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Manchester Climate Vulnerability Assessment

Manchester, CT is an inland town with a humid, subtropical climate. It has a normal temperature range of 18°F-84°F. It has a total population of approximately 59500. The town engaged in a community resilience building workshop with The Nature Conservancy and Sustainable CT in 2022. This was done largely in response to recent storms that have caused flooding and with the broader goal of preparing for climate change. In this assessment, we will identify vulnerabilities in Manchester that may be of concern in the coming years as our climate changes.

Heatwaves:

Hartford County is projected to have a 9.17% increase compared to historical data from 1981-2005 in the severity of very hot days (above the 95th percentile) by 2045-2049. This uses the metric of wet-bulb temperature, which shows the relationship between heat and humidity. This is the most relevant information when concerned with human physiological response to heatwaves. There are projected to be about 49 more very hot days and 15 more dangerous days (80°F-86°F wet-bulb temperature according to The ACP Humid Heat Stroke Index) than the historical average by 2045-2049.

Manchester has a total population of about 59500 and a senior citizen population of about 9300 (approximately 15.6% of the total population). This portion of the population is more vulnerable to heat stress because their bodies do not adjust well to extreme heat, and because they are more likely to have preexisting medical conditions or take medications that might worsen their bodies' temperature regulation. Manchester has a combined population of about

26500 people of color and hispanics (approximately 44.5% of the total population). People of color and hispanics tend to experience more preventable hospitalizations with heat related hospitalizations being highest among blacks. These differences are largely due to housing quality, language barriers, cultural barriers, and community isolation.

One particular area of concern is census tract 5147, which includes a neighborhood on the south end of Main Street. People of color and hispanics make up about 73.4% of the population of this tract, and senior citizens make up about 5.3%. About 6.3% of the population lacks health insurance. 80.4% of the area lacks tree canopy, and 54% of the area is impervious.

Another area of concern is census tract 5146, which is just west of tract 5147. It is the only tract in Manchester that is above the state median for vulnerability according to the criteria put forth by Headwaters Economics. People of color and hispanics make up about 43% of the population, and senior citizens make up about 26.7%. 79.1% of the area lacks tree canopy, and 50.6% of the area is impervious.

One more area of concern is census tract 5141.03, which is in the northwest corner of Manchester. People of color and hispanics make up about 70.3% of the population, and senior citizens make up about 3.6%. About 6.1% of the population lacks health insurance. 75.3% of the area lacks tree canopy, and 43% of the area is impervious. This tract contains the Buckland Hills Mall. The mall is an area of significant economic interest, but it has been declining in recent years.

These tracts are of most concern in regards to heatwaves for a variety of reasons. These tracts all lack tree canopy cover in a high percentage of their overall area, and about half of the total area is impervious. This means that these tracts are susceptible to the urban heat island effect. While the plans to redesign Main Street include more street trees, many of these areas still

lack street trees. The economic vulnerability of the people means that they may not be able to afford air conditioning for their homes and may need to work outside on very hot days. The high percentage of people of color and hispanics is associated with an increase in environmental vulnerability and preventable deaths. Tract 5146 has a high elderly population, which is more at risk for health problems due to excess heat.

Tropical Storms:

Tropical storms like Irene and Isaias will increase in frequency and intensity. High wind speeds can knock down trees and tree limbs. This can cause damage to property and cause road closures. Road closures due to debris and flooding can stall or prevent emergency vehicles from responding to a call. Emergency personnel will be strained, particularly in the 8th District which has only one fire truck. The aftermath of severe storms is often an economic burden. Acquiring disaster relief funds may be a challenge as disasters become more frequent.

Flooding:

The increased frequency of intense precipitation events will lead to flooding from rivers and stormwater runoff. Many of the town's problems with stormwater are due to outdated infrastructure. A culvert beneath Route 44 past the Manchester Senior Citizens Center is outdated; it was unable to keep up with water from previous tropical storms. There are plans to install a retention basin before the culvert entrance. Some homes are outdated and unable to drain stormwater properly. Buildings just east of Main Street were constructed in the 1950s in a low-lying area and are prone to flooding.

