EGG HARBOR CITY URBAN HEAT ISLAND ASSESSMENT

Prepared for

Egg Harbor City

by

Cape Atlantic Conservation District

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Background

Egg Harbor City was first planned by German investors from Philadelphia, PA. Chartered in 1856 and incorporated in 1858, the city was intended to be a commerce center for the remote farms in the area. While originally it was to be a port along the Mullica River, development focus quickly shifted to the southern portion of the city to capitalize on the benefits of the nearby Camden & Atlantic Railroad[1]. Today, Egg Harbor City, proud of its unique history, continues to function as a commerce center and recreation hub, while continuing to grow to meet the needs of its citizens.

The city, centrally located in Atlantic County, is within the New Jersey Pinelands National Reserve. It has a land area of 10.9 square miles, and according to the 2020 Decennial Census, has a population of over 4,390 residents. This equates to a city population density of about 403 people per square mile. According to the 2023 American Community Survey, there are 1,655 total households within the city. About 8% of residents live in poverty. Racial breakdown from the 2020 Decennial Census includes: white 2172, Hispanic or Latino 1223, black or African American 974, Asian 117, American Indian and Alaska Native 23, Native Hawaiian and other Pacific Islander 1, two or more races 503, and some other race 606 [2]. The 2018-2022 Social Vulnerability Index (SVI) for Egg Harbor City is high at a total SVI score of 0.89, indicating that individuals and communities within the city may struggle with adequately preparing for, responding to, and rebounding from environmental hazards, such as extreme heat events[3]. The themes that account for the total SVI are as follows: Socioeconomic 0.85, Minority/Language 0.81, Household Composition/Disability 0.77, and Housing/Transportation 0.77.[4] This data is relevant in assessing the impacts of urban heat islands on Egg Harbor City and its residents.

There are areas within Egg Harbor City that experience above-average temperatures, particularly in the warmer summer months, due to urban heat islands. Heat islands are developed areas, oftentimes within cities, that experience higher temperatures than the surrounding rural areas[5]. Factors responsible for the extreme temperatures of heat islands include a lack of vegetation and natural landscape, city infrastructure that absorbs higher levels of solar radiation, human activity that generates excess heat, city layout, geography, and weather.

Heat islands can have serious impacts on residents. Direct impacts include heat-related illness and death, which disproportionately affect vulnerable populations such as young children, older adults, low-income populations, people with chronic illness, outside workers, unhoused people, and more. When temperatures rise to extreme levels, electricity demand to power air conditioning systems increases, resulting in higher electricity expenses and an increased risk of brownouts or blackouts.

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[1] https://www.eggharborcity.org/history

[2] https://data.census.gov/profile/Egg_Harbor_City_city,_Atlantic_County,_New_Jersey?g=060XX00US3400120350

[3] https://www.vulnerabilitymap.org/Resources#what-is-social; https://www.vulnerabilitymap.org/Mapping-Tools/Social-Vulnerability/Map-View-Zip?zipCode=08215

[4] https://sjtcnj.maps.arcgis.com/apps/instant/media/index.html?appid=e26e8a1b82304bbf976af1baed5f991a

[5] https://www.epa.gov/heatislands

Consequently, utility companies may use fossil fuel power plants to meet the high electricity demand, which increases greenhouse gas emissions and generates pollutants that threaten human well-being. Water quality may also become compromised with high temperatures, as temperature surges from heated stormwater runoff can kill aquatic life and disrupt ecosystem service processes[6].

This heat island assessment identifies and characterizes urban heat islands within Egg Harbor City, which will direct mitigation strategies. Mitigating the severity of heat island effects will improve public health and comfort in the city.

Methodology

An interactive map was created with GIS software, overlaying the data layers of interest for a more comprehensive assessment. The data of interest that was imported into the interactive map includes NJDEP Bureau of GIS's (NJDEP BGIS) Urban Heat Islands and Land Surface Temperatures in New Jersey Summer 2022, NJDEP BGIS's Overburdened Communities under the New Jersey Environmental Justice Law 2025, United States Forest Service's (USDA USFS) Tree Canopy Cover Percentage 2023, and Davey Tree Resource's Street Tree Inventory of Egg Harbor City completed in 2025 and provided by the city. This data was imported over ESRI's 2025 World Imagery raster base layer. All map layouts and analyses included in this assessment were generated using this constructed interactive map tool.

Results

Based on the NJDEP Land Surface Temperature data collected in Summer 2022, the most developed areas of Egg Harbor City show significantly higher land surface temperatures (113-127°F) than the surrounding, more suburban areas (97-107°F), and the dense forested areas just northeast of the central city (81-97°F)(Figure 1). According to historic weather data, the highest daily "average high air temperature" at the Atlantic City International Airport during Summer 2022 was 86°F[7]. These readings confirm the existence of heat islands within the city, especially in the urban downtown area.

Identifying Hot Spots in Egg Harbor City

The areas within Egg Harbor City that exhibit higher temperatures were earlier defined as heat islands, and for the sake of both the report's assessment and precision during mitigation, specific site locations within each heat island will be referred to as hot spots. Heat islands are shown in dark red coloration on Sustainable Jersey's thermal New Jersey Heat Island Map and as a spectrum of orange and red coloration in Figure 1, which indicates priority targets for heat island mitigation measures.

