0.6% annually. By the late-century, time spent in drought may increase by 7.3% annually. Sussex County has not historically experienced severe drought conditions, but future severe droughts may occur 2.1% of the year by the mid-century and 3.7% of the year by the late-century.

[7] New Jersey Office of Emergency Management. 2024. State of New Jersey All-Hazards Mitigation Plan.
[8] Shope, J., Nikolopoulos, E., and Araujo, D.S.D. 2025. DRAFT New Jersey Projected Future Drought Dataset Technical Documentation.

D. Flood

Flooding damages property and infrastructure, disrupts services, and impacts health. Local stakeholders reported minimal flood impacts in Newton, with only 29% of survey respondents personally affected by flooding "many times" or "a few times" each year (Appendix B). Flooding in Newton is driven by three factors:

- Fluvial flooding, or riverine flooding, when intense rain events cause rivers and streams to overtop their banks;
- Pluvial flooding, when intense rain events lead to surface water accumulation; and
- Land cover type, which influences infiltration and runoff.

While this analysis primarily assesses fluvial flooding in Newton, it is important to note that flash flooding and other pluvial flooding can be especially hazardous. The inundation modeling used for this analysis does not account for flood mitigation infrastructure (e.g., dams, bulkheads, check valves, etc.). Further modeling beyond the scope of this analysis is needed to assess the compound impacts.

This assessment identifies current and future flood risks in Newton based on the measures listed in Table III-7. Each of these flood measures is defined and mapped in this section.

Table III-7. Measures of current and future flood risk

Current flood risk measures	Future flood risk measures
• FEMA flood zones • Stormwater and flash flooding	• Inland Flood Protection Rule

Current Flood Risks

FEMA Flood Zones

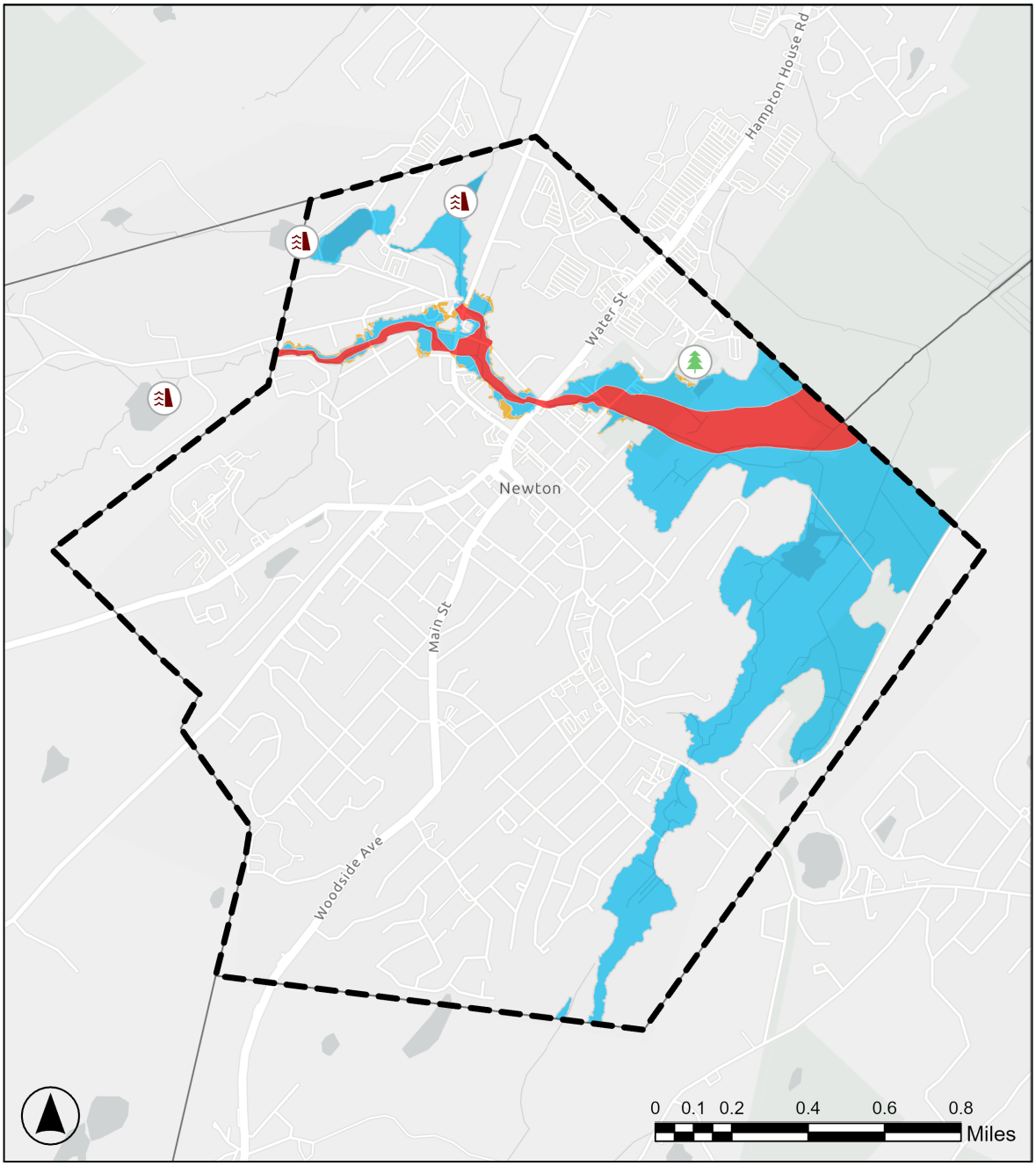
The Federal Emergency Management Agency (FEMA) models flood hazards for much of New Jersey. The 1% annual (100-year) flood, also known as the base flood, has a 1% chance of being equaled or exceeded in any given year. The 0.2% annual (500-year) flood has a 0.2% chance of being equaled or exceeded in any given year. The regulatory floodway is a portion of the floodplain that must remain unobstructed to safely convey floodwaters and is an area where development is highly restricted.

In discussing flood risk in Newton, it is important to note the existing flood control measures already in place. Newton has three (3) municipal dams that are used to mitigate flooding within

these FEMA flood zones. One is located in front of Sussex County Community College (SCCC), the second is located to the rear of SCCC at Horton's Pond, and the third is located just north of Glenn Terrace off of Swartswood Road. The Glenn Terrace dam is in Fredon Township but owned and operated by Newton. These three dams, collectively, control stormwater runoff down to the intersection of Water Street and Clinton Street, largely minimizing the impact of major flood events as the water travels underground. This water then daylights into Memory Park and the surrounding preserved lands. In 2023, the Town undertook stormwater improvement measures at Memory Park utilizing NJDEP funding to redirect stormwater runoff, expand the existing rain garden, and better control the drainage of Moore's Brook. As another measure to mitigate the impacts of flooding events, undeveloped and preserved land is zoned as T-1 Natural Areas and T-2 Rural Reserved Areas to minimize and eliminate the development of impervious coverage in these critical locations.

Map III-3 depicts the FEMA flood zones in Newton. The 1% annual chance flood zone primarily overlaps with the town's agricultural and natural areas such as the Hyper Humus Easement. Paulins Kill, a tributary of the Delaware River, is designated a regulatory floodway and is found in northern Newton. This area includes commercial development and public property.

Map III-3. FEMA flood zones



LEGEND

FEMA Flood Zones

- 1 Pct Annual Chance Flood
- 0.2 Pct Annual Chance Flood
- Regulatory Floodway

- Dam
- Memory Park

Stormwater and Flash Flooding

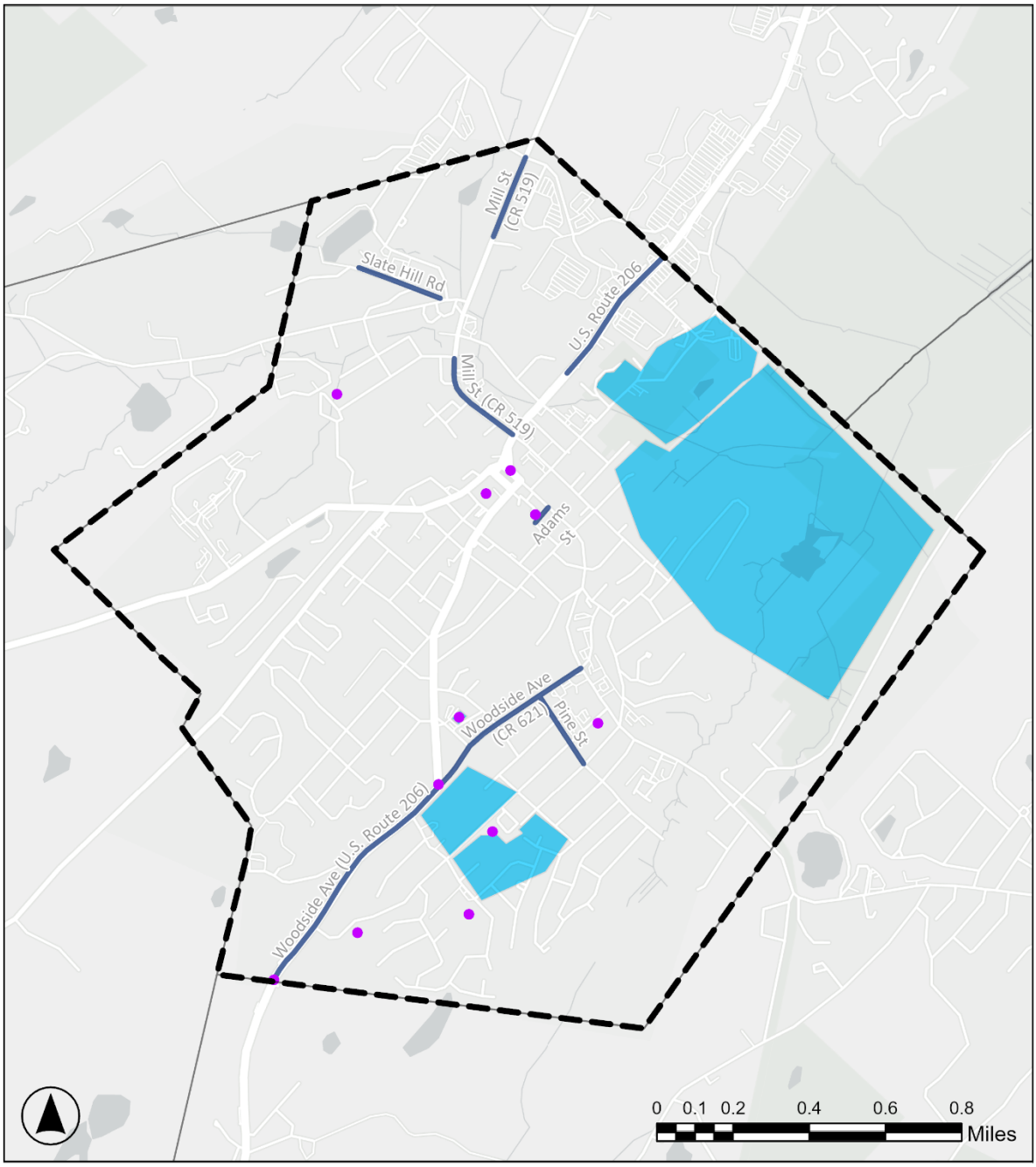
Flooding can occur during flash flood events when stormwater infrastructure is overwhelmed by extreme precipitation. Map III-4 depicts the observed locations of flooding during precipitation which were identified by community stakeholders through the public engagement process that included an in-person meeting and a public survey (see Appendix B).

Stormwater points identified by stakeholders are scattered across the municipality but particularly in the downtown area, several locations along Woodside Ave, and along Merriam Avenue in the southern portion of the municipality. These discrete locations reflect community-reported areas where localized drainage failures, ponding, or surface runoff have been observed. Specific locations that were identified include the Dollar General near Nelson Street and Woodside Ave, industrial parcels along Paterson Avenue where several businesses operate, Hillside Terrace apartments, Adams Street parking lot, and Church St. Flooding at these locations can affect business operations, transportation capabilities, and access to community spaces and places of worship found along Church St.

Road sections impacted by stormwater flooding are distributed along several corridors in the municipality, including Mill Street, Woodside Avenue, U.S. Route 206, State Hill Road, Adams Street, and Pine Street. These road segments indicate recurring or potential disruptions to local transportation networks during storm events, potentially affecting emergency access and daily mobility for residents. Large contiguous areas impacted by stormwater flooding are concentrated predominantly in the eastern portions of the municipality, with the most expansive zones located near Memory Park and the Paulinskill River Wildlife Management Area.

Notably, the points identified as most susceptible to flooding are outside of the FEMA flood hazard areas and the extent of the Inland Flood Protection Rule (discussed in further detail in Section III.D, Future Flood Risks). With the exception of the easternmost areas identified on Map III-4, which are intentionally utilized as locations where stormwater is directed, these areas are likely associated with insufficient drainage infrastructure and low-gradient terrain, making them particularly vulnerable to prolonged inundation following significant precipitation events.

Map III-4. Stormwater and/or flash flooding locations



LEGEND

- Stormwater points
- Roads sections affected by stormwater flooding
- Areas affected by stormwater flooding

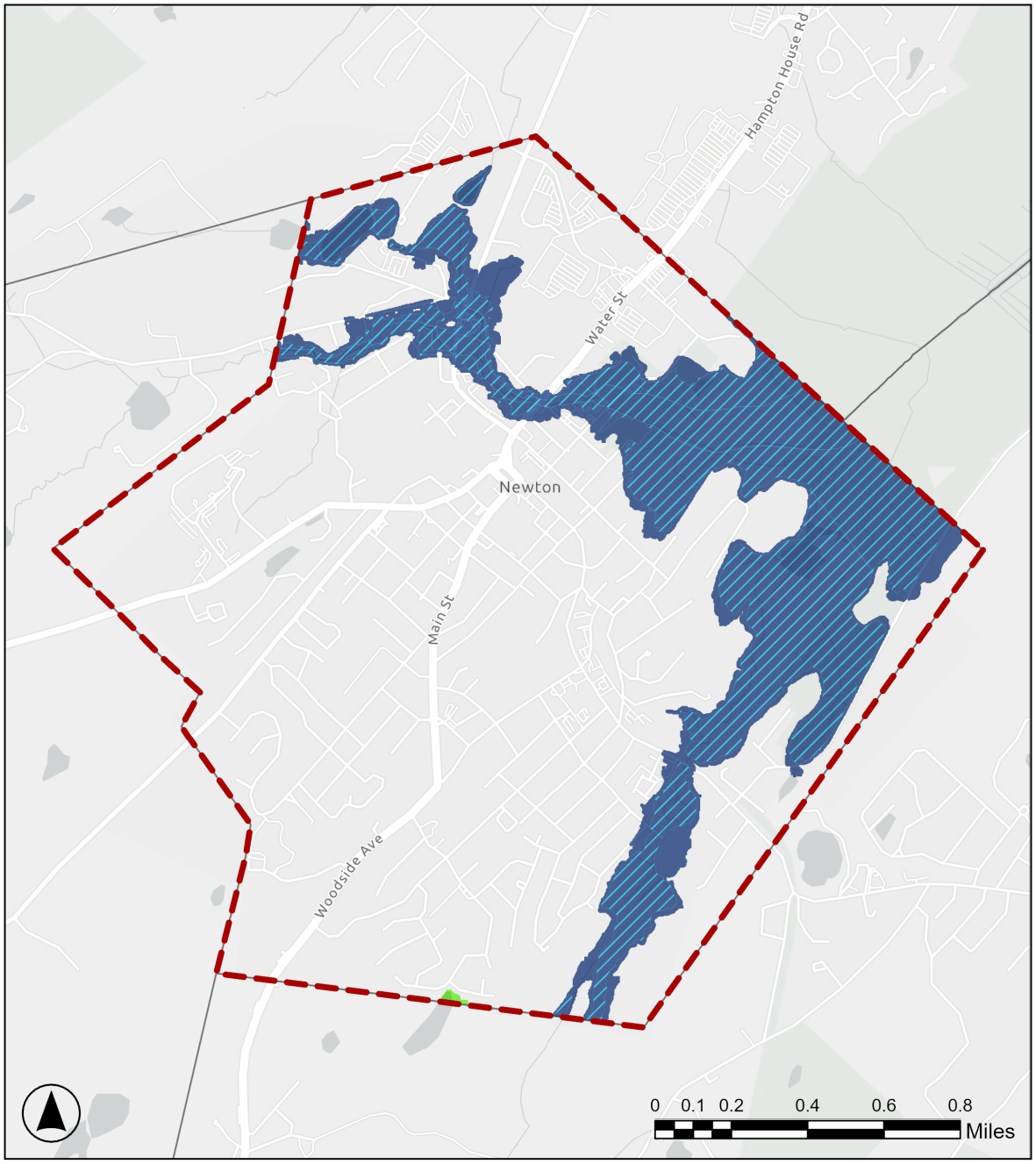
Note: Map is based on stakeholder survey and in-person feedback.

Future Flood Risks

Inland Flood Protection Rule

In July 2023, the NJDEP adopted its Inland Flood Protection Rule, establishing a new Design Flood Elevation (DFE) standard for specific types of new construction and redevelopment in inland/fluvial areas. The new DFE is three feet above the elevation of the 1% Chance Annual Flood or, where NJDEP flood mapping is available, two feet above NJDEP's flood hazard area DFE if that is higher. Map III-5 depicts areas in Newton that may be subject to the Inland Flood Protection Rule by estimating the extent of an additional three feet of flooding on top of the current FEMA 1% annual chance flood zone. It should be noted that the map is for planning purposes only, and a site-specific survey is needed for flood impact analyses, permitting, or other legal or regulatory purposes. The green "low-lying" areas are below the elevation of the expanded flood surface, and therefore have the potential to flood, but are hydrologically disconnected from the rest of the flood zone. This information can support local efforts to safeguard critical facilities and community assets.

Map III-5. Areas potentially subject to the Inland Flood Protection Rule



LEGEND

- FEMA 1% Annual Chance Flood Zone
- Approximate extent of Inland Flood Protection Rule
- Approximate extent of Inland Flood Protection Rule, Low-Lying Areas

(Source: NJ Climate Change Resource Center)

E. Wildfire

Wildfires are unplanned fire burnings in natural areas including forests, grasslands, or prairies. The New Jersey CCRC's *State of the Climate: New Jersey 2024* reports that 798 wildfires burned 4,847 acres in New Jersey during the exceptionally dry 2024 fall season. Increasing temperatures are anticipated to cause greater evaporation and increasing vegetation scorch, exacerbating conditions contributing to wildfires. Wildfire smoke contains air pollutants that decrease air quality and pose risks to human health.

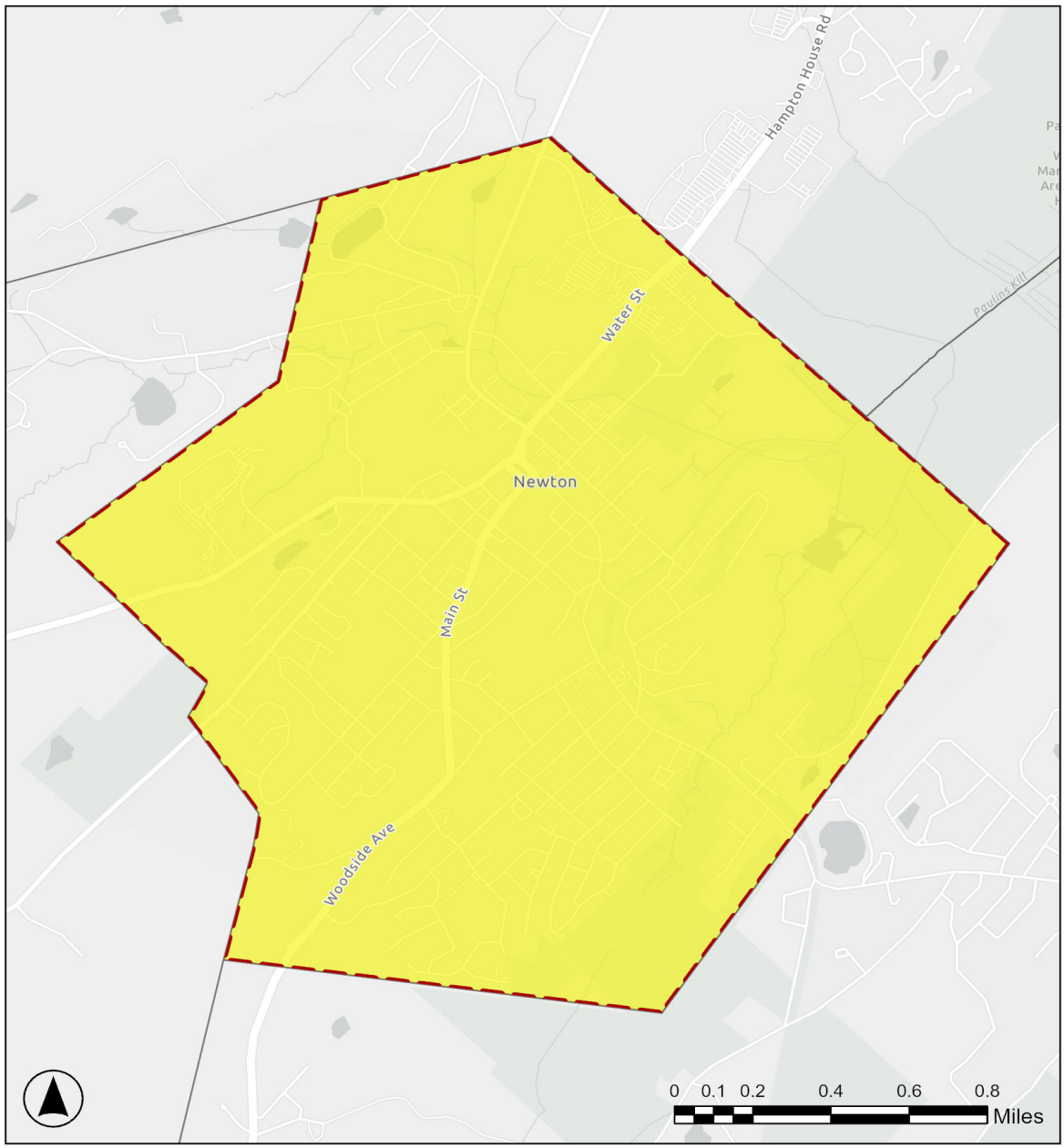
Wildfire hazards in Newton were assessed using historic wildfire data from the National Interagency Fire Center (NIFC)[9] and NOAA[10] and data on risk to potential structures from the NJ Wildfire Risk Assessment Portal.[11] The risk to potential structures dataset integrates modeled wildfire likelihood and intensity with generalized consequences to a structure on every pixel, allowing comparison of wildfire risk in locations with existing or future development.

Map III-6 depicts wildfire risk to potential structures and locations of historic wildfire incidents documented by the NIFC in Newton. Wildfire does not pose a significant risk to Newton or adjacent municipalities. All areas of the municipality are classified as low risk to potential structures, and no wildfire incidents have been documented by NIFC and NOAA since 1950.

Local stakeholders rank wildfire as having the lowest frequency of personal impact in Newton (Appendix B).

[9] National Interagency Fire Center. 2025. NIFC Open Data Site.
[10] National Centers for Environmental Information, National Oceanic and Atmospheric Administration. 2025. Storm Events Database.
[11] NJ Forest Fire Service. 2025. New Jersey Wildfire Risk Assessment Portal.

Map III-6. Wildfire risk to potential structures and select historic wildfires



LEGEND

Wildfire risk to potential structures

High — Low

(Source: NJ Wildfire Risk Assessment and National Interagency Fire Center)

IV. Buildout Analysis

This section addresses the MLUL requirement that the CCRHVA include a "build out analysis of future residential, commercial, industrial, and other development in the municipality, and an assessment of the threats and vulnerabilities identified above related to that development." Certain areas within a municipality are not fit for development, including wetlands, water bodies, and buffers around protected lands or species.

This section identifies and analyzes the developable areas within the municipality with respect to the current zoning designations and exposure to current and future climate hazards. This analysis is a high-level planning exercise and should not be substituted for site-specific determinations of developability, which require field survey and professional engineering evaluation. This analysis differs from other applications of buildout analyses, such as those used in determining a municipality's realistic development potential to comply with affordable housing obligations.

The methodology used in this section includes the following steps:

- Identifying developable areas within the Town of Newton by determining and removing all areas that are protected from development;
- Analyzing these areas with the current zoning districts and any areas identified by the municipality for redevelopment, then calculating the total potential development for these areas;
- Analyzing the exposure of developable areas to heat and flooding. Newton experiences high land surface temperatures in the downtown and surrounding residential areas. This section details varying levels of exposure for potential lots and units, and
- Finally, identifying developable areas and potential development that are least exposed to flooding.

A. Areas Protected from Development

Areas protected from development were identified based on two broad categories, detailed in Table IV-1 and represented in Map IV-1:

- Non-developable areas: Already developed lands (based on land use categories), water features, or wetlands.
- Constrained areas: Those with development limitations due to environmental concerns.

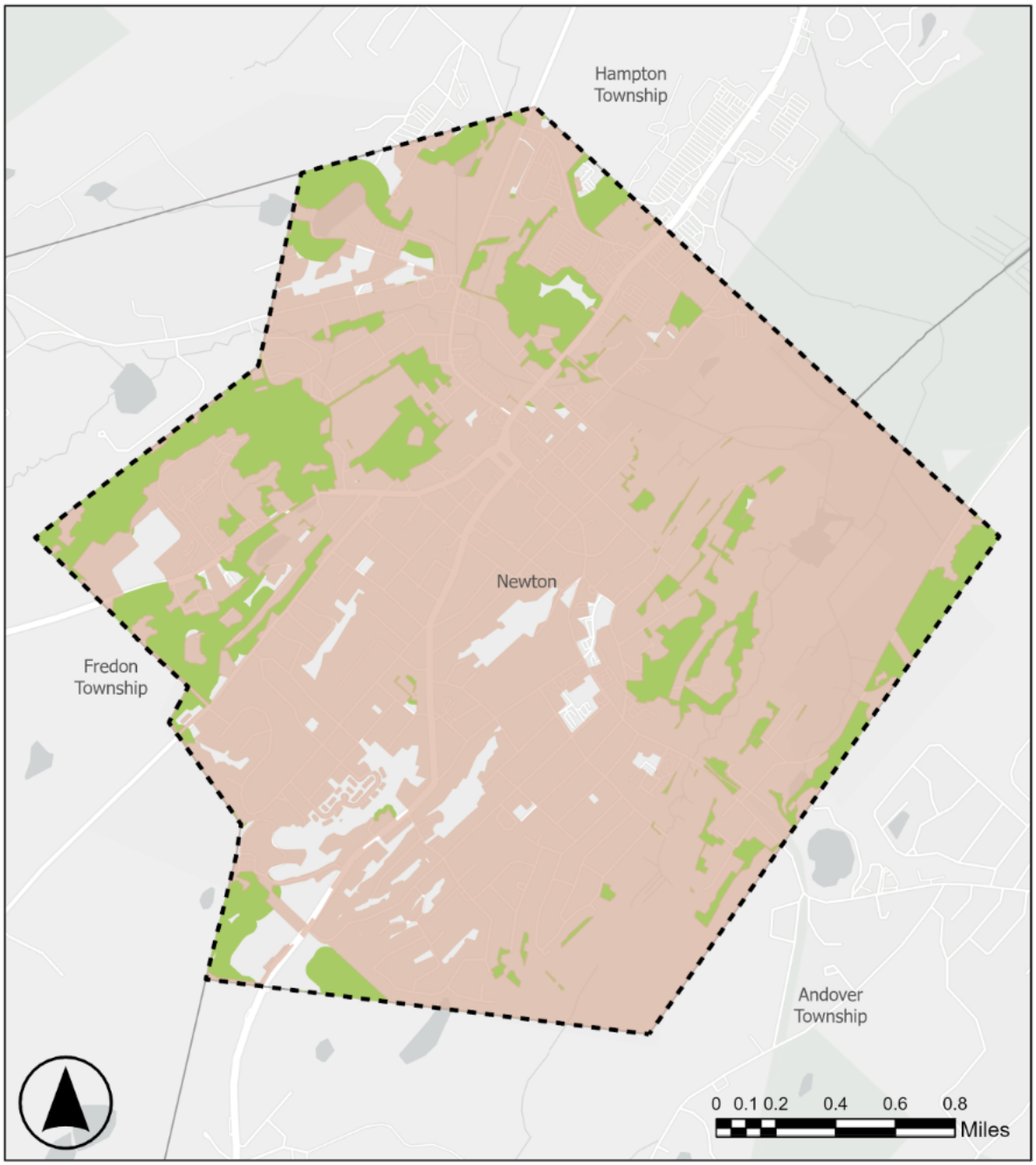
Table IV-1. Areas protected from development

Areas Protected from Development	Land Types	Datasets
Non-Developable Areas	Water, wetlands, transportation, barren land with extractive mining*, non-vacant urban land, publicly owned recreational lands, and open space /conserved land	• 2020 Land Use Land Cover Dataset • 2023 Parcel MOD-IV Composite • Protected Areas Database (PAD-US 4.1) • State, Local and Nonprofit Open Space of New Jersey • Preserved Farmland of New Jersey
Constrained Areas	• Riparian buffers for inland and coastal waters • Threatened and endangered species habitat • Regional Commissions, where applicable (Pinelands Management area, Highlands Preservation area, Hackensack Meadowlands District)	• Landscape Project v3.4 • Category One (C1) Waters of New Jersey • Preservation and Planning Area • Open Water Protection Area

Note: All land type categories and associated datasets identified in this table should be reviewed on a case-by-case basis to verify the nature, extent, and permanence of development restrictions.

** Barren land with extractive mining was included as a non-developable area due to the highly disruptive nature of these practices to the landscape. It is possible that future conditions after remediation of such sites may revert them to developable land and should be evaluated on a case-by-case basis.*

Map IV-1. Areas protected from development



LEGEND

- Not Developable
- Constrained

B. Developable Areas

Developable areas were broadly identified through GIS-based mapping analysis to exclude non-developable and constrained areas. The remaining developable areas consist primarily of undeveloped lands that are not subject to regulatory or environmental development restrictions. To further refine the developable areas, the Town of Newton's zoning ordinance was analyzed.

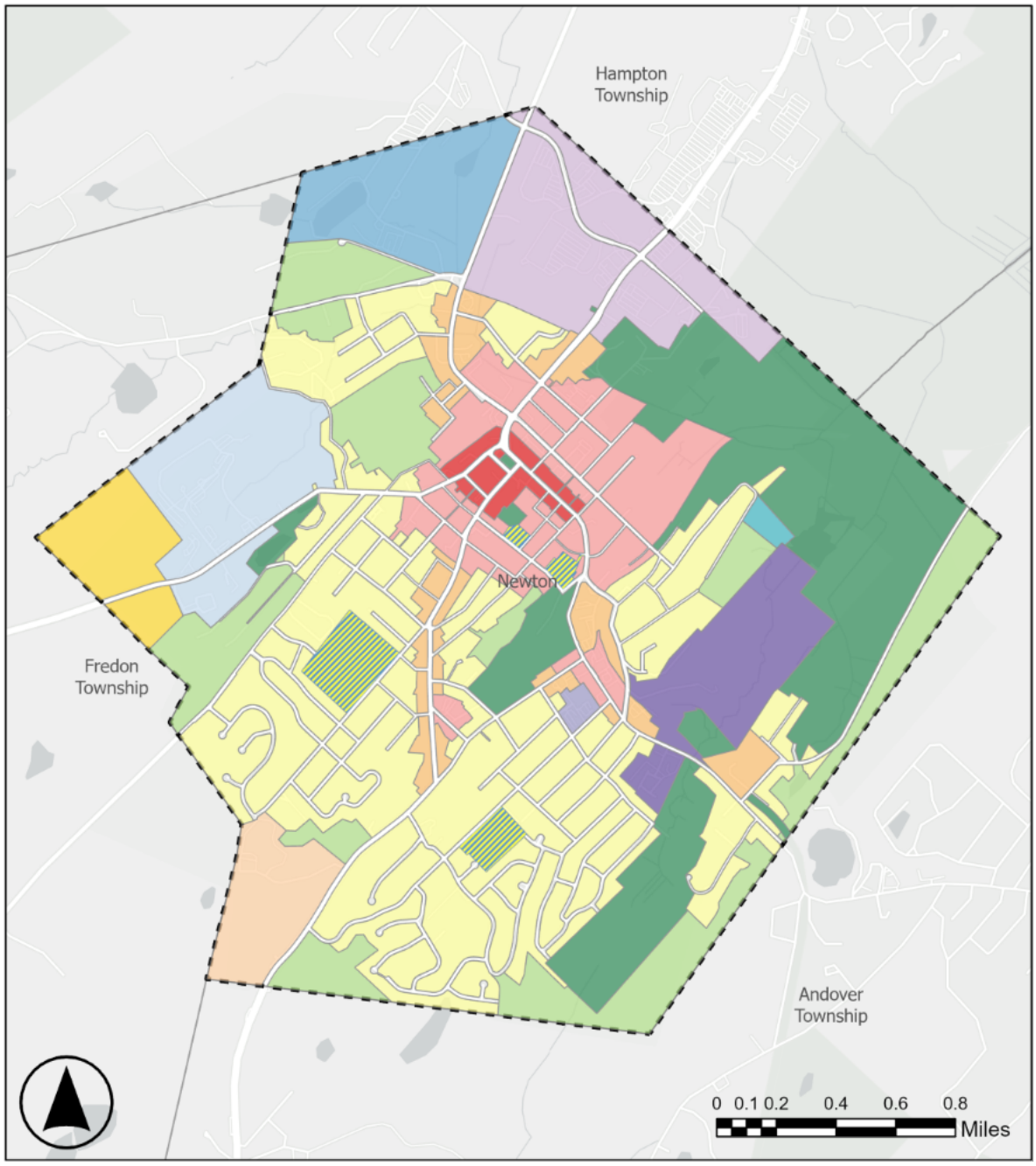
Zoning Analysis

Situated at the base of the Great Slate Mountain of the Appalachian Ridge in northwest New Jersey and between the watersheds of two major river systems: the Paulins Kill and the Pequest River, the Town of Newton's zoning is organized into two broad categories: ***Transect Zones (T)*** and ***Special Districts (SD)***. Map IV-2 presents the zoning districts within the town. **Transect Zones** include Natural Areas (T1), Rural Reserved Areas (T2), Neighborhood Residential (T3) and Mixed-use services (T4), Town Core (T6) and its surrounding support areas (T5), while Special Districts consist of Hospitals (SD-1), Colleges (SD-2), Retail, Office, and Manufacturing (SD-3 to SD-5), Schools (SD-6), Senior Community Centers (SD-7), Utilities (SD-8), and Planned Neighborhood Development (SD-9).

