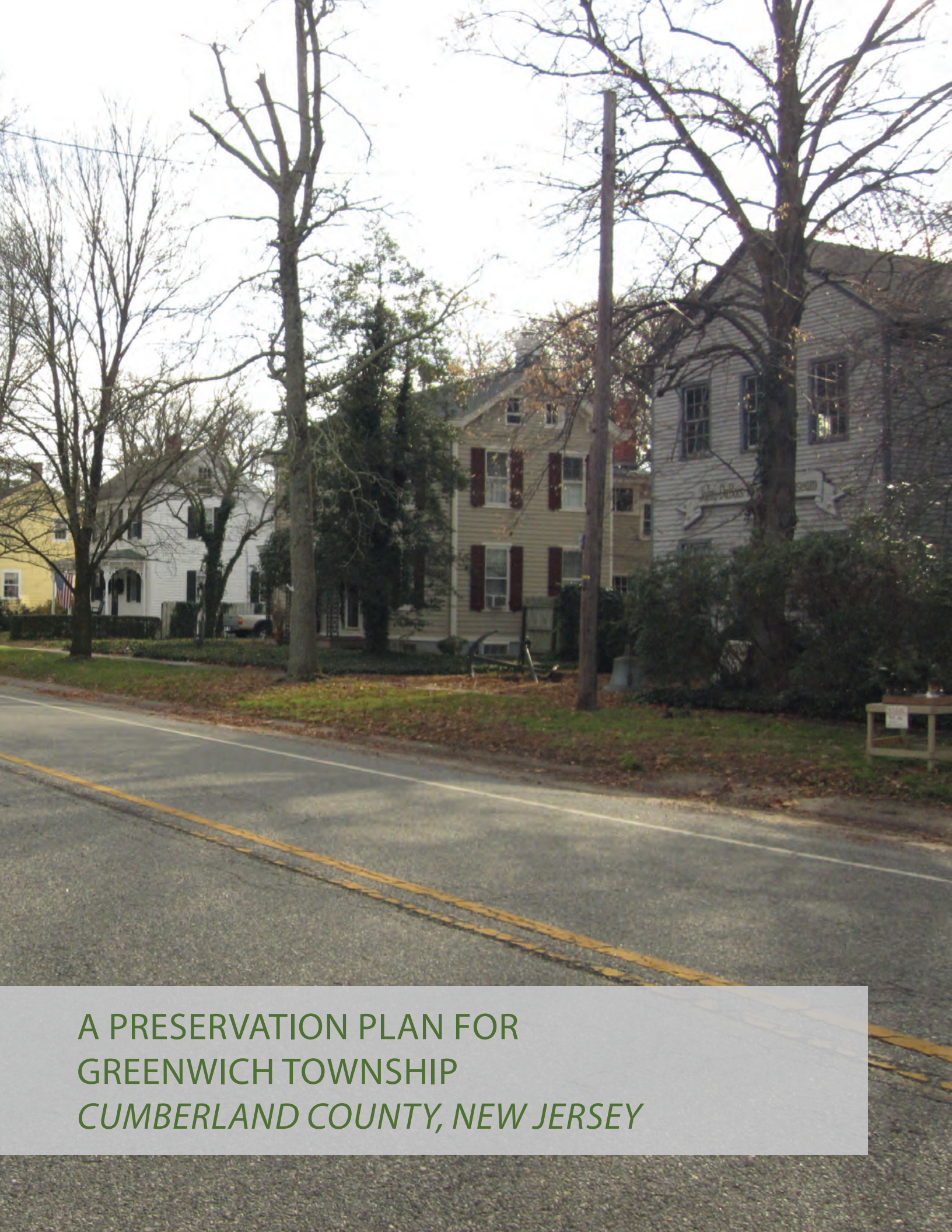

A PRESERVATION PLAN FOR GREENWICH TOWNSHIP

CUMBERLAND COUNTY, NEW JERSEY

ACKNOWLEDGEMENTS

The Greenwich Studio team would like to expressly thank our advisor Randall Mason for his patience and support. We would like to specifically thank Richard Dilks; Joan Berkey; Matt Pisarski; Penny Watson; Larry Niles; Warren Adams; and Aislinn Gandy for all the technical help they provided our studio team. We would like to thank Michael Henry and Trudy Hansen for hosting our group, organizing the focus panels, and providing xxxxx

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Table of Contents

Executive Summary

Greenwich Township is a beautifully preserved cultural landscape that faces some serious challenges in the future. A community rich in natural and cultural resources, Greenwich faces threats that include sea level rise, a location within a cash poor township, and an aging population.

During the course of the semester the Greenwich Studio team collected and analyzed information to inform our decision-making process. We conducted historical research, appraised existing conditions, and interviewed stakeholders. We looked at development potential and preservation priorities to develop a plan that addresses the myriad of issues that Greenwich Township faces today. To develop our preservation approach we posited the question: How is this place valued? The historical, community, economic and ecological values remain at the forefront of our preservation plan. We identified Greenwich's character defining elements, carried out a SWOT analysis, and looked at different planning approaches. We then worked with faculty members to refine our approach.

Though Greenwich faces many challenges, the community has a long history of resilience and a desire to protect what they value. The Studio team determined that a proactive approach to preservation that offers specific planning strategies based on an economic and community development model, ultimately leaving decision-making in the hands of the community, will work to create a sustainable Greenwich for the future.

The Pirate House (Joan Berkey)

Introduction

"Greenwich is a long town … along one main and wide street, leading directly away from the River Cohansey, originally called in old papers, New Caelaria River. It is a pleasant walking street, being all carpeted with white clover, clean, and green and pleasant to the tread. I had not imagined so fine a country in any part of Jersey, as I found here."

-John Fenwick

The village and township of Greenwich (pronounced Green-witch) is situated on the shore of the Cohansey River in southern New Jersey. Originally founded in 1765 as a seaport town by John Fenwick, the town has a rich history that has both shaped, and been shaped by, the natural landscape. As a result of the delicate balance between nature and human processes, Greenwich faces an uncertain future that must address threats such as sea-level rise, flooding, rising taxes low levels of municipal services, and the lack of a holistic preservation plan. The threats that Greenwich faces are the same threats that many historic communities will face in the 21st century. As historic preservationists, it is important that we study communities such as these, and understand ways to mitigate threats to our cultural heritage.

In the fall of 2011, nine students in the University of Pennsylvania's Graduate Program of Historic Preservation studied Greenwich as part of an applied studio course in preservation planning. A requirement for second-year Master's students, the course focuses on group collaboration to effectively analyze information and produce a values-centered conservation plan.