This assessment characterizes the most prominent hot spots in Egg Harbor City. Hot spots were determined as areas within Egg Harbor City that reached the highest temperatures during Summer

[6] https://www.epa.gov/heatislands/what-are-heat-islands
[7] https://weatherspark.com/s/147157/1/Average-Summer-Weather-at-Atlantic-City-International-Airport-New-Jersey-United-States#Figures-Temperature

2022, which are shown in the figures below as orange (113°F -119°F) and orange-red (119°F -127°F) coloration (NJDEP BGIS). Three main heat islands were identified by clustering the hot spots by location within the city, as shown in Figure 2. The hot spots are labeled on the specific heat island maps below, as well as on the Tree Canopy Cover map (Figure 3) and the Overburdened Communities map (Figure 4). The numbered heat islands and corresponding letter-labeled hot spots are listed below. While this list aims to focus on the most prominent hot spots, additional hot spots may be observed within the municipality and be targeted for mitigation using Sustainable Jersey's New Jersey Heat Island Map.

Egg Harbor City Heat Islands and Corresponding Hot Spots

1. Heat Island 1: Egg Harbor City Center
    a. Philadelphia Ave
    b. Harbor Plaza Shopping Area
2. Heat Island 2: Egg Harbor City Urban/Rural Transition Area
    a. Buddy Davis Yachts
    b. Egg Harbor City Water Treatment Facility
    c. Charles L. Spragg Elementary School
    d. Egg Harbor City Board of Education
    e. Egg Harbor Maintenance Garage & Philadelphia Village Apartments
3. Heat Island 3: North Egg Harbor Redevelopment Area
    a. Cedar Creek High School
    b. Neighborhood at Cedar Creek

The Egg Harbor City hot spots listed above are also characterized using tree canopy (Figure 3), social vulnerability (Figure 4), and street tree inventory (Figure 5) maps. This comprehensive data provides insight into potential mitigation strategies (particularly using shade trees to reduce heat) and the heat island impacts on residents, which can inform project prioritization. Site visits to each hot spot may provide additional context regarding site conditions and mitigation opportunities. Mitigation implementation may be prioritized for socially vulnerable groups that are disproportionately affected by extreme heat and systemic inequities.

The following pages present maps displaying the heat islands and corresponding hot spots, canopy cover, social vulnerability index, and tree inventory data.