The Transect and Special District zones follow a concentric pattern of development with residential neighborhoods surrounding the town core along Main Street, High Street, Park Place, and Spring Street. Low-density residential and accessory apartments constitute the largest share in the south, southwest, and east side followed by natural areas (including wetlands, water, and wetland buffers) in the eastern side along with large tracts of undeveloped land which are preserved from intensive development.

Table IV-2 lists key developmental controls and minimum lot sizes permitted based on the town's zoning ordinance. Residential districts (T2, T3, and SD7) permit single family dwellings, duplexes, and senior/multifamily housing with stricter lot size requirements of 1 acre, 9,000 sq. ft., and 8 dwelling units per acre. Mixed-use and Town Center districts (T4, T5, T6, SD5, and SD9) combine higher-density residential uses with retail, office, hotel, and civic services. Civic and Institutional districts (T1, SD1, SD2, and SD6) are dedicated to open space, parks, hospitals (Newton Medical Center), college campuses (Sussex County Community College), and schools (Newton High School, Lakeland Andover School, and Halsted Street Middle School). Commercial and Industrial districts (SD3, SD4, SD8) permit retail, warehousing, and utility services. While residential districts have strict minimum lot size requirements, there is little information about the minimum lot size requirements for most districts. Development in the districts that do not have the minimum lot size specified within the zoning ordinance would have to be decided on a case-by-case basis.

Map IV-2. Zoning



LEGEND

Zoning Districts

- Natural Areas: T-1
- Rural Reserved Areas: T-2
- Neighborhood Residential: T-3
- Neighborhood Services: T-4
- Town Core Support Area / Neighborhood Cores: T-5
- Town Core: T-6
- Hospital District: SD-1
- College District: SD-2
- Retail-Manufacturing District: SD-3
- Industrial-Manufacturing District: SD-4
- Office-Manufacturing District: SD-5
- Schools District: SD-6
- Senior Community District: SD-7
- Power Substation District: SD-8
- Planned Neighborhood Development: SD-9

Table IV-2. Town of Newton zoning ordinance

Zoning District	Permitted Uses	Minimum Lot Size
T-1: Natural Areas	Open space, Parks	No minimum. Residential not permitted; minimal government use permitted.
T-2: Rural Reserved Areas	Single-family dwellings (cluster optional)	1.0 acre unless clustering which allows 0.25-acre lot size with minimum 40% open space set aside and 10% density bonus as a conditional use. Density is based on gross acreage less critical environmental areas divided by 1 acre Pre-existing lots 0.25 to 0.99 acre in size may be developed with one single-family residential unit provided T-2 setbacks can be met.
T-3: Neighborhood Residential	Single-family and Duplex	9,000 square feet
T-4: Neighborhood Services	Mixed-use, Townhouse, Office, Civic	9,000 square feet
T-5: Town Core Support Area / Neighborhood Cores	Residential, Retail, Office, Hotel	No minimum listed
T-6: Town Core	High-density mixed-use, Commercial	No minimum listed
SD-1: Hospital District	Civic, Medical, Office, Parking	No minimum listed
SD-2: College District	Campus, Multifamily, Office	No minimum listed
SD-3: Retail-Manufacturing District	Retail, Warehouse, Hotel, Live/Work	No minimum listed
SD-4: Industrial-Manufacturing District	Industrial, Manufacturing	No minimum listed
SD-5: Office-Manufacturing District	Office, Research & Development (R&D), Mixed-use	No minimum listed
SD-6: Schools District	Civic institutional (School)	No minimum listed

Continued on next page

SD-7: Senior Community District	Senior housing, Multifamily	8 dwelling units per acre (single-family detached not permitted)
SD-8: Power Substation District	Utility uses only	No minimum listed
SD-9: Planned Neighborhood Development	Mixed-residential and Mixed-use	No minimum listed

(Source: Town of Newton, NJ, Code 2025-12-15, Part II General Legislation, Chapter 320 Zoning: Form-Based Code)

Buildout Analysis

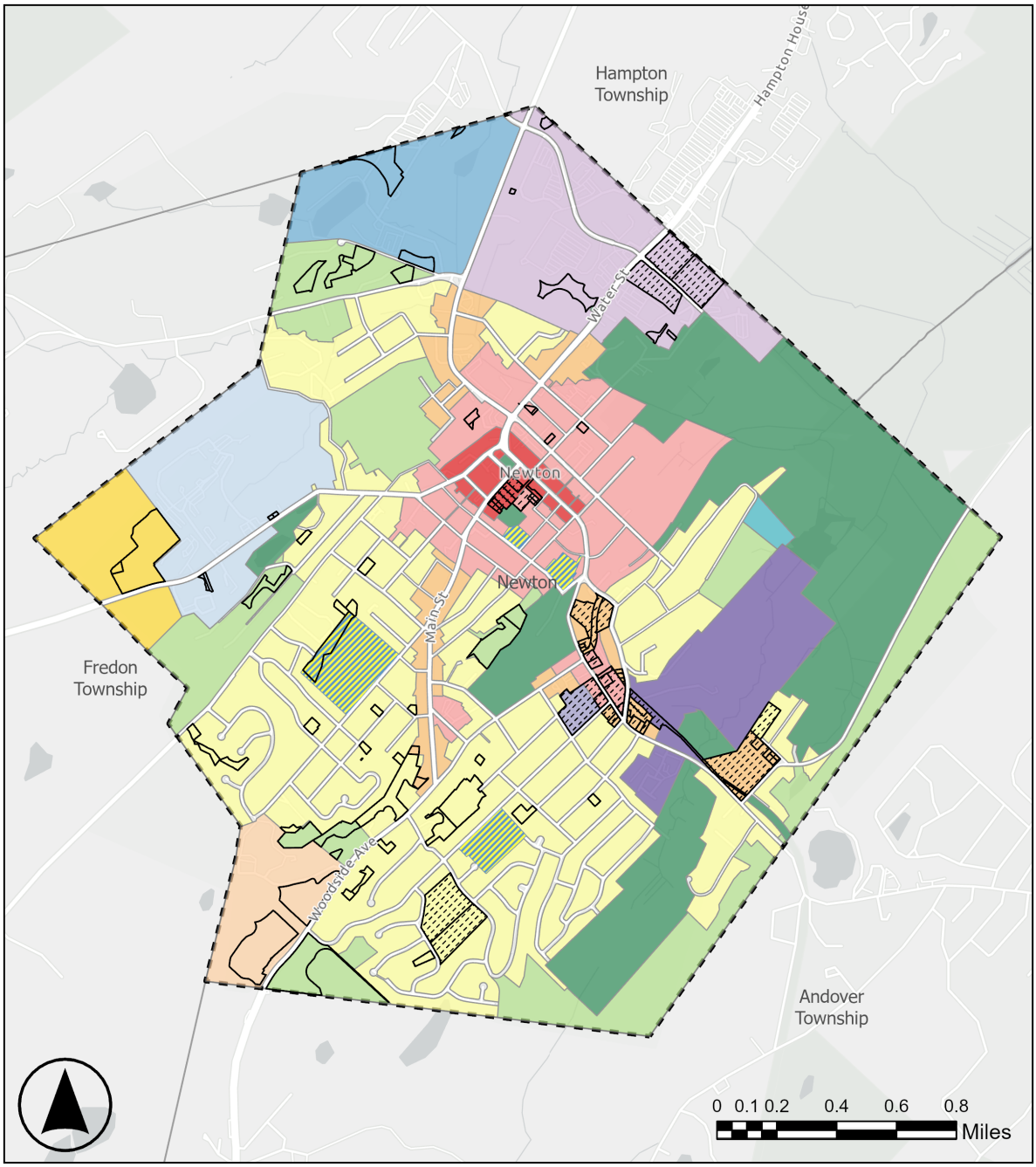
After broadly identifying developable areas, GIS-based zoning analysis resolved spatial discrepancies. Large parcels spanning multiple zoning districts were split by the district to ensure compliance with its zoning regulations. Irregular parcels that did not conform to the minimum lot size requirements of the applicable zoning designation were thoroughly reviewed before removing them from the analysis. Minimum lot sizes that were available were used to determine how many potential lots could be developed within the Town of Newton.

Map IV-3 illustrates the developable areas resulting from this analysis along with the zoning districts of Newton. The areas vary in shape and size and may not be individual tax parcels. There are 58 developable areas highlighted with a black outline spread across the town. Along with developable areas, the areas in need of redevelopment are also shown on this map which are in the town's center and supporting districts (along Main St), neighborhood support services district (between Sparta Avenue and Diller Ave) and retail-manufacturing district (along Water St).

Table IV-3 shows the total available areas for development along with their development potential, calculated by applying an 80% gross-to-net conversion factor[12] to account for roads, stormwater infrastructure, and utility easements. After calculating the net area, the minimum lot size requirement was used to determine the number of potential lots. Table IV-3 identifies 58 developable areas across 10 zoning districts, with a combined gross developable area of 3,690,196 square feet and a net developable area of 2,952,157 square feet yielding a potential of 107 additional lots. In addition, the Planned Neighborhood Development, Hicks Avenue Redevelopment Area, and Merriam Gateway Redevelopment Area yield a potential of 470, 14, and 9 units respectively. The T-3 (Neighborhood Residential) district accounts for the largest share of this capacity, with 23 developable areas and a potential of 82 new lots followed by T-2 (Rural Reserved Areas), offering 10 developable areas and a potential of 20 new lots. T-4 (Neighborhood Services) and SD-7 (Senior Community District) follow, offering two and one development areas respectively, with potential yields of three and two lots. A total of 20 additional areas are within the zones which do not have minimum lot size specified. Even though the potential number of lots is not calculated within this analysis, these areas present the potential for additional development and hence the potential number of lots is greater than 107.

[12] Lathrop, R.G., and Myers, J. 2023. Buildout analysis for the Southern Barnegat Bay Watershed. Center for Remote Sensing and Spatial Analysis, Rutgers University.

Map IV-3. Developable areas with zoning districts in the Town of Newton



LEGEND

- Developable Areas
- Areas in Need of Redevelopment

Zoning Districts

- Natural Areas: T-1
- Rural Reserved Areas: T-2
- Neighborhood Residential: T-3
- Neighborhood Services: T-4
- Town Core Support Area / Neighborhood Cores: T-5
- Town Core: T-6
- Hospital District: SD-1
- College District: SD-2
- Retail-Manufacturing District: SD-3
- Industrial-Manufacturing District: SD-4
- Office-Manufacturing District: SD-5
- Schools District: SD-6
- Senior Community District: SD-7
- Power Substation District: SD-8
- Planned Neighborhood Development: SD-9

Table IV-3. Developable areas and development potential

Zoning District	Description	Number of Developable Areas	Gross Developable Area (Sq. Ft.)	Net Developable Area (Sq. Ft.)	Minimum Lot Size (Sq. Ft.)	Potential Number of Lots
T-2	Rural Reserved Areas	10	1,072,484	857,988	43,560	20
T-3	Neighborhood Residential	23	923,418	738,734	9,000	82
T-4	Neighborhood Services	2	31,465	25,172	9,000	3
T-5*	Town Core Support Area / Neighborhood Cores	7	54,930	43,944	-	-
SD-1	Hospital District	4	23,212	18,570	-	-
SD-2*	College District	3	73,770	59,016	-	-
SD-3*	Retail-Manufacturing District	5	170,839	136,671	-	-
SD-6*	Schools District	1	136,462	109,169	-	-
SD-7	Senior Community District	1	698,081	558,465	348,480	2
SD-9*	Planned Neighborhood Development	2	505,535	404,428	-	(470 Planned Units) **
Grand Total		**58**	**3,690,196**	**2,952,157**		**107**

***** *Development potential to be calculated on a case-by-case basis*

****** *SD-9 is an undeveloped 52-acre inclusionary zone, estimated in the Housing Element and Fair Share Plan to yield 470 residential units with a set-aside of 94 affordable units, and is not included in the total potential number of lots. The town's HEFSP provides proposed densities and credits for SD-9.*

Areas in need of Redevelopment

New Jersey's Local Redevelopment and Housing Law (LRHL) authorizes municipalities to designate underutilized or substandard properties as areas in need of redevelopment and to transform them

into healthier, more vibrant, or economically productive spaces. The redevelopment process has its own regulatory requirements and approvals under the LRHL, and hence, the development potential for these areas is not included within this buildout analysis. Table IV-4 illustrates two of these redevelopment areas: Hicks Avenue and Merriam Gateway Redevelopment Areas, with their estimated development potential.

Table IV-4. Redevelopment Areas and development potential

Redevelopment Areas	Potential Number of Units
Hicks Avenue Redevelopment Area	14 units
Merriam Gateway Redevelopment Area	9 units
Grand Total	**23 units**

Map IV-4 presents an overview of the redevelopment areas within FEMA flood zones, which shows Hicks Avenue and Merriam Gateway Redevelopment Areas exposed to 1% annual chance and the approximate extent of NJDEP Inland Flood Protection Rule (1% chance plus 3FT) flood scenarios. Map IV-5 and IV-6 show the flood exposure of these two redevelopment areas. Flood exposure is categorized as follows:

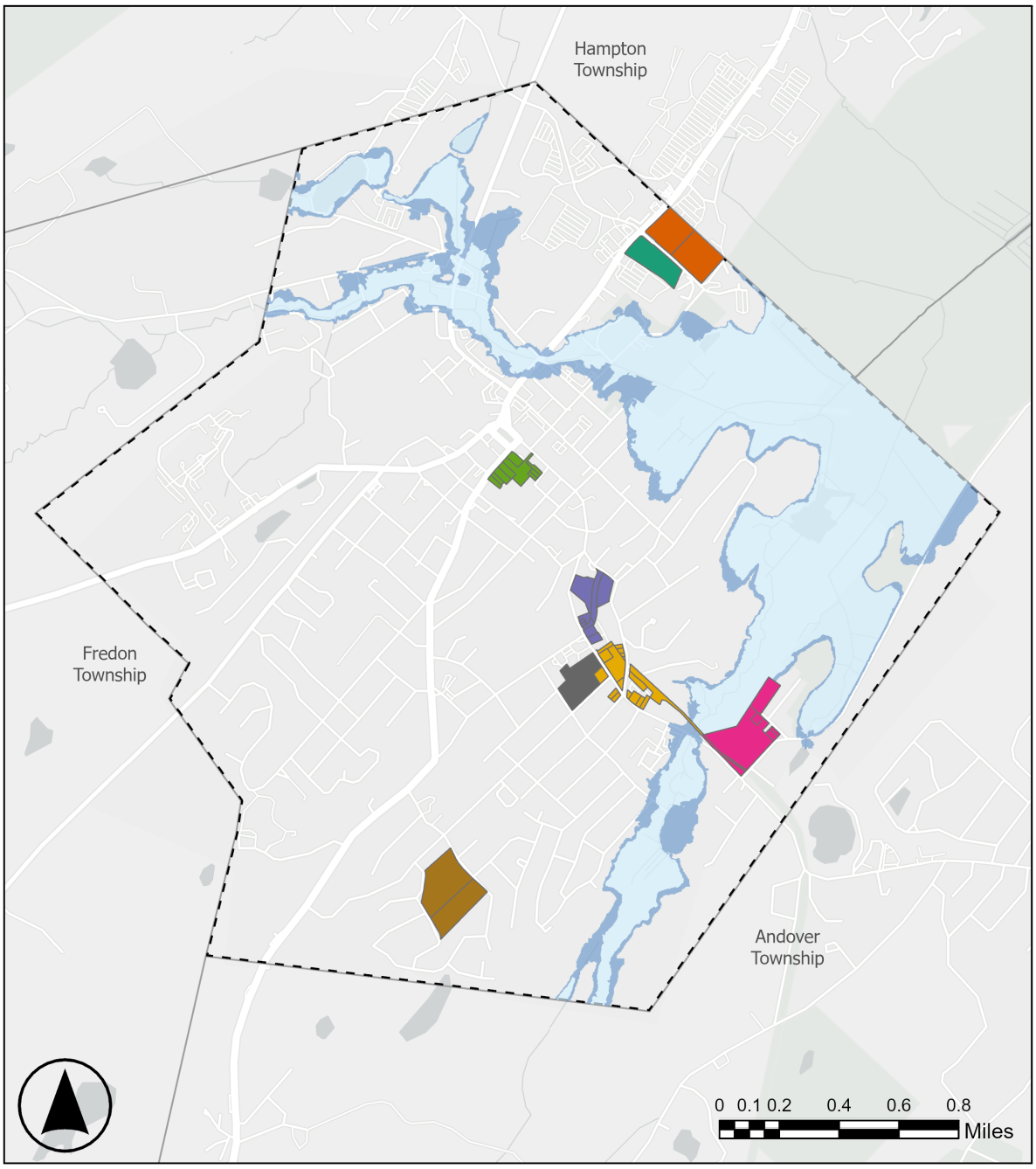
- Not inundated: 0% of the area is exposed to flooding
- Limited inundation: 1% to 50% of the area is exposed to flooding
- Considerable inundation: 51% to 99% of the area is exposed to flooding
- Completely inundated: 100% of the area exposed to flooding

Table IV-5 shows that Hicks Avenue and Merriam Gateway Redevelopment Areas are exposed to limited flooding under both FEMA 1% chance and Approximate extent of Inland Flood Protection Rule scenarios. No area is completely exposed to flood risk in either scenario. The purpose of this analysis is to highlight flooding challenges and support informed redevelopment decisions.

Table IV-5. Flood exposure of the areas in need of redevelopment

	Exposed at...	
Area in need of redevelopment	FEMA 1% Annual Chance Flood	Approx. extent of Inland Flood Protection Rule
Hicks Avenue Redevelopment Area	Limited	Limited
Merriam Gateway Redevelopment Area	Limited	Limited

Map IV-4. Areas in need of redevelopment within FEMA flood zones



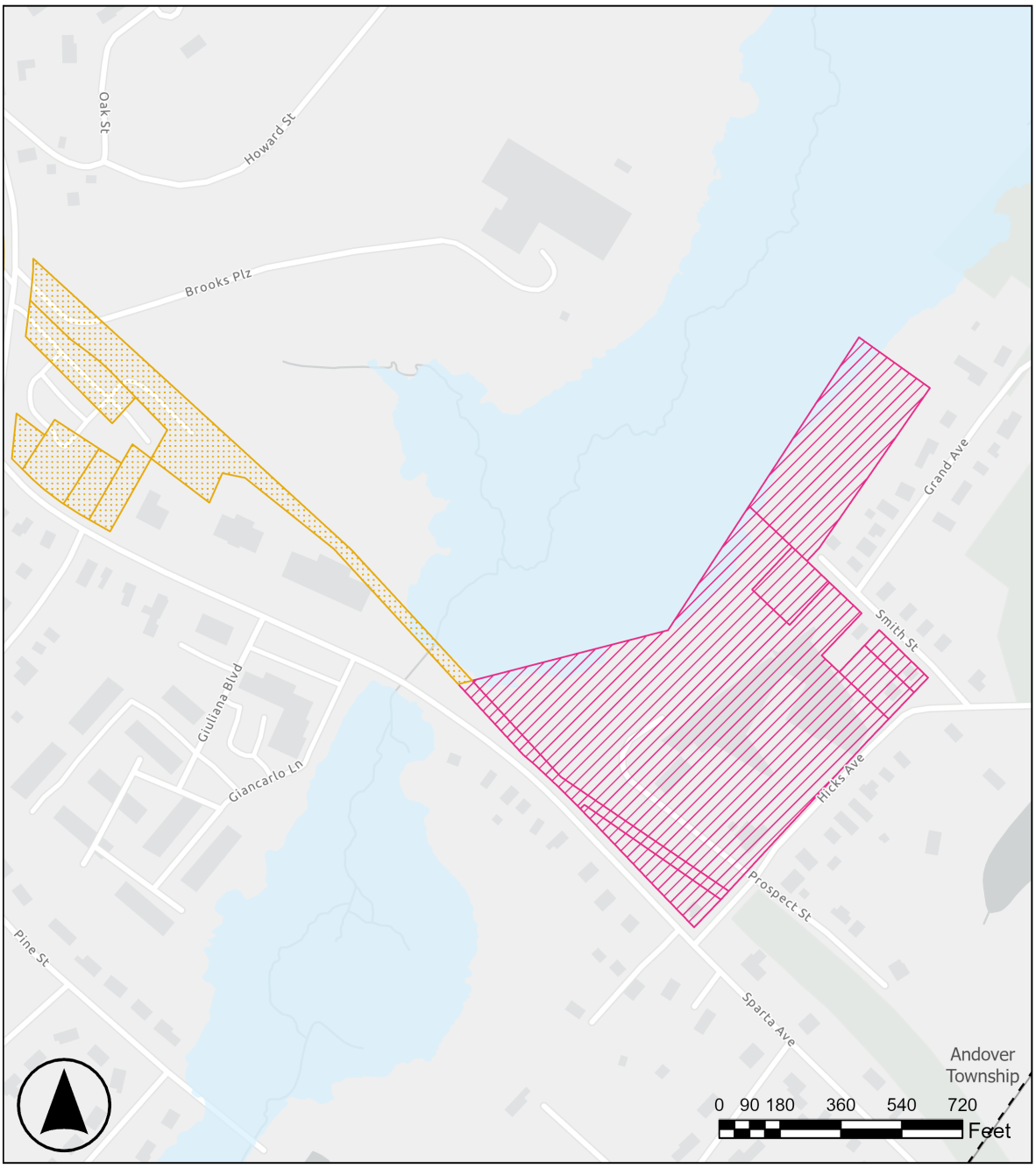
LEGEND

- 1% Annual Chance Flood
- Approximate extent of Inland Flood Protection Rule

Redevelopment Areas

- 121 Water Street Redevelopment Area
- Armory Shop Rite Redevelopment Area
- Diller Avenue Redevelopment Area
- Hicks Avenue Redevelopment Area
- McGuire Redevelopment Area
- Merriam Gateway Redevelopment Area
- Paterson Avenue Redevelopment Area
- Sparta Avenue Redevelopment Area

Map IV-5. Areas in need of redevelopment exposed to FEMA 1% annual chance flood zone



LEGEND

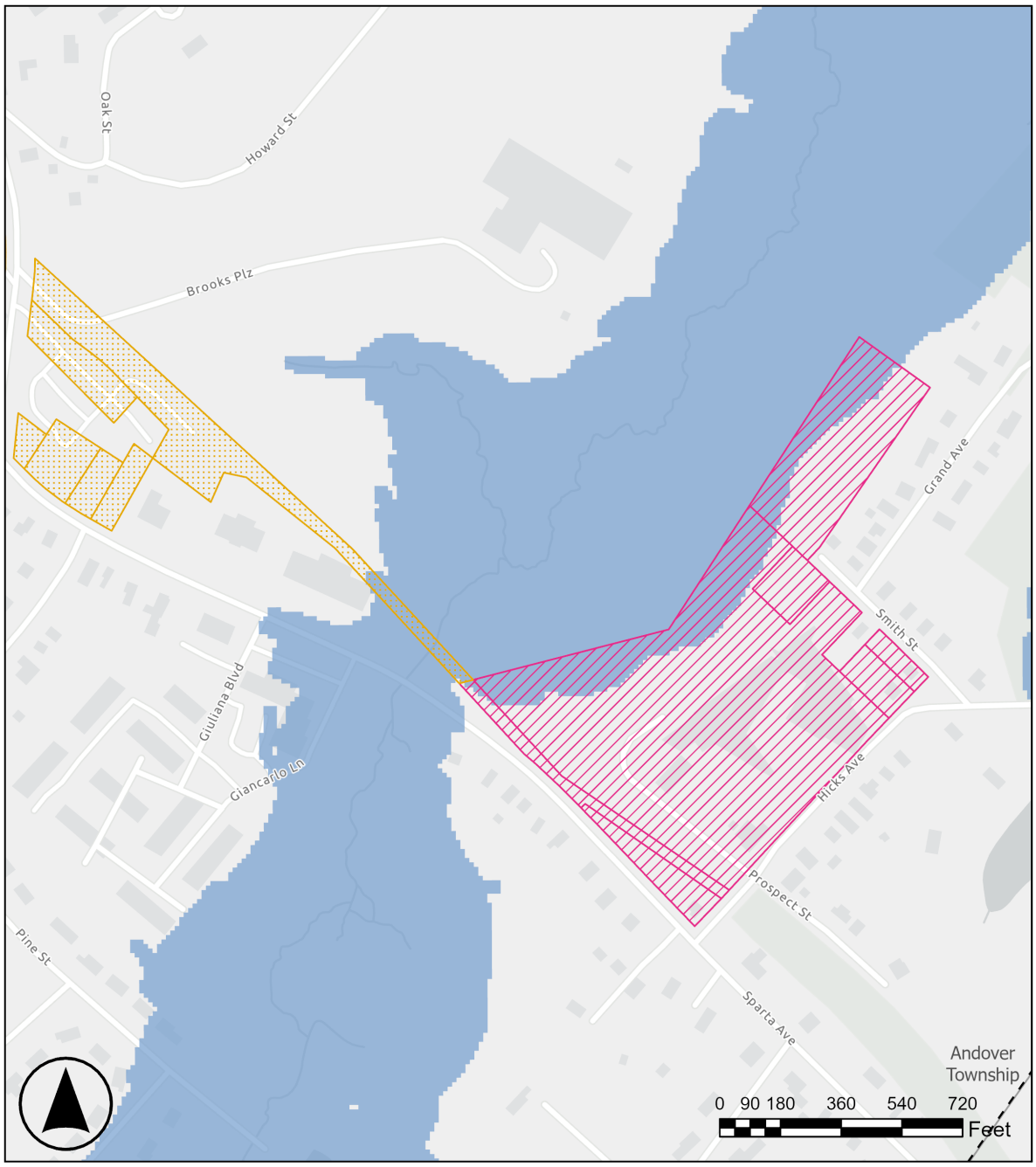
1% Annual Chance Flood

Redevelopment Areas

Hicks Avenue Redevelopment Area

Merriam Gateway Redevelopment Area

Map IV-6. Areas in need of redevelopment exposed to Inland Flood Protection Rule



LEGEND

Approximate extent of Inland Flood Protection Rule

Redevelopment Areas

Hicks Avenue Redevelopment Area

Merriam Gateway Redevelopment Area

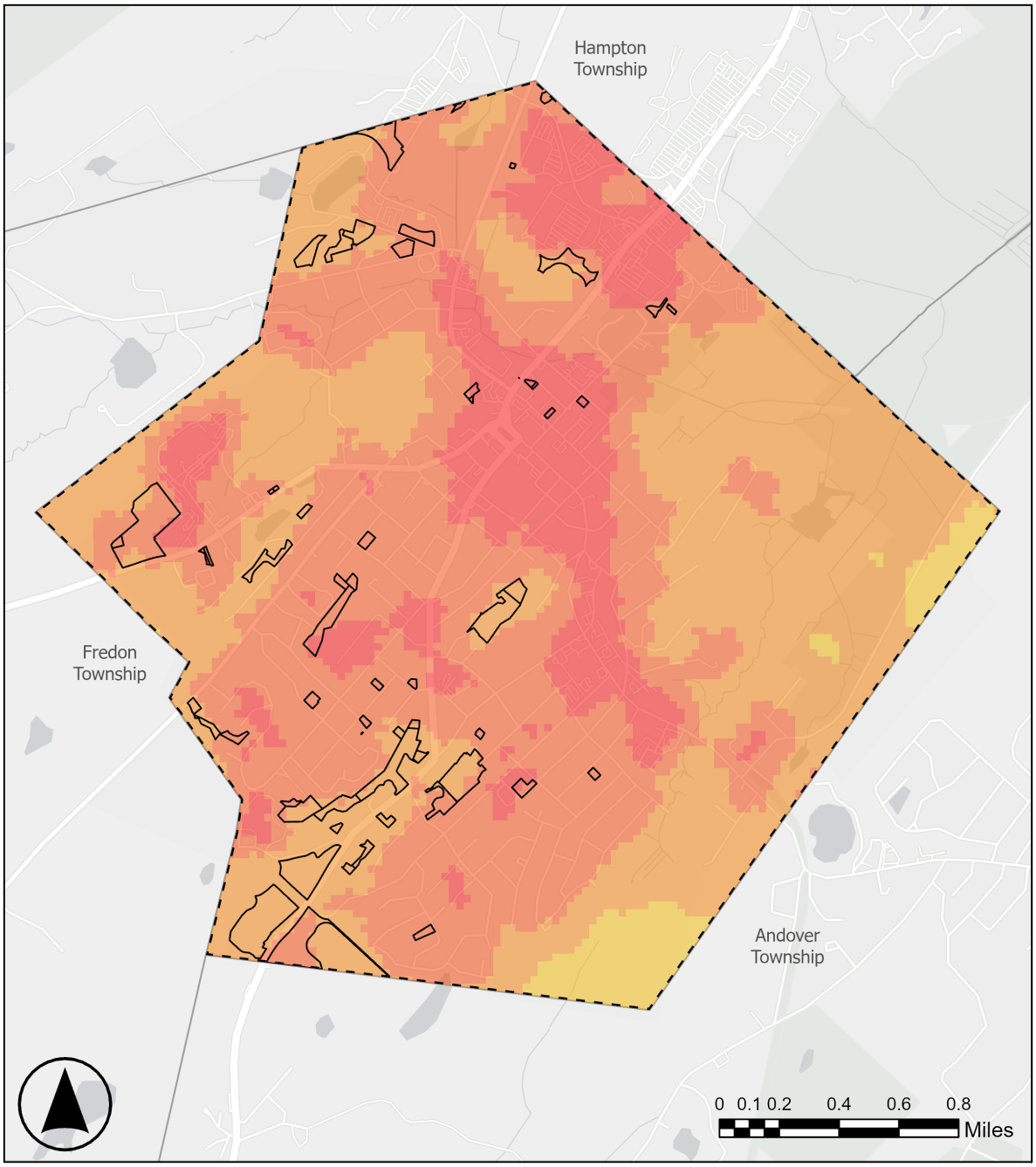
C. Exposure of Developable Areas

Identifying the climate hazard exposure of developable areas is the critical component of this build-out analysis to support decisions about where future development may face significant risk. This exposure analysis identifies how heat and flooding are projected to impact the development potential identified in Table IV-3.

Map IV-7 shows the developable areas with respect to land surface temperature. As detailed in Section III.A, temperature projections indicate that the Town of Newton is prone to high heat risk, with temperatures reaching nearly 100 °F. This risk is compounded by the urban heat island effect, a phenomenon in which impervious surfaces, such as buildings, parking lots, and streets, absorb and retain more solar heat than vegetated or naturally permeable surfaces. Although natural areas with greater tree canopy and green space coverage are relatively cooler, built out neighborhoods including the downtown and surrounding neighborhoods as well as retail centers in the northeast region exhibit a pattern of elevated surface temperatures.

The developable areas identified in this section are scattered throughout these warmer zones, and any future development within them should incorporate heat mitigation strategies to avoid intensifying existing temperature patterns. Because green spaces help moderate surface and air temperatures through shading and evapotranspiration, opportunities to reduce impervious coverage and to incorporate additional trees, green roofs, permeable paving, and landscaped buffers within these developable areas should be explored. Such measures would not only help offset projected temperature increases but could also improve stormwater management, reduce building energy demand, and enhance quality of life for residents in surrounding neighborhoods.