The study took place over the course of 15 weeks and involved four phases: identification and research, understanding the significance of the site, analysis, and the creation of a preservation approach and recommended interventions.

IDENTIFICATION & RESEARCH

This phase began with gathering information informally and formally in order to understand Greenwich Township as a place. Students visited Greenwich throughout the semester and explored the township by car, by foot, and bike, producing photographs, maps, and interviews with residents. Archival research was also completed using resources from the Cumberland County and Greenwich Historical Societies, as well as other secondary sources.

SIGNIFICANCE

The team analyzed the information obtained during the identification and research phase to craft a statement of significance about the place. This statement is what informed the studio team's decisions while analyzing and crafting a preservation plan.

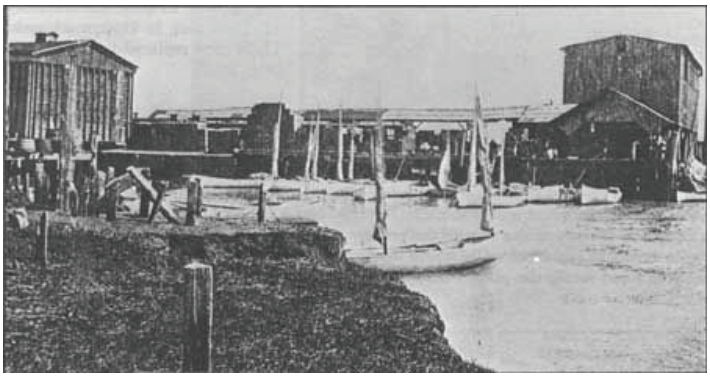
ANALYSIS AND INTERVENTIONS

In order to create a holistic preservation plan for the township, it was necessary for the team to approach the study area as a cultural landscape. Our working definition of a cultural landscape approach considers a geographical area as interconnected systems of cultural and natural resources, exhibiting cultural or aesthetic values, whose management requires a comprehensive, multi-disciplinary approach.

The studio team identified the character defining elements, values, historical significance, character areas, and stakeholders of Greenwich. A SWOT (strengths, weaknesses, opportunities, and threats) analysis was carried out, and the key issues driving change were identified. This process enabled the team to prioritize threats and character areas. The result is a plan that recommends a light regulatory approach that would enable the preservation of natural and cultural heritage through integrated community participation and sustainable economic development. The plan proposes to both increase the tax base through a variety of discreet responses, while leveraging outside funding and capacity-building opportunities at the County, State, Federal, and private levels to help support and grow the Township economy. A series of responses were crafted to execute this approach; these interventions were developed individually by team members and are added as an appendix to this report.

History

Greenwich is located on the north shore of the Delaware Bay in southern Cumberland County. The township is 18.2 square miles. It is on the Atlantic coastal plain within the estuarine portion of the Delaware Bay. Several small cities are in the proximity of Greenwich, the closest of which is Bridgeton, a town of 20,000 people. Larger population centers include Philadelphia and Atlantic City, each an hour away from Greenwich by car. Greenwich is not served by any major highways or rail lines, which is one reason the town remains fairly isolated.



Old Port (National Park Service)

There are three centers of settlement in Greenwich: Greenwich Village, Othello and Springtown. Cumberland County is rich in agricultural land, along with natural and man-made wetlands, all of which surround these three settlements.

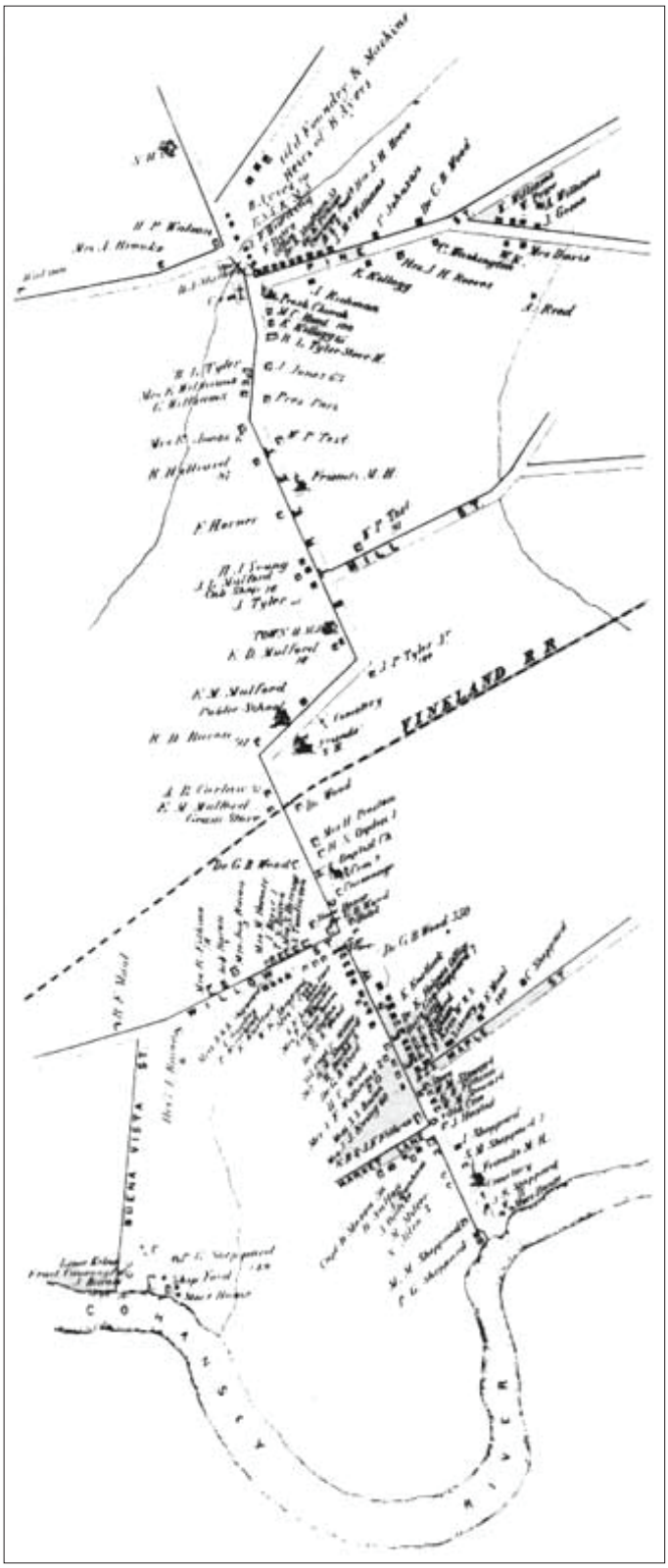
Before the arrival of Europeans, Greenwich Township was home to the Leni Lenape Native American tribe. The "Little Scionesse," one of many subdivisions of the Lenni Lenape, settled along the Cohansey River. The area had a mild climate, a supply of fresh water, plentiful fish and game, and good agricultural land. The Little Scionese fished, hunted and cultivated a variety of agricultural products including corn, squash, beans, rice, sunflowers, cranberries, blueberries, and tobacco. A native stone called "Cohansey Quartzite" was surface mined and used to make tools and weapons. Recovered artifacts from Greenwich indicate the population levels rivaled current Greenwich population levels. Many of these Native Americans succumbed to European disease or migrated away, while others stayed on and assimilated as farmers. Their descendents still live in Greenwich today.[1]