These maps are for planning purposes only. These maps are not boundary surveys. Data has been compiled from various sources and is credited below.
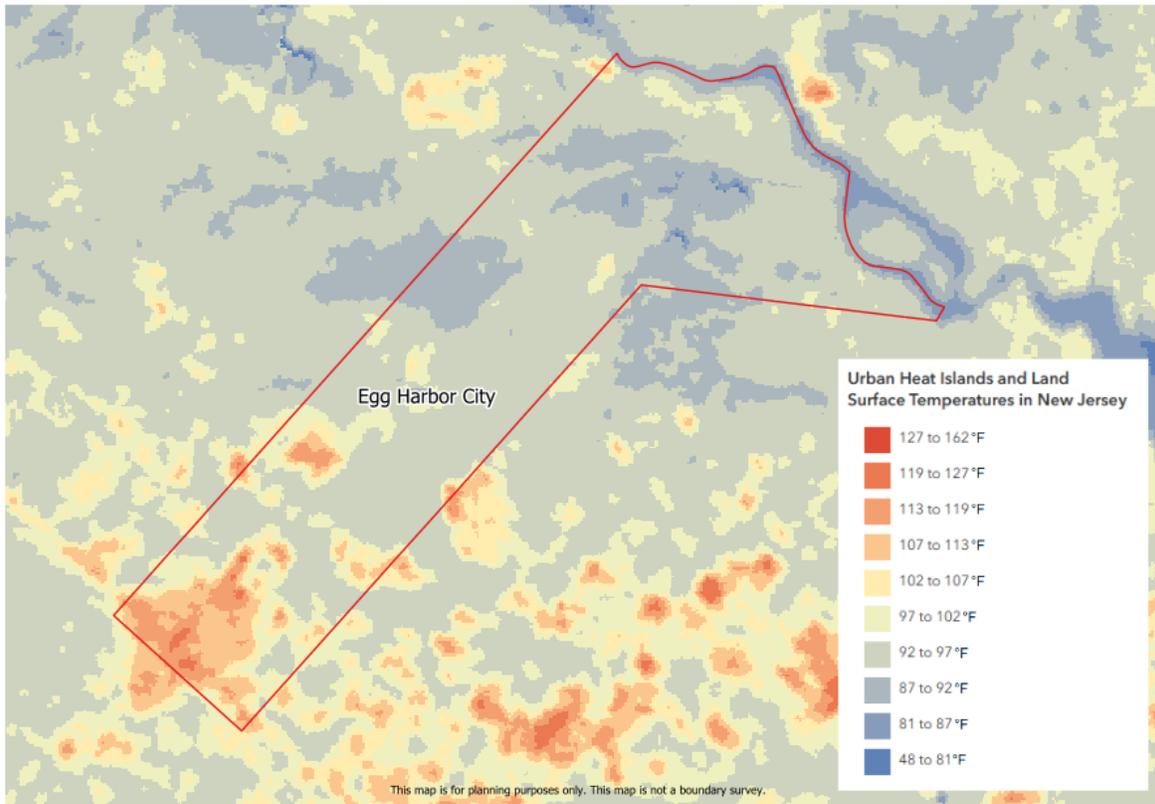
Figure 1. Surface temperature in °F (Summer 2022) of Egg Harbor City and the surrounding area (Source: NJDEP BGIS). The warmest temperatures, shown as areas of orange-red and orange, exist mainly in the southern portion of Egg Harbor City, per the city boundary outlined in red. These high temperatures indicate the location of heat islands and their corresponding hot spots.
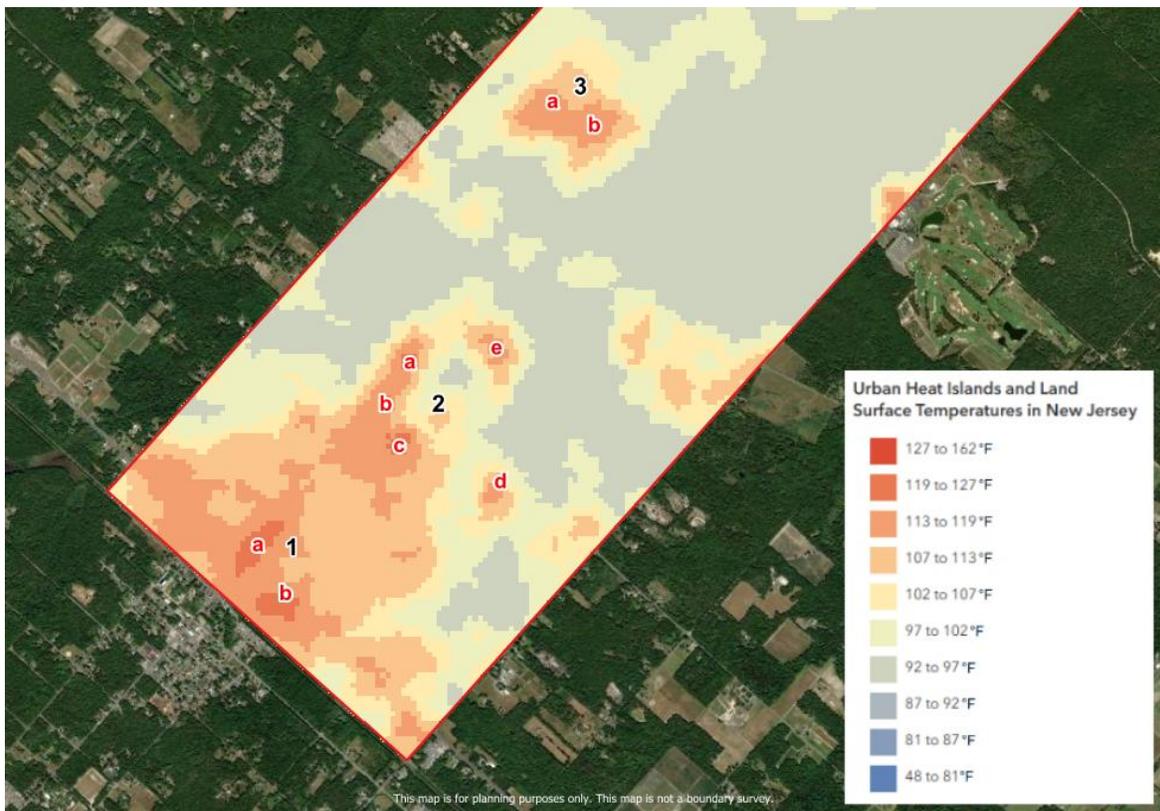