Map IV-7. Developable areas and land surface temperature



LEGEND

Developable Areas

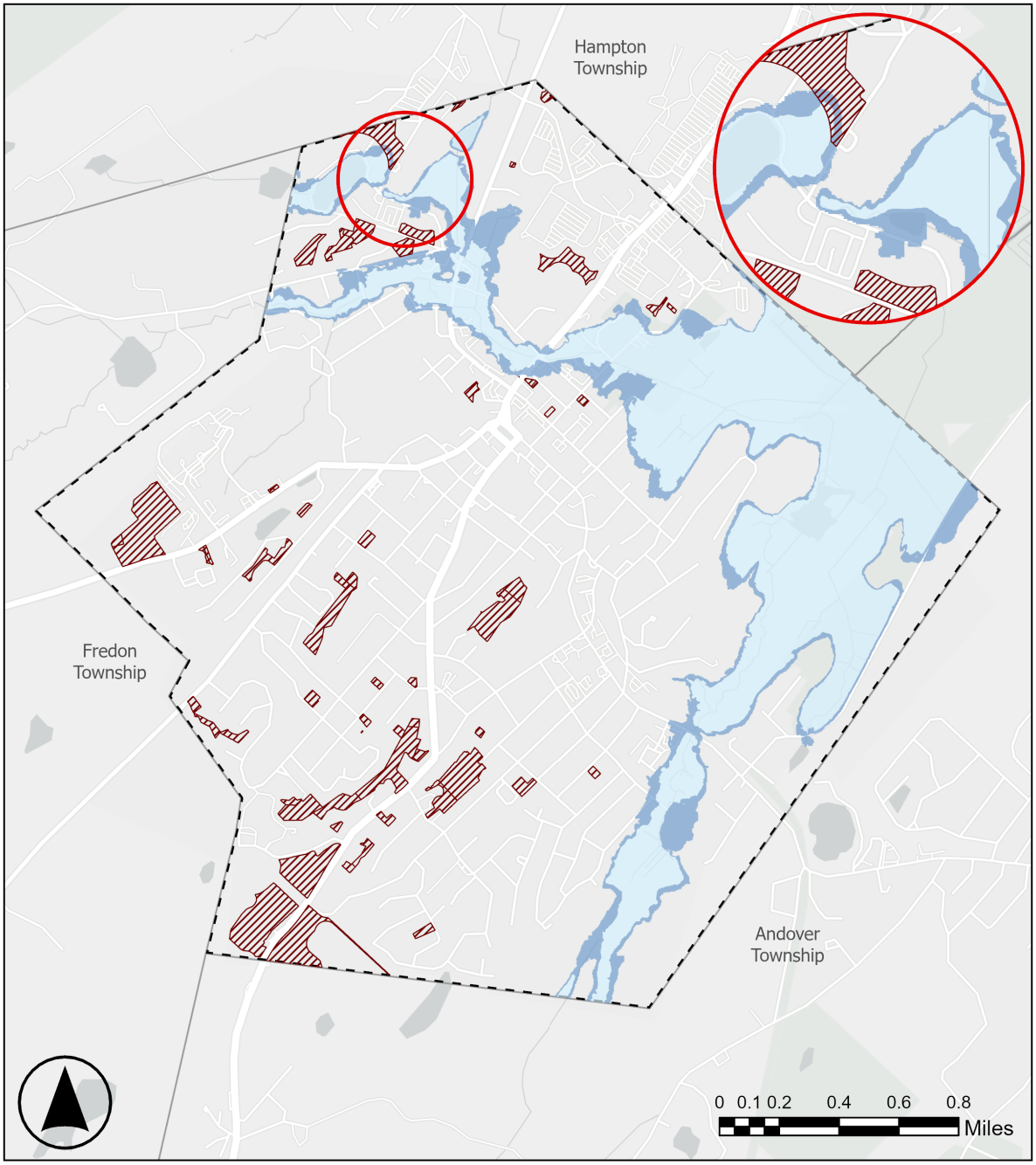
Land Surface Temp (F)

- Below 80
- 80-90
- 90-100
- 100-110
- Over 110

Map IV-8 depicts the flood exposure of developable areas for FEMA 1% annual chance flood zone and the approximate extent of NJDEP Inland Flood Protection Rule (1% chance plus 3 feet). Of the 58 developable areas, two are exposed to limited flooding – one in the College District (SD-2) and one in the Rural Reserved Areas (T2) district. Given Newton's location between the Paulins Kill and the Pequest River and its largely built-out, impervious landscape, the town experiences stormwater flooding, as shown in Map III-4. As such, these developable areas, though outside the mapped flood zones, may present opportunities for future design standards, such as green infrastructure, permeable surfaces, and on-site stormwater retention, to help absorb and mitigate flash flooding impacts within Newton's residential and business districts.

The buildout analysis presented in this section establishes a planning-level baseline for understanding future development potential within the Town of Newton and its relationship to the climate-related hazards of heat and flooding. Proactive land-use policies and investment in stormwater infrastructure should be considered as the Town of Newton looks toward its future growth.

Map IV-8. Developable areas within FEMA flood zones



LEGEND

- Developable Areas
- 1% Annual Chance Flood
- Approximate extent of Inland Flood Protection Rule

V. Exposure and Vulnerability Assessment

New Jersey's MLUL requires a CCRHVA to identify "critical facilities, utilities, roadways, and other infrastructure that is necessary for evacuation purposes and for sustaining quality of life during a natural disaster, to be maintained at all times in an operational state." This section addresses and significantly expands upon that requirement, analyzing the climate hazard exposures of additional community facilities, assets, and population groups of importance to local planning. Where applicable, for consistency with Hazard Mitigation Planning, this section is categorized to facilitate alignment with FEMA Community Lifelines.

A. Facilities and Infrastructure

This sub-section addresses the MLUL's requirement for a CCRHVA to identify "critical facilities, utilities, roadways, and other infrastructure that is necessary for evacuation purposes and for sustaining quality of life during a natural disaster." It includes analysis of the following:

- Critical facilities that are essential to maintain quality of life. These include facilities related to education (e.g., schools and child care centers), safety and security (e.g., law enforcement, fire stations, and emergency operation centers), and health and medical care (e.g., hospitals, dialysis centers, VA medical facilities, and nursing homes). Commercial facilities that provide the community with essential shopping and services are included in Section V – C. Community Assets.

- Infrastructure and utilities necessary to maintain services. These include facilities related to transportation and evacuation routes (e.g., roads, public transit, aircraft landing facilities, ferry terminals, gas stations, EV charging stations, and rail lines), energy (e.g., power plants), and water systems (e.g., wastewater treatment plants).

- Hazardous facilities and known contaminated sites from which climate hazards may cause releases of hazardous materials.

These facilities, sites, and assets fall within the following FEMA Community Lifelines: Safety and Security; Health and Medical; Food, Water, Shelter; Transportation; Energy; Communications; Water Systems; Hazardous Materials. Climate risks to facilities and infrastructure are related to the asset's exposure to hazards and its ability to operate during or despite climate-related weather events. Risks also depend upon the ability of responders to provide services to the community from the asset and the ability of residents to access the services they provide.

Heat

As detailed in Section III.A, temperature projections indicate that Newton may experience increasing heat throughout the century. Increasing temperatures have a variety of impacts on facilities and infrastructure. While heat will not necessarily impact critical facilities themselves, increasing temperatures will require greater health and medical services response. This may include planning for increased mobilization to and from health facilities and cooling centers.

Presently, the town does not have a cooling center. Additionally, schools have experienced operational challenges related to extreme heat. Older facilities often are not equipped with central air conditioners and may not be safe during extreme heat events.

Extreme heat also acts as a stressor on New Jersey's energy systems due to increased demand for electricity for cooling and heating.[13] Heat can impact energy infrastructure, increasing the likelihood of mechanical issues or service disruptions. The town has two electric substations, the electric bulk power transmission and control substation along Mount View Street in the northeastern part of the town and the second near the Thorlabs compound, both of which are currently exposed to temperatures between 90 and 100°F.

Communications infrastructure is critical to the daily functions of municipalities and is especially vital to emergency response and management. Communication infrastructure can be physical or cyber and is vital to the functionality of other infrastructure systems like utilities and transportation. Extreme heat can be a threat to telecommunications that are already high heat generators with temperature thresholds that may not be designed to endure extreme heat. Intense heat waves can cause overheating of machinery, increase fire risks, and lead to malfunctions in cooling systems. Failure or degradation of equipment catalyzes a slowdown of services across all other facilities and infrastructure. The town has a total of ten land mobile private transmission towers, three of which are on the Sussex County Community College campus and two within the Newton Medical Center. Newton also has two microwave service towers, one at T-Mobile along Route 94 and one at the Sussex County Sheriff's Office.

Hazardous materials are also of concern during extreme heat events since nearly all chemicals are affected by heat. Extreme temperatures can impact the storage and transport of hazardous materials, especially if they are volatile.[14] Newton has ten industrial sites of varying scales, 20 Known Contaminated Sites, two Scrap Metal Facilities and a Community Right to Know Site, Thorlabs, Inc., which has permits for potential hazardous materials storage.

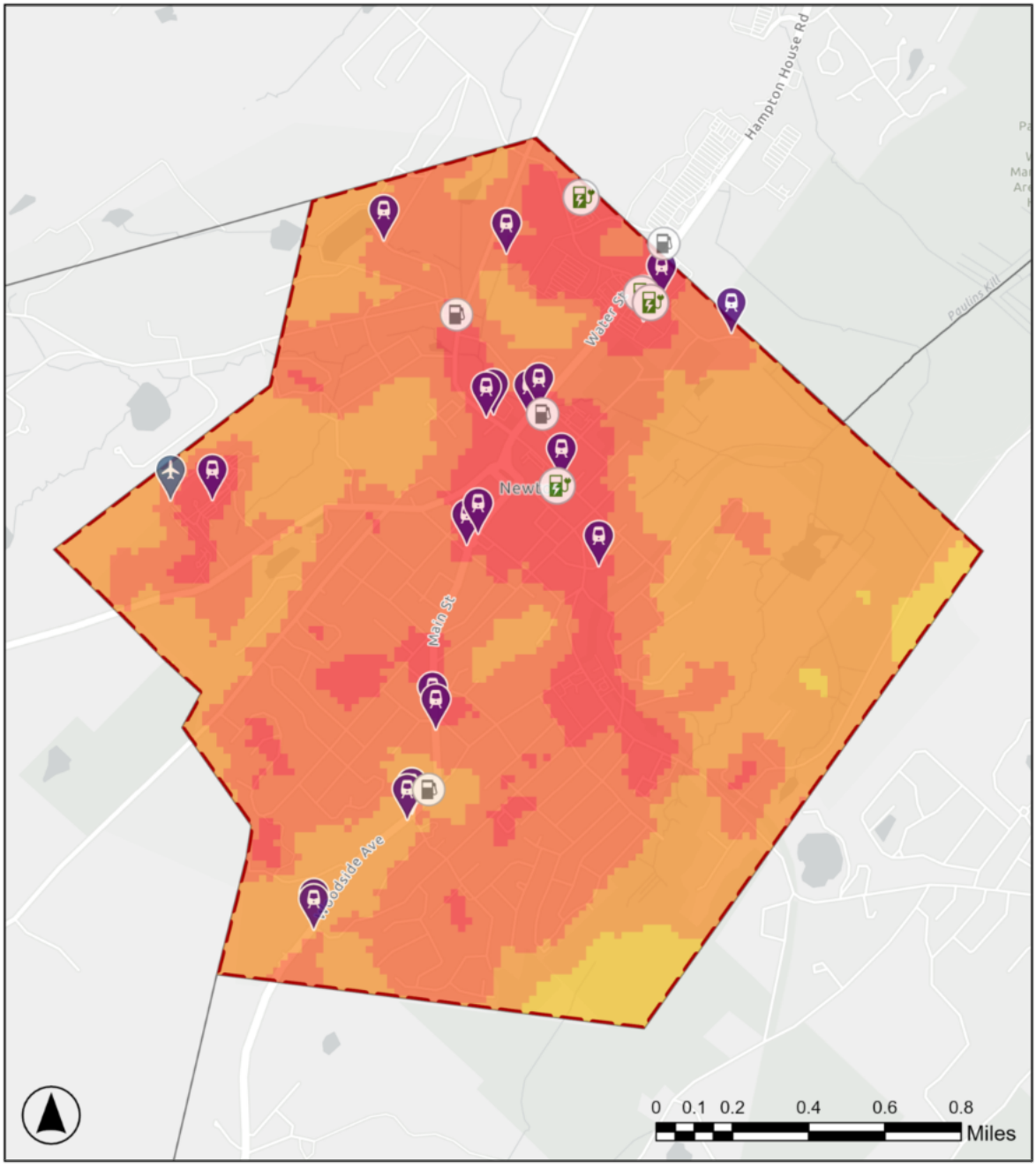
Heat also impacts transportation. High temperatures can warp materials and reduce the reliability of air, land, and maritime systems. This impacts how goods and people move across all travel modes, including roads, railways, public transit, active transportation, water transport, and aviation infrastructure. Risks posed by high temperatures include accelerated degradation of roads and railways, power system failures due to overheating, and public safety concerns for pedestrians and transit riders in areas with limited shade or tree canopy.

Map V-1 illustrates transportation assets in Newton that may be affected by rising temperatures. Key transportation infrastructure in Newton is highly concentrated along the two main arterial roads – Main Street and Water Street, which also form the urban core of the town. Public transit

[13] Filión, N.A., Knutsen, M., and Phillips, S. New Jersey Department of Environmental Protection. 2025. New Jersey Extreme Heat Resilience Action Plan.
[14] New Jersey Office of Emergency Management. 2024. State of New Jersey All-Hazards Mitigation Plan.

bus stops are located along this central corridor in an area that experiences relatively high surface temperatures, ranging from 90 to over 110 °F, especially in the downtown area. Additionally, the heliport at the Newton Medical Center (the town's only aviation facility) experiences land surface temperatures exceeding 110 °F. Newton's eight EV charging stations face similar risks, as extreme heat causes lithium-ion batteries to charge more slowly, while forcing the vehicle's thermal management system to consume extra energy to prevent overheating, significantly increasing recharge times. When temperatures exceed 80 °F, energy consumption per mile steeply increases, whereas frequent exposure to extreme heat accelerates long-term battery degradation, eventually leading to a permanent reduction in battery capacity.

Map V-1. Land surface temperature and transportation assets



LEGEND

Land Surface Temperature (°F)

- Below 80
- 80 - 90
- 90 - 100
- 100 - 110
- Over 110

Transportation Infrastructure

- Aviation Facilities
- EV Charging Stations
- Gas Service Stations
- Public Transit Stations

Storms

As detailed in Section III.B, the frequency and intensity of extreme precipitation events are anticipated to increase throughout the century. Storm-driven extreme precipitation and wind affect the built environment across all sectors.

Extreme precipitation directly impacts stormwater management and water quality when overloaded water and sewage systems flood, with untreated water posing public health risks. For transportation, extreme precipitation events have been linked with increased risk of traffic accidents, road inaccessibility and/or closures, inability to use active transportation modes (e.g., biking and walking), pavement buckling, and material erosion on the base of bridges in water due to faster stream flow. Additionally, increased frequency of extreme precipitation leads to faster rates of degradation and can disrupt maintenance of energy and transportation infrastructure (See discussion of relevant infrastructure in the above section about heat).

Historically, high winds in New Jersey have caused damage to power, communication, transportation, water, and other lifeline systems.[15] Extreme winds can cause structural damage to facilities, including the breakage or collapse of compromised components such as building materials like roofs, signage, or windows and outdoor components like fencing or cooling systems. Facilities and infrastructure are also vulnerable to indirect hazards such as falling trees and downed power lines. Transportation, utilities, and communication infrastructure are also vulnerable, as high winds can lead to disruptions in public transit service, create hazardous conditions for road users, interrupt emergency communications, and catalyze water and power outages. Roadways, railways, and bridges can be shut down due to structural compromise or blockage from trees and/or debris. Extreme winds can also contribute to the spread of wildfires and contaminant dispersal.

It should be noted that Newton is uniquely dense compared to other Sussex County municipalities. While structural damage and downed power lines are hazards that occur with storms, the Town is also resilient. For example, a downed tree or power line does not significantly limit vehicle traffic or emergency access given the grid-like pattern of development with relatively connected streets and routes available. Additionally, the Town is only 3.4 square miles, allowing for the Department of Public Works and emergency responders to access all sections of the municipality easily.

Drought

As detailed in Section III.C, Newton's time in drought each year is anticipated to increase throughout the century. Facilities and infrastructure that depend on water are those most affected by drought. For example, energy production may be affected due to the need for cooling water, although no power plants are present in Newton. Drinking water and water treatment may also be impacted. During drought, water use patterns may shift to higher rates of groundwater pumping, which can have implications both for water quality and increased risk of land subsidence. Land subsidence can

[15] New Jersey Office of Emergency Management. 2024. State of New Jersey All-Hazards Mitigation Plan.

damage infrastructure such as sidewalks, roads, and rail lines. Surface water reservoirs experience severe volume depletion, accelerated evaporation, degraded water quality, and compromised municipal or agricultural delivery during droughts. Newton has been affected by drought in the past; for example, in 2015, the Newton Water and Sewer Utility imposed water restrictions because the water level at Morris Lake, the town's reservoir in Sparta Township, was dropping.

The Morris Lake reservoir has been Newton's primary water source since the early 1900s. Since the completion of the Morris Lake Filtration Plant in 2006 (owned and operated by the Town of Newton), Newton has maintained compliance with the NJDEP limits of lead and copper. The Newton Wastewater Treatment Plant, located on Townsend Street, has served the town since 1907. Owned and operated by the Town of Newton Water and Sewer Utility, the plant has an operating capacity of 1.4 million gallons per day (MGD). It typically processes an average of 0.91 MGD before discharging treated wastewater into Moore's Brook, a part of the Paulins Kill watershed.

Flood

Transportation infrastructure is particularly vulnerable to flooding when roads and railways become impassable, disrupting daily life, emergency and healthcare services, and the food supply chain. Flooded energy and communications infrastructure can impact emergency response coordination and hinder oil, gas, and electricity production. For hazardous sites, flooding can mobilize pollutants and lead to acute and chronic health effects.[16] Potential public health impacts from mobilized pollutants include respiratory illnesses from mold exposure and infectious disease spread from microorganism contamination of clean water. The pollution impacts of flooding can continue after flood waters recede. Finally, flooding impacts in water systems can include damaged wells, contaminated aquifers and wells, and backed-up sewage systems that can overflow and discharge sewage into communities and water sources.

Maps V-2, V-3, and V-4 highlight assets located within high-risk FEMA flood zones, including the 1% annual chance flood zone, the approximate extent of Inland Flood Protection Rule, and the regulatory floodway. The analysis of hazardous sites included facilities present within the municipality regulated by any of the following programs:

- Toxic Catastrophe Prevention Act (TCPA)
- Discharge Prevention Containment and Countermeasure (DPCC)
- Known Contaminated Sites
- Community Right to Know
- Solid and Hazardous Waste Facilities

[16] New Jersey Office of Emergency Management. 2024. State of New Jersey All-Hazards Mitigation Plan.

- Combined Sewer Overflow
- Scrap Metal Facilities

The maps highlight many of the essential services located near the floodplains; however, most of Newton's critical facilities, including those related to education, healthcare, and safety and security, are not located within the FEMA flood zones. The primary flood risk identified in the analysis is the vulnerability of industrial sites and the disruption of transport services concentrated in the eastern and northern zones of the town, along Water Street in the urban core.

Map V-2 depicts potential flood exposure of Newton's critical infrastructure, including transportation, water, and energy infrastructure. Located within the approximate extent of Inland Flood Protection Rule, the public transit stations at Water Street, belonging to First Student, and East Clinton Street are especially vulnerable to flooding. The Exxon and Busy Bee gas stations, situated near the urban core, face a similar threat. Newton's only Wastewater Treatment Plant is located within the approximate extent of Inland Flood Protection Rule, which places the town's wastewater treatment capacity at risk of flood impacts. Two of Newton's sewer pumps are located within the approximate extent of Inland Flood Protection Rule. One pump is located at the intersection of Sparta Avenue and Giancarlo Ln in the southwestern part of Newton in a commercial area. The second pump is located north of Memory Park.

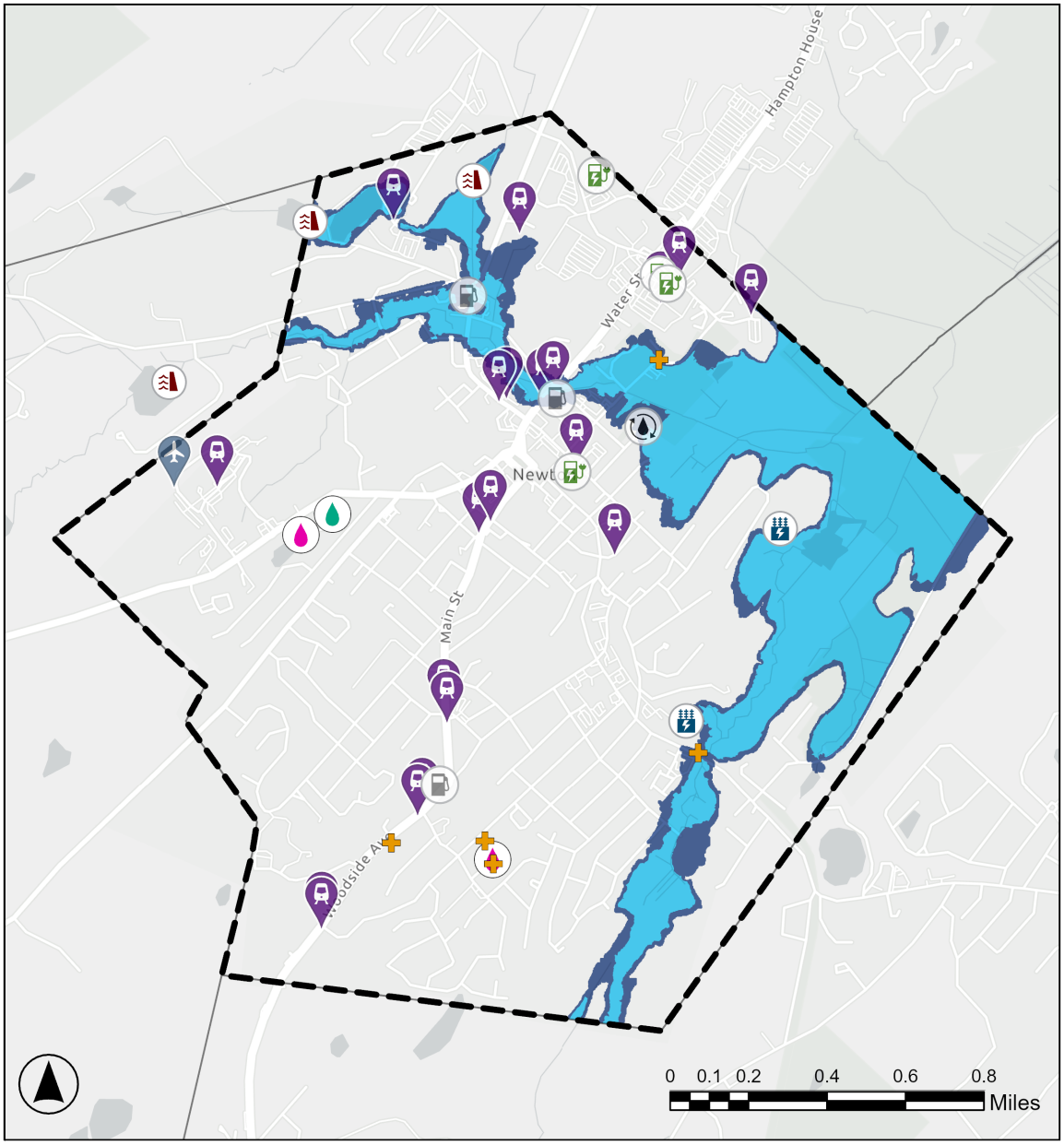
Map V-3 depicts the exposure of critical facilities to flooding. Two of Newton's facilities related to healthcare and safety are found within the approximate extent of Inland Flood Protection Rule. The Town's Department of Public Works has a garage located near Memory Park that is within the approximate extent of Inland Flood Protection Rule. Given the department's important function in the town to maintain roads, storm drains, and municipal buildings, access to the department's garage is vital, particularly during hazardous events such as extreme floods. Additionally, the Town's only dialysis center is within the approximate extent of Inland Flood Protection Rule, potentially limiting access to important health services for vulnerable groups. A significant finding from this analysis is exposure to hazardous sites. Out of the 20 known contaminated sites in Newton, five are located within the 1% annual chance flood zone, depicted in Map V-4. These same sites, i.e., the MWD Inc Clinton Garage, Newton Town Garage, Brian & Bills Automotive Inc, Clinton Street & Route 206 groundwater contamination, and Darlinton Heritage Properties, are within the 1% annual chance flood zone plus three feet, posing a potential risk to public health in the event of flooding.

Table V-1 summarizes the number of each type of facility and infrastructure exposed at each flood measure. Table V-2 provides details on the exposure of industrial parcels, which represent a total of 81.71 acres at risk with a net equalized value of approximately $15.71 million. The net equalized value includes the land and improvement value and is further explained in Section V.B (MOD-IV Parcel Flood Analysis).

To identify commercial facilities that provide essential shopping and services, Homeland Infrastructure Foundation-Level Data (HIFLD)[17] and USDA SNAP Retailers[18] datasets were reviewed. Although these facilities were not mapped because their locations frequently change, they include six banks, two grocery stores (Weis Markets 143 at 121 Water St. and Hayeks Market at 1 Mill Street), and four pharmacies located along State Route 206. Currently none of these sites fall within the FEMA flood zones. These commercial facilities are important for post-storm continuity of services and are typically analyzed in the Hazard Mitigation Plan (HMP). See Section VII.A for discussion of the Sussex County HMP and Newton Municipal Annex. From a land use perspective, Newton may consider overall impacts to commercial zoning, which is detailed in Section V.C.

[17] U.S. Department of Homeland Security. 2025. Homeland Infrastructure Foundation-Level Data (HIFLD).
[18] U.S. Department of Agriculture. 2026. Snap Retailer Location data.

Map V-2. Critical infrastructure within FEMA flood zones



LEGEND

Transportation

- Aviation Facilities
- Gas Service Stations
- EV Charging Stations
- Public Transit Stations

Water Infrastructure

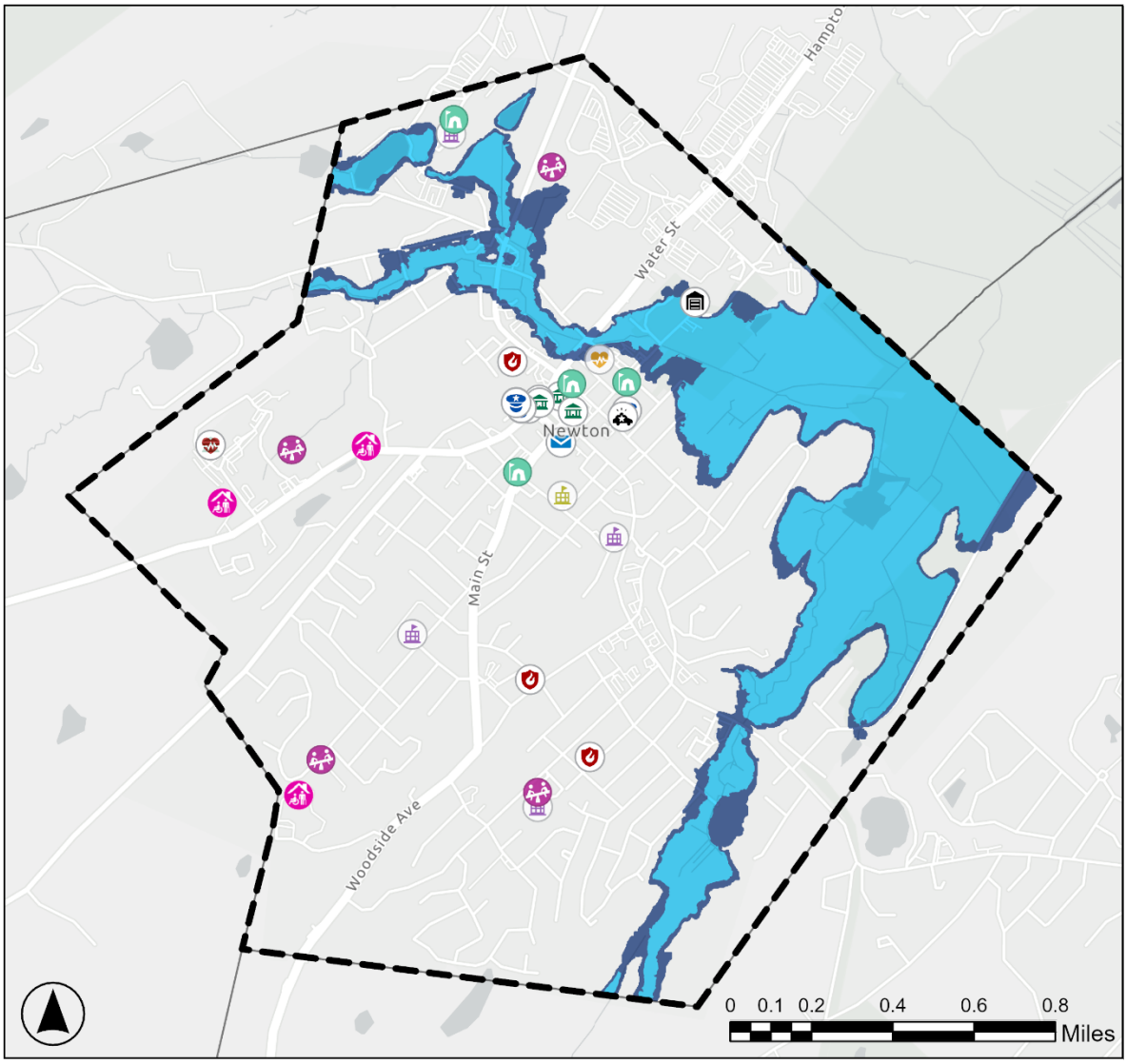
- Pump Station
- Sewer Pump
- Storage Tank
- Dam
- EPA ICIS Wastewater Treatment Plants

- Power Substation

FEMA Flood Zones

- FEMA 1% Annual Chance
- Approximate extent of Inland Flood Protection Rule

Map V-3. Critical facilities within FEMA flood zones



LEGEND

FEMA Flood Zones

FEMA 1% Annual Chance

Approximate extent of the Inland Flood Protection Rule

Safety and Security

Fire and Emergency Medical Service (EMS)

Local Emergency Operations Centers

Emergency Shelters

Local Law Enforcement

Health and Medical Facilities

Nursing Homes/Assisted Care

Hospitals

Dialysis centers

Education

Child Care Centers

Public Schools

Private Schools

Government facilities

Post Office

Municipal Offices

Sussex County Offices

DPW Garage

Map V-4. Hazardous sites and industrial parcels within FEMA flood zones

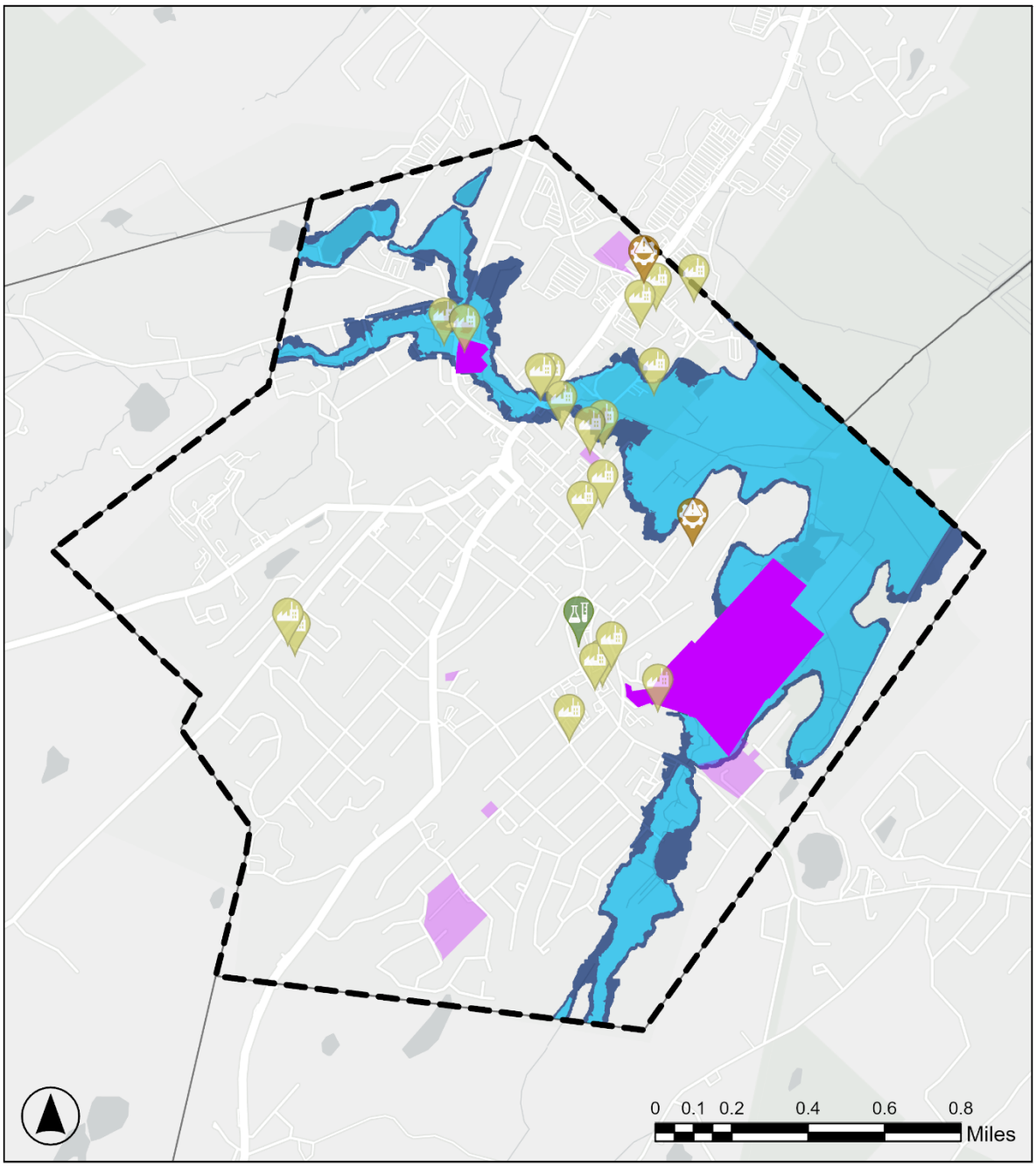


Table V-1. Flood exposure of facilities and infrastructure

	Total #	# Exposed in...	
		FEMA 1% Annual Chance Flood	Approximate extent of Inland Flood Protection Rule
Safety and Security			
Child care centers	4	0	0
Fire stations/EMS	3	0	0
Local Emergency Operation Centers	1	0	0
Local law enforcement	3	0	0
Private schools	1	0	0
Public schools*	4	0	0
Shelter locations	4	0	0
Health and Medical			
Hospitals	1	0	0
Nursing homes / Assisted care facilities	3	0	0
Dialysis centers	1	0	1
Government facilities			
Post Office	1	0	0
Sussex County Offices	8	0	0
Municipal Offices	1	0	0
Department of Public Works	1	0	1
Water Systems			
Wastewater treatment plants	1	0	1
Sewage pump	5	0	2
Stormwater pumps	2	0	0
Storage tank	1	0	0
Dam	1	0	0
Transportation			
Aircraft landing facilities	1	0	0

Continued on next page

Public transit stations	20	0	2
Gas stations (NJEMS)	3	0	2
EV charging stations	8	0	0
Energy			
Power substation	2	0	0
Hazardous Sites			
Known Contaminated Sites	20	5	5
Community Right to Know	1	0	0
Scrap Metal Facilities	2	0	0

*Although public schools are included in this section as critical facilities, school property parcels (Public School Property-15A and Other School Property-15B) are analyzed with the other public property classes in Section V.C).