The first European explorers arrived in the Delaware Bay in 1623. Between 1638 and 1650 the Swedish established settlements north and west of Greenwich, along with fishing and hunting camps near the Delaware Bay shore. By 1649 the Swedish government lost interest in Southern New Jersey but some colonists chose to remain. The Dutch also occupied and laid claim to areas in South Jersey until 1664 when the British took control of New Amsterdam (New York) and all of New Jersey.

Under English rule all vacant lands in North America were deemed to belong to the king. Between 1660-1664 King Charles II granted John Lord Berkeley and Sir George Carteret the colony of New Jersey. Thirteen years later John Fenwick purchased much of west New Jersey from Berkeley and Cateret in trust for Edward Bylannge. Fenwick claimed the land as his own and controversy ensued when Byllange accused Fenwick of wrongdoing. Before the matter was settled, Fenwick voyaged for the New World aboard the Griffin and landed near Salem in 1675. Fenwick traded the hunting and occupancy rights for Cumberland and Salem County with the Lenni Lenape in exchange for English goods.[2]

Hicksite Church (Sustainable Greenwich)

The land ownership controversy continued between Fenwick and Byllange until William Penn was brought to arbitrate. William Penn ruled that one tenth of the land belonged to Fenwick and the rest to Bylannge. Fenwick retained the land that is Salem and Cumberland County. He died the following year in 1683. Before his death, Fenwick



Ye Greate Street (1876 Atlas)

undertook plans for a town called "Cohanzik" after a local Indian Chief. The name was changed to Cohansey when the first street "Ye Greate Street" was surveyed in late 1683. The first lots were purchased by Quakers, Presbyterians, and Baptists seeking refuge from the harsh religious climate of both Old and New England. Later the name was changed to Greenwich after Greenwich on the Thames. Two early settlement areas included Greenwich and Head of Greenwich on either end of Ye Greate Street for one and a half miles. The street widened from 80 to 100 feet approaching the Cohansey River in anticipation of a growing maritime trade. Large farm parcels were also sold in the surrounding area. The Head of Greenwich, renamed Othello was settled a little later in 1707.[3] Fenwick's' towns Greenwich and New Salem were the first English- speaking settlements on the Delaware River.[4]

The freedom to practice religion continued to bring settlers to Greenwich. Churches including Quaker, Presbyterian, Baptist and Methodists were all established over the next 50 years.[5] Most of the first settlers were Quakers from England. Quaker meetings were held in private homes until the meeting house was constructed in 1737.

In 1710 the Presbyterians established their place of worship at the Head of Greenwich. In the 1830s, Hicksite Quakers who broke from the Orthodox sect in Greenwich established their church in Head of Greenwich. One prominent Presbyterian from this area was Philip Vickers Fithian, a Princeton graduate, minister and prolific writer.

In 1687 Greenwich was designated an official port of entry. The town included an active harbor, several mills, shops and stores. The combination of commerce, religious freedom, the connection to a port and good soil for agriculture helped Greenwich to prosper.

In 1748 the Colonial Legislature passed an Act changing the southern part of Salem County to Cumberland County and dividing it into six townships. The townships voted to put the county seat in Cohansey Bridge, currently known as Bridgeton, for the sake of convenience. Once the courthouse was established in Bridgeton this area grew rapidly, eventually impacting growth of Greenwich as former Greenwich residents relocated to Bridgeton and slowed the growth of the town. [6]

In December 1774, shortly after the Boston Tea Party, the brig Greyhound arrived in Greenwich loaded with tea. The captain feared that if he attempted delivery to Philadelphia the cargo would be burned, so he hid it in the home of English sympathizer Dan Bowen. The majority of the county chose to support the Continental Congress's decision to resist taxation without representation. Enraged Greenwich citizens learned of the hidden tea, and on December 22nd, whites disguised as Indians captured

Head of Greenwich (Sustainable Greenwich)

and burned the tea in Greenwich's town square.[7] No one was prosecuted for the tea burning and in 1908 the tea burning monument was erected on Ye Greate street by the Cumberland County historical society.

BUILDING HISTORY

Building in Greenwich began as early as 1685. Today these early timber frame structures are differentiated into three periods of construction. The earliest structures date from 1685 until about 1730 and are identified by the use of a large summer beam, exposed framing members, and low ceilings. These techniques reflect the building traditions brought to Greenwich with some of the earliest settlers who were coming from across the Atlantic but also south from New England and Northern New Jersey.

The second period of timber frame construction in Greenwich dates from the 1730s until about 1780 or 1790. This period saw taller ceilings without exposed joints and the use of HL (Holy Lord) hinges on cabinets and doors. During this time brick structures also became more prevalent in Greenwich. Early brick houses date to the 1730s. Though Greenwich was founded as a Quaker settlement, there was not a Quaker Meeting House in Greenwich until 1737. This meetinghouse was a timber structure and was only replaced by a brick building in 1779 after the early structure burned down.

The final period of timber frame construction took place from about 1780-90 until about1840. In this last period the use of water mill-sawn timbers, as opposed to hand-hewn

timbers, allowed for taller ceiling heights and framing members hidden from view. In this period many of the older, smaller timber frame structures saw additions in both timber and brick. In the latter half of the 19th century many earlier houses were decorated with Victorianized elements on the exterior to give them a more contemporary feel, though their bones may date as early as 1685.[8]

SPRINGTOWN

African Americans settled in Springtown sometime around the turn of the 19th century.