Figure 2. Surface temperature in °F (Summer 2022) and heat island locations of Egg Harbor City, indicated by numbers "1" through "3", as well as corresponding clustered hot spots within each heat island, indicated by red letters "a" up to "e" (Source: NJDEP BGIS). Defined hot spot locations within a heat island allow for higher precision for mitigation management practices.
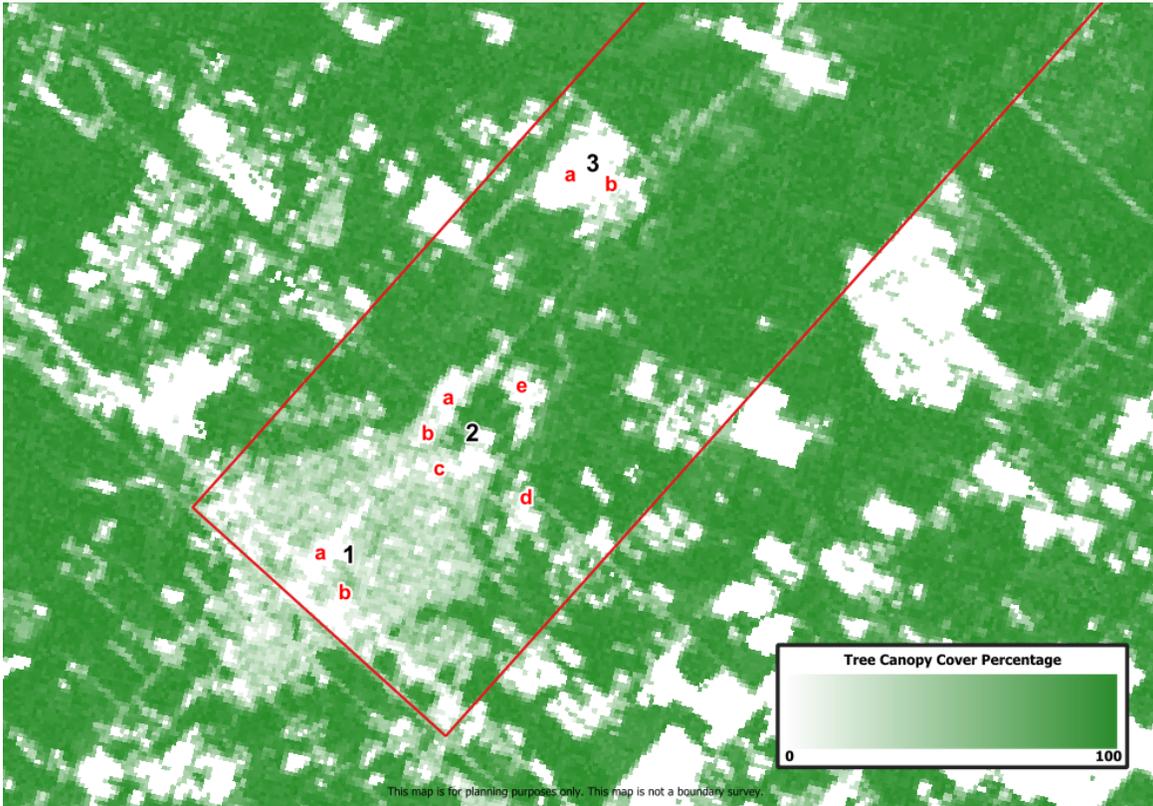
Figure 3. Tree canopy cover percentage from 0-100% (2023) in Egg Harbor City (Source: USDA USFS). All defined hot spots are in areas with little to no tree canopy cover, as indicated by the white color. In areas with less vegetation, temperatures tend to be higher due to the heat island effect.
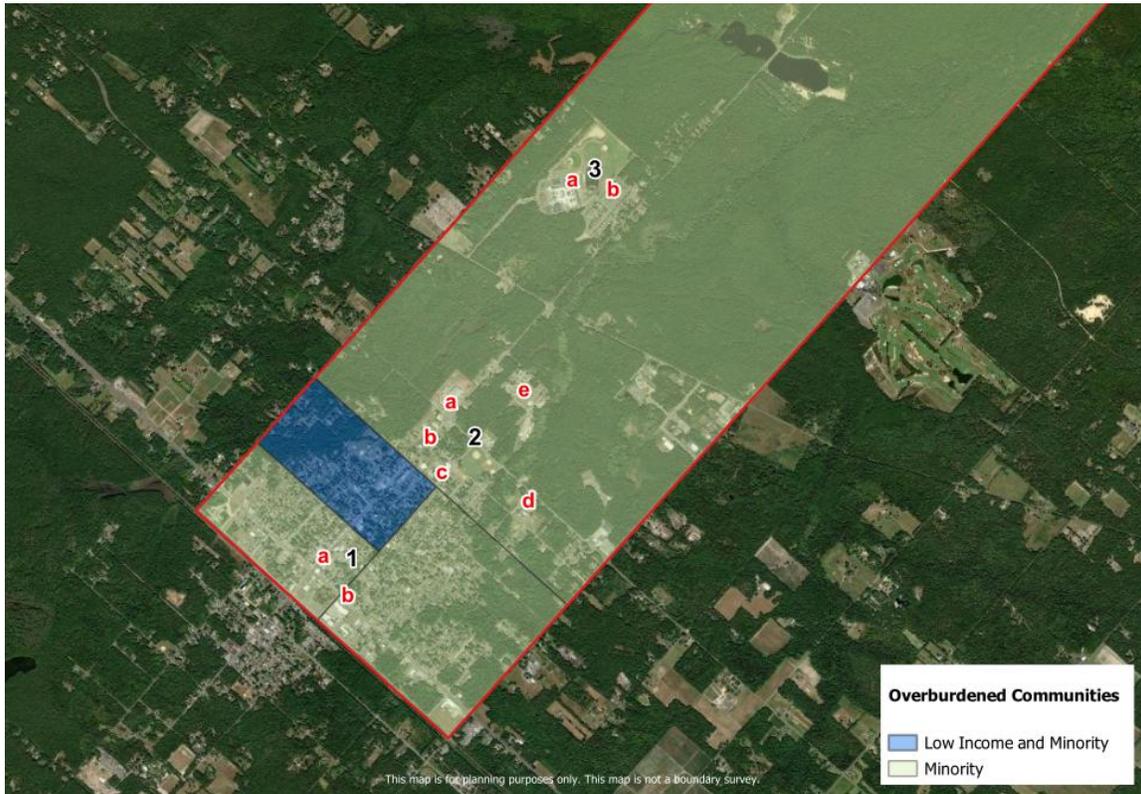