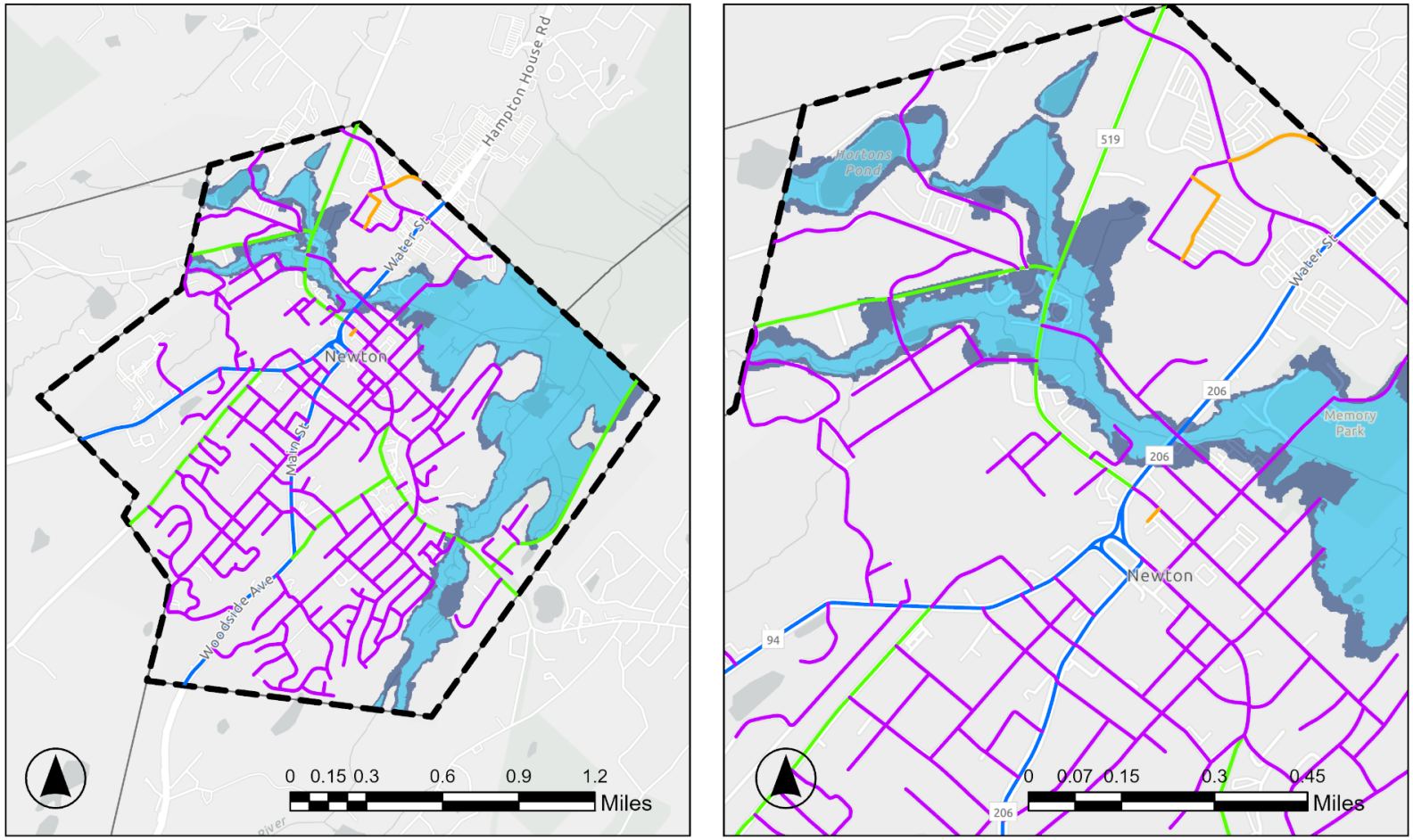
Table V-2. Flood exposure of industrial parcels

	Total # Parcels	Total Acres	Net Equalized Value ($)*	Exposed in...	
				FEMA 1% Annual Chance Flood	Approximate extent of Inland Flood Protection Rule
Newton Sewer Department 37 East Clinton Street	1	0.8	1,703,998	No	No
All Access Staging & Productions 2 North Park Drive	1	4	7,042,142	No	No
Thorlabs 1 Brooks Plaza & 9 Hicks Ave	2	78	10,617,116	Yes	Yes
Sustainable Asset Management 52 Paterson Avenue	1	7	7,024,679	No	No
Janel Newton Ventures LLC 56 Paterson Ave	1	5	3,751,335	No	No
Passaic Metal & Building Supplies Co. 4 & 6 Cassidy Place	2	0.4	608,024	No	No
B&G Elevator Inc 75 Mill Street	1	4	5,088,902	Yes	Yes
Planet Networks 80 Merriam Avenue	1	0.7	1,295,136	No	No

*Net equalized value is the sum of land and improvement value, adjusted to reflect market value.

In addition to direct flood risk to facilities and infrastructure, it is important to understand potential impacts to access due to flood exposure of surrounding roads and/or evacuation routes. Roadway jurisdictions are shown on Map V-5. The map distinguishes roads by color depending on jurisdiction of the Highway Authority, State, County, Municipal, Private, or other entities. This information can support planning of flood adaptation strategies for roadways by understanding which entity is responsible for road maintenance, improvement, funding, and regulation.

Map V-5. Roadway jurisdiction



LEGEND

FEMA Flood Zones

- FEMA 1% Annual Chance
- Approximate extent of the Inland Flood Protection Rule

Road Jurisdiction

- Highway Authority
- State
- County
- Municipal
- Private
- Other

Wildfire

Wildfire does not appear to pose a significant hazard to municipal facilities and/or infrastructure, and there have been no documented wildfire events in Newton since 1950 (see Section III.E). Wildfires can pose significant disruption to transportation, communications, utilities, and hazardous sites. Wildfires can reach temperatures of 2,200 °F in extreme conditions, which can melt nearby building materials and infrastructure assets without direct flame contact.[19] Fires can directly damage or structurally compromise powerlines, telecommunications towers, water distribution systems, roads, bridges, and other transportation infrastructure through melting, warping, collapse, or deforming critical components of these systems. Direct fire impact on hazardous sites can release toxins into the air, water, and soil and can alter both hazardous substances and processing facilities. Wildfires can also overwhelm fire departments and other emergency services.

B. Land Use

MOD-IV Parcel Flood Analysis

The Parcels and MOD-IV Composite of New Jersey dataset provides basic information regarding property location, class, and tax value, and taxation for each tax parcel in New Jersey.[20] This dataset was intersected with flood data to calculate the percentage of each parcel exposed under various flood scenarios. For the purposes of this assessment, a parcel is considered exposed if at least 50% of the land area is within the FEMA flood zone. Structures are likely to be impacted on most parcels at this threshold, although exceptions may include large parcels with limited development. Municipal equalized valuation ratios, from the New Jersey Division of Taxation's 2023 Table of Equalized Valuations,[21] were applied to reflect assessment values that were closer to true market value. This information is useful when considering costs to repair, rebuild, or relocate after flood losses.

This assessment analyzed flood exposure for each property class for the flood measures listed in Table III-7 (FEMA 1% annual chance flood zone and approximate extent of Inland Flood Protection Rule). The results are included in each relevant sub-section: Industrial property is included in Section V.A – Facilities and Infrastructure; Farm property is included in Section V.B – Natural and Working Lands; Commercial, schools, and other public property is included in Section V.C – Community Assets; Residential and apartments property is included in Section V.D – Housing and People.

As an overview, this section includes an analysis of all parcels in Newton within the FEMA 1% Annual Chance flood zone, detailed in Table V-3 and depicted in Map V-6. Overall, most property in Newton is located outside the high-risk flood area, with a total of 47 out of 2,546 parcels within the FEMA 1% annual chance flood zone, covering 169 acres of land with a total net equalized value of all exposed properties of $46.5 million. Flood exposure to residential/ apartment parcels is

[19] U.S. Geological Survey. 2024. How Hot Are Wildfires?

[20] New Jersey Office of GIS. 2025. Parcel and MOD-IV Composite of New Jersey.

[21] https://www.nj.gov/treasury/taxation/pdf/lptval/2023/allcounties.pdf

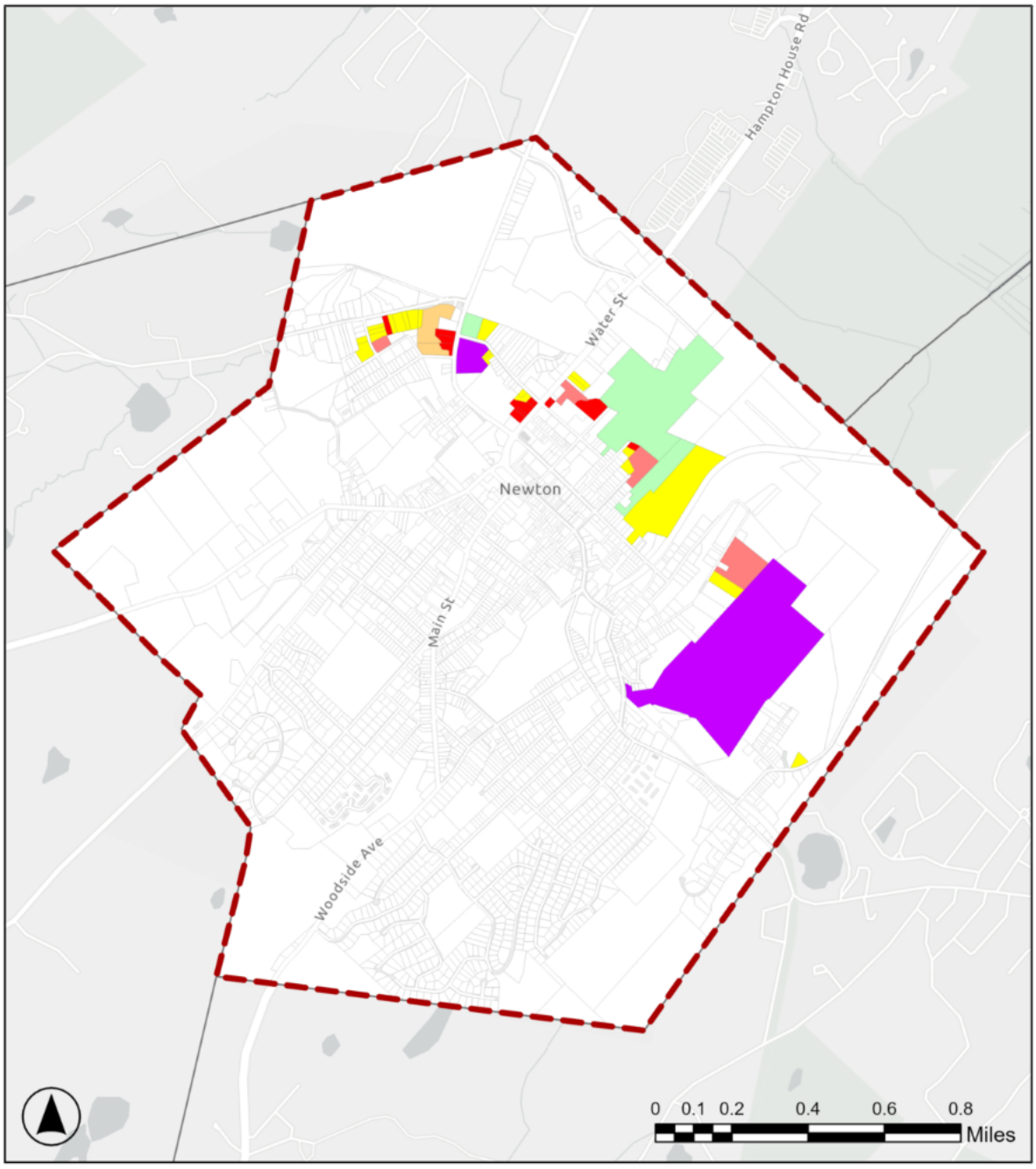
minimal, with only 25 out of 2,041 parcels located within the FEMA 1% annual chance flood zone, having a net equalized value of nearly $18.2 million at risk. Similar patterns of exposure exist across the other property classes. Out of the 10 industrial parcels, only two parcels are located within the flood zone. However, they represent 75 acres of land with a net equalized value of $12.9 million at risk, the highest value for any single property class. There are also 13 commercial parcels ($9.6 million) and three school and public property parcels ($5.2 million) exposed to flooding.

Table V-3. Property parcels within FEMA 1% annual chance flood zone

		Number / land area exposed in...		
		FEMA 1% Annual Chance Flood		
MOD IV Property Class	Total # parcels	# Parcels	Acres	Net Equalized Value ($)
Residential (2)	2,012	23 (1%)	28	10,372,348
Apartments (4C)	29	2 (7%)	5	7,791,456
Commercial (4A)	217	13 (6%)	6	9,625,343
Industrial (4B)	10	2 (20%)	75	12,887,430
Farm (3A and 3B)	10	0 (0%)	0	-
Schools and other Public Property (15A through 15F)	144	3 (2%)	44	5,230,769
Vacant Land (1)	65	4 (6%)	11	584,644
Unclassified Land	31	0 (0%)	0	-
Total	**2,546**	**47 (1.85%)**	**169**	**46,491,990**

Note: Class 15 properties with no improvement value were excluded from the count of exposed parcels.

Map V-6. Property parcels within FEMA 1% annual chance flood zone



LEGEND

Parcels Inundated 50% or More- FEMA 1% Chance Annual Flood

- Residential
- Industrial
- Schools and Other Public Property
- Apartments
- Commercial
- Vacant

Non-inundated Parcels

Natural and Working Lands

Natural and working lands include wetlands, forested land, agricultural land, and other open/green space. These lands benefit communities in many ways. They are especially important for addressing climate change for their capacity to absorb carbon from the atmosphere, mitigating climate change impacts. Newton's landscape is dominated by forested land (484.61 acres or 22.4% of its land use) and wetlands (337.04 acres or 15.6%) along with a small agricultural footprint of approximately 45 acres (2.1%).

The Sussex Swamp Preserve, which protects New Jersey's largest limestone fens, serves as a sanctuary for state-endangered plants like the bog willow, rhodora, and seaside arrow-grass. The Paulinskill Wildlife Management Area spans across 111.3 acres of the town's land representing almost 5% of its total municipal area. This area is a vital habitat for high priority species including the federally listed Bog Turtle and state-endangered species such as the Bald Eagle, Bobcat, and Red-shouldered Hawk. The wildlife management area is also a major hub for recreational activities, predominantly hiking, hunting, fishing, and bird watching. The Sussex Branch Trail provides the town with more active recreational activity options like biking, horseback riding and cross-country skiing during the winter months.

Protecting and restoring natural areas to reduce climate impacts was the top-ranked land use strategy among the local stakeholder survey respondents, reflecting strong community support for nature-based approaches to hazard mitigation (see Appendix B). This is in alignment with Newton's existing zoning practices.

Heat

As detailed in Section III.A, temperature projections indicate that Newton may experience increasing heat throughout the century. Warmer temperatures may extend the length of the growing season and the types of crops that are viable in New Jersey. However, warmer winter temperatures can disrupt chilling time necessary for many perennial crops and allow more insects to overwinter, increasing growing season pest pressure. Extreme heat can damage crops before harvest or lead to early season development that can be damaged by later frosts. Warmer temperatures may also exacerbate drought conditions that can limit groundwater irrigation and stress rain-fed crops. While the town has just 45 acres of agricultural land, 67% of its municipal soils are assigned to hydrologic group D, meaning that they have a very slow infiltration rate and a high run-off potential when thoroughly wet. In extreme heat these soil characteristics may exacerbate water management stress.

In wetlands, extreme heat can disrupt ecosystems by contributing to habitat loss, changes in wildlife diversity and behavior, and degrading soil and water quality. In forests and green spaces, high temperatures can degrade soil health, increase the frequency and duration of wildfires, and accelerate the life cycles of insect pests, allowing them to mature and spread more rapidly.[22] When

[22] New Jersey Office of Emergency Management. 2024. State of New Jersey All-Hazards Mitigation Plan.

combined with extreme precipitation, heat can also increase the temperature of runoff entering waterways resulting in water quality issues.

Storms

The increasing frequency of extreme precipitation events (see Section III.B) may impact natural and working lands across urban and rural areas, contributing to heightened risks from pests, diseases, invasive species, and storm-related damage.[23] Heavy precipitation and associated runoff increases the rate of streambank erosion and destabilization, which may damage surrounding areas and impact water quality.[24] Recognizing the storm risk, the Natural Resource Inventory of Newton identifies the Pequest River, a Category 1 waterway, as requiring a 300-foot development buffer to protect against flood related damage and to preserve water quality.

Extreme precipitation can also negatively impact agriculture, including planting delays, root disease, and limited access to pastures for livestock.[25] Increased soil erosion and agricultural runoff may result in increased manure, fertilizer, and pesticides entering local waterways and contaminating surface and groundwater.[26] While Newton has only 45 acres dedicated to agricultural land use, most of these areas are located in the T-2 Rural Reserved Areas in the outskirts of the town, which are designated for protection through conservation and farmland easements to prevent environmental degradation.

High winds in New Jersey have historically caused significant agricultural losses and economic setbacks due to the impact of projectile debris (e.g., hail), damaging crops and killing livestock. In forested areas and open spaces, extreme winds can cause tree failure, such as breakage or uprooting. This damage makes trees more susceptible to disease or pests, weakening overall forest health and making canopies less resistant to additional threats like wildfires.

Flood

Natural and working lands serve as important natural resources that help absorb excess rainwater and buffer storm surge, thereby reducing flooding in surrounding areas. However, flooding can cause significant impacts to these landscapes.

In watersheds, flooding can increase sedimentation and bank erosion, introducing hazardous materials into nearby water bodies and creating conditions favorable to waterborne pollution that

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[23] New Jersey Climate Change Alliance. 2022. Forest Resource Considerations for A New Jersey Natural and Working Lands Strategy.

[24] New Jersey Office of Emergency Management. 2024. State of New Jersey All-Hazards Mitigation Plan.

[25] Hristov, A. N., Degaetano, A. T., Rotz, C. A., et al. 2018. Climate change effects on livestock in the Northeast US and strategies for adaptation. *Climatic Change*, 146, 33-45.

[26] U.S. Global Change Research Program. 2016. The impacts of climate change on human health in the United States: A scientific assessment. Pages 1–312 in A. Crimmins, J. Balbus, J. L. Gamble, C. B. Beard, J. E. Bell, D. Dodgen, R. J. Eisen, N. Fann, M. D. Hawkins, S. C. Herring, L. Jantarasami, D. M. Mills, S. Saha, M. C. Sarofim, J. Trtanj, and L. Ziska, editors. U.S. Global Change Research Program, Washington, DC.

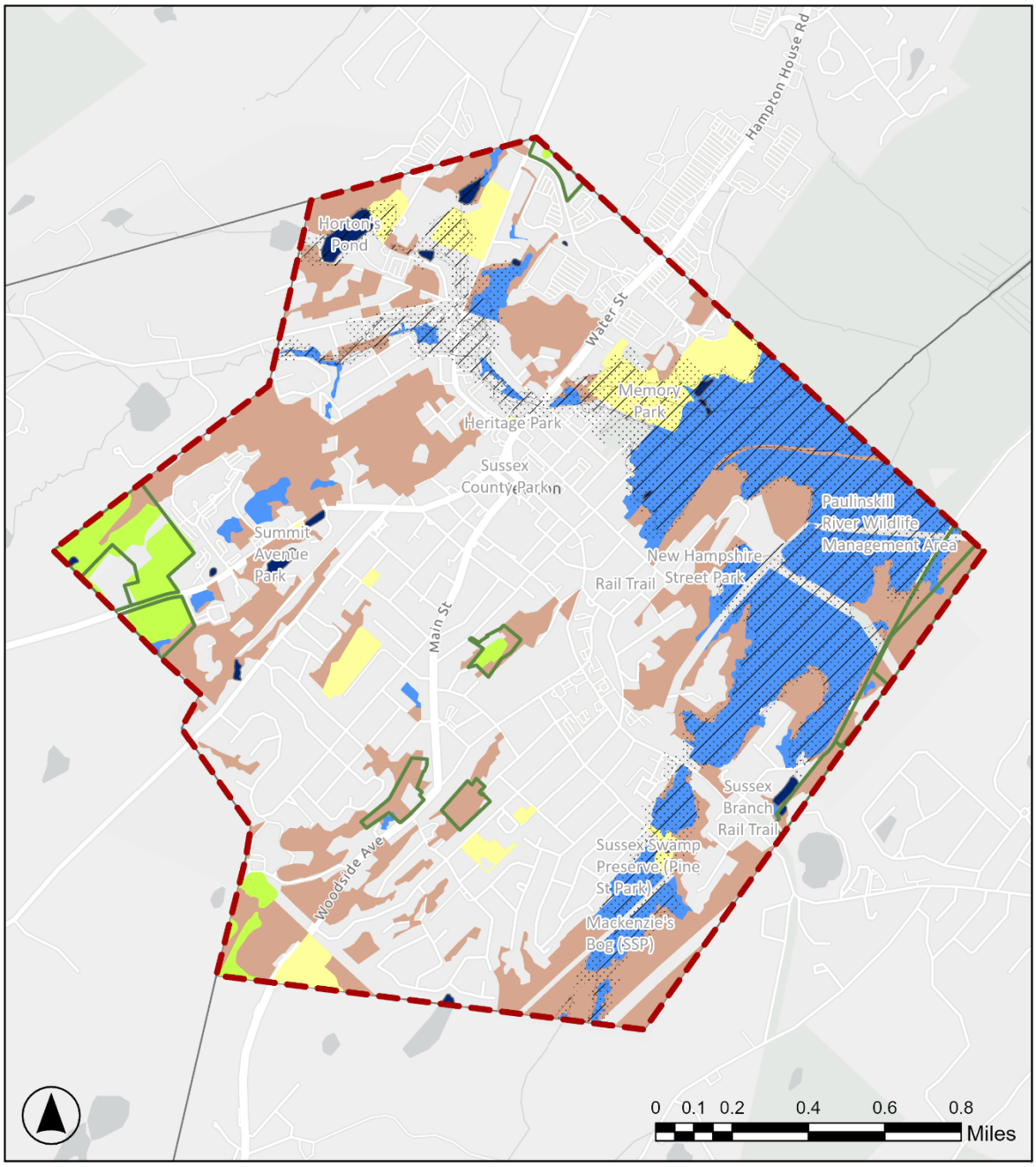
may affect local water supplies. In addition to these human health and water quality concerns, flooding threatens ecosystems. Flooding can contribute to the inundation of forests and vegetated lands, damaging vegetation and flora, negatively affecting forest health and the agricultural industry.

Map V-7 depicts flood risk to natural and working lands in Newton for the flood measures listed in Table III-7 (FEMA 1% annual chance flood zone and the approximate extent of Inland Flood Protection Rule). Additional details on exposure of farm parcels are included in Table V-4. Flood exposure of natural and working lands can primarily be found in wetlands and forests on the eastern side of Newton. Sections of the Sussex Branch Rail Trail, recreational areas at Sussex County Community College, Memory Park, Paulinskill River Wildlife Management Area, and Sussex Swamp Preserve including Mackenzie's Bog are found within the FEMA 1% annual chance flood zone. Heritage Park is exposed in the approximate extent of Inland Flood Protection Rule. Many of these natural areas are classified as wetlands, which are inherently accustomed to periodic flooding; however, extreme flooding can limit access to trails and other recreational resources. In contrast, most of the agricultural and farm parcels, primarily located in the western and southern part of Newton, are outside the flood zone. Table V-4 quantifies this low risk for agricultural assets with no farm parcels within the FEMA 1% annual chance flood zone and only one 15-acre parcel within the approximate extent of Inland Flood Protection Rule.

Table V-4. Flood exposure of natural and working lands parcels

	Number / land area exposed in...			
	FEMA 1% Annual Chance Flood		Approximate extent of Inland Flood Protection Rule	
MOD IV Property Class	# Parcels	Acres	# Parcels	Acres
Farm (Regular) Total parcels = 1	0	0	0	0
Farm (Qualified) Total parcels = 9	0	0	1	15

Map V-7. Flood exposure of natural and working lands parcels



LEGEND

Land Use 2020 Working Lands

- Recreational
- Agricultural
- Forestland
- Water
- Wetlands
- Farm Parcels

FEMA Flood Scenarios

- 1 % Chance Annual Flood
- Approximate extent of Inland Flood Protection Rule

Drought

As detailed in Section III.C, Newton's time in drought each year is anticipated to increase throughout the century. Droughts can affect wetlands, forested land, agricultural land, and other open/green space. Agriculture-related drought disasters are common, with the most recent disaster in New Jersey occurring in Cumberland and Sussex Counties from August 2022 to November 2022.[27] Agricultural drought is when there is not enough water available for a particular crop to grow at a particular time, due to soil moisture deficiencies, lack of groundwater, and precipitation. Agricultural drought may result in a reduction in crop yields, economic loss, livestock stress, an increased demand for irrigation, and soil degradation.

Additionally, drought in combination with high temperatures can increase the risk of wildfires in natural and working lands, due to an increase in evaporation, dry soil conditions, and large-scale loss of trees and vegetation, which are highly flammable.

Wildfire

The risk of wildfire in Newton and its adjacent municipalities is low. The town has not had any wildfires since 1950 (see Section III.E). Statewide, wildfires account for the damage or destruction of about 7,000 acres of forests each year, releasing pollutants such as carbon monoxide, volatile organic compounds, carbon dioxide, hydrocarbons, nitrogen oxides, and fine particulate matter. Wildfires destroy vegetation, threaten biodiversity, and damage habitat for threatened and endangered species. Conversely, many plant species have adapted to fire, and some are dependent on it for reproduction.

In addition to the hazard of direct contact with fire, wildfires can cause prolonged secondary hazards to the lands they impact, including the weakening of soils, stripping of vegetation to absorb runoff, and the baking of soils with high clay content, creating impervious conditions that can increase the chance of flooding.

C. Community Assets

There are other valuable assets in a community that may not necessarily be defined as "critical" by the provisions of a CCRHVA. Assets with local significance may be places that:

- Represent the community identity;
- Are important to quality of life;
- Have significance for cultural reasons; and/or
- Provide community recreation.

[27] New Jersey Office of Emergency Management. 2024. State of New Jersey All-Hazards Mitigation Plan.

Local planning can benefit from understanding impacts to these assets that shape everyday life in the community. Climate hazards may pose immediate and/or direct risks based on the exposure of the asset itself, as well as indirect and/or long-term risks associated with potential loss of the value provided to the community. Community assets in Newton were identified through publicly available datasets and input from municipal staff, residents, and other local stakeholders. Public datasets included locations of: (a) libraries, (b) art venues, (c) entertainment and sporting venues, and (d) historic properties. Community assets identified by local stakeholders were categorized as follows (see Appendix B for a list of places identified in each of these categories):

- **Civic & Community** - Organizations focused on community needs such as social connections, advocacy, including senior centers, youth centers, etc.
- **Businesses** - Shops, restaurants, and other commercial entities providing community services.
- **Cultural** - Museums, galleries, theaters, etc.
- **Recreation** - Playgrounds, parks, trails, ball fields, etc.
- **Religious** - Churches, temples, and other spiritual centers.

This analysis examined the exposure of community assets using publicly available data on the locations of libraries, art venues, entertainment and sporting venues, and historic properties. Defined by its nineteenth-century streetscape, the Newton Town Plot Historic District spans 17 acres around the County Courthouse and the Green. Situated in the town center, the district serves as a vital link to Newton's early history and development. Constructed in 1770 as a parsonage, 3 Dunn Place is named after Reverend Clarkson Dunn and is the oldest surviving building in Newton, and the only remaining structure from the town's original Town Plot. The Merriam Home, built in 1884 as the largest and the costliest private residence in Sussex County, was listed on the National Register of Historic Places in 1970 for its exceptional High Victorian architecture and its history as a charitable home.

Other key cultural assets along Main Street include the Sussex County Library, Christ Episcopal Church, Newton Academy, and the Hill Memorial Building. The Newton Theatre, originally built in 1924 and restored in 2008, is an economic and cultural anchor of the town's revitalization program. Along with the Newton Theatre, the Sussex County Community College's Performing Arts Center provides a modern space for student plays and local community events. The Newton Fire Museum and the Sussex and Merchants National Bank, located along Spring Street, further contribute to the district's historic character.

Heat

As detailed in Section III.A, temperature projections indicate that Newton may experience increasing heat throughout the century. Increasing temperatures can limit a community's ability to access and use various indoor and outdoor community assets, thus impacting social well-

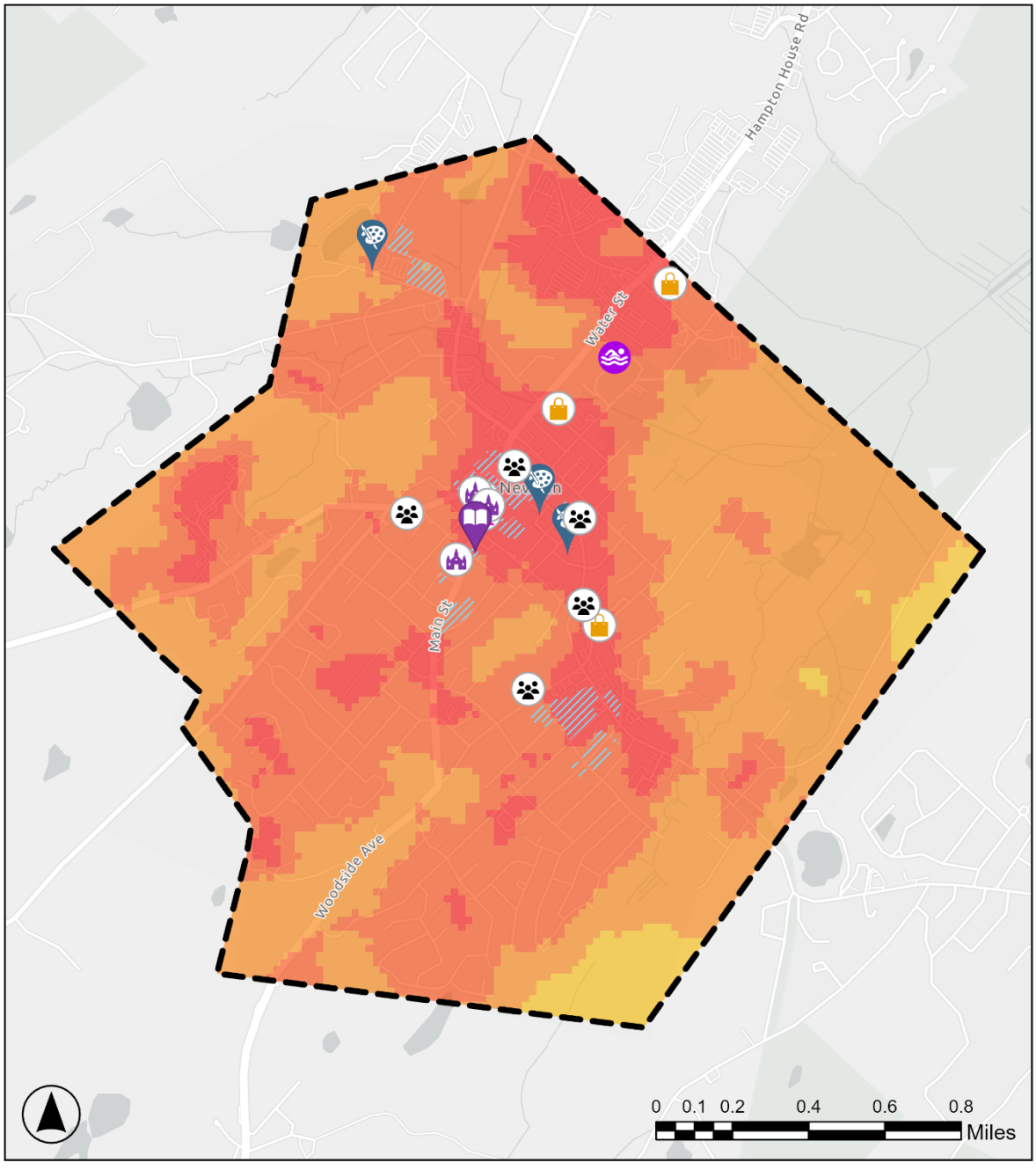
being and public health. On the other hand, places of gathering such as parks, libraries, and community centers can provide heat relief. Parks and green spaces can provide heat relief, but these outdoor assets can become unsafe without available shaded areas, trees, and water. Indoor facilities with air conditioning, such as libraries, local shops, community centers, and event venues, can also serve as cooling spaces. Yet, these locations risk facing increased demand that can exceed their capacity. Ensuring such facilities are properly equipped, accessible, and resilient to extreme temperatures is essential for protecting public health and maintaining social and community well-being.[28]

Map V-8 illustrates land surface temperature in summer 2022 in relation to Newton's community assets. Newton's key cultural assets, located within the historic core, experience temperatures exceeding 100 °F. Civic buildings like the Sussex County Library can serve as essential indoor cooling centers during extreme heat events.