According to Sarah Hancock, " In addition to the legacy to his sons of land and money, John Sheppard left them the kindly feeling for those in trouble. To his son Benjamin he bequeathed the mill property. Escaping slaves found welcome there. Benjamin owned many acres of land that was mostly forest. The soil was sandy, dotted with springs as the water flowed downward underground from Pine Mount. To the men who came to this Quaker for refuge, Benjamin

AME Church (Sustainable Greenwich)

Sheppard offered an acre of ground if they would cut the trees and erect upon the land cabins for their homes. Many took advantage of the offer.[9] Thomas R. Sheppard and J.R. Sheppard, residents of Greenwich, were the only two white Underground Railroad stationmasters in Cumberland County. [10]

The African Society of Methodists was formed in Springtown and purchased land for their meetinghouse in 1810. The meetinghouse that exists today was built in 1830 and is on the National Register of Historic Places. This is one of the oldest black churches in New Jersey, dating to the early 1800s. There church is known for its role in the Underground Railraod, providing succor to fugitive slaves from Delaware and Maryland arriving from across the Delaware Bay.

The Ambury Hill Cemetery, located near Ye Greate Street and Stathem's Neck Road, was the final resting place for many members of the African Society of Methodists in Greenwich, and contains the remains of some of the earliest members of the congregation. The cemetery is also significant as the burial place of many African American veterans of the Civil War. Ambury Hill is currently in the care of the Bethel AME Church, although the congregation no longer uses it.[12]

FARMING HISTORY

During the colonial period, 85% of the population of Greenwich lived on farms. Rich agricultural land led to rapid settlement of the area. Farmland was created by the cutting and sale of lumber for shipbuilding and shipment to Philadelphia. A farmer was able to produce enough

Tomatoes at Canning (National Park Service)

food for his family with a little surplus to sell in town. The improvement of agricultural land and proximity to water for transportation allowed the farmers to supply both armies during the Revolutionary War. Philadelphia also supplied a good market for farm products.[13]

By the 1800's there was a decline in soil fertility. This caused some farm families to move west in search of better agricultural land. The discovery of green marl in the area of Greenwich, however, made it possible for farmers to fertilize their fields. The use of marl coupled with crop rotation regenerated the land. Fertility was the reason farmers continued to reclaim the marshes for farming until the mid twentieth century, though some used more conventional methods to increase production. Between 1810 and 1900, growers emphasized the care and fertilization of soil, and crop rotation. In addition to greater range, the number of farms increased while their size decreased, and more farmers turned to growing produce, and raising dairy cows and poultry.[14] Agricultural products included wheat, corn, timothy hay, salt hay, tomatoes apples and peaches. With the arrival of the Greenwich branch of the railroad in 1873, agriculture began to change. The train provided fast access to urban markets for produce.

Food production grew steadily in Greenwich Township for more than 200 years. John E. Sheppard started a small canning factory in his home in the 1840's. He eventually opened a warehouse and canning operation. Several other canneries followed in Greenwich, allowing locals to continue to expand the economic growth and distribution of agricultural products. Canning was later followed by the frozen food industry which was aided by the Seabrook family and their work in frozen food improvements.[15]

Agriculture provided Greenwich with a relatively stable economic base that was furthered by the Farmland Assessment Act of 1964. By reducing property taxes of farmland, farmers could better afford the production costs of business. Further protection of Agricultural land in Greenwich came in the form of the Farmland preservation of New Jersey with the Agricultural Retention Act of 1983.[16]

MARITIME HISTORY

In addition to agriculture, Greenwich Township depended on all aspects of the maritime industry including ship building, harvesting of oyster and sturgeon, and production of salt hay.

The height of Greenwich's sturgeon industry was 1888, when Delaware Bay fisherman caught six million pounds of sturgeon, while the rest of the East Coast caught a mere

Greenwich Piers (Sustainable Greenwich)

one million pounds. Sturgeon meat and its caviar were shipped from the bay via boats, as well as by the railroad that terminated at the port of Caviar.

Oystering served as a major industry for Greenwich. In 1775 the colonial legislature forbade lime burners from taking shells for making lime. By the late 1800's, the Delaware Bay oyster industry was booming. The discovery of moving oysters from shallow to deep waters increased their size and added greater value. But supply began to dwindle as demand grew and depletion of seedbeds continued. Several laws were enacted to slow down the harvest and protect the limited supply. But in 1950 oysters grew increasingly suseptible to the MSX virus, a parasite that weakens and kills the oysters. This virus almost completely ended oystering in the Delaware Bay.[17]

Oystering (National Park Service)

Salt Hay is a sturdy narrow leaf cord grass that grows in tidal marshes that fringe the Delaware Bay and river where salt content is high. Salt hay was used as animal bedding and occasionally food although it lacked many important nutrients. The development of a system of dikes, ditches and sluice gates improved salt hay production, which allowed the introduction of domesticated grasses and clover.[18]

By the 1780s laws were enacted to allow property owners to further dam creeks and control tides. Later on, Meadow companies were hired to build earthen dikes and drainage ditches. Salt production continued into the 1950s. Maintenance of the dikes became important to controlling tidal water reaching rich agricultural areas. After the slat hay industry disappeared the care of the dikes began to falter, which continues to this day.