Figure 4. Overburdened communities (2025) of Egg Harbor City in relation to each heat island and its corresponding hot spots. All defined hot spots are located in census group blocks where at least 40% of the residents identify as a minority or member of a State recognized tribal community (Source: NJDEP BGIS; Imagery Basemap 2025 - Esri). Targeted heat island mitigation in overburdened communities can strengthen the health and resilience to environmental hazards of residents living in those areas.
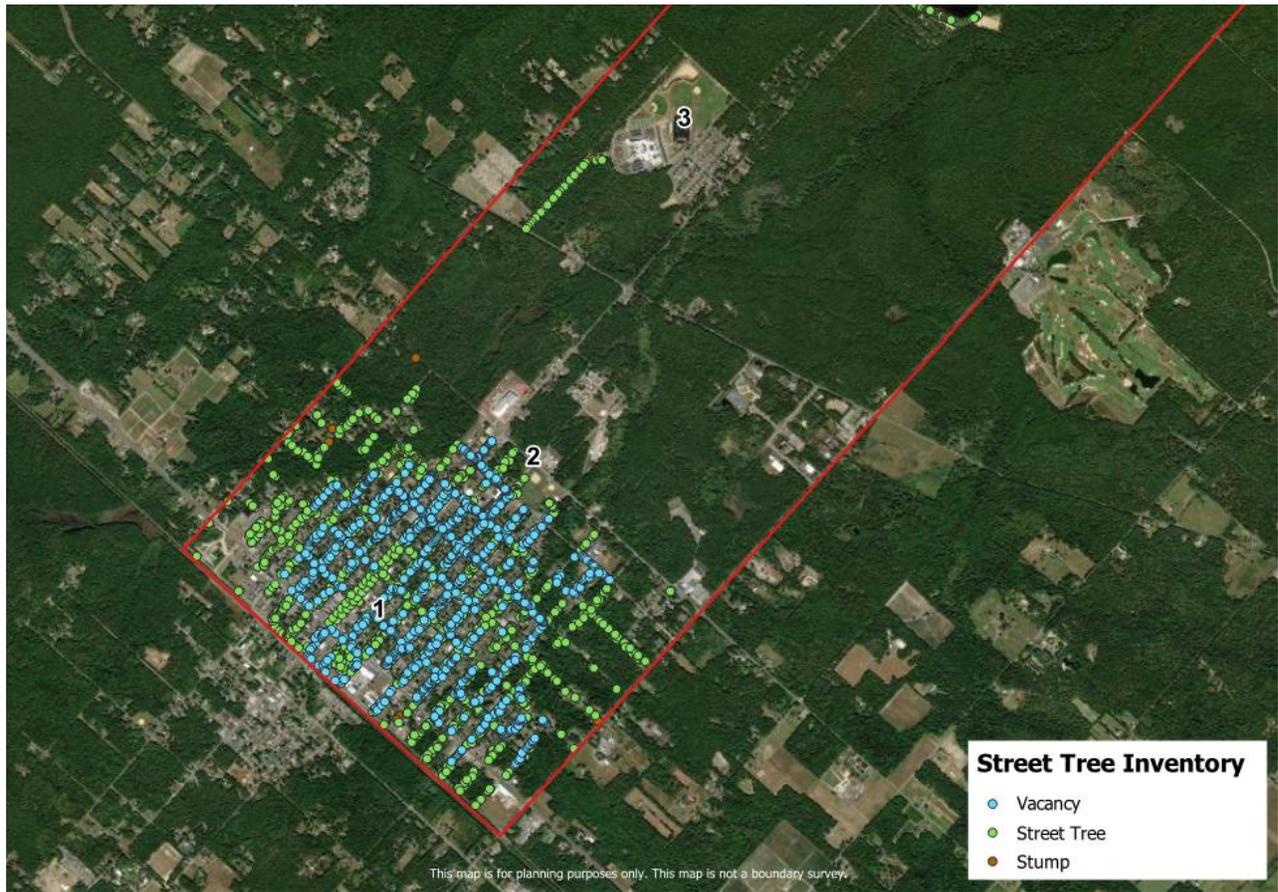
Figure 5. Street tree inventory (2025) of Egg Harbor City, showing the locations of street tree vacancies, living street trees, and stumps (Source: Davey Resource Group, TreeKeeper; Courtesy of Egg Harbor City). Within the defined heat islands are groups of vacancies that may be targeted for street tree planting that will reduce the heat island effect in Egg Harbor City.