Community assets identified by stakeholders, including businesses, civic and community organizations, cultural sites, and places of worship, are distributed primarily across central portions of Newton including its downtown area, where heat exposure is also greatest. The Newton Town Pool, located in Memory Park, serves as a recreational hub for summer activities and swimming. The pool and natural areas like the Newton Green, through its tree canopy shading can help provide residents with the necessary outdoor respite during high summer temperatures. As a central node of green infrastructure, the historic park can help mitigate the urban heat island effect.

[28] Filión, N.A., Knutsen, M., and Phillips, S. New Jersey Department of Environmental Protection. 2025. New Jersey Extreme Heat Resilience Action Plan.

Map V-8. Land surface temperature and community assets



LEGEND

Land Surface Temperature (°F)
- Below 80
- 80 - 90
- 90 - 100
- 100 - 110
- Over 110

Community Assets
- Historical Properties
- Arts Venues
- Library

Identified by stakeholders
- Business
- Civic & Community
- Cultural
- Religious
- Town Pool

Storms

As detailed in Section III.B, the frequency and intensity of extreme precipitation events are anticipated to increase throughout the century. Extreme precipitation impacts community assets and economic well-being. Extreme precipitation can limit access to outdoor recreation when parks and other outdoor spaces flood and the impacts can last for extended periods. Additionally, extreme precipitation can drive biodiversity loss, impacting recreational fishing and hunting.[29] See Section V.B. for details on recreationally important species present in Newton.

Drought

As detailed in Section III.C, Newton's time in drought each year is anticipated to increase throughout the century. Community assets can have varying water supply demands, which can place stress on water infrastructure, the local economy, quality of life, and natural resources during droughts. Water-based recreational activities (e.g., boating, kayaking, water skiing, fishing, etc.) often depend on specific water levels. These activities can be restricted when water levels drop, negatively impacting local tourism and quality of life.[30]

Agricultural droughts hinder the irrigation of farms, limiting the availability of fresh produce for farmers' markets. Reduced water supply has also been linked with lower water quality, impacting recreation, and water-based jobs. Drought watches may trigger mandatory water conservation measures.[31]

Flood

Flooding poses both immediate and long-term risks to community assets. Map V-9 depicts potential flood exposure of community assets in Newton for the flood measures listed in Table III-7 (FEMA 1% annual chance flood zone, and approximate extent of Inland Flood Protection Rule). Table V-5 summarizes the number of each type of asset exposed at each flood measure.

Most of Newton's key cultural and community assets are located outside the FEMA flood zones. As such, these assets can potentially function as recovery hubs during emergency events. One historic property, the Horton Mansion and Gatehouse in the northwest corner of the town, is within the FEMA 1% annual chance flood and the approximate extent of Inland Flood Protection Rule. Among the community assets identified by the local stakeholders, only one commercial location is within the approximate extent of Inland Flood Protection Rule. Due to the transient nature of commercial establishments, a detailed analysis of flooding impacts to commercial parcels is presented in Map V-10. Additionally, the Newton Town Pool is vulnerable in the approximate extent of Inland Flood Protection Rule.

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[29] New Jersey Department of Environmental Protection. 2023. Outside, Together! A statewide comprehensive outdoor recreation plan for New Jersey.

[30] National Integrated Drought Information System, National Oceanic and Atmospheric Administration. 2025. By Sector: Recreation & Tourism.

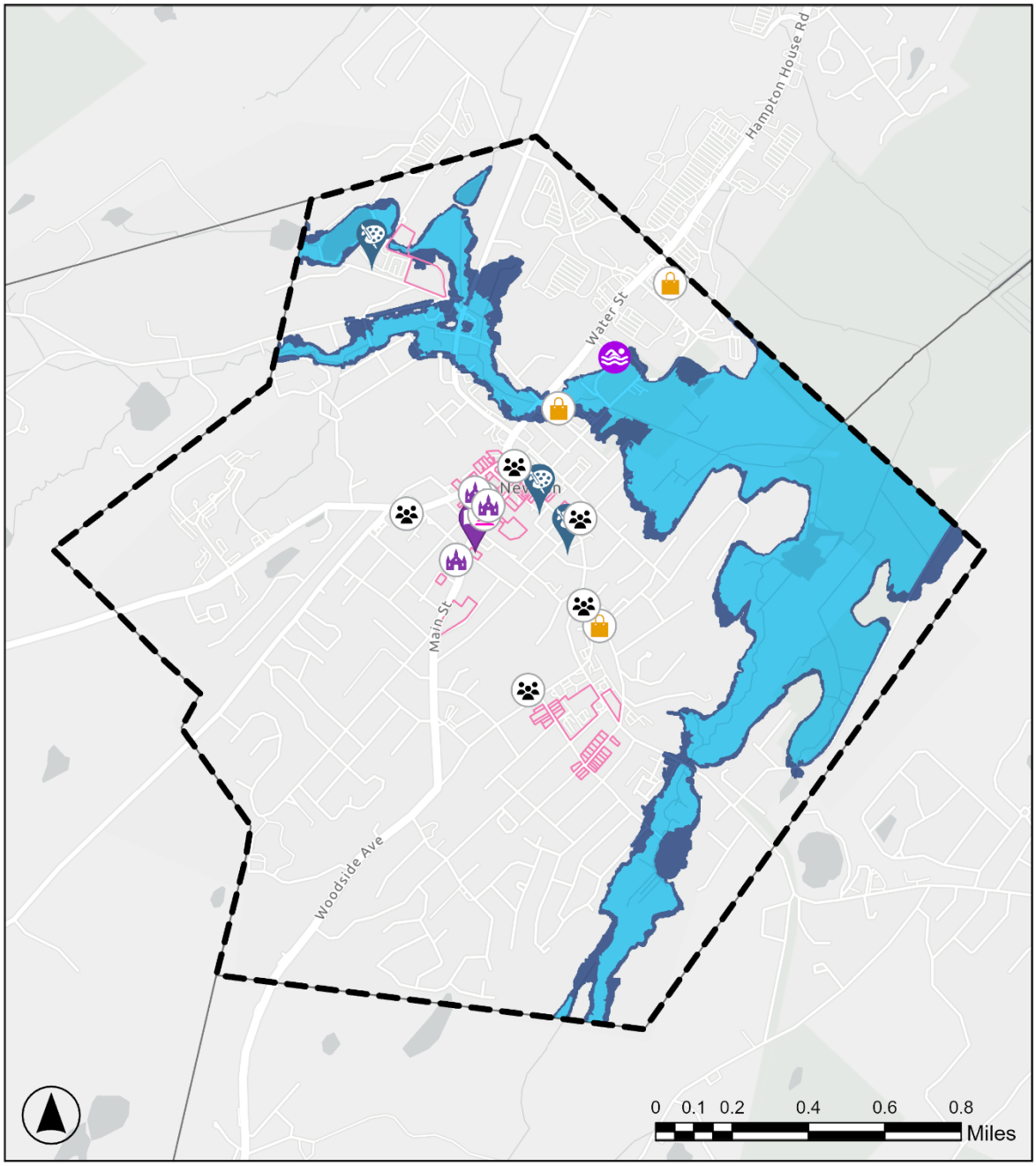
[31] Domber, S., Barr K., Snook, I., Hoy, D., Carreno, B., Drabik, J., Walsh, S. NJDEP Division of Water Resources Management. 2024. 2024 New Jersey Water Supply Plan.

Table V-5. Flood exposure of community assets

	Total #	# Exposed in...	
		FEMA 1% Annual Chance Flood	Approximate extent of Inland Flood Protection Rule
Libraries	1	0	0
Art Venues	3	0	0
Public pool*	1	0	1
Commercial*	3	0	1
Religious*	3	0	0
Cultural*	1	0	0
Civic & Community*	6	0	0

*Community assets identified by stakeholders

Map V-9. Community assets within FEMA flood zones



LEGEND

Community Assets

Historic Properties
Library
Arts Venues

Identified by stakeholders

Business
Religious
Cultural
Town Pool
Civic & Community

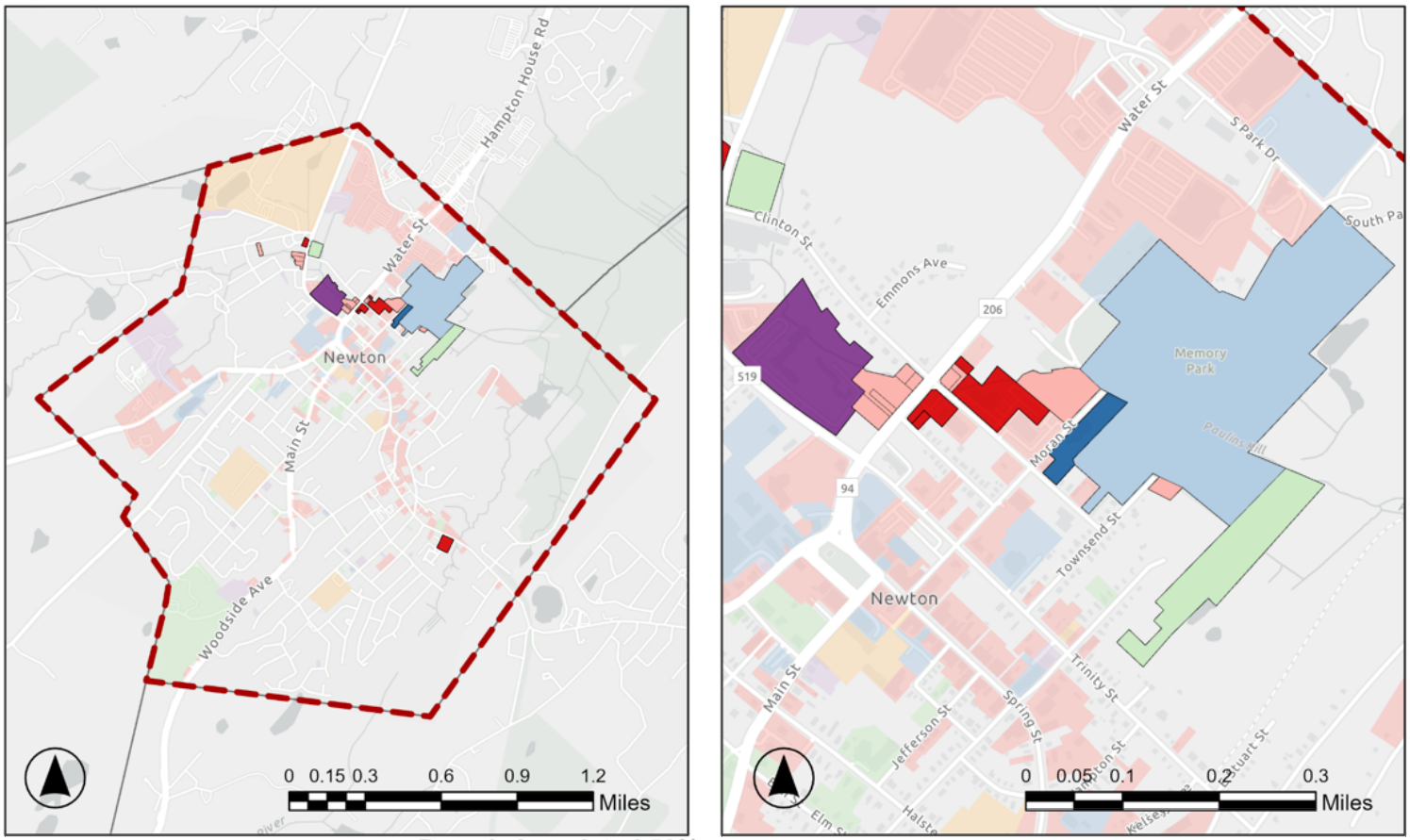
Flood Scenarios

FEMA 1% Annual Chance
Approximate extent of Inland Flood Protection Rule

Map V-10 depicts the community asset parcels exposed by each flood measure for the following property classes: Commercial, Schools, Public Properties, Church and Charitable, and Other Exempt Properties. Table V-6 provides details on the number of parcels, land area, and value of property exposed.

Flood exposure of community asset parcels is concentrated in the northeast section of Newton. Commercial properties are the most impacted land use, with 13 parcels spread across six acres within the FEMA 1% annual chance flood zone with a net equalized value of $9.6 million. The total number of parcels in the approximate extent of Inland Flood Protection Rule increases to 24, a marginal rise from 16 in the FEMA 1% annual chance flood zone. However, the economic escalation is significant, rising from $14.9 million to $49.8 million in net equalized value. This increase is largely driven by the risk to commercial infrastructure and a high-value other exempt property.

Map V-10. Community asset parcels within FEMA flood zones



LEGEND

Not Impacted Parcels
- Commercial
- Public Properties
- Churches and Charitable Organizations
- Other Tax-exempt properties
- Schools

Parcels Inundated 50% or more

FEMA 1% Annual Chance
- Commercial
- Public Properties
- Churches and Charitable Organizations
- Other Tax-exempt properties
- Schools

Approximate extent of Inland Flood Protection Rule
- Commercial
- Public Properties
- Churches and Charitable Organizations
- Other Tax-exempt properties
- Schools

Table V-6. Flood exposure of community asset parcels within FEMA flood zones

		Number / land area exposed in...					
		FEMA 1% Annual Chance Flood			Approximate extent of Inland Flood Protection Rule		
MOD IV Property Class	Total # parcels	# Parcels	Acres	Net Equalized Value ($)	# Parcels	Acres	Net Equalized Value ($)
Commercial (4A)	217	13	6	9,625,343	19	11	20,676,288
Schools (15A and 15B)	8	0	0	-	0	0	-
Public Properties (15C)	32	1	35	2,207,389	2	37	3,458,941
Church and Charitable (15D)	28	2	8	3,023,380	2	8	3,023,380
Other Exempt (15E and 15F)	24	0	0	-	1	7	22,644,970
Total	**309**	**16**	**50**	**14,856,112**	**24**	**64**	**49,803,579**

Note: Class 15 properties with no improvement value were excluded from the count of exposed parcels.

Wildfire

Wildfire does not pose a significant risk to Newton or adjacent municipalities. All areas of the municipality are classified as low risk with no wildfire incidents documented since 1950 (see Section III.E). Community assets most at risk during wildfires are those located within the Wildland Urban Interface where the built environment intermingles with undeveloped land, such as forests and grasslands.[32] For Newton, the forestland near Sussex County Community College and Thorlabs, Inc. is particularly vulnerable. Wildfire can disrupt the food supply chain due to impacts on roads used to transport agricultural products.[33] Wildfires can also severely impact local air quality, making it undesirable to visit parks and other community assets even after a wildfire has been extinguished.[34] This can particularly affect individuals with respiratory conditions (see Section V.D.).

[32] U.S. Fire Administration. 2022. What is the WUI?

[33] New Jersey Office of Emergency Management. 2024. State of New Jersey All-Hazards Mitigation Plan.

[34] Mattson, A. 2025. As wildfires increase, NJ considers public-health impact. *NJ Spotlight News*.

D. Housing and People

Climate hazards can exacerbate existing housing issues such as escalating housing costs, displacement of lower-income people, and aging infrastructure. Although everyone who lives in New Jersey is vulnerable to climate change, some population groups are more vulnerable than others. Assessing the disproportionate impacts faced by these populations is necessary to assess the impacts of climate change on a community as a whole. Table V-7 provides data[35] on Newton's vulnerable population groups.

Table V-7. Vulnerable populations in Newton

	Population Estimate	Population Percent
Low-income*	2,198	26.3%
No health insurance	301	3.6%
Aged 65 and older	1,666	19.9%
Aged 17 and younger	1,506	18.0%
Disabled	1,221	14.6%
Minority	2,284	27.3%
American Indian or Alaska Native	0	0%
Asian	121	1.4%
Black or African American	775	9.3%
Native Hawaiian or Pacific Islander	0	0%
Some other race	21	0.3%
Two or more races	362	4.3%
Hispanic	1,005	12.0%
Living in group quarters	557	6.7%
	Household Estimate	Household Percent
Limited English proficiency households	54	1.6%
No vehicle households	397	11.5%
Mobile home housing units	32	0.8%
Multi-unit housing units	1,441	38.0%

*At or below twice the poverty threshold as determined by the US Census Bureau (2024).

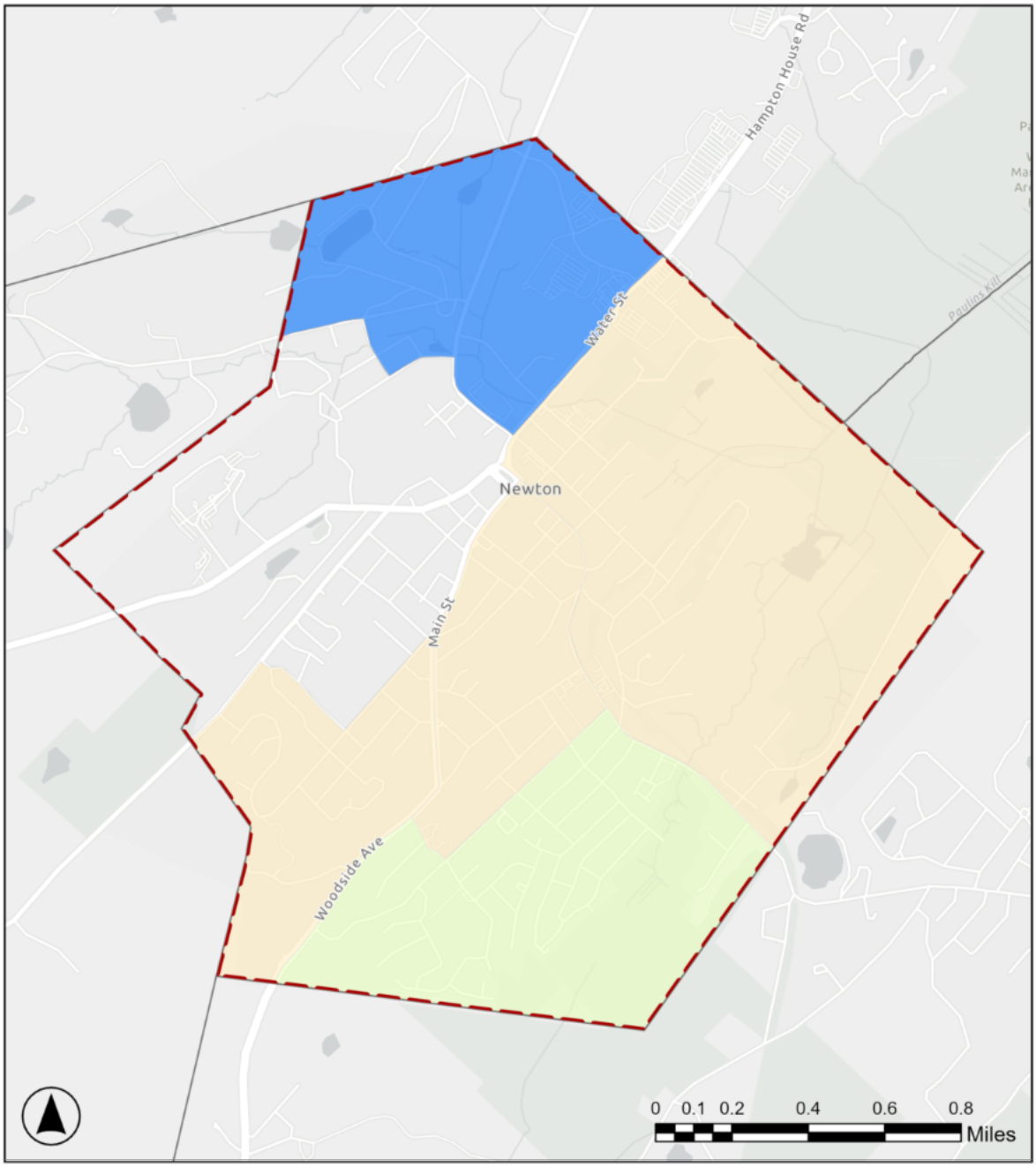
[35] U.S. Census Bureau. 2024. American Community Survey Five Year Estimates.

Additionally, the New Jersey Environmental Justice Law (N.J. Stat. Ann. 13:1D-157) defines Overburdened Communities (OBC) as census block groups with:

- At least 35 percent low-income households (at or below twice the poverty threshold as determined by the United States Census Bureau); or
- At least 40 percent of the residents identify as minority or as members of a State recognized tribal community; or
- At least 40 percent of the households have limited English proficiency (without an adult that speaks English "very well" according to the United States Census Bureau).

The OBC designation facilitates mapping of these vulnerable populations within each municipality statewide. As depicted on Map V-11, three of Newton's census block groups located on the southern, eastern, and northern parts of the municipality are defined as OBC due to the percentage of low-income households. Within these census blocks, there are 1,793 residents in low-income households and 1,590 identifying as minorities.

Map V-11. Overburdened communities



LEGEND

Overburdened Communities as defined by NJDEP

- Low Income
- Low Income and Minority
- Minority

Heat

As detailed in Section III.A, temperature projections indicate that Newton may experience increasing heat throughout the century. Hot days, in combination with poor housing conditions and lack of climate control can have significant impacts on health. Lack of air conditioning and crowded living spaces can cause heightened anxiety, disrupt sleep patterns, and stress cardiovascular systems.[36] Housing with insufficient building insulation located in areas of high surface temperature or potential heat islands may expose residents to temperatures that can exceed outside temperatures. In New Jersey, heat-related hospital admissions during the warm season (May to September) increased approximately 156% between 2004 and 2013.[37] Children, elderly people, and those with pre-existing conditions are especially at risk. In Newton, 37.9% of the population is either over 65 years old (19.9%) or under 18 years old (18%).

Additionally, the combination of high heat with high humidity increases risk to outdoor occupational groups for heat-related illnesses like heat stroke.[38] Occupational groups that are particularly vulnerable because of the amount of time spent outside include workers in construction, agriculture, forestry, and natural resource management. High temperatures also increase the concentration of ground-level ozone in the air. This is particularly harmful for individuals with chronic respiratory conditions.[39]

To better understand potential heat stress challenges for residents, Map V-12 depicts housing parcels in relation to land surface temperature in summer 2022. The highest temperatures, over 110 °F, are concentrated in the densely developed central region of Newton. This is the commercial corridor and has limited housing. Residential areas primarily found in the southern region of the town experience temperatures ranging from 100 to 110 °F. This heat is partly driven by the density of impervious surfaces, such as rooftops, streets, and parking lots. Map V-13 depicts heat island risk relative to the Census Block Groups designated as OBCs. For each Census Block Group, the analysis provides a ratio value from negative one (100% impervious cover) to positive one (100% canopy cover). This range of potential values is split evenly into five groups in the map below, ranging from “higher canopy cover” to “higher impervious cover.” OBCs are spread across Newton except for the western edge. However, the map reveals that the residents in the central portion are the most susceptible to the urban heat island effect.

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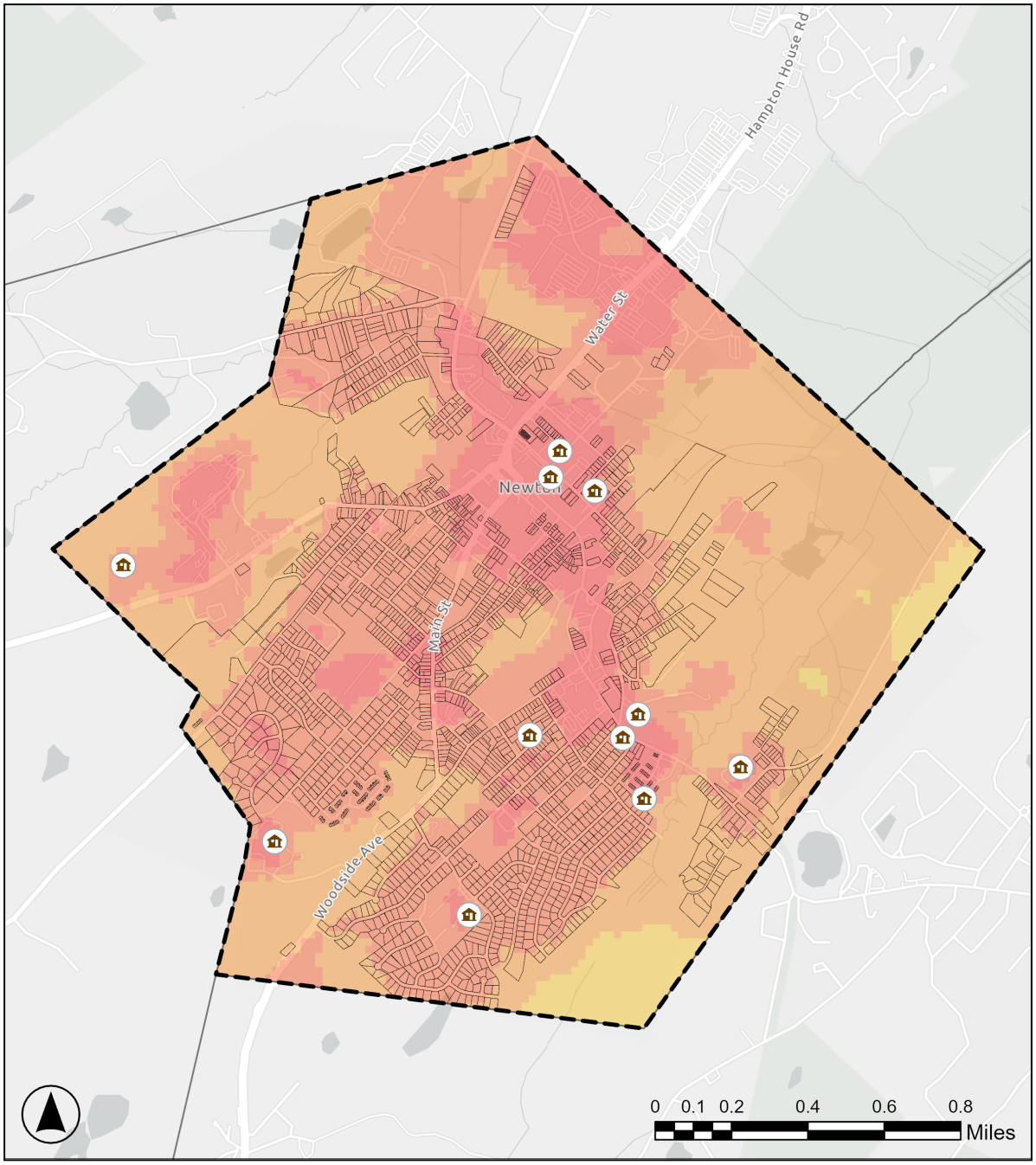
[36] Filión, N.A., Knutsen, M., and Phillips, S. New Jersey Department of Environmental Protection. 2025. New Jersey Extreme Heat Resilience Action Plan.

[37] Moran, D., J. Whytlaw, J. Herb, M. Kaplan, J. Madrigano, and P.Kinney. 2017. New Jersey Climate and Health Profile Report. New Jersey Climate Adaptation Alliance. New Brunswick, NJ: Rutgers University

[38] New Jersey Department of Environmental Protection. 2022. Climate Change Impacts on Human Health & Communities: Addendum to the 2020 New Jersey Scientific Report on Climate Change. Version 1.0. (Eds. J.A. Bonventre, L.A. Lester). Trenton, NJ. 54 pp.

[39] Center for Disease Control. 2022. Heat and chronic conditions.

Map V-12. Land surface temperature and housing



LEGEND

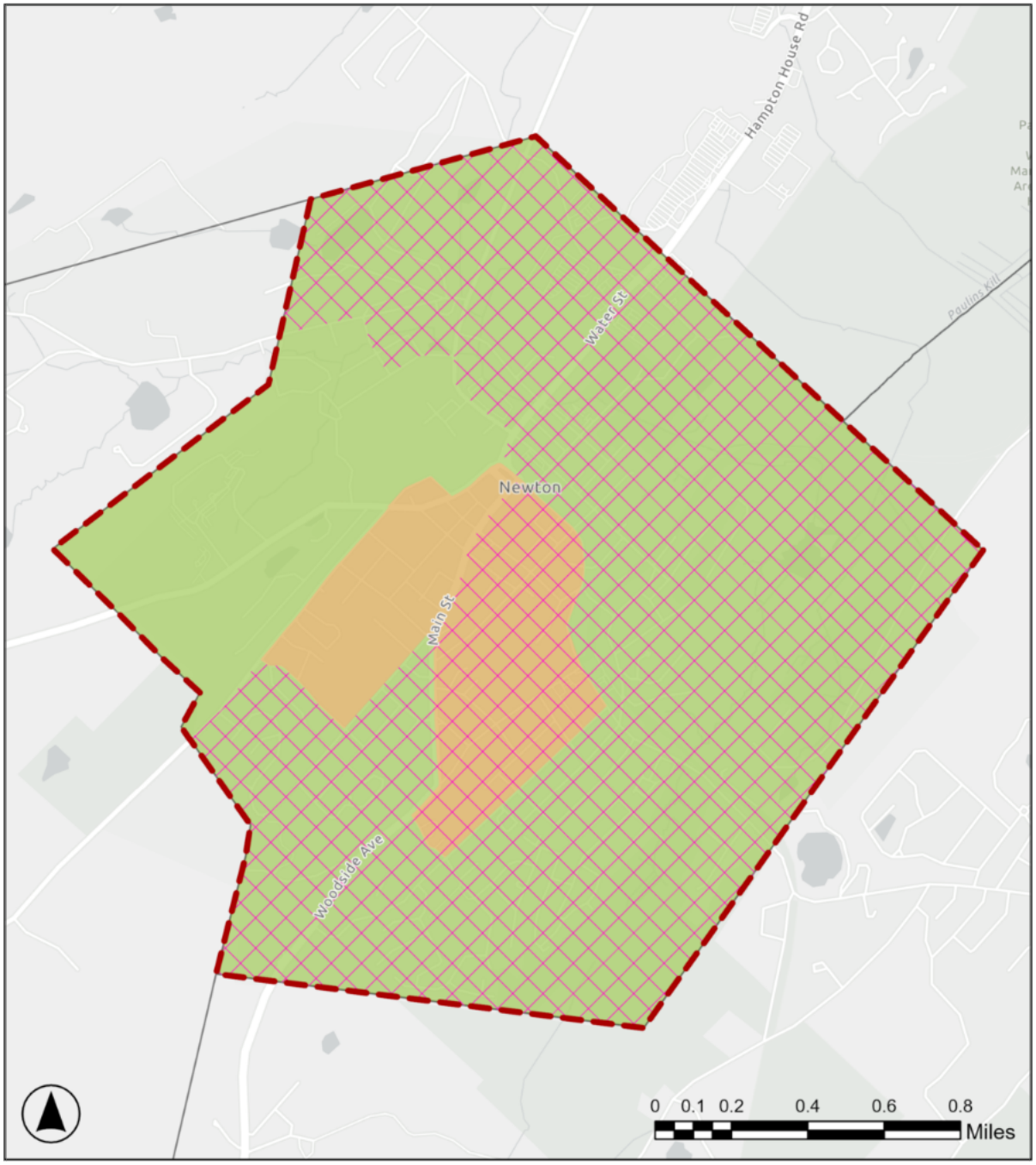
Residential and Apartments

Land Surface Temperature (°F)

- Below 80
- 80 - 90
- 90 - 100
- 100 - 110
- Over 110

Affordable housing sites

Map V-13. Heat island risk to Overburdened Communities



LEGEND

NJDEP EJ Overburdened Communities

Canopy Cover to Impervious Cover Ratio

- Higher Canopy Cover
- Moderately High Canopy Cover
- Equivalent Canopy/Impervious Cover
- Moderately High Impervious Cover
- High Impervious Cover

Storms

The public health impacts of storms are well documented in New Jersey. For example, extreme rainfall during the warm season has been connected to increases in hospitalizations for gastrointestinal illness.[40] In the aftermath of Superstorm Sandy, adults exposed to mold in their homes were more likely to be diagnosed with asthma and more likely to report mental health distress. Children living in homes that experienced even minor damage were at higher risk for psychological and emotional issues.[41] According to data from the US Census Bureau, approximately 3.6% of Newton's population does not have health insurance and may be at particular risk of health impacts.