The declining number of volunteer trail workers means slower recovery after trails are flooded, which leads to a lower quality of outdoor recreation. Outdoor recreation further suffers from the flooding of parks, notably Charter Oak Park.

Flooding due to stormwater runoff is possible anywhere, but is more likely in low lying areas with impervious surfaces. UConn students Hannah Leibowitz and Heather Wirth conducted a stormwater survey of four locations in Manchester (Manchester High School, Charter Oak Park, Mary Cheney Library, and Manchester Town Hall) and made recommendations for low-impact development of stormwater infrastructure. These are areas that could experience flooding due to stormwater runoff, and the solutions provided can be considered for other areas. Potential riverine flooding (>1% annual risk) of roads and properties including but not limited to:

- Hockanum River
 - Oakland Trail
 - Parking lot of Big Sky gym
 - Parking lot of Kohl's
 - Union Pond Trail
 - Union Pond Park
 - Small Section of N School St
 - Adams Mill Trail
 - Motorcar West
 - GKN Aerospace- Manchester
 - Garage Door Repair Of Manchester
 - New State Rd
 - Hilliard St
 - Carl Silver Field
 - New State Rd Trail
 - Hilliard Trail

- Hackett Trail
- East Catholic High School Soccer/ Lacrosse Field
- Laurel Marsh Trail
- Stone Dust Loop
- South Fork of the Hockanum River
 - Landfill Way
 - Leber Field
 - Town of Manchester Fleet
 - Olcott St
 - Arbors of Hop Brook
 - Mc Kee's Automotive Services
 - W Center St
- Folly Brook
 - 252 Bidwell St, Folly Brook Apartments
- Hop Brook
 - Millbridge Hollow Condominiums
 - 290 Hartford Rd
 - Parking lot of Fuss & O'Neill
 - Charter Oak Park
- Porter Brook
 - Homes on the south side of Charter Oak St, between Sycamore Ln and Charter Oak Park
 - Highland Park

- Lydall Brook
 - Sam's Food Stores
 - 67 Oakland St
 - Homes on north and south sides of Scott Dr, between Cushman Dr and Ambassador Dr
 - Scott Dr
 - Kennedy Rd
 - Dearborn Dr
 - Vernon St
 - Cliffside Dr
 - Properties between Vernon St and Cliffside Dr
- No marked stream
 - Stanford Dr
 - Meadowbrook Dr
 - Mt Nebo Park
 - Spring St

Disaster Planning:

Manchester has a comprehensive disaster plan that is used in the case of severe weather events like blizzards and tropical storms. Residents are able to take shelter in the Manchester Senior Citizens Center and Manchester High School. Hotels have been used as shelters for the sake of isolation during the COVID-19 pandemic. These shelters are equipped with backup generators and are able to provide food and water to hundreds of people. The senior center is able to store medication for those who need it. Transportation to these shelters is provided via

bus. In the event that roads are flooded, transportation will be limited. Residents should be made aware if they live in a floodplain and if a coming storm may require them to relocate themselves.

Landlord Accountability:

There are about 11300 rental units in Manchester. Landlords are responsible for keeping the premises in a safe and habitable condition. Landlords are responsible for keeping electrical, plumbing, sanitary, heating, ventilating, and other amenities that they provide their tenants.

Landlords are not required to provide reasonable cooling. This could be problematic with the increased occurrence and severity of heatwaves.

Mold may grow after a flood and may release harmful mycotoxins. Home inspectors are not required to check for mold. Schools must pass an indoor air quality evaluation. Residents should read insurance policies to find out if mold is covered and to what extent. Residential landlords must adhere to a warranty of habitability that generally makes them responsible for dealing with mold. Residents may be responsible for reporting any potential mold hazards.

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