1. **Heat Island 1: Egg Harbor City Center** – Both (1a) Philadelphia Avenue and (1b) Harbor Plaza Shopping Area (800-814 White Horse Pk) show large areas of asphalt and concrete in the form of sidewalk, open roads, and parking lots. Notably, hot spot 1a contains a strip of buildings on both sides of the road, many of which have a dark roof.
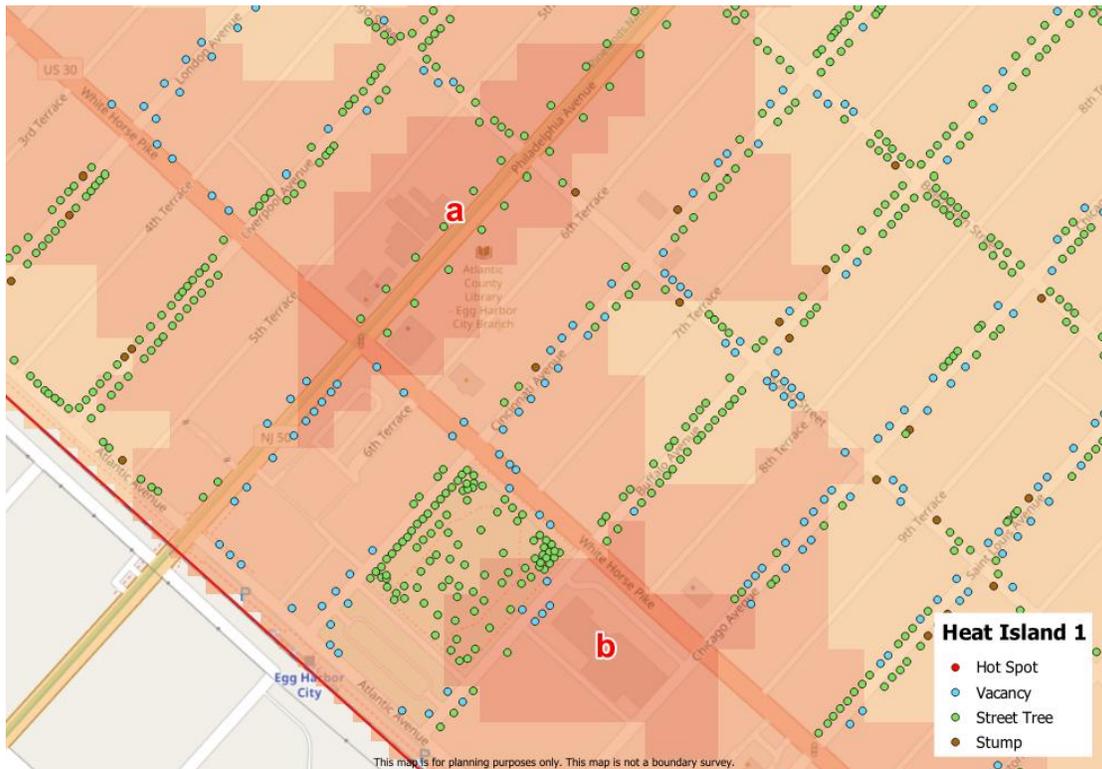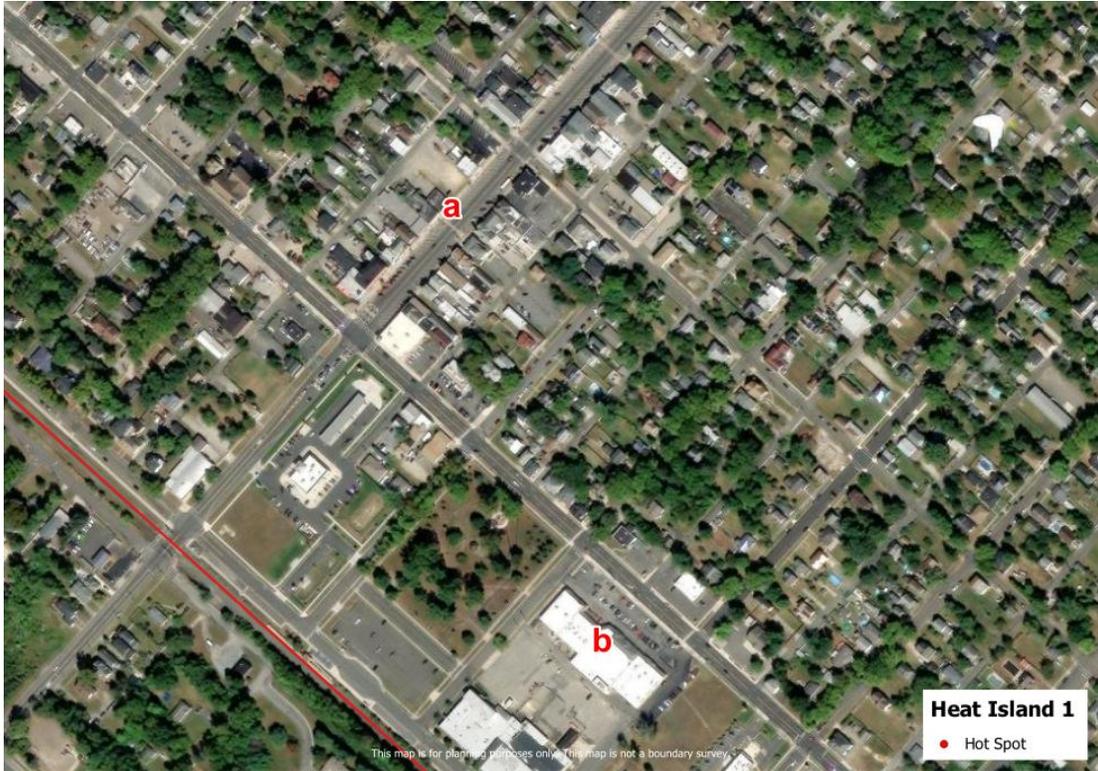
2. **Heat Island 2: EHC Urban/Rural Transition Area** – This cluster of hot spots includes (2a) Buddy Davis Yachts (801 Philadelphia Ave), (2b) Egg Harbor City Water Treatment Facility (717 Philadelphia Ave), (2c) Charles L. Spragg Elementary School (601 Buffalo Ave), (2d) Egg Harbor City Board of Education (730 Havana Ave), and (2e) Egg Harbor Maintenance Garage (1001 