Power outages pose additional risks to vulnerable populations, including the elderly and medically frail, who are more susceptible to temperature exposure in homes and facilities without air conditioning or heat. The loss of power can have serious health implications for New Jersey residents, where approximately 15.8% of homes rely on electricity for heating and cooling. Beyond residential settings, individuals in medical facilities may face life-threatening situations if critical equipment fails due to storm-induced outages. Vulnerable populations, like the elderly, especially in coastal communities, are considered the most vulnerable due to the direct exposure to high-impact storms, limited adaptive capacity, and need for additional time or assistance during evacuations.[42] The town has four nursing homes, three of which are located along State Route 94-S in the eastern portion of the town – Barn Hill Care Center, Valley View Rehabilitation and Healthcare Center, and Ave Care Center, while the United Methodist Communities at Bristol Glen is located on the southern edge of the town off Bristol Glen Drive.

Drought

Newton's time in drought each year is anticipated to increase throughout the century (see Section III.C). Drought can exacerbate climate-related effects on social systems. While the built environment, including housing, is not directly damaged by drought, a home's dependence on the public water supply can influence its livability during drought periods.

During periods of heightened demand on public water systems, increasing operational costs may be passed down to the consumer. Increasing water supply rates may restrict water access for financially constrained households. In rural communities, droughts are felt more acutely due to the reliance on private wells, their susceptibility to drying up, and the costly nature of maintaining them. Limitations to financial and technical resources further exacerbate a community's vulnerability to drought-related hazards.[43]

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[40] Gleason, J. & Fagliano, J. 2017. Effect of drinking water source on associations between gastrointestinal illness and heavy rainfall in New Jersey. https://doi.org/10.1371/journal.pone.0173794

[41] Abramson, D., Alst, D., Merdjanoff, A., Piltch-Loeb, R., Beedasy, J., Findley, P., Peek, L., Mordy, M., Moroso, S., Ocasio, K., Park, Y.S, Sury, J., Tobin, J. 2015. Sandy Child and Family Health Study PERSON Report.

[42] New Jersey Office of Emergency Management. 2024. State of New Jersey All-Hazards Mitigation Plan.

[43] Domber, S., Barr K., Snook, I., Hoy, D., Carreno, B., Drabik, J., Walsh, S. NJDEP Division of Water Resources Management. 2024. 2024 New Jersey Water Supply Plan.

Flood

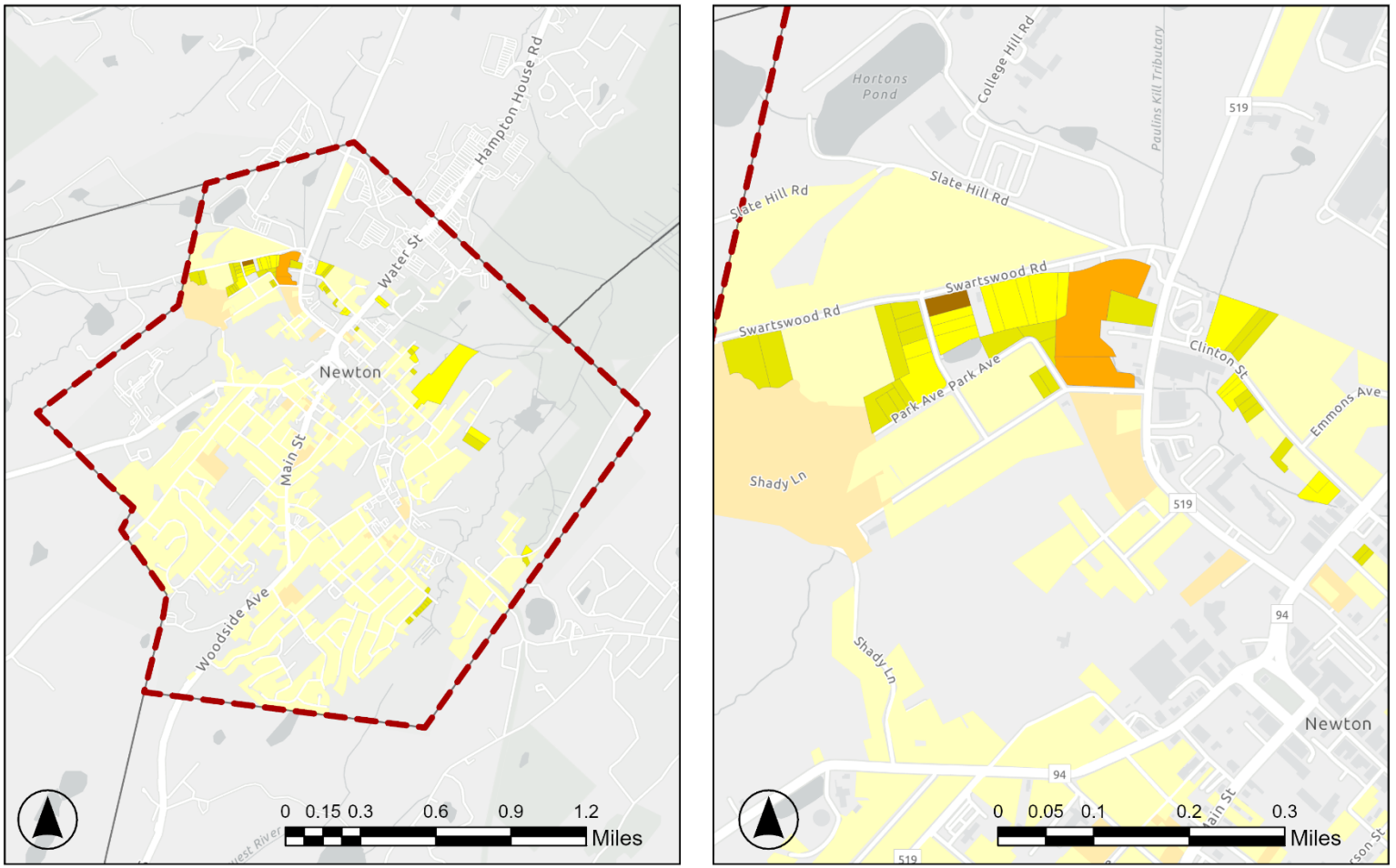
Flooding impacts vulnerable populations by exacerbating existing underlying inequities. In addition to impacts on property, flooding causes physical and mental health impacts. The most direct health impact from flooding is drowning and trauma. Other health impacts from flooding can be the result of increased risk of exposure to contaminants such as bacteria, mold, parasites, and chemical pollutants that can cause gastrointestinal, respiratory, and other conditions. Costly repairs and displacement resulting from flooding can create financial burdens that disproportionately impact low- to moderate-income families. [44]

Map V-14 depicts the potential flood exposure of housing parcels in Newton for the flood measures listed in Table III-7 (FEMA 1% annual chance flood zone, and approximate extent of Inland Flood Protection Rule). Table V-8 provides details on the number of parcels, land area, and value of property exposed.

Newton has a total of 2,041 residential and apartment parcels, with a small fraction of these being exposed under the current potential flood scenarios. Twenty-five parcels, totaling 33 acres, are located within the current FEMA 1% annual chance flood zone, with a net equalized value of approximately $18.2 million. The proportion of housing parcels at risk increases with higher flood levels, with 63 parcels being impacted in the approximate extent of Inland Flood Protection Rule. The economic impact increases significantly to $36.4 million under this scenario. As illustrated by Map V-14, most of the impacted residential properties are concentrated in the northern part of the town along Swartswood Road and Clinton Street.

[44] New Jersey Interagency Council on Climate Resilience. 2025. New Jersey Statewide Flood Resilience Initiatives.

Map V-14. Housing parcels within FEMA Flood Zones



LEGEND

Parcels not flooded
- Residential
- Apartments

Parcels Inundated 50% or more

FEMA 1% Annual Chance
- Residential
- Apartments

Approximate extent of Inland Flood Protection Rule
- Residential
- Apartments

Table V-8. Flood exposure of housing parcels within FEMA Flood Zones

		Number / land area exposed in...					
		FEMA 1% Annual Chance Flood			Approximate extent of Inland Flood Protection Rule		
MOD IV Property Class	Total # parcels	# Parcels	Acres	Net Equalized Value ($)	# Parcels	Acres	Net Equalized Value ($)
Residential (2)	2,012	23	28	10,372,348	60	41	26,732,718
Apartment (4C)	29	2	5	7,791,456	3	6	9,655,650
Total	**2,041**	**25**	**33**	**18,163,804**	**63**	**47**	**36,388,368**

Map V-15 depicts the potential flood exposure of OBC in Newton for each of the flood measures. Table V-9 summarizes the number of people exposed within Newton's OBC census blocks for each flood measure.

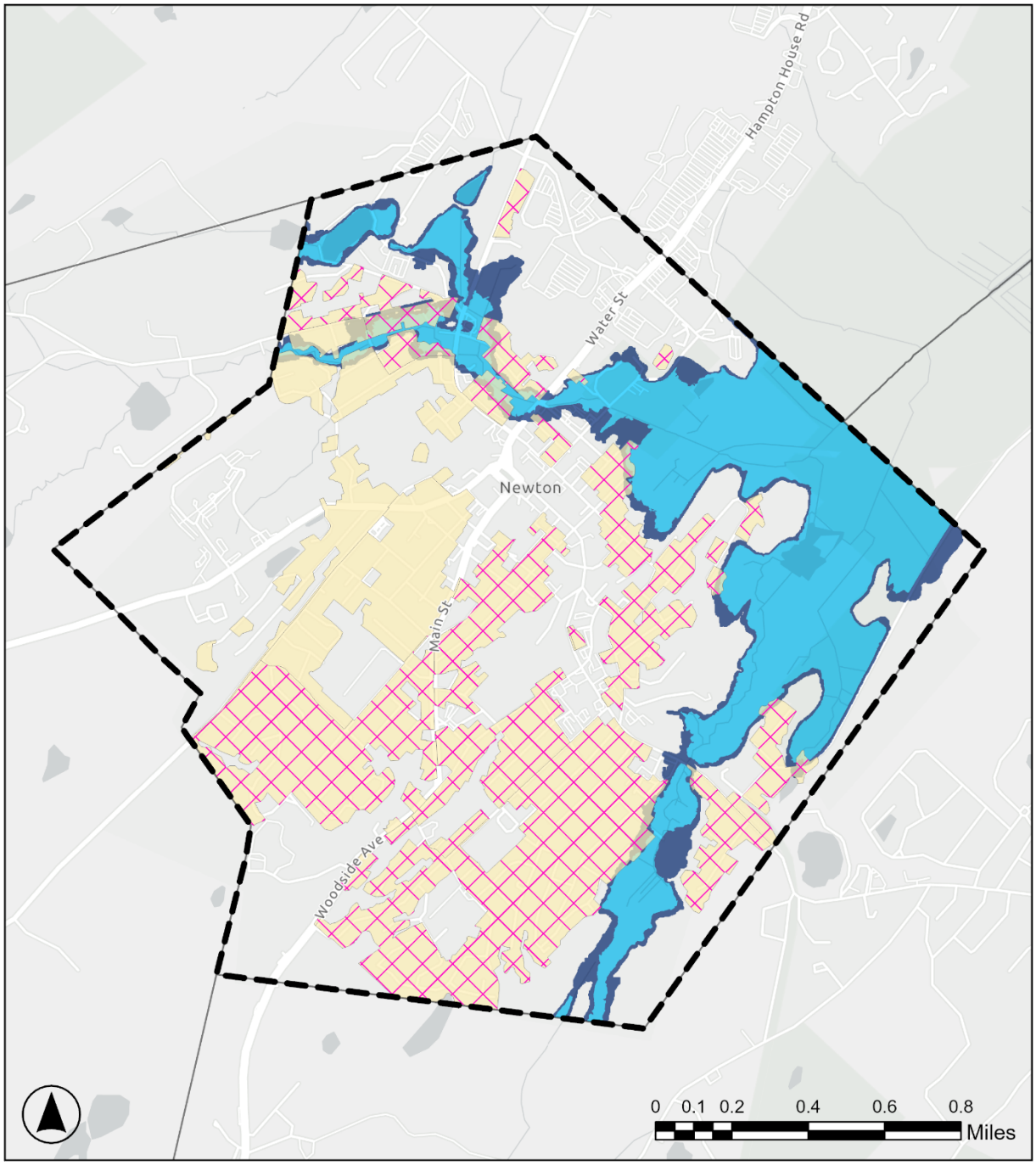
A small portion of OBCs are exposed to flooding in the northwest and southeast sections of Newton. Approximately 45 people living in low-income households (at or below twice the poverty threshold) are within the FEMA 1% annual chance flood zone, with that number increasing to 97 people in the approximate extent of Inland Flood Protection Rule. Racial and ethnic minority populations face a comparable risk.

Table V-9. Flood exposure of Overburdened Communities

	Total # in OBC census blocks	Estimated number of people exposed in...	
		FEMA 1% Annual Chance Flood	Approximate extent of Inland Flood Protection Rule
Low-income*	1,793	45	97
Minority	1,590	42	94
Limited English proficiency households	45	4	7

*At or below twice the poverty threshold as determined by the United States Census Bureau.

Map V-15. Overburdened Communities within FEMA flood zones



LEGEND

Flood Scenario

- FEMA 1% Annual Chance
- Approximate extent of the Inland Flood Protection Rule
- NJDEP EJ Overburdened Communities in Residential Land Use
- Residential Land Use

Wildfire

Wildfire does not pose a significant risk to Newton or adjacent municipalities. All areas of the municipality are classified as low risk, with no wildfire incidents documented since 1950 (see Section III.E). Housing most at risk during wildfires is located in areas where the built environment mixes with natural land. Wildfires can cause shifts in the housing market as fires destroy homes and displace residents. Municipalities may struggle to bounce back and provide sufficient housing stock after wildfires, causing a plateau or declining population in communities with large or recurring events. [45]

[45] New Jersey Office of Emergency Management. 2024. State of New Jersey All-Hazards Mitigation Plan.

VI. Impacts on Master Plan

The New Jersey MLUL requires a CCRHVA to analyze "the potential impact of natural hazards on relevant components and elements of the master plan." Newton's master plan was completed in 2008 and the most recent reexamination in 2023 (including the Conservation Element and Open Space and Recreation Plan). A separate Housing Element and Fair Share Plan was adopted in 2025. The Newton Master Plan includes the following plan elements:

Mandatory Elements

- Statement of objectives, principles, assumptions, policies, and standards
- Land Use Plan Element
- Housing Element and Fair Share Plan

Optional Elements

- Community Facilities Section
- Circulation Plan Element
- Recycling Element
- Historic Resources Element
- Conservation Plan Element
- Open Space and Recreation Plan

These elements were reviewed and analyzed to identify connections with the current and future climate hazards and exposures identified in this CCRHVA. For each element, this section includes a summary of relevant findings and potential considerations for Newton to improve resilience to climate-related hazards.

A. Statement of objectives, principles, assumptions, policies, and standards (SOPAPS)

The MLUL requires a municipal master plan to include a "statement of objectives, principles, assumptions, policies and standards" to guide the physical, economic, and social development of the municipality. Newton's general development goal is "to enhance and strengthen [its] position as a Regional Center in Sussex County to fulfill the social, commercial, governmental, medical, and service needs of a growing County within the constraints of existing resources." The master plan outlines general goals and objectives as well as some specific to Residential, Historic Preservation, Economic, Circulation, and Environmental/Conservation. The following goals and

objectives are stated in the New Jersey Municipal Land Use Law (MLUL), N.J.S.A. 40:55D-2(b), related to climate change hazards:

- To "secure safety from fire, flood, panic and other natural and man-made disasters,"
- To "promote the conservation of historic sites and districts, open space, energy resources and valuable natural resources…to prevent urban sprawl and degradation of the environment through improper use of land."

The following are Residential, Circulation, and Environmental/Conservation goals that are consistent with the findings of this CCRHVA:

Residential Goals and Objectives:

- Emphasize infill, revitalization, and redevelopment of housing in the downtown area.
- Promote "live where you work" housing.
- Create and maintain buffers where residential development abuts more intense uses.

Circulation Goals and Objectives:

- Encourage use of alternate transportation modes (e.g., pedestrian, bicycle, local transit, rail) to lessen dependence on the automobile for local trips in Town, thereby minimizing in-town congestion and air pollution.
- Incorporate off-street parking into new infill buildings as rear parking decks, located midblock behind buildings, or underground; all developable surface lots must be screened from the street with liner buildings and may be accessed by service lanes.

Environmental/Conservation Goals and Objectives:

- Conserve and protect environmentally sensitive areas (e.g., steep slopes, wetlands, and floodplains) in Newton.
- Utilize modern water runoff control techniques to improve local drainage patterns from new development and to enhance the environment.
- Promote green building techniques, low impact development, energy efficient buildings, and the use of alternative energy.
- Preserve and protect existing street trees and promote planting of additional street trees and replacement of dying and diseased trees, utilizing properly sized trees in appropriate locations.

Climate Hazard Connections

The residential goal that emphasizes redevelopment of downtown areas is consistent with the protection and preservation of more outlying and open area as areas for stormwater infiltration, which can reduce the severity of floods. This goal is also related to a potential reduction in the amount of new impervious surface. Impervious surface can both increase runoff in floods and increase heat.

The residential goal that promotes live-where-you-work housing can decrease reliance on the automobile, which reduces congestion and subsequent carbon emissions, and can also lead to reduced temperatures. Implementation of buffer zones can help preserve the ecosystems within environmentally sensitive areas such as forest or wetlands, which absorb carbon dioxide (CO_2) and can reduce instances of increased temperatures, flooding, and other severe weather events.[46]

The circulation goals that include reducing congestion, air pollution, and directing new parking to underground or screened areas align well with Section V of the CCRHVA in that these efforts should reduce factors that can exacerbate extreme heat events. The conservation goals related to protecting environmentally sensitive areas and improving drainage aligns generally with the CCRHVA projections of increased flooding, as these actions should help to mitigate effects of extreme precipitation and extreme flooding events. The conservation goals regarding green/low-impact building and preserving or planting trees are connected to CCRHVA projections on increasing extreme heat in developed areas of the town, and they should help to mitigate some of these impacts.

Potential Resilience Considerations

- Consider adding a Residential goal that aligns housing planning with climate hazard and vulnerability assessments.
- Consider adding a Circulation goal that specifically aligns new road and transportation planning with climate hazard and vulnerability assessments.
- Consider adding an Economic Development goal that aligns new development planning with climate hazard and vulnerability assessments.
- Consider adding a Historic Resources goal that aligns any plans or programs affecting historic buildings or sites with climate hazard and vulnerability assessments.

[46] Tang, J., Di, L., Xiao, J., Lu, D., & Zhou, Y. (2017). Impacts of land use and socioeconomic patterns on urban heat Island. *International Journal of Remote Sensing*, *38*(11), 3445-3465.

B. Land Use Element

The 2008 Land Use Plan Element is a future-development and redevelopment guide for remaining vacant land and underutilized lands. It proposes transect districts to define land-use character and density and to prepare the Town for a form-based code using a SmartCode model ordinance. That background is important because the CCRHVA shows that the risks most relevant to land use - heat, increasing rainfall, future flood extent, drought stress, exposed infrastructure, and contaminated sites - are spatially uneven and therefore need to be translated into zoning, design, and redevelopment review. (2008 Master Plan, Land Use Plan Element, p. 34)

Proposed land uses will be considered using the transect district planning tool, which defines land use areas by their character and density and aims to limit the potential for sprawl development. Though climate hazards are not explicitly mentioned in this section, transect descriptions relevant to climate hazard exposure include:

- **T-1 Natural Areas** covers wetlands, water, and lands that should be preserved from development; permitted uses are limited to parks, recreation, walking trails, and bike paths (2008 Master Plan, p. 45).
- **T-2 Rural Reserved Areas** covers large tracts at the outskirts; recommended density is one unit per ten acres, with rural cluster development at one unit per two acres on quarter-acre lots (2008 Master Plan, p. 45).
- **T-3 Neighborhood Residential** covers single-family residential areas spanning out from downtown (2008 Master Plan, p. 46).
- **T-4 through T-6** progress toward the higher-density Town Core, which is identified as the Central Business District with mixed-use, multi-story, retail-and-residential character (2008 Master Plan, pp. 46–47).
- **Special Districts SD-1 through SD-9** accommodate specialized uses: hospital (SD-1), college (SD-2), retail/manufacturing along Route 206 (SD-3), industrial/manufacturing along Sparta Avenue (SD-4), office/manufacturing (SD-5), schools (SD-6), senior community (SD-7), power substation (SD-8), and the SD-9 Planned Neighborhood Development District along High Street with a 20% mandatory affordable housing set-aside (2008 Master Plan, p. 48; 2019 Reexamination Report, p.7).

Climate Hazard Connections

The Transect Zone framework (2008 Master Plan, pp. 43–48) and its 2012 ordinance adoption are generally compatible with CCRHVA findings. The framework already permits accessory dwelling units, live/work units, and high-density mixed-use in T-4 through T-6 (2008 Master Plan, pp. 46–47), which can support compact, infill development directed away from the FEMA flood zones identified in CCRHVA §III.D and away from the high-heat industrial corridor identified in CCRHVA §III.A. T-1 Natural Areas (2008 Master Plan, p. 45) are aligned with CCRHVA §V.B findings on natural and working lands as flood buffers.

A future land use element update or reexamination presents an opportunity to overlay Transect Zone or Special District boundaries with FEMA flood zones, the Inland Flood Protection Rule expanded surface (CCRHVA Map III-5), heat island risk zones (CCRHVA Map III-2), or land surface temperature (CCRHVA Map III-1). Such an overlay would identify which T-zones or SDs contain parcels exposed under any of the CCRHVA flood scenarios. The Rule's Design Flood Elevation of three feet above the 1% annual chance flood for specified inland new construction and redevelopment (Section III.D) is a newly established standard — implemented primarily at the ordinance level — that a future element update could acknowledge where transects intersect the expanded flood surface.

The CCRHVA's Section V exposure findings, which postdate the element, offer new information for future redevelopment planning. The 2019 Reexamination Report inventory of redevelopment areas (pp. 33–35) could be revisited in light of climate hazard exposure, including heat exposure. The CCRHVA (Tables V-1, V-2) identifies several facilities that sit in or adjacent to the urban core where the redevelopment areas are concentrated, and operational continuity of these facilities under projected hazard conditions is an area for future examination.

Land surface temperature maps from the summer of 2022 (Map III-1) illustrate that Sparta Ave, which is a part of the "spine" of Newton, reaches surface temperatures over 110 F. Development that aims to support higher densities oftentimes leads to the creation of impervious surfaces that retain heat, which will contribute to increased temperatures.[47] This combined data illustrates an opportunity to plan development in this area with climate hazards in mind, so that continued downtown investment and heat mitigation can proceed together. Increased population densities can also lead to more people who rely on automobile transportation, which can lead to rise in temperatures and exacerbate flooding-related climate hazards due to blockages that stagnate the flow of water.

There are a number of other connections to climate hazards that future updates could develop. The Land Use Element's tree canopy, vegetation, and impervious surface standards could be mapped against the CCRHVA heat findings in a future update. The Land Use Element addresses brownfields generically as a redevelopment opportunity (2008 Master Plan, p. 35) and notes that several contaminated sites lie in proposed redevelopment areas; flood mobilization of contaminants and the sequencing of remediation around hazard exposure are newly identified considerations for future redevelopment planning.

Future updates could also condition development capacity and buildout assumptions on drought-adjusted water supply, reflecting CCRHVA III.C projections of increasing drought; address groundwater pumping and land subsidence considerations that could affect infrastructure and water quality; and incorporate Overburdened Communities (OBC) and environmental-justice considerations into land use policy.

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[47] Tang, J., Di, L., Xiao, J., Lu, D., & Zhou, Y. (2017). Impacts of land use and socioeconomic patterns on urban heat Island. *International Journal of Remote Sensing*, *38*(11), 3445-3465.

Potential Resilience Considerations

- Incorporate or refer to Section V of the CCRHVA, exposure findings which flags several facilities that sit in or adjacent to the urban core where the redevelopment areas are concentrated.
- Continue to promote a high-density core, thereby encouraging less car-dependency.
- Refer to the tree canopy, vegetation, and impervious surface mapping prepared as part of the CCRHVA to guide consideration of green infrastructure standards.
- Incorporate vulnerable population discussion and findings into the Master Plan where appropriate.
- Incorporate a detailed climate hazard resilience plan within the land use element, especially in the "spine" of Newton where development is focused, and align land use planning with climate hazard and vulnerability projections
- Consider adding heat-resilience design standards to transect and redevelopment review, especially Sparta Avenue/Mill Street, Water Street, Main Street, and OBC areas.
- Consider integrating drought, groundwater withdrawal management, and subsidence analysis into land-use decision-making.
- Consider establishing a periodic (10-year cycle minimum) CCRHVA-Land Use crosswalk update.

C. Housing Element and Fair Share Plan

The MLUL mandates the inclusion of a housing element for a municipality's master plan. Newton's 2025 housing element and fair share plan (HEFSP) includes a goal to align housing plans with the State Development and Redevelopment Plan, which asks that there is a full range of housing choices, primarily in Centers, at appropriate densities to accommodate projected growth.

The HEFSP states that its purpose is to provide a realistic opportunity to meet low- and moderate-income housing needs by using multiple opportunities to develop a variety of housing types integrated into Newton's existing land-use pattern and character. It reaffirms goals, including appropriate land development, adequate light/air/open space, coordination with neighboring jurisdictions, appropriate densities, sufficient space for residential and other uses, senior housing, affordable housing, and balancing market-rate and affordable housing within neighborhoods. (2025 HEFSP, Purpose and Goals, pp. 11-12.)

It includes sections related to demographics, HEFSP relationship-to-plans, housing occupancy and costs, housing stock, site-suitability and projections for housing needs. The HEFSP concludes that large-scale new construction is restricted by lack of developable land because Newton is largely built out, and that most new housing units will likely be created through redevelopment area designations and redevelopment of existing sites.

Several parts of Town have been declared areas in need of redevelopment, including Paterson Avenue, Hicks Avenue, and Merriam Gateway. Several new developments or plans for new developments that follow the Fair Housing Act are included in the plan as well.

Climate Hazard Connections

Because the CCRHVA postdates the HEFSP's preparation, the climate-vulnerability evidence now available presents an opportunity for future housing planning: it could be used to inform site selection, rehabilitation, outreach, or design. However, as the existing Housing Plan Element and Fair Share Plan were approved by the court per Consent Order dated December 9, 2025, no changes are being recommended to the current approved HEFSP. All recommendations could be considered when the town amends or updates its HEFSP.

There is alignment of the center-based and redevelopment-based housing strategy with CCRHVA heat and flood logic because compact redevelopment can reduce pressure on open lands that moderate heat and flooding. This alignment can be further strengthened, because the center and redevelopment pattern concentrates housing near heat-exposed impervious corridors, heat and stormwater performance standards in implementing ordinances would reinforce its resilience benefits (Maps III-1, III-2, V-12, V-13). An area for future examination: a site can be suitable for affordable housing under traditional planning criteria while remaining untested for late-century heat, future fluvial flood extent, access disruption, water-system vulnerability, or OBC exposure.

The HEFSP rehabilitation program targets substandard low- and moderate-income units and covers major systems including weatherization, roof, plumbing, heating, electricity, sanitary plumbing, and load-bearing structural systems (2025 HEFSP, Rehabilitation Program, p. 37.). This aligns strongly with CCRHVA Section V.D because heat, storms, flood repair costs, mold, displacement, and infrastructure failure disproportionately affect lower-income households and older/substandard units. Future program cycles present an opportunity to incorporate explicit climate-resilience standards into rehabilitation criteria.

Emergency-resilience standards for senior or supportive housing are a further area for future examination. The HEFSP aligns with the CCRHVA concern for vulnerable populations; future planning could consider backup power, cooling rooms, accessible evacuation planning, emergency communications, flood-safe access routes, and continuity protocols for senior, group-home, or special-needs housing. Future planning could also evaluate whether residents of affordable sites can reach medical services, groceries, pharmacies, transit, cooling centers, shelters, or emergency services if these assets or connecting roads are disrupted.

Finally, drought-tolerant landscaping, water-efficiency standards, leak detection, irrigation limits, and analysis of water-cost burden for affordable units are opportunities to address CCRHVA projections of longer drought periods and the possibility that drought-related operational costs may be passed to consumers, restricting water access for financially constrained households.

Potential Resilience Considerations

- Consider adding CCRHVA climate-screening fields to all HEFSP site-suitability analyses. Future site-suitability tables could include land-surface temperature, heat-island risk, FEMA 1% flood zone, Inland Flood Protection Rule planning extent, stormwater/flash flooding, drought/water supply, contaminated-site proximity, critical-infrastructure dependency, road/access continuity, and OBC location.
- Consider adding hazard-related plan coordination to "Relationship to Other Plans."
- Consider inventorying existing housing stock against CCRHVA exposure findings (Table V-8).
- Consider using the rehabilitation program as a climate-resilience retrofit program, prioritizing units in the FEMA 1% and plus-3-feet flood zones, high-heat areas, older structures, and OBCs.
- Consider requiring heat mitigation and resilience standards for senior and supportive housing.
- Consider adding emergency-resilience standards for senior, supportive, and group-home housing.
- Consider evaluating housing access during flood and storm events.
- Consider protecting low- and moderate-income residents from resilience-related cost burdens.
- Consider integrating drought and water affordability into HEFSP implementation.
- Consider prioritizing OBC in housing policy.
- Continue to ensure housing in environmentally sensitive areas is [re]developed in a manner that prioritizes the health and longevity of these areas and aligns with climate-informed flood hazard mapping.

D. Community Facilities

The community facilities section of the 2008 Master Plan details the distinct acreage and type of community facilities, the duration and type of services offered within them, and the approximate number of individuals that make use of them and why. It also includes a Recreation Needs Assessment which identifies census block areas that do not meet national standards for access to recreational and open space. Several recommendations on how to address the lack of access to recreational land are included.

Climate Hazard Connections

While climate hazards are not currently addressed in this section, there are opportunities to incorporate some of the findings from Section III and V where risks to community facilities and open spaces are identified. The essential services community facilities provide can be disrupted by climate hazards like floods or heatwaves that can produce long-term structural damage and increase risk to all who use the facilities.

As detailed in Section III of the CCRHVA, Newton is expected to experience increased temperatures that can lead to frequent instances of heat-related illnesses. This can produce an increased reliance on the limited resources within the safety and security and health and medical care facilities. A rise in heat can also cause malfunctions in the communication infrastructure that safety and security and health and medical care facilities rely on to support the community. Some educational facilities have also experienced heat-related operational challenges. Older facilities can sometimes lack central air conditioning systems that will be crucial for extreme heat events.

Mapping data illustrates that other community facilities such as libraries, art venues, entertainment and sporting venues, historic properties, and shelter locations are at risk of being negatively impacted by heat and flood related climate hazards. Map V-8 uses land surface temperature data from summer 2022 and depicts that these community facilities are in areas that exceed 100 F. Though these community facilities may be able to provide air conditioning, increased temperatures can cause demand for cooling services to rise while capacity to provide decreases.

Potential Resilience Considerations

- Acknowledge and consider planning for the specific climate hazards that currently affect and will affect community facilities under future climate change projections.
- Consider including additional categories of community facilities (e.g. art venues, shelter locations, entertainment and sporting venues, historic properties, affordable housing sites).
- Consider including more detailed information on the current climate resilience of community facilities (e.g. back-up generators, air conditioning, access to canopy cover, evacuation plans).

E. Circulation Element

The circulation element identifies the jurisdiction, function, and high accident locations of existing roads. The need for more in-depth examinations of circulation, such as level of service surveys of existing roadways and examining current and future problem traffic areas, is highlighted. Recommendations for additional bike paths are included in the element as well.

Climate Hazard Connections

Connections between the circulation element and climate hazards are an opportunity for future examination in this element. Integrating climate resilience into the circulation element can ensure that public transit and everyday streets can withstand extreme weather like floods and heatwaves.

Potential Resilience Considerations

- Include a plan for evacuation procedures that incorporate climate-hazard resilience planning, prioritizing residents of OBCs.
- Continue to encourage and facilitate the use of alternate transportation modes that are healthy for residents and reduce carbon emissions and air pollution that can exacerbate extreme heat events.