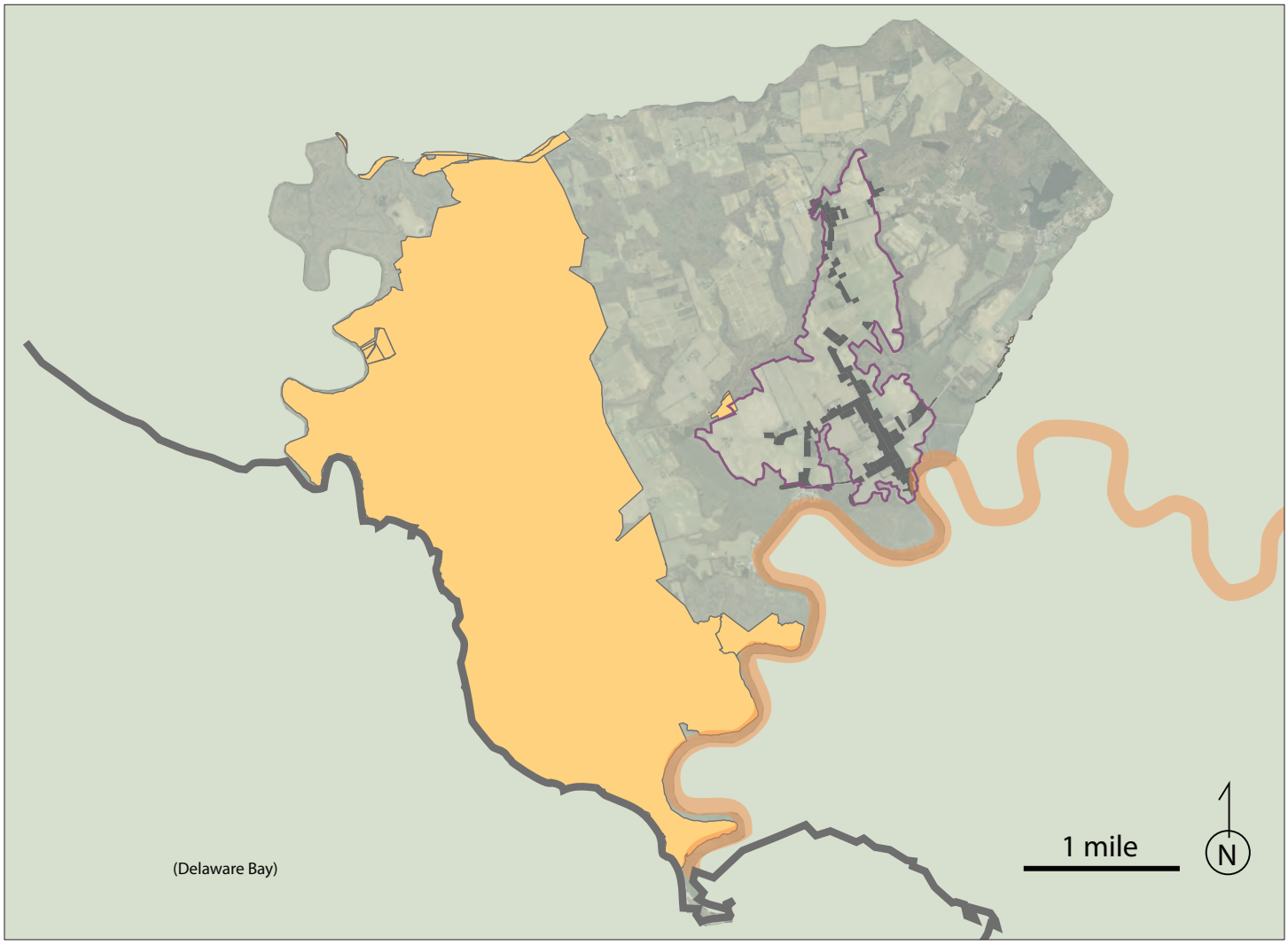
BAYSIDE TRACT

Because of the relatively low land value in Cumberland and Salem County, pressure for industrial development began in the 1960's with the plan for the Salem nuclear power plant. Greenwich felt this pressure in 1965 when the General Electric company began accumulating land in Greenwich under the guise of a straw company, Overland Realty. The company amassed over 4,500 acres—approximately one third of the township—of agricultural land fronting the bay.[19]

Citizen opposition led to zoning ordinances in 1966 and 1975 that created a historic district and later led to zoning that prohibited certain kinds of uses to the Bayside Tract. Despite opposition, the Salem Nuclear power plant was built in Salem in 1977.

The Bayside Tract land is part of the Estuary Enhancement Program, which encompasses over 20,000 acres along the Delaware Bay.[20]

Greenwich township has survived essentially as plotted in 1684. While no longer the busy port it once was, Greenwich remains one of the few colonial villages retaining its original fabric in New Jersey. Historic structures, agriculture, the rural lifestyle, and its connection to the river and bay are all part of the 300 year evolution of Greenwich township. These enduring qualities make Greenwich the special place that it is today.



The preserved Bayside Tract (Map: Studio Greenwich Team)

Comparative Photographs

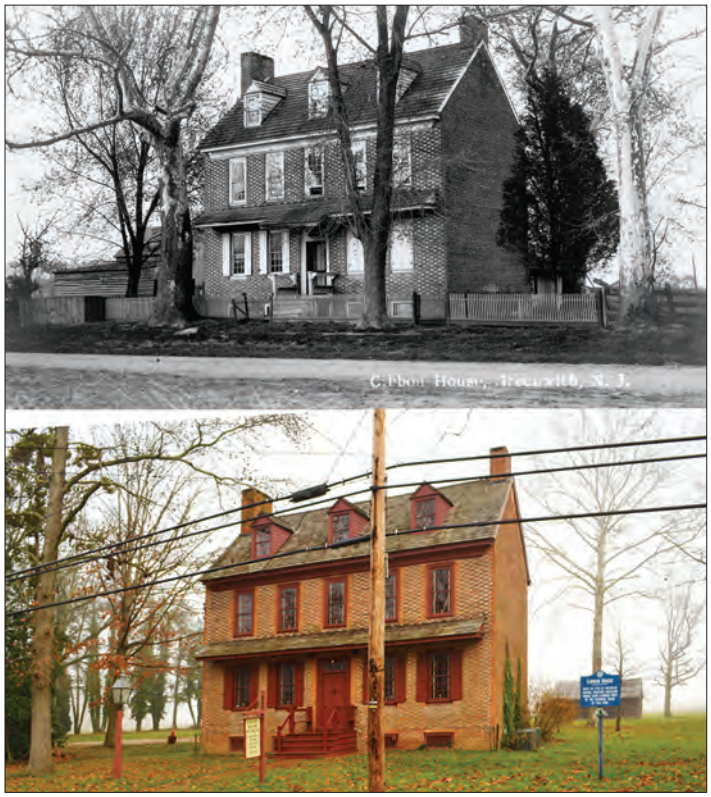
The collection of comparative photos includes multiple combinations of historic and current photos of buildings and landscapes that were photographed in at the same direction, angle, and scale over time. They are powerful tools to record changes over time through comparisons.

From the comparative photos, not only can minor or major changes of buildings during their long histories be observed, but also stories of changes of built environment can be told.

In practice, comparative photos can be both useful resources for historic research in Greenwich and powerful marketing tools to demonstrate the rich histories of this town.