S Chicago Ave) & Philadelphia Village Apartments (1000-58 Cincinnati Ave). These hot spots show open areas with little tree canopy and large areas of asphalt, and most are owned by the city.
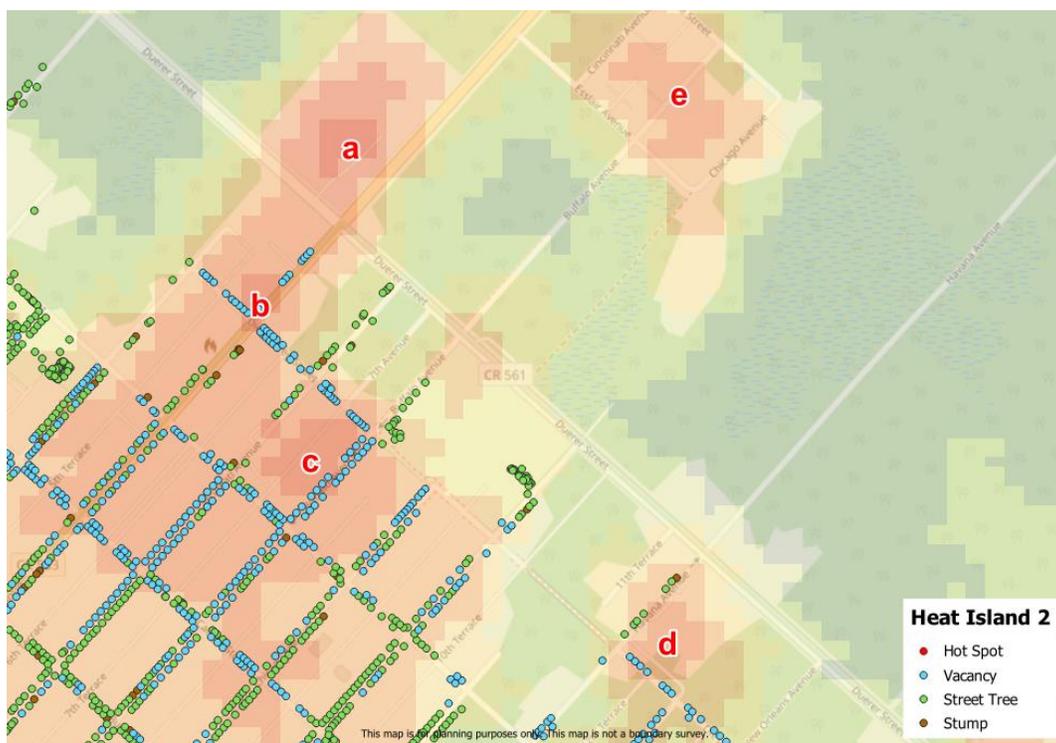
3. **Heat Island 3: North Egg Harbor Redevelopment Area** – This heat island includes (3a) Cedar Creek High School (1701 New York Ave) and the adjacent (3b) Neighborhood at Cedar Creek. Within this heat island are many built structures, including buildings, large parking lots with solar panels, paved athletic courts, and a synthetic turf field that is newly installed as of 2024, postdating the Summer 2022 land surface temperature data. There is also little tree canopy in the developed area.
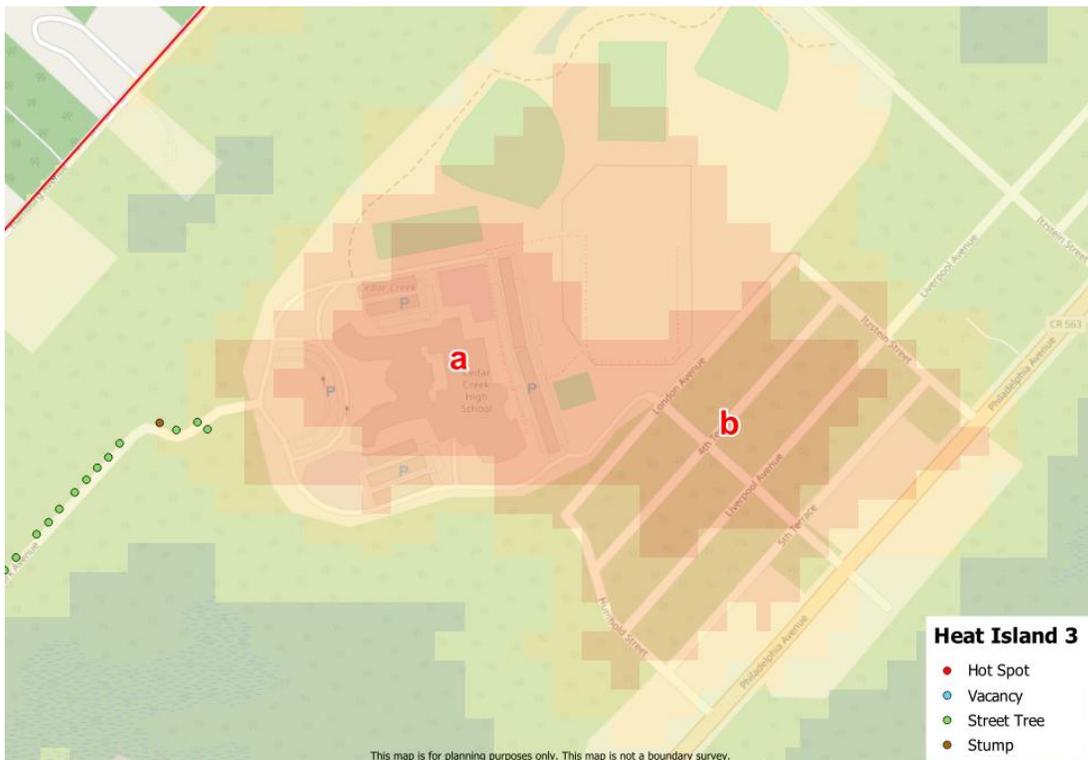
Overview of Hot Spot Types