F. Recycling Element

The MLUL requires municipalities to prepare a Recycling Plan that incorporates State Recycling Plan goals. Newton's Town Recycling Center offers several recycling programs and activities such as curbside pick-ups of recyclables, leaf pick-ups, and Christmas tree pick-ups. Additionally, the Sussex County Municipal Utilities Authority accepts household hazardous waste from County residents in the summer and fall. The Sussex County Waste Management Plan projects waste to increase at a minimum of five percent per year, with waste per capita in the County on the rise at a faster rate than the rest of the State. The County has set a goal to meet the 50 percent recycling rate identified in the State Recycling Plan.

Climate Hazard Connections

Connections between recycling and climate hazards are an opportunity for future examination in this element. Recycling reduces waste, which can help to lessen the impacts of flooding by reducing clogging in drainage systems.

Potential Resilience Considerations

- Consider acknowledging the connections between recycling and resilience against climate hazards.

G. Historic Resources Element

The historic preservation element includes a thorough overview of the history of how Newton evolved into its present form, including an architectural history of resident homes between the 17th-20th centuries.

Climate Hazard Connections

Although climate hazards are not explicitly mentioned, the Certified Local Government Program (CLG) is acknowledged as providing Newton with funding assistance for educational outreach programs.

Map V-8, which captures land surface temperature and the location of Newton's historic sites, illustrates that these historic sites experience temperatures that exceed 100 °F. Map V-9 shows that many historic sites are concentrated in the northeast section of Newton, where flood exposure for community assets is highest. Section III of the CCRHVA details increased rainfall projections that can cause structural and expensive damage to historic sites and create an immediate loss in valued historic treasures.

Potential Resilience Considerations

- Look to implement green building upgrades, where possible, to help buildings withstand extreme weather events and temperature fluctuations.

H. Conservation Plan Element (Including Natural Resources Inventory)

The conservation plan element prioritizes the preservation, conservation, and utilization of natural resources, including soil conservation, groundwater recharge, and important habitats. The conservation plan element notes that sustainable soil conservation can assist in reducing the impact of climate change-related hazards (Master Plan Update, page 29). Additionally, there is recognition in the Conservation Plan that failure to develop land appropriately can have negative effects on the health of the environment and the community.

Climate Hazard Connections

Section III.C of the CCRHVA details that Newton's time in drought each year is anticipated to increase throughout the century. Drought can derail efforts put into conserving wetlands, forests, agricultural and other green spaces. Drought can also create soil moisture deficiencies that can promote degradation.

Section V of the CCRHVA includes Map V-7, which depicts that flood exposure will likely impact wetlands and forests in the East. Flooding can severely deteriorate the ecosystems within forests and wetlands.

Potential Resilience Considerations

- Consider incorporating findings of Map V-7 into future updates to the Conservation Element.
- Consider aligning future conservation and protection efforts with projections for future climate change-related drought and flooding.

I. Open Space and Recreation Plan

Newton's Open Space and Recreation plan has been prepared in accordance with the guidelines and requirements as set forth by the NJDEP's Green Acres Program and the MLUL. Several types of open space (active recreation, passive recreation, farmland preservation, environmental conservation recreation, and greenbelt) are identified.

The recreation part of the plan identifies the location of Newton's recreational facilities and several potential plans to implement more recreational facilities, including increasing open space requirements for more developments and inventorying vacant land in neighborhoods that have recreation deficiencies to target potential land acquisition. This element includes mapping of priority lands for community greenspace and water are provided. Notably, nearly all of the Town is identified as low priority or lands that are not important for protecting surface water quality.

Climate Hazard Connections

Climate hazards are specifically addressed in the Open Space plan; there is a goal to ensure all future design and management efforts consider increased precipitation, heat, and more severe storm events, with a specific goal to maximize Newton's ability to cope with climate change by designing and siting facilities with changing temperatures, precipitation, and flood patterns in mind. There is a recognition that preserving open space protects important environment features (wetlands, floodplains, steep slopes) that contain delicate ecosystems, wildlife, and vegetation species. Additionally, there is recognition that natural areas like open space help absorb carbon and mitigate the effects of climate change.

Section V of the CCRHVA details that high temperatures in green spaces can degrade soil health, increase the frequency and duration of wildfires, and accelerate the life cycles of insects that would allow them to mature and spread rapidly, ultimately producing an environment that can deteriorate and limit accessibility to open spaces.

Higher air temperatures can also increase the temperature of runoff entering waterways, which can result in water quality deterioration. Map V-7 illustrates the flood exposure of natural and working land parcels that are near to several of Newton's recreational lands. Flooding can degrade these areas and lead to limited access to them.

Potential Resilience Considerations

- Align open space management and recreation planning with current climate projections from the CCRHVA.
- Consider implementing a detailed climate hazard resilience plan to preserve open space, farmland, and recreational spaces.

VII. Coordination with Other Planning

The New Jersey MLUL requires a CCRHVA to include a "policy statement on the consistency, coordination, and integration of the climate change-related hazard vulnerability assessment with any existing or proposed natural hazard mitigation plan, floodplain management plan, comprehensive emergency management plan, emergency response plan, post-disaster recovery plan, or capital improvement plan." This section addresses and expands upon that requirement by analyzing how the hazard exposures identified in Sections III, IV, and V may impact the following plans:

- Sussex County Hazard Mitigation Plan (including municipal annex) (2021)
- Floodplain Management Regulations of the Town of Newton (2024)
- Stormwater Management Plan (2005)
- Emergency Operations Plan (2025)
- Capital Improvement Plan

These plans were reviewed and analyzed to identify connections with the current and future climate hazards and exposures identified in this CCRHVA. For each plan, this section includes a summary of relevant findings and potential considerations for Newton to improve resilience to climate-related hazards.

A. Sussex County Hazard Mitigation Plan and Municipal Annex to the County HMP

The County and all 24 participating local jurisdictions (referenced as "the Planning Partners") prepared the 2021 Hazard Mitigation Plan (HMP) as an update to the 2016 version. The updated HMP includes countywide analysis and assessment of hazards, risk, and capabilities, as well as discussions on socially vulnerable populations and inclusion of these populations in the planning process. The Sussex County HMP consists of two volumes. Volume I of the HMP acts as a resource for ongoing mitigation analysis and includes information on mitigation planning and methodology for risks and capability assessments. Volume II includes summaries of each jurisdiction's planning, regulatory, fiscal capabilities, past mitigation actions, vulnerability to hazards, and specific mitigation strategies.

Hazards that are recognized in the HMP and the CCRHVA include:

- Drought
- Flood
- Hazardous Material
- Nor'easter (a powerful storm that hails from the Northeast and is characterized by heavy winds, precipitation, and potential coastal flooding)
- Severe Weather (thunderstorms, lightning, hail, high winds, tornadoes, and extreme temperatures)

After an evaluation of each jurisdiction's hazard risk and vulnerability, based on past events, past and predicted future losses, and the expected probability of future occurrence, the planning partners summarized overall hazard risk for Sussex County (marking each hazard as high, medium, or low risk). Based on this ranking, in no particular order, the three hazards that Sussex County is likely at risk for are Nor'easter, Severe Weather, and Severe Winter Weather.

Newton's highest-ranking hazards of concern mirrored those of Sussex County, and Newton's adaptive capacity to adjust to potential hazard damage from each identified hazard is considered moderate – capacity might exist, but it is not used or could use some improvement. Of the 19 actions Newton desires to implement, those most relevant to the CCRHVA include:

- Development of a Disaster Debris Management Plan, which would identify resources and locations for debris storage.
- Addition of certified floodplain managers (CFM) to staff, which would allow for an increase in the depth of understanding when dealing with FEMA floodplains.
- Upsizing of the Merriam Avenue School stormwater pump facility, which would reduce the risk of flooding in the area serviced by the facility.
- Upgrading of the stormwater management system at the Public Works Garage on Moran Street, which would reduce the risk of flooding.
- Wind resistance improvements at Sussex County Community College.
- Installation of automatic standby generators at critical facilities to serve as backup power.
- Establishment of procedures to capture loss and damage data from hazard events, to improve knowledge of hazard events and increase chances of receiving grant funding support. Damage assessment tools have been provided by the New Jersey Office of Emergency Management, and training on their use would support this action.
- Implementation of a Flood Damage Prevention Ordinance update to include discussion of New Jersey's 1-foot freeboard requirement for new construction.

Climate Hazard Connections

The HMP aligns well with the CCRHVA on the dominant role of storms in Newton's hazard profile. The HMP's Newton annex identifies issues (HMP, p. 9.16-13) that include two stormwater infrastructure improvement needs: the Merriam Avenue School pump facility and the DPW Garage stormwater system on Moran Street. Both have proposed mitigation initiatives (2021-Newton-001 and 2021-Newton-002, both High priority). The two documents converge on identifying water infrastructure as the most critical exposure, with the CCRHVA extending the analysis to the wastewater treatment facility and sewer pumps not specifically named in the HMP.

The findings on risk of wildfire are consistent, and the HMP's identification of wind and snow-load deficiencies in three buildings is aligned with projections found in the CCRHVA's extreme wind and storm narratives (Sections III.B and V.A). The HMP also flags energy infrastructure vulnerability to both heat and storms, providing grounding for the HMP mitigation actions related to energy resilience and backup power needs. The two documents also align in their identification of the Master Plan as the integration vehicle for hazard and climate information.

The CCRHVA Section III.D identifies the NJDEP's Inland Flood Protection Rule (adopted July 2023) as a new regulatory standard establishing a Design Flood Elevation three feet above the 1% annual chance flood (CCRHVA Section III.D, Future Flood Risks).

The HMP's hazard ranking process references "changing future climate conditions" as one input (HMP, p. 9.16-14), but the actual hazard profiles in the annex are anchored to historical event records with a five-year planning horizon. The CCRHVA, by contrast, projects all hazards to two future horizons — mid-century (2036–2065) and late-century (2070–2099), introducing a long-horizon perspective the HMP has not formally adopted.

Potential Resilience Considerations

During the next update to the county HMP, the town should consider referring to the following when working with the County on development of the Municipal Annex:

- Consider adding extreme heat as a hazard of concern in the Newton annex and propose at a minimum one mitigation initiative addressing heat.
- Consider adopting the CCRHVA's Inland Flood Protection Rule mapping as a standard flood measure in future HMP risk and exposure tables.
- Consider adding an Overburdened Communities equity overlay to the Newton-specific vulnerability section, using CCRHVA Section V.D, Table V-7, and Map V-11 as the source, and include mitigation initiatives targeted at the OBC block groups.
- Consider adding a Drought mitigation initiative responsive to CCRHVA Section III.C and Section V.A findings.

- Consider updating HMP Table 9.16-3 to add the CCRHVA itself as a component of the Land Use Element planning documents.

- Strengthen the "Climate Resilient" mitigation category usage in HMP Table 9.16-17. Identify at least one Climate Resilient action for each of Hurricane and Tropical Storm, Nor'easter, Severe Winter Weather, and Drought — the High and Medium hazards for which the CCRHVA documents projected worsening.

- For future HMPs, consider adopting three planning horizons — present-day, mid-century, and late-century — for the next risk assessment, paralleling CCRHVA Section II's methodology.

B. Floodplain Management Ordinance

Newton's Floodplain Management Regulations (referenced throughout the document as "code" or "regulations") are intended to minimize public and private losses due to flood conditions in specific hazard areas through the establishment of comprehensive regulations for management of flood hazard areas. These regulations are intended to be administered and enforced in conjunction with the flood provisions of New Jersey's Uniform Construction Code, which developed subcodes for various aspects of building construction, including building, plumbing, electrical, and fire safety (New Jersey Department of Community Affairs). Embedded within the Uniform Construction Code is the New Jersey Flood Hazard Control Act, which aims to minimize flood damage, preserve surface water quality, and protect wildlife and vegetation in flood hazard areas (New Jersey Administrative Code, 2026).

The regulations implement the best available flood information from the Federal Emergency Management Agency (FEMA), which provides detailed hazard information, higher flood elevations, larger flood hazard areas, and ultimately results in more restrictive regulations to inform the establishment of flood hazard areas. One highlighted regulation is the prohibition of development in regulatory floodway areas if the proposed development produces increases in base flood elevations. Article II establishes the flood hazard areas and design flood elevations for Newton.

Climate Hazard Connections

The code's framework aligns with the regulatory regime within which the CCRHVA's flood findings sit, specifically the code's deferral to the new Inland Flood Protection Rule as a flood measure, including higher elevation requirements for critical facilities and roads. The prohibition of development in riparian zones is also aligned with CCRHVA findings on flood exposures in low-lying areas (Sections V.A and V.B). Likewise, the code's design standards for new facilities are responsive to this exposure category — though they apply only to new and replaced facilities, not retrofit of existing ones.

Potential Resilience Considerations

- Consider developing a floodplain management plan that protects housing, community assets, and critical facilities and is informed by and in alignment with the climate change projections for future increases in precipitation and storms in the CCRHVA.
- Consider amending the code to explicitly codify the three-foot Design Flood Elevation standard for delineated watercourses, consistent with the NJDEP Inland Flood Protection Rule.
- Consider adding an explicit cross-reference in Article II requiring permit applicants to review the Newton CCRHVA's flood-exposure inventory (CCRHVA Section V.A, Tables V-1 and V-2; Section V.D, Tables V-7 through V-9) as part of pre-application due diligence, formalizing the connection between the code and the CCRHVA.
- Consider adopting an equity-considerations provision applicable to substantial improvement determinations and variance reviews, requiring the Floodplain Administrator to consider whether the property is within an Overburdened Community block group.

C. Stormwater Management Plan

The 2005 Stormwater Management Plan (SWMP) guides Newton's compliance with NJDEP's Municipal Stormwater Regulation Program (MSRP) and addresses three substantive Design and Performance standards: groundwater recharge, stormwater quantity control, and stormwater quality control — each tied to specific subsections of N.J.A.C. 7:8-5 (SWMP page 8). The plan applies to projects defined as "major development": new projects or redevelopment projects that disturb one or more acres of land, or that increase impervious site coverage by one-quarter acre or more (SWMP page 8).

Nine specific implementation goals are stated, and the plan also contains an inventory of stormwater infrastructure and maintenance and inspection requirements. The plan has sections reserved for specific mitigation project options and a land-use/build-out analysis, but the content of those sections is not yet prepared in the 2005 document.

Climate Hazard Connections

The 2005 SWMP explicitly adopts Low Impact Development (LID) as its design philosophy (SWMP pages 9–10), with both nonstructural and structural BMPs listed. This LID framing is directionally aligned with the green infrastructure approach mentioned in the CCRHVA. The SWMP's prioritization of low-impact development may help mitigate the risks associated with CCRHVA's projection (Section III) of increased frequency and intensity of rainfall and storm events in the future because impervious surfaces can weaken stormwater management efforts. Impervious surfaces can also interfere with natural groundwater recharge, which can increase the risk of drought events, which are also expected to increase throughout the century (Section III).

Regarding mobilization of pollutants through flooding, the CCRHVA and SWMP address pollutant transport from different angles — the SWMP through routine stormwater runoff, the CCRHVA through flood-event mobilization.

Potential Resilience Considerations
Because the SWMP is approximately 21 years old, predates the 2021 NJDEP green infrastructure rule amendments, and predates this CCRHVA by twenty years, the primary recommendation is a comprehensive update of the plan consistent with NJDEP regulations rather than targeted amendment of specific sections.

D. Emergency Management Plan / Emergency Response Plan / Post-Disaster Recovery Plan

(Note: The source document used to develop this section is not the Town of Newton Emergency Operations Plan. It is a questionnaire containing Newton's responses to twelve questions about the actual EOP that was completed by Newton municipal officials. The section below, therefore, analyzes Newton's questionnaire responses which describe the EOP but do not contain its protocols, inventories, or operational content.)

The Emergency Operations Plan (EOP) was adopted in June 2025 and "…establishes a comprehensive framework of policy and guidance for local incident preparedness, response, and mitigation operations for the town," including responsibilities and actions to be taken during an incident or planned event so that adverse effects on people, property, and the environment are reduced. It was designed to be "interconnected with the regular operations of all tasked agencies and "supports the regulations and laws that are designed to prohibit discrimination and ensure equal opportunities for individuals with disabilities and others with access and functional needs, including other vulnerable or traditionally underserved populations."

The EOP identifies several natural disasters (Nor'easter, Severe Weather, Severe Winter Weather, Dam Failure, Flood, Geological Hazards, Hazardous Materials, Hurricane, Wildfire, Disease Outbreak, Drought, Earthquake, and Infestation) and categorizes them by High, Moderate, or Low Risk. The following are the assigned risks of the natural disasters that are recognized or discussed in both the CCRHVA and the EOP:

High Risk: Nor'easter
Moderate Risk: Flood, Hazardous Materials
Low Risk: Drought

Explicit definitions of objectives like hazard mitigation, prevention, protection, response, or recovery, as well as a capability assessment, are also not included.

Twenty-one annexes are listed. Of these, the annexes most directly relevant to CCRHVA climate hazards are:

EOP Annex (per questionnaire)	Most directly relevant CCRHVA hazards/sections
Alert, Warning, Communications	Storms (CCRHVA III.B); Flood (III.D)
Damage Assessment	All climate hazards; coordination with FDPC § 120-3.13
Disaster Recovery	All climate hazards
Emergency Operations Center	All climate hazards
Emergency Medical Services	Heat (CCRHVA III.A); all climate hazards
Evacuation	Flood (CCRHVA III.D); Wildfire (III.E)
Fire and Rescue	Wildfire (CCRHVA III.E)
Hazardous Materials (HazMat)	Storms (CCRHVA III.B); Flood (III.D); coordination with FDPC § 120-11.7
Public Health	Heat (CCRHVA III.A); Drought (III.C); Flood (III.D)
Public Works	Storms (CCRHVA III.B); Flood (III.D); coordination with SWMP
Resource Management	All climate hazards
Shelter Reception and Care	Heat (CCRHVA III.A); Storms (III.B); Flood (III.D)
Social Services	Overburdened Communities (CCRHVA V.D)

Climate Hazard Connections

The June 2025 EOP's stated framing — “interconnected with the regular operations of all tasked agencies, as opposed to being used only during declared disasters” is consistent with the CCRHVA's framing of climate hazards as continuous-risk phenomena. The EOP's High Risk tier (Nor'easter, severe weather, severe winter weather) is consistent with the CCRHVA Section III.B storm-hazard treatment and the climate projections that frame the CCRHVA.

The EOP's stated equity commitment “to prohibit discrimination and ensure equal opportunities for individuals with disabilities and others with access and functional needs, including other vulnerable or traditionally underserved populations” — is directly relevant to CCRHVA Section V.D.

Potential Resilience Considerations
(NOTE: Because the source document is a partial questionnaire rather than the EOP itself, the recommendations below address what a full climate-resilient EOP for Newton could contain.)

- Consider adding a heat-event response protocol responsive to CCRHVA Section III.A and Tables III-1 and III-2.
- Consider an integrated overall risk-and-vulnerability characterization, consistent and coordinated with CCRHVA Sections III and V.
- Consider revising the Hurricane risk classification from Moderate toward High, given the CCRHVA Section III.B projection that storm intensity will increase.
- Consider establishing explicit cross-references between the EOP and the CCRHVA.

E. Capital Improvement Plan

The 2025 Capital Budget and Capital Improvement Program (CBCIP) is "a document used as part of the local unit's planning and management program" that "does not in itself confer any authorization to raise or expend funds" but acts "as a guide for continuous planning and budgeting."

The document is not a plan, but a Municipal Data Sheet that serves as the state-mandated municipal budget submission form filed with the New Jersey Department of Community Affairs, Division of Local Government Services, and lists the Town's desired upgrades. The 2025–2027 Capital Improvement Program contains two distinct project series: a general municipal series and a water/sewer utility series. One sheet also provides project justifications for some of the capital items. Those projects most related to climate change include wastewater treatment plant infrastructure and general road improvements like "resurfacing, curbing, sidewalks, and appurtenances."

Climate Hazard Connections

The Water/Sewer utility CIP is the strongest CCRHVA alignment point, as these investments are directionally consistent with the CCRHVA's exposure findings. The lead service line replacement, though not a climate-resilience program, complements CCRHVA's Section V.D vulnerable-population framing — particularly for Overburdened Communities, where older water service infrastructure correlates with older housing stock.

Project 2025-2 (Boardwalk Connector Memory Park) connects the Sussex County Rail Trail into Memory Park. While the project is not climate-rationalized, it advances green-corridor connectivity that could support access to natural areas for vulnerable populations during heat events (CCRHVA Section III.A heat island findings).

Potential Resilience Considerations

- Continue to upgrade emergency equipment to prepare for the increased future flooding and heat projected in the CCRHVA
- Continue to improve potable water and wastewater treatment systems, consistent with the increased future flooding and heat projected in the CCRHVA
- Consider including projects to improve the climate-resilience of affordable housing units, libraries, and shelters.
- Consider including projects to preserve and enhance open space and recreation areas.
- Consider adding Automatic Standby Generators at Critical Facilities as a capital project.
- Consider adding a Cooling Center Designation and Facility Upgrade project to support heat resilience under CCRHVA Section III.A.

VIII. Appendices

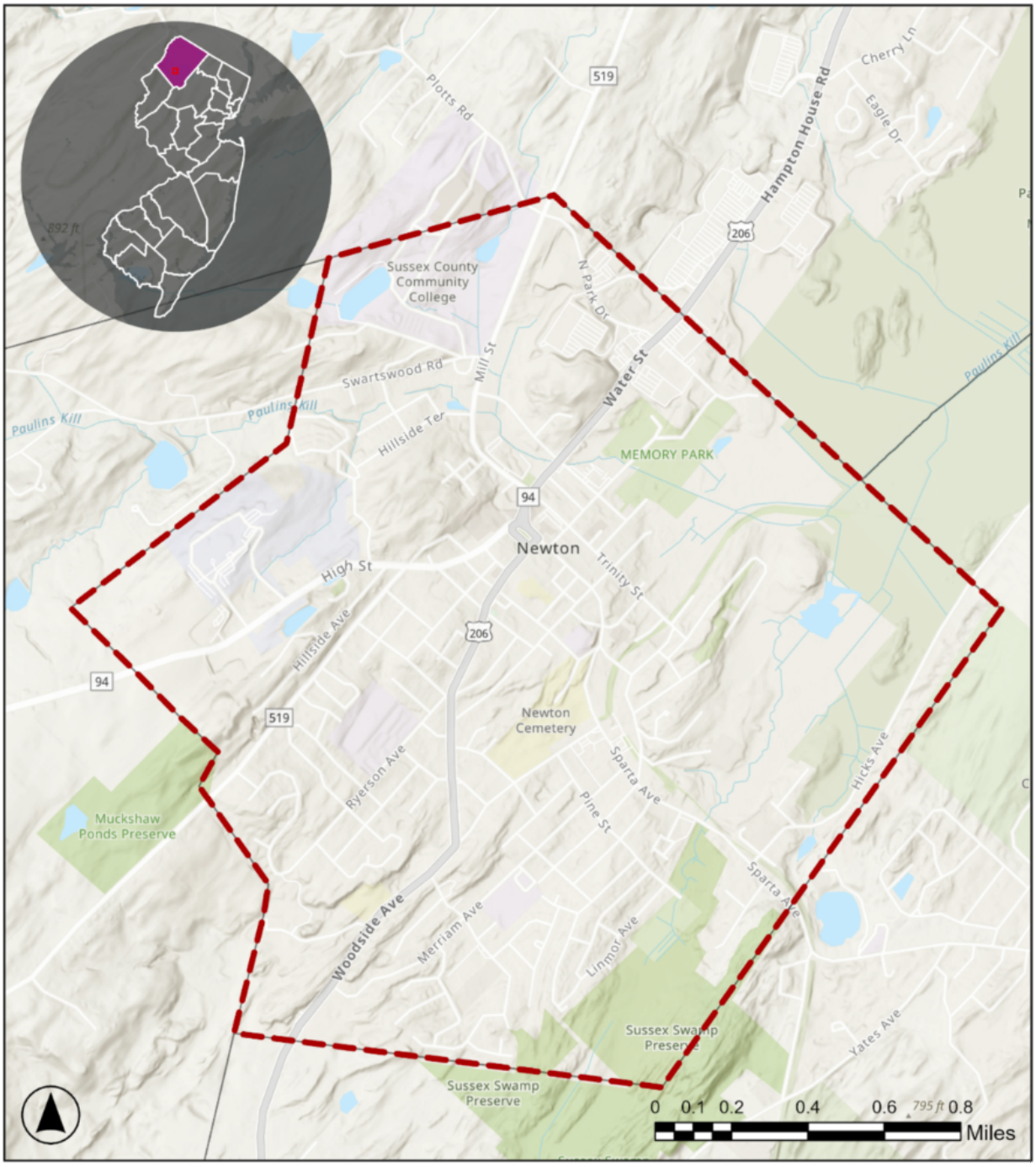
Appendix A: Description of Town of Newton

Serving as the county seat, the Town of Newton (henceforth, “Newton” or "the town') is centrally located in Sussex County, New Jersey. It is bordered by Hampton Township to the north, by Fredon Township to the west, and by Andover Township to the south and east. Situated within the Kittatinny Valley, the town spans approximately 3.36 square miles. The Paulinskill River Wildlife Management Area lies along its northern edge, and Sussex Swamp Preserve is located to the south. A major tributary of the Paulins Kill flows through the town. Map A-1 depicts Newton’s location.

With settlements beginning as early as 1751, Newton was the only pre-Revolution county seat in the state of New Jersey, serving as a stopping point along the route connecting New York City and the Great Lakes. This strategic location played a crucial role in the supply and communication lines between New England, the Hudson River forts, and Philadelphia during the American Revolution. The completion of the railroad in 1854 and the subsequent arrival of the first modern factory in 1873 accelerated future commercial and residential growth in the late 1800s. The establishment of the Merriam Shoe Factory in 1873 marked the beginning of an era of enterprise, characterized by the emergence of new industries, including silk mills and creameries. The development of the state highway system, the Hudson River Crossings, and the automotive culture of the early 20th century reshaped the town. With a booming dairy industry, Newton remained a cultural hub in Sussex County during the post-World War II era.

The closure of the railroad services in 1966 dealt a significant blow to Newton’s industrial identity, forcing the local businesses dependent on railroads to close. The town underwent the most profound changes in the 1960s and 1970s, transforming from a self-contained rural center to a suburban community. The downtown area of Newton is still lined with mansard residences, Greek Revival mansions, brick Italianate homes, and Romanesque houses, as well as commercial buildings that reflect its prosperous industrial past.

Map A-1. Town of Newton



LEGEND

- NJ
- Municipal Boundaries
- Newton

Demographics

According to the 2019-2023 American Community Survey Five-Year Estimates, Newton's residential population is 8,336.[48] The population density is approximately 2,480.9 people per square mile, which is significantly higher than the state average. Table A-1 includes detailed demographic information for Newton.

Table A-1. Demographic data for Town of Newton, Sussex County, New Jersey

	NJ	County	Town
Total Population	9,267,014	145,117	8,336
Population Density	1,260 people/sq mile	279.9 people/sq mile	2,480.9 people/sq mile
Population change (2020 to 2023)	+381,596	+4,121	+401
Median age	40.1	44.1	42.2
Population below 18	2,031,322	28,394	1,632
Population above 65	1,599,816	26,774	1,643
Median Household Income	$101,050	$114,316	$73,679
Persons in poverty	889,287	7,794	1,190

Land Uses

Newton is a suburban town with a combination of a mixed-use downtown core with lower-density residential uses surrounding it. The residential and commercial establishments are highly concentrated in the corridor along the town's two main arterial roads, Main Street and Water Street. A significant portion of the town is classified as wetlands and forestland along its eastern and southern edges. The Merriam Shoe factory was converted into condominiums in the 1970s, and the remaining industrial land uses are interspersed within the residential and commercial neighborhoods in the northern and southern zones of the town. There are eight (8) redevelopment areas, several of which have already been redeveloped into a mix of commercial, industrial, and residential uses. Map A-2 depicts Newton's land use-land cover. Table A-2 and Map A-3 detail property parcels and classes.

[48] U.S. Census Bureau. 2023. American Community Survey Five Year Estimates.

Map A-2. Land Use-Land Cover (2020)

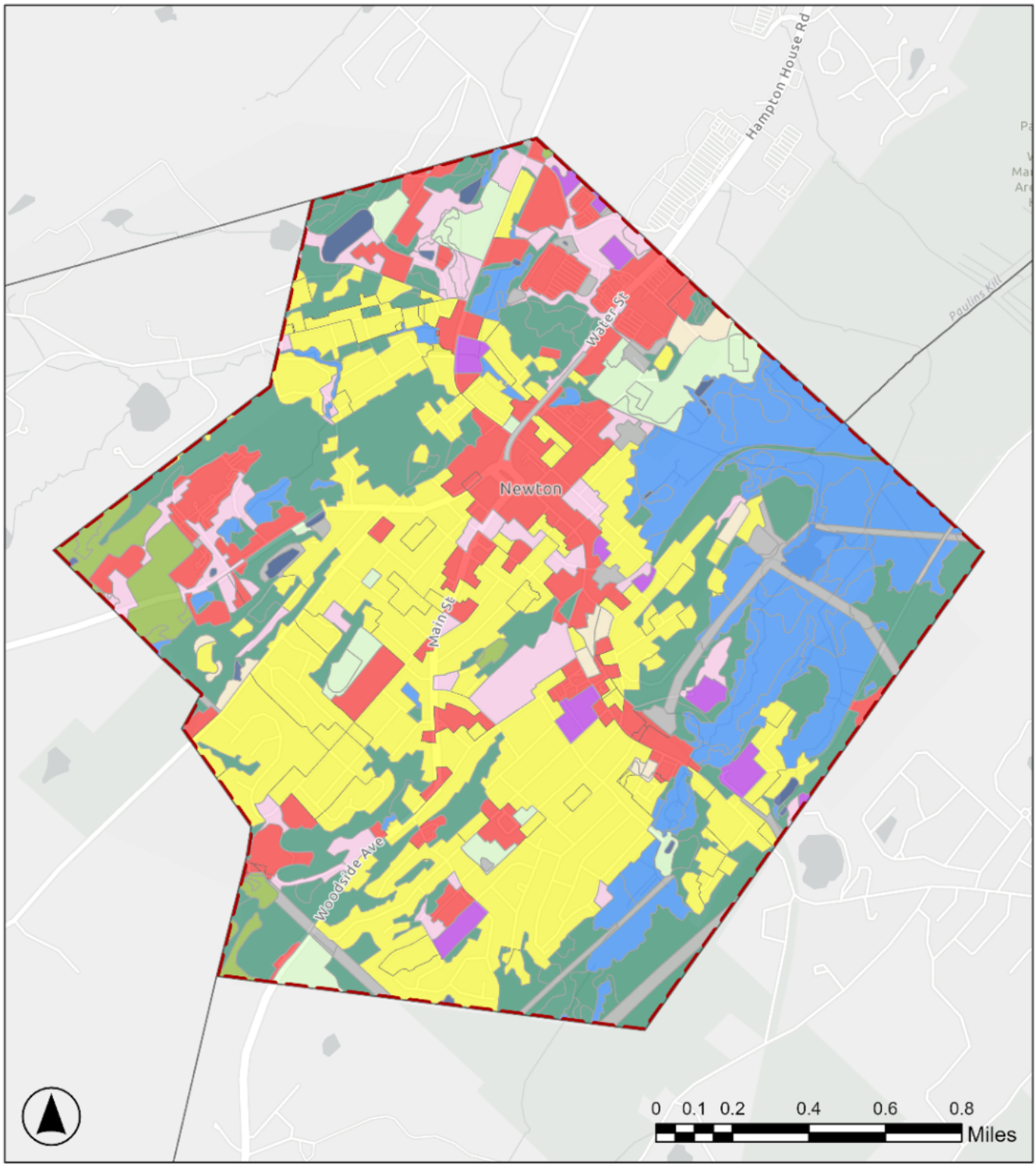
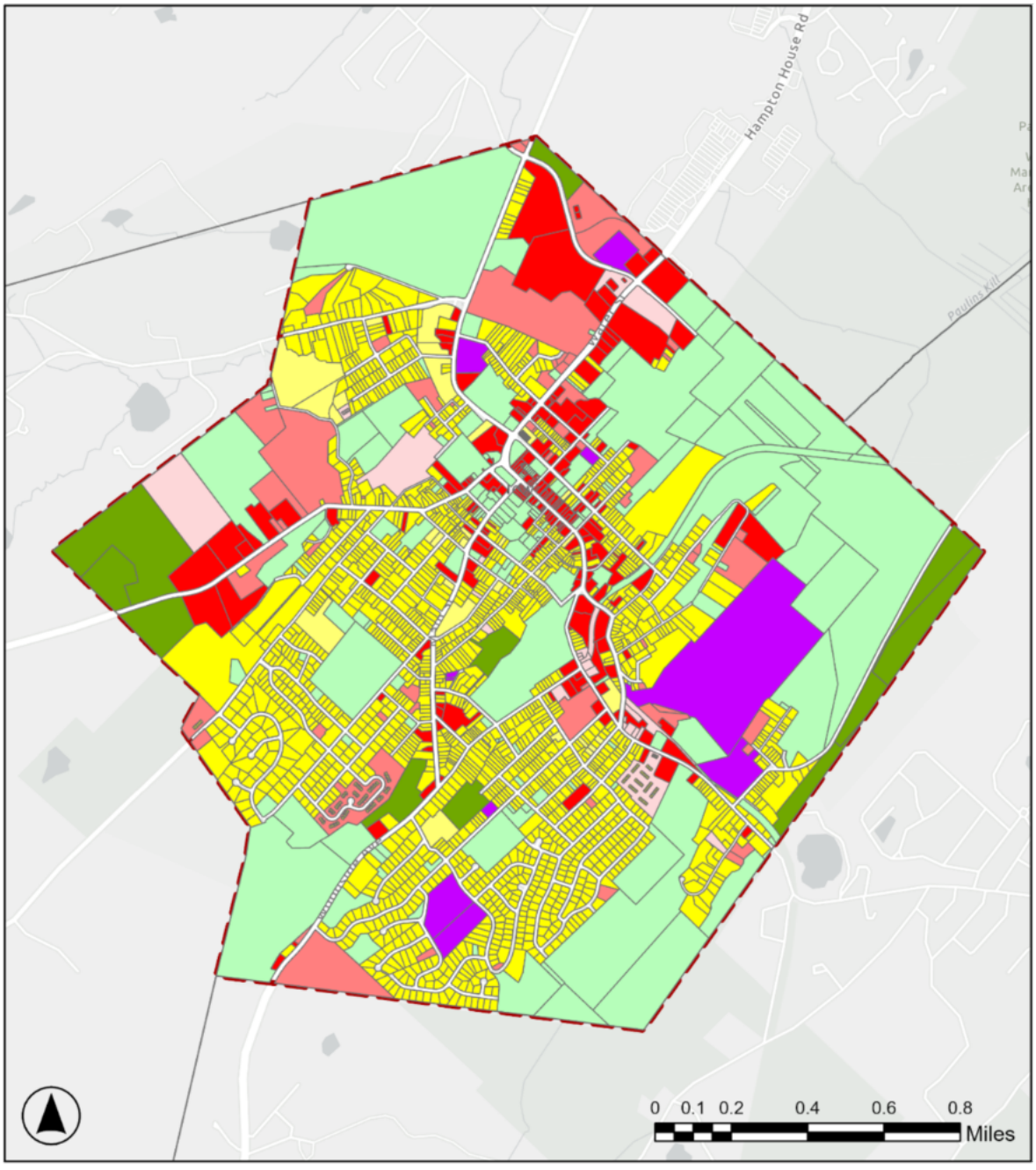