Market Lane Corner (Goodwin Family Collection)

Presbyterian Church (Goodwin Family Collection)



Gibbon House (Goodwin Family Collection)

Upper Meeting House (Goodwin Family Collection)

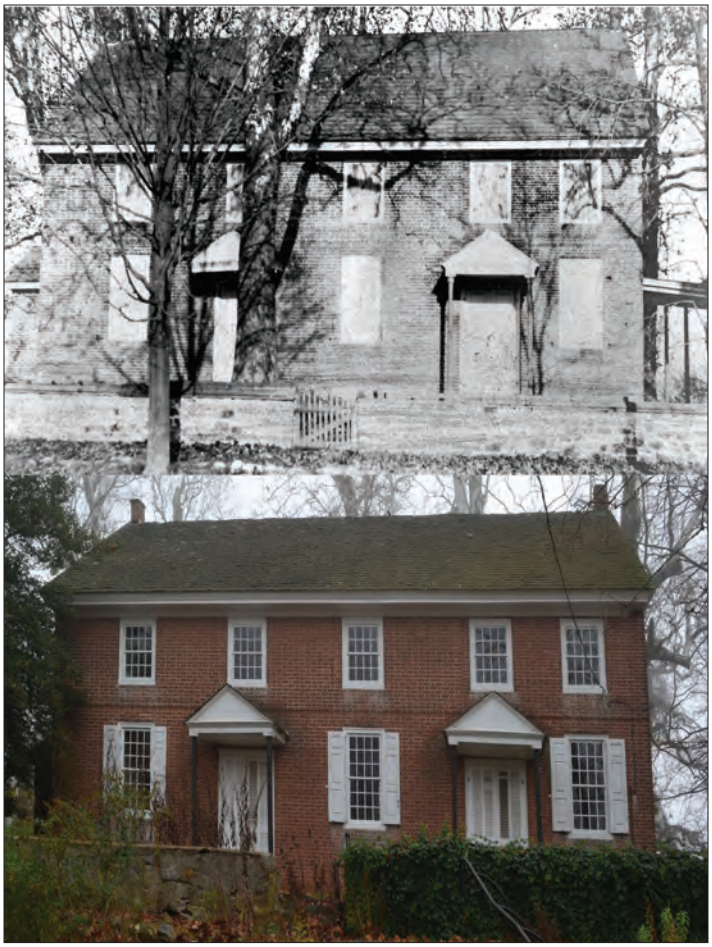
Richard Wood Store (Goodwin Family Collection)

Pirate House (Goodwin Family Collection)

Ye Greate Street, facing northwest (Goodwin Family Collection)

Ye Greate Street, facing southeast (Goodwin Family Collection)

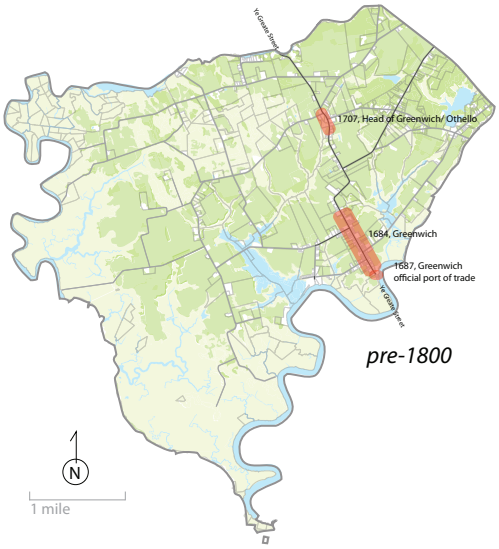
Richard Wood Mansion (Goodwin Family Collection)



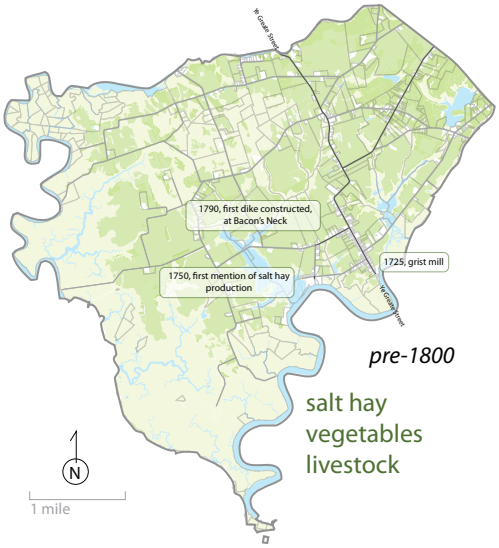
Lowe Meeting House (Goodwin Family Collection)

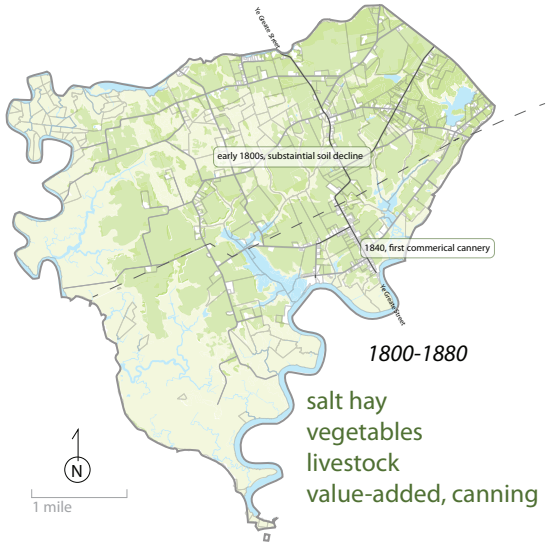
Evolutionary Mapping

Village Evolution

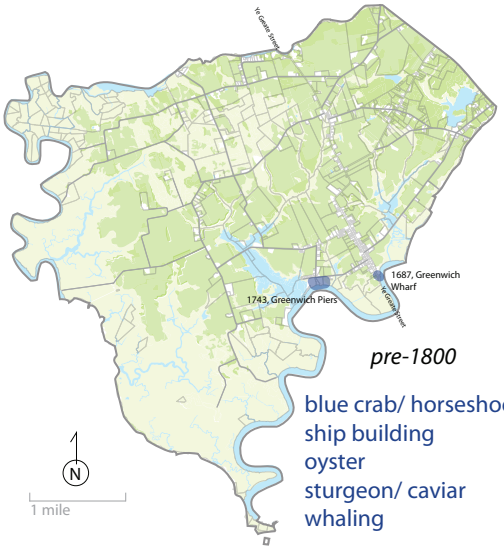


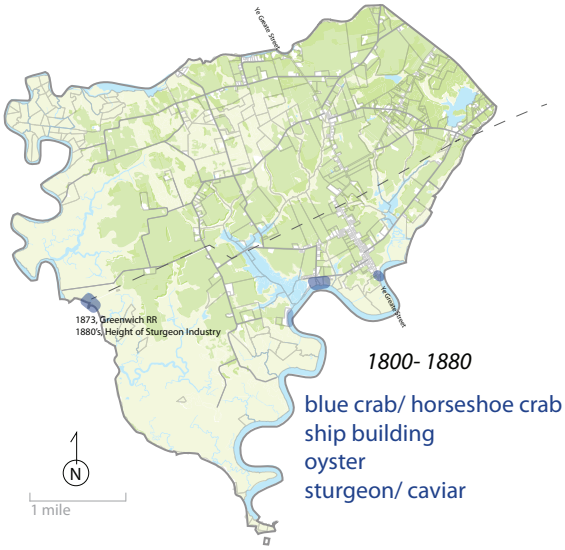
Agricultural Evolution

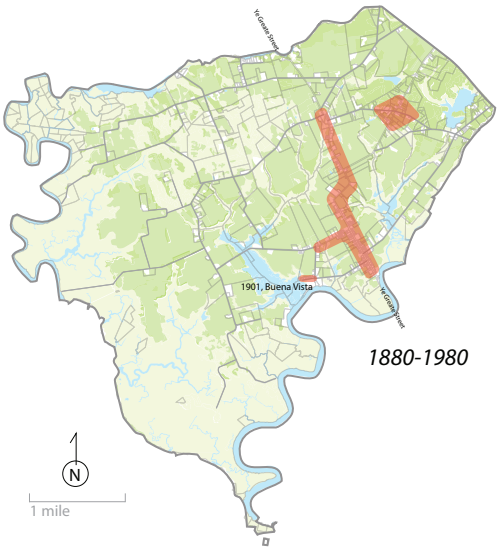




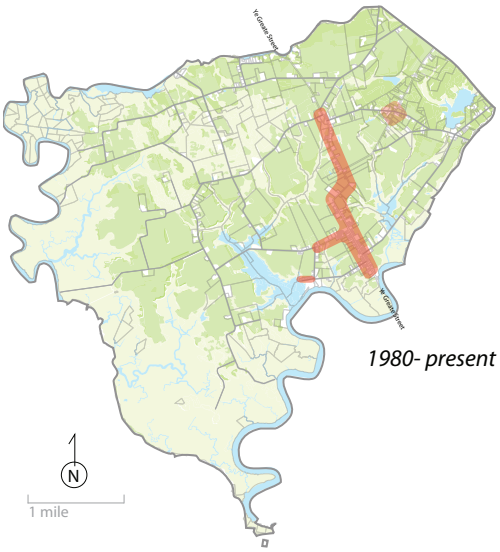
Maritime Evolution







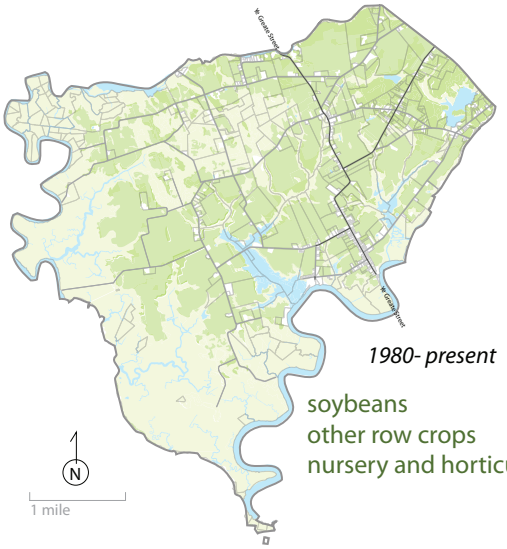
1880-1980



1980- present

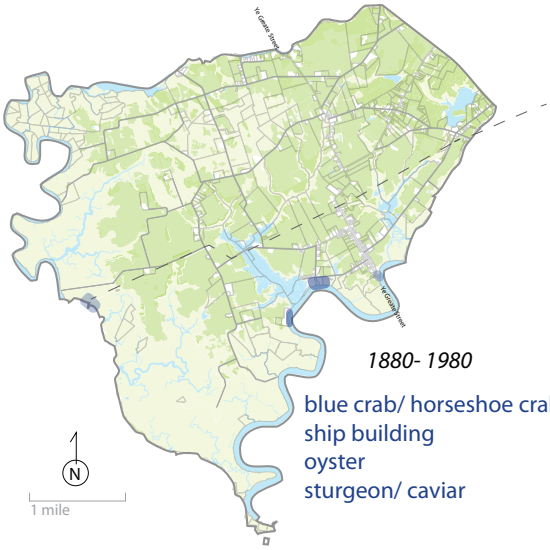
1880- 1980

salt hay
vegetables
value-added, canning
soybeans
other row crops



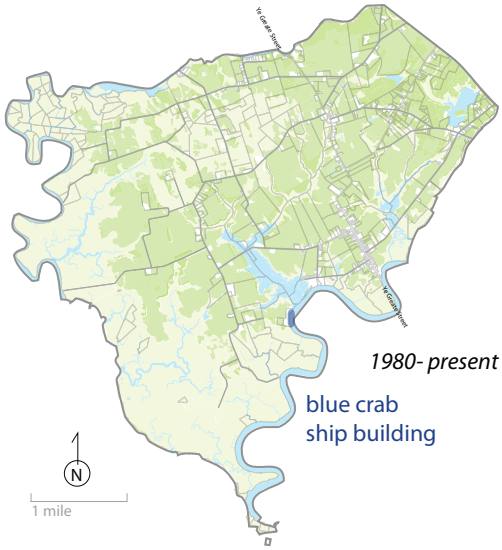
1980- present

soybeans
other row crops
nursery and horticulture



1880- 1980

blue crab/ horseshoe crab
ship building
oyster
sturgeon/ caviar



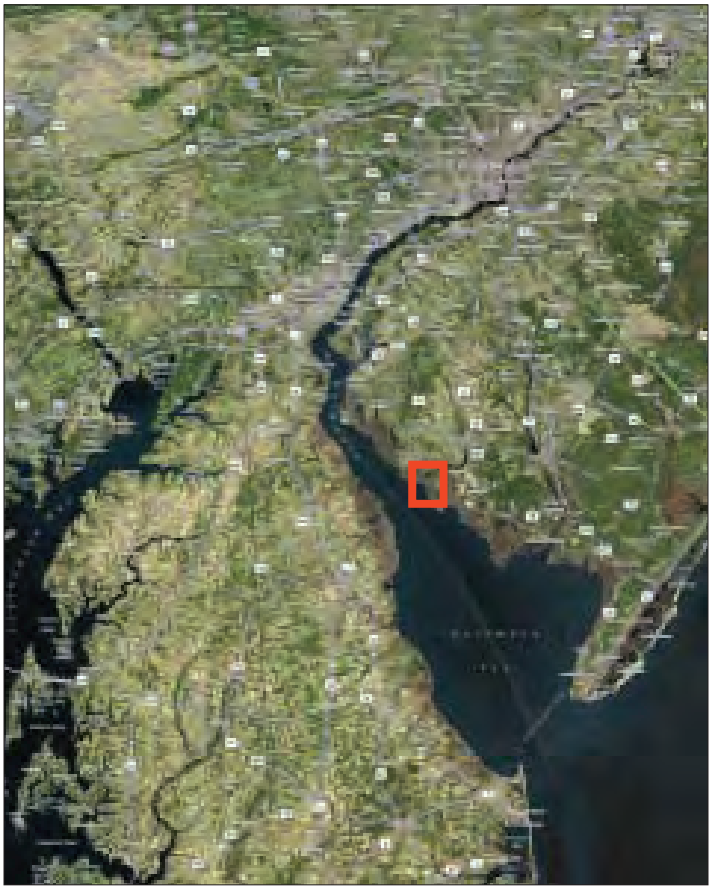
1980- present

blue crab
ship building

Current Conditions

Greenwich Township is located southwestern Cumberland County, NJ, along the Delaware Bay. It encompasses nineteen square miles of marshes and agricultural land, with large pockets of southern pinelands sugar sand. For the first 200 years of its existence it was a prosperous, shipbuilding, canning, and fishing center. With the decline of sturgeon, blue crab, and oyster populations in the Delaware Bay in the mid-twentieth century, and the closure of the last commercial canning operation at around the same time, much of the industry left Greenwich. Although there is still production of nursery and forage crops, some boatbuilding, oystering, and crabbing, along with a strong recreation boating trade, Greenwich is predominantly a bedroom community.

Greenwich Township (Cumberland County), constitutes the entirety of zip code 08323. It is Block Group 2 of Census Tract 105, Cumberland County, New Jersey. It is Congressional District 2 (111th Congress), New Jersey, with a census defined region of Northeast, Middle Atlantic Division, is part of the Vineland-Millville-Bridgeton, NJ MSA, and is part of the Philadelphia-Camden-Vineland, PA-NJ-DE-MD CSA.



Aerial showing Greenich in the Mid-Atlantic region

Greenwich Township, Cumberland County, New Jersey

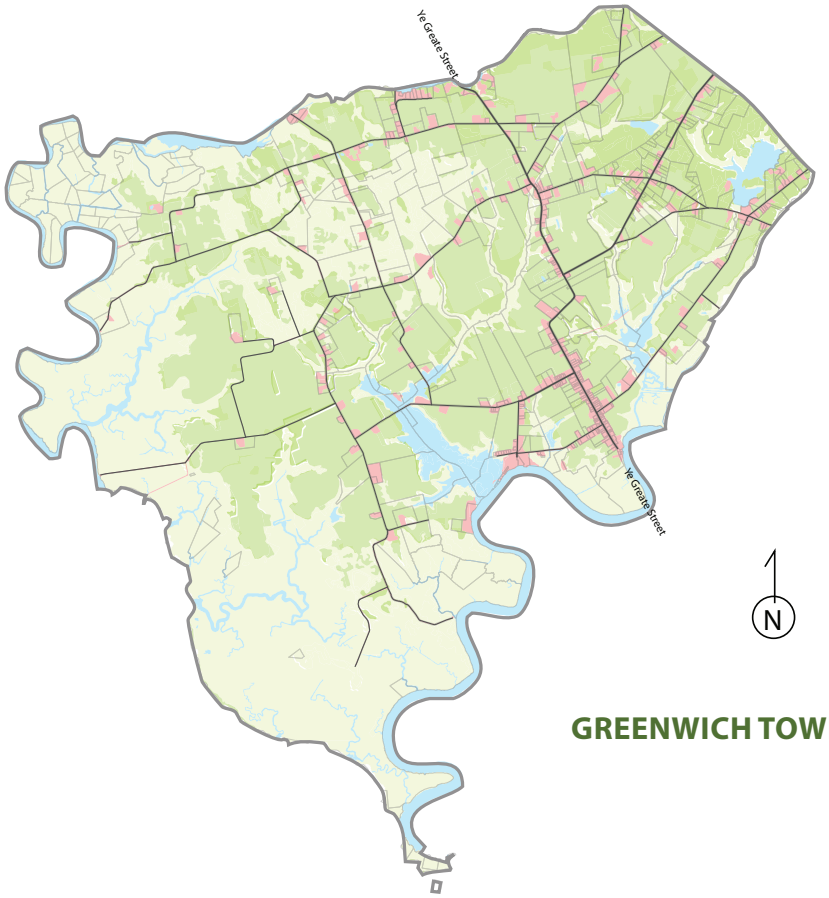


TABLE 1: Census Designations, Zip Code 08323, Greenwich Township, Cumberland County, NJ	
Congressional District 111th Congress	Congressional District 2 (111th Congress), New Jersey
Voting District/Remainder	Greenwich Township Voting District 1, Cumberland County, New Jersey
School District, Elementary	Greenwich Township School District (Cumberland County), New Jersey
Census Tract	Census Tract 105, Cumberland County, New Jersey
County Subdivision	Greenwich township, Cumberland County, New Jersey
Region	Northeast Region
State	New Jersey
Division	Middle Atlantic Division
Block Group	Block Group 2, Census Tract 105, Cumberland County, New Jersey
County	Cumberland County, New Jersey
Metropolitan Statistical Area/Micropolitan Statistical Area Metro/Micro	Vineland-Millville-Bridgeton, NJ Metro Area
School District, Secondary	Cumberland Regional School District, New Jersey
Combined Statistical Area Metro/Micro	Philadelphia-Camden-Vineland, PA-NJ-DE-MD CSA
School District, Unified	Remainder of New Jersey, New Jersey
State Legislative District, Upper Chamber 2010	State Senate District 3 (2010), New Jersey
State Legislative District, Lower Chamber 2010	General Assembly District 3 (2010), New Jersey

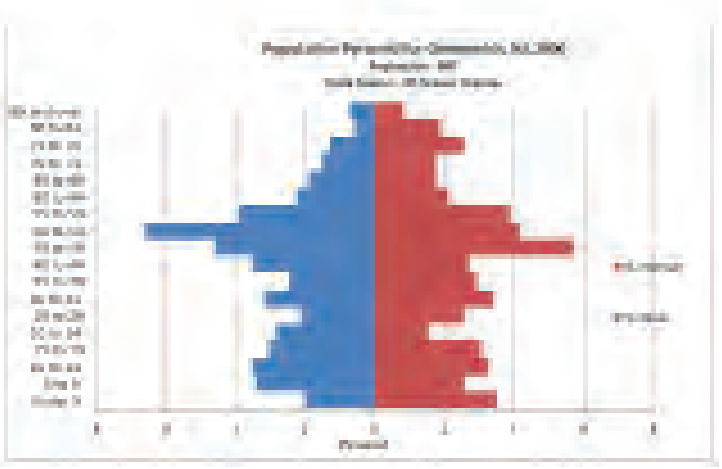
DEMOGRAPHICS