Below are the descriptions of hot spot types found in Egg Harbor City. The numbered hot spot location(s) are organized by each defined type. Some locations may exhibit multiple hot spot types:

Areas with Little Tree Canopy / Vegetation Cover – The most common hot spots observed in Egg Harbor City are areas that lack tree canopy and vegetation cover. Plants provide a natural cooling effect in two ways: by casting shade, which directly lowers surface temperature, and by undergoing evapotranspiration, where plants use heat from the air to evaporate water from their leaves[8]. Therefore, areas without adequate vegetation and the resulting natural cooling effect will be more hazardous during high-temperature events than those areas with greater canopy cover.

Hot Spots

1a. Philadelphia Ave
1b. Harbor Plaza Shopping Area
2a. Buddy Davis Yachts
2b. Egg Harbor City Water Treatment Facility
2c. Charles L. Spragg Elementary School
2d. Egg Harbor City Board of Education
2e. Egg Harbor Maintenance Garage & Philadelphia Village Apartments
3a. Cedar Creek High School
3b. Neighborhood at Cedar Creek

Parking Lots / Large Areas of Asphalt – The next most common hot spots observed in Egg Harbor City are locations with large areas of paved surface, usually in the form of parking lots. These paved surfaces readily absorb heat during the day and slowly emit that same heat into the night, increasing ambient temperature and heating stormwater runoff when it rains[9]. In areas where there is high foot traffic or where residents, particularly vulnerable populations, live or work, this direct and potentially daily interaction with hot paved surfaces can be especially hazardous.

Hot Spots

1a. Philadelphia Ave
1b. Harbor Plaza Shopping Area
2b. Egg Harbor City Water Treatment Facility
2c. Charles L. Spragg Elementary School
2d. Egg Harbor City Board of Education
2e. Egg Harbor Maintenance Garage & Philadelphia Village Apartments
3a. Cedar Creek High School

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[8] https://www.epa.gov/heatislands/benefits-trees-and-vegetation
[9] https://www.epa.gov/heatislands/using-cool-pavements-reduce-heat-islands

Dark Roofs – Although not as numerous in Egg Harbor City as other hot spot types, dark roofs are another contributor to the heat island effect in the city. Dark colored roofs, ranging from gray to black, absorb more solar radiation, thus generating excessive heat in the surrounding area and increasing heat flow into the building. This results in higher energy and money costs to cool the inside of the building during warm weather and reduces the comfort and safety of those occupying buildings without air conditioning[10].

Hot Spots

1a. Philadelphia Ave
2c. Charles L. Spragg Elementary School
2d. Egg Harbor City Board of Education

Synthetic Turf Fields – Although synthetic turf fields are durable, low-maintenance, and more cost-effective than natural turf fields, disadvantages include synthetic turf's high heat absorption and inability to cool through evapotranspiration. These unfavorable characteristics of synthetic turf result in a higher surface temperature that is often significantly greater than the ambient temperature[11]. And while synthetic turf can dissipate heat quickly during the night, the increased heat that is generated by synthetic turf during hot days can be both uncomfortable and potentially dangerous[12].

Hot Spots

3a. Cedar Creek High School

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[10] https://www.energy.gov/energysaver/cool-roofs
[11] https://plantscience.psu.edu/research/centers/ssrc/research/infill/temperature-and-color
[12] https://dep.nj.gov/wp-content/uploads/dsr/synthetic-turf-memorandum-june2022.pdf

Below is an overview of the Egg Harbor City hot spot inventory, which summarizes the assessment above:

Table 1. Egg Harbor City Hot Spot Inventory

Hot Spot #	Color	Address	Type	Tree Canopy Coverage% (0-100%)*	Overall SVI Score (0.0-1.0)**
1a	Orange-red	Philadelphia Ave	Main street (Little canopy, Paved area, Dark roof)	< 1%	0.89
1b	Orange-red	800-814 White Horse Pk	Shopping plaza (Little canopy, Paved area)	< 1%	0.89
2a	Orange-red	801 Philadelphia Ave	Private business (Little canopy)	< 1%	0.89
2b	Orange-red	717 Philadelphia Ave	Municipal building (Little canopy, Paved area)	< 1%	0.89
2c	Orange-red	601 Buffalo Ave	Public elementary school (Little canopy, Paved area, Dark roof)	< 1%	0.89
2d	Orange	730 Havana Ave	Municipal building (Little canopy, Paved area, Dark roof)	< 1%	0.89
2e	Orange	1001 S Chicago Ave / 1000-58 Cincinnati Ave	Municipal building / Housing complex (Little canopy, Paved area)	< 1%	0.89
3a	Orange	1701 New York Ave	Public high school (Little canopy, Paved area)	< 1%	0.89
3b	Orange	Humbold St - Itzstein St	Neighborhood (Little canopy)	< 1%	0.89

* Tree canopy coverage was determined using the 2021 "USA NLCD Tree Canopy Cover" layer on the Sustainable Jersey Heat Map[13]
**SVI was determined using the "CDC Social Vulnerability Index 2018-Overall SVI (Tracts)" layer on the Sustainable Jersey Heat Map

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[13]https://sjtcnj.maps.arcgis.com/apps/instant/media/index.html?appid=e26e8a1b82304bbf976af1baed5f991a

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