Table A-2: Town of Newton parcels by property class

Property Class	Number of Parcels	Area in acres
Residential	2,012	605
Residential (Apartments)	29	46
Commercial	217	165
Industrial	10	101
Education	12	129
Public Property	99	366
Church and Charitable	28	78
Cemeteries	5	33
Farmlands	10	112
Transportation	0	0
Other Exempt	28	139
Vacant Land	65	150
Unclassified Land	31	55
Total	**2,546**	**1,979**

(Source: Parcels and MOD-IV Composite of NJ)

Map A-3. Town of Newton parcels and property classes



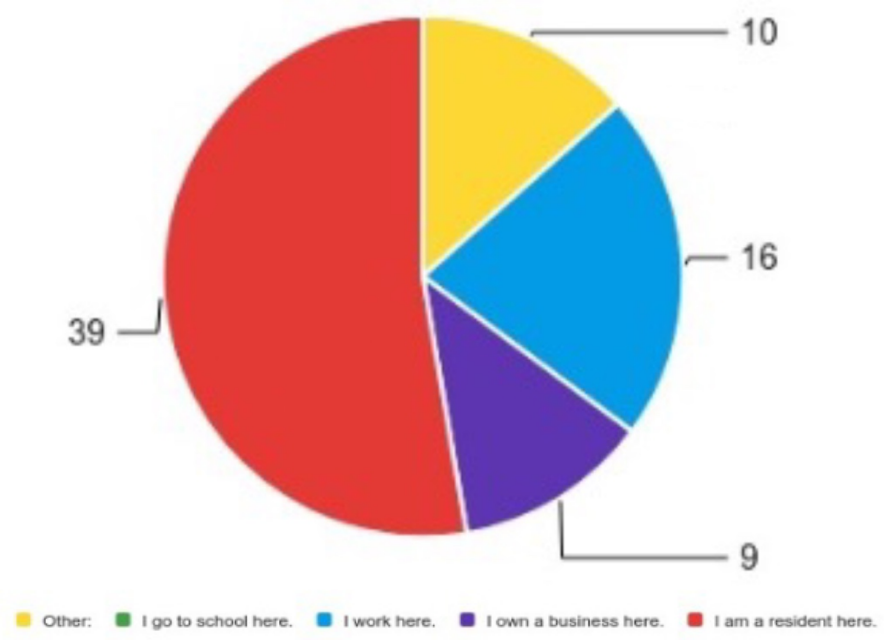
(Source: Parcels and MOD IV Composite of NJ)

Appendix B: Public Engagement Summary

The town advertised the CCRHVA public engagement opportunities through their municipal website and social media starting on February 24, 2026. The in-person meeting was held on March 23, 2026, during a regularly scheduled town council meeting. The meeting included a brief presentation by Rutgers to explain the overall CCRHVA project (process, goals, etc.) and an overview of hazard assessment findings, followed by participants visiting "stations" with large printed maps to share locations and experiences with flooding, community assets, other climate hazards (heat, wind, drought, wildfire), and any other questions or concerns. The online survey was designed to replicate the opportunities for input provided at the in-person meeting. To this end, respondents were asked to mark digital maps and provide details about the locations of climate hazards and community assets. The survey was open for four weeks from February 24 to March 22, 2026, and had 52 responses. Input from the in-person meeting and the survey was used to refine the hazard analyses and maps in Sections III and V.

Q1 – How would you describe your relationship to the Town of Newton? Select all that apply. - Selected Choice

52 responses



Q1_5 Other: - Text

6 Responses

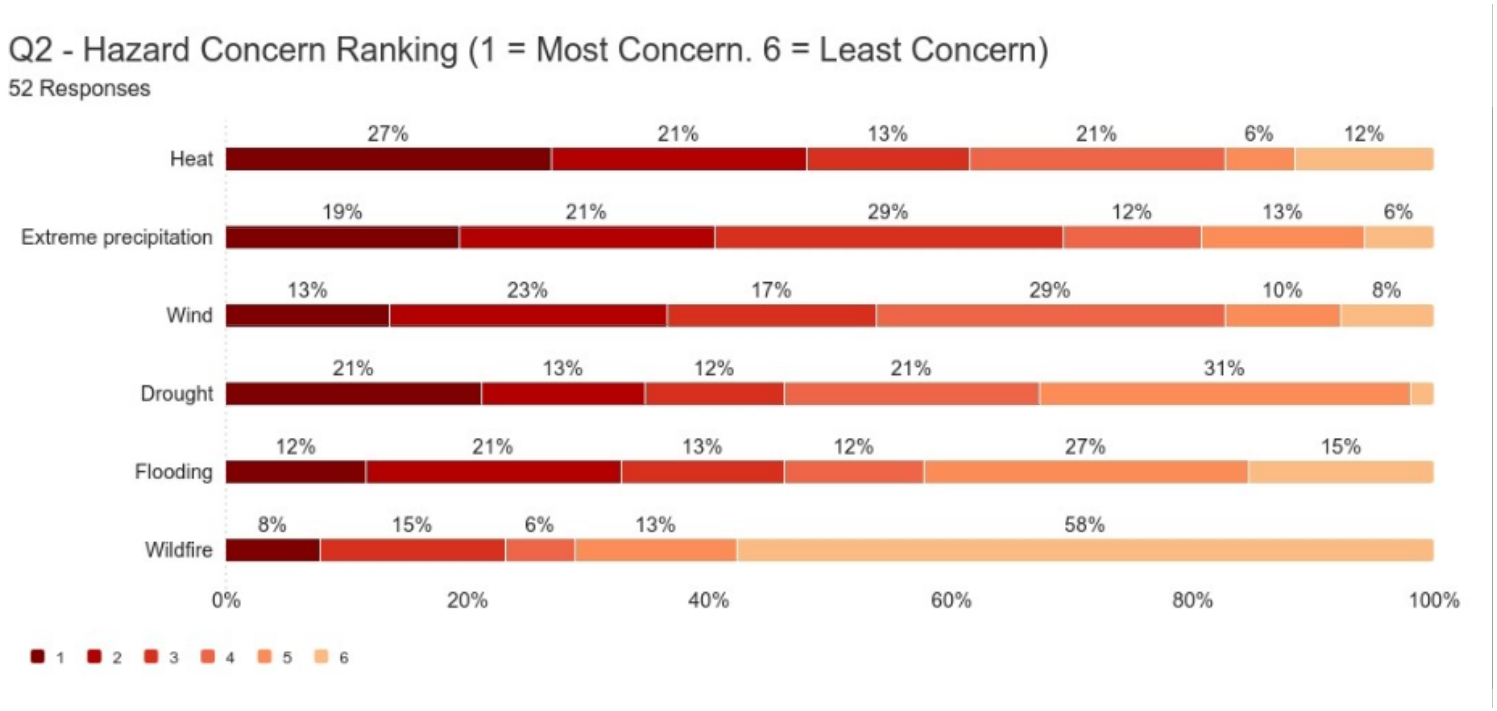
Other: - Text
I volunteer with Newton Planning Board and Newton First Aid Squad as an EMT/driver
Vice Chair Newton Planning Board
Planning Board Member
I am also a volunteer.
My mom lives in Newton and Newton is where I shop
I deliver packages throughout the entire town of Newton

Q2 - Rank each hazard according to your level of personal concern for Newton Town, with 1 being the most concern and 6 being the least concern.

Note: Lower average rank indicates greater level of personal concern.

Rank	Hazard	Average Rank
1	Heat	2.92
2	Extreme Precipitation	2.96
3	Wind	3.21
4	Drought	3.33
5	Flooding	3.67
6	Wildfire	4.90

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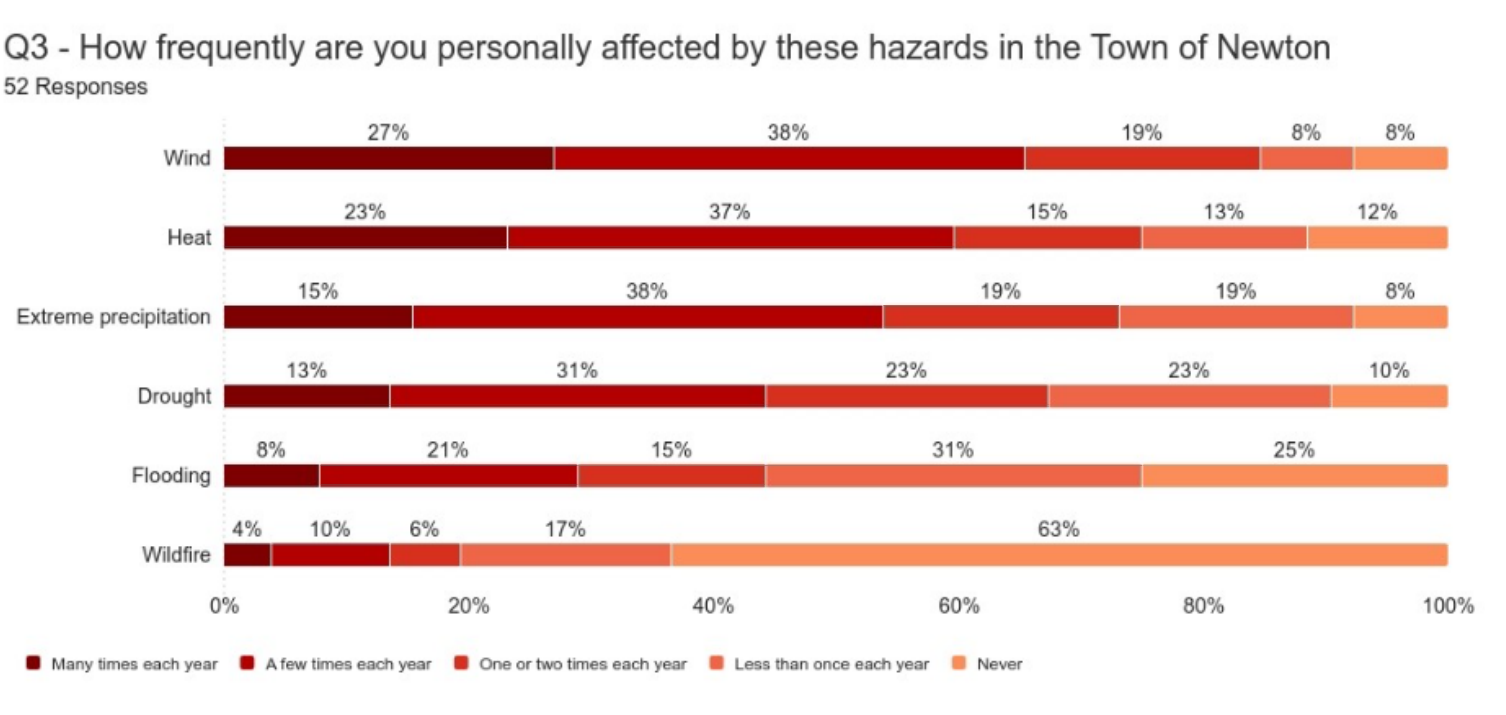

Q2 - Hazard Concern Ranking (1 = Most Concern. 6 = Least Concern)
52 Responses
Heat
27%
21%
13%
21%
6%
12%
Extreme precipitation
19%
21%
29%
12%
13%
6%
Wind
13%
23%
17%
29%
10%
8%
Drought
21%
13%
12%
21%
31%
Flooding
12%
21%
13%
12%
27%
15%
Wildfire
8%
15%
6%
13%
58%
0%
20%
40%
60%
80%
100%
1
2
3
4
5
6

Q3 – How frequently are you personally affected by these hazards in Newton Town?

Note: Higher average indicates more frequently impacted. (Scale: Many times each year=5, A few times each year=4, 1 or 2 times each year=3, Less than once each year=2, Never=1).

Rank	Hazard	Average
1	Wind	3.69
2	Heat	3.46
3	Extreme precipitation	3.35
4	Drought	3.15
5	Flooding	2.56
6	Wildfire	1.73

Continued on next page


Q3 - How frequently are you personally affected by these hazards in the Town of Newton
52 Responses
Wind
27%
38%
19%
8%
8%
Heat
23%
37%
15%
13%
12%
Extreme precipitation
15%
38%
19%
19%
8%
Drought
13%
31%
23%
23%
10%
Flooding
8%
21%
15%
31%
25%
Wildfire
4%
10%
6%
17%
63%
0%
20%
40%
60%
80%
100%
Many times each year
A few times each year
One or two times each year
Less than once each year
Never

Q4 - Please share details below about up to three important places in Newton town. The CCRHVA will recommend ways to protect the places most important to the community.

(Examples include recreational facilities, entertainment venues, museums, shops, places of worship, etc. We have already identified government facilities like schools and fire stations, so there is no need to share those.)

Please include:

- Place name
- Address or description of location
- Why it's important

Note: Responses to Q4 were categorized and added to the community assets maps in Section V.C.

East Point Lighthouse
All of the businesses & buildings on Spring St
Newton Pool
Newton Reservoir
Woodside Ave & Route 206
Old Courthouse
Old Shoe Factory
Newton Medical Center
Wellness Hub (Mental Health Urgent Care)
Office of Emergency Management
Newton Theatre - 234 Spring Street, Newton, NJ 07860
Presbyterian Church
Christ Episcopal Church - 62 Main Street, Newton, NJ 07860.
Kittatinny Valley State Park
Municipal Center

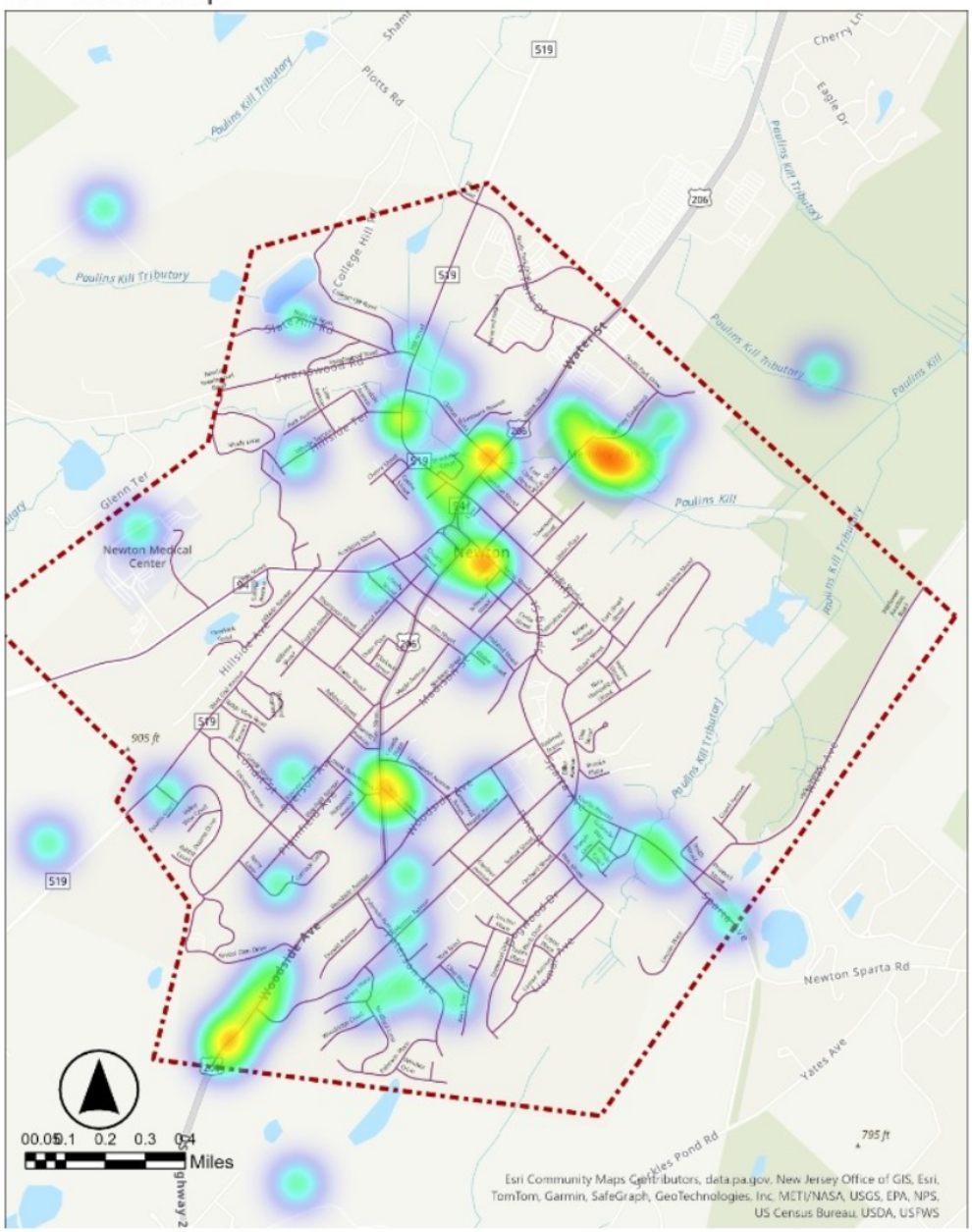
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Newton Public Library - 44 Trinity Street, Newton, NJ
Main Street Shops - Main Street, Newton, NJ
Newton Town Park Dog Park
Sussex County Recovery Community Center
Andover Township Municipal Building
Thorlabs Office Buildings
Pine Street Park
Market Street Mission - Sussex County - Shelters for homeless
Sussex County Museum - 82 Main Street.
Family Promise of Sussex County - Shelters for Homeless
Animal Shelters
Wooded Areas - 41.038540,-74.752587
ShopRite - 125 Water Street, Newton, NJ 07860
Alpha Fitness – 2 E Clinton St, Newton, NJ 07860
Sussex Branch Trail - 2 Hicks Ave, Newton, NJ 07860,
Quarry & Overlook Ponds - 06 West End Ave, Newton, NJ 07860 and 4 Overlook Rd, Newton, NJ 07860
Pine Street Park
Newton Cemetery
Church Cluster (Presbyterian, Episcopal, Baptist)
Morris Lake
Hortons Pond
Shoe factory

Q5 - Click on the map below to add locations where you have observed flooding in Newton Town.

Note: The heat map colors represent the concentration of points added to the map in a location with highest concentration=yellow/red, medium-high=green, medium-low=light blue, lowest=purple.

Q5 - Heat Map



LEGEND

Concentration of flooding locations

Low----------Medium----------High

Q6 - Please share details about each location you added to the map, including:

- **Names of flooded roads, intersections, and/or neighborhoods,**
- **How often it floods**
- **Causes of flooding (high tide, rain, storm surge)**
- **Damage or effects**

Note: Responses to Q6 were used to refine the flood map(s) in Section III. Stormwater flooding locations were added to Map III-4.

Q7-Q10 - If you have experienced any of the climate hazards below [heat, wind, drought, wildfire] in Newton Town, please share details about the event(s) including:

- **Approximate location, if applicable**
- **Year (and month/season, if known) of event(s)**
- **Observed impacts**

Heat
Summers are regularly warmer
Summer 2024,2025
Summer (June–August):
Downtown Newton, Summer 2022 – Extremely hot days caused AC failures in shops and discomfort for pedestrians.
Throughout Newtown
Main Street area, July 2023 – Record heatwave, outdoor events postponed, heat-related complaints.
Crystal Lake and surrounding streets August 2016 Impacts: Prolonged heat caused high water usage; swimming areas crowded; heat-related fatigue among recreational users.
All the town and County heat was especially bad the summer of both 2024 and 2025. It led to severe drought both years.

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2023 home c and work
some summer days have excessive heat
Entire town
Town wide damage to plant life.
Pool summer
Town of Newton. Every year. Heat exhaustion, melts food when we aren't home because when we run the air conditioner it makes our bill go up. It also KILLS THE TREES when it gets really bad especially the last two years.
Extreme Heat Waves: Examples: Elevated temperatures causing strain on the power grid. Impacts: Increased cooling costs, health risks to vulnerable populations, particularly in denser parts of the town.
Approximate location: Throughout Newton, especially downtown areas and residential neighborhoods Year (and season): Summer 2022 and Summer 2023 Observed impacts: High temperatures lasted several days, making outdoor activities difficult and increasing electricity use for cooling. Some residents experienced discomfort due to limited access to cooling, and there was increased risk for heat-related illness among elderly residents.

Wind
Sometimes in summer or early fall there are storms and wind
Trees down, residential wind damage
Once in a blue moon
Fall 2023
Spring, Summer, Fall over the past 18 years up with overall intensity per storm magnifying every year. Trees down power lines down branches everywhere debris in roadways. All over town wherever the storm hits.
Hillcrest neighborhood, Spring 2021 – Strong gusts knocked down tree branches, blocked roads.
Region wide
Slate Hill Road, March 2022 – Fallen trees caused minor power outages.
Near Newton Free Library and nearby parking lots January 2019 Impacts: Power lines downed, causing outages for several hours; scattered debris; trees partially uprooted.
Blew down neighbor’s trees in the center of Newton

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almost every spring thunder and wind storms.
Entire town
Tornado damage in 1991 causing the loss of trees on Sparta Ave properties.
Dead branches that fall on sidewalks and road ways. Pedestrian and traffic hazards.
Merrian St, Jersey Place: fallen trees; fall
Paterson Place, all seasons, all years, damaging winds that have torn roofing shingles and siding off houses.
My house
Town of Newton. Every year. It also KILLS THE TREES when it gets really bad especially the last two years.
Severe Thunderstorms & High Winds: Examples: Downed trees, power outages lasting multiple days. Notable Times: July 2012 (Derecho), frequent summer thunderstorms.
Approximate location: Town-wide, including neighborhoods near wooded areas Year (and season): Winter 2020 and Summer 2021 (during severe thunderstorms) Observed impacts: Strong winds caused tree branches to fall, blocking roads and damaging power lines. Some homes experienced temporary power outages, and debris cleanup was required after storms.
Along Route 206 and other side roads, during high winds, trees come down potentially taking wires down creating power outages and tying up resources waiting on repairs.

Drought
Every year this seems to be happening
Small ponds are drying up around our area generally
Summer.2022
Late summer (July–September)
Residential area near Paulins Kill River, Summer 2020 – Gardens dried out, lawns turned brown.
Across Newton
Sparta Avenue, Summer 2021 – Limited water use, smaller creek levels.
Private lawns throughout Newton Centre July–August 2017 Impacts: Brown lawns and stressed trees; voluntary water use restrictions; some small-scale landscaping losses.
All over Newton and all over Sussex County frequently the last 20 years. It was especially bad the summers and fall of both 2024 and 2025

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A few years
currently, and 2024 or 2025
Entire town
The entire state of NJ has been in a drought warning since last year.
Concerns with water levels at the town water supply, Morris Lake.
Happens on occasion. Aren't we in a drought situation presently?
Town of Newton. Every year. It also KILLS THE TREES when it gets really bad especially the last two years. Water smells and sometimes boiling advisories take place.
Approximate location: Residential lawns, parks, and gardens across Newton Year (and season): Summer–Fall 2022 Observed impacts: Reduced rainfall led to dry lawns and stressed vegetation. Water conservation measures were encouraged, and some residents limited outdoor watering due to drought conditions.
At least annually we experience periods of time with drought conditions.

Wildfire
Never in Newton that I've noticed
Got close. Not in Newton that I'm aware of. I have a nature preserve directly behind my home and I think about wildfire often.
Spring (March–May)
Edge of woodland near Mill Street, Fall 2019 – Small brush fire quickly contained, no structural damage.
Massachusetts
None observed – no events in vicinity
Residential area near Chestnut Hill wooded patches August 2015 Impacts: Fire department responded to a small fire caused by discarded cigarette; no buildings damaged; increased community awareness.
Have not observed wildfires in Newton
Wildfires from other areas impact the air quality in Newton every year.
Storms & Heavy fire outbreak Examples: Intense storms or heavy, Impacts: Dangerous travel conditions, power outages fire buildup, and structural damage to trees/roofs.

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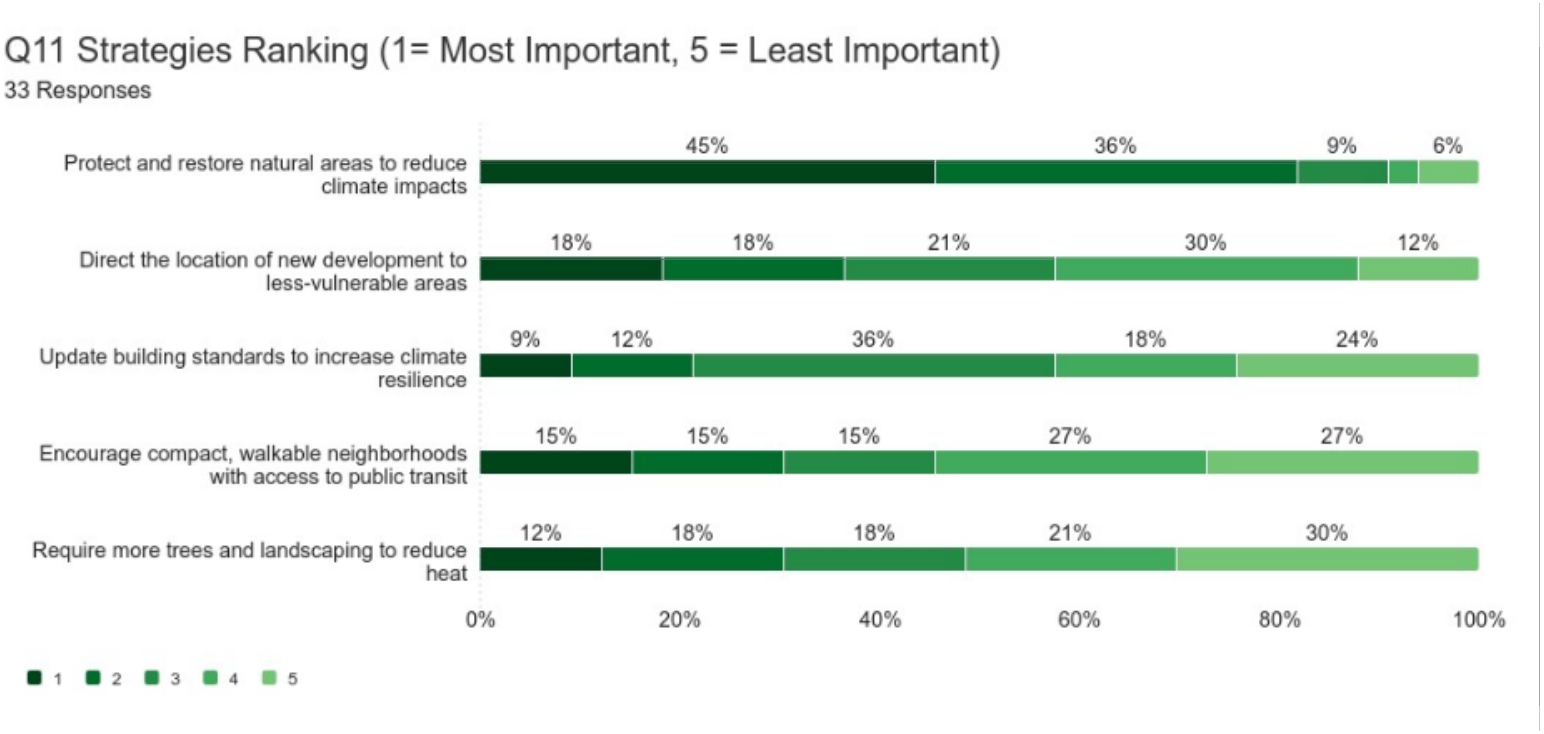
Approximate location: Nearby wooded and forested areas in Sussex County
Year (and season): Spring 2023
Observed impacts:
Smoke from nearby brush or forest fires affected air quality temporarily. Residents noticed haze and were advised to limit outdoor activity during smoky conditions

Q11 - Below are examples of strategies related to land use and zoning that can help reduce the impacts of climate hazards. Rank their importance for your municipality, with 1 being most important and 5 being least important.

Note: Lower average rank = higher priority.

Rank	Strategy	Average Rank
1	Protect and restore natural areas to reduce climate impacts	1.88
2	Direct the location of new development to less-vulnerable areas	3.00
3	Update building standards to increase climate resilience	3.36
4	Encourage compact, walkable neighborhoods with access to public transit	3.36
5	Require more trees and landscaping to reduce heat	3.39

Continued on next page


Q11 Strategies Ranking (1= Most Important, 5 = Least Important)
33 Responses
Protect and restore natural areas to reduce climate impacts
45%
36%
9%
6%
Direct the location of new development to less-vulnerable areas
18%
18%
21%
30%
12%
Update building standards to increase climate resilience
9%
12%
36%
18%
24%
Encourage compact, walkable neighborhoods with access to public transit
15%
15%
15%
27%
27%
Require more trees and landscaping to reduce heat
12%
18%
18%
21%
30%
0%
20%
40%
60%
80%
100%
1
2
3
4
5

Appendix C: Data Sources

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Section III Detailed Data Sources

Tables

Table III-1. Heat waves - https://njhealthadapt.rutgers.edu/ , Public Health Report, Table 1

Table III-2. Extreme heat days -https://njhealthadapt.rutgers.edu/ , Public Health Report, Table 2

Table III-3. Days below freezing - https://njhealthadapt.rutgers.edu/ , Forest Climate Risk Report

Table III-4. Rainfall (in inches) over 24-hours by annual storm probability - https://njhealthadapt.rutgers.edu/, Public Health Report, Table 3

Table III-5. Increase in annual probability for the 10% and 1% chance storm - Northeast Regional Climate Center, unpublished data

Table III-6. Annual percent time in drought - Shope, J., Nikolopoulos, E., and Araujo, D.S.D. 2025. DRAFT New Jersey Projected Future Drought Dataset Technical Documentation, unpublished data

Maps

Map III-1. Land surface temperature – Summer 2022 – https://rutgers.maps.arcgis.com/apps/mapviewer/index.html?webmap=4d8f6d249e394357827fecd5312fc861

Map III-2. Heat island risk - https://rutgers.maps.arcgis.com/home/item.html?id=fc1878a4cb3f432da15a030d63896076#overview

Map III-3. FEMA flood zones - https://rutgers.maps.arcgis.com/apps/mapviewer/index.html?webmap=cba402bdd0334334b6c2f2568d7e5443

Map III-5. Areas potentially subject to the Inland Flood Protection Rule – https://services1.arcgis.com/ze0XBzU1FXj94DJq/arcgis/rest/services/NJ_FEMA_FP3_4_9_2024/FeatureServer

Map III-6. Wildfire risk to potential structures and select historic wildfires - NJ Wildfire Risk Explorer and Wildland Fire Incident Locations | National Interagency Fire Center

Map V-13. Heat island risk to Overburdened Communities - https://rutgers.maps.arcgis.com/apps/mapviewer/index.html?webmap=9f8adca918b0467bbcf74f5c06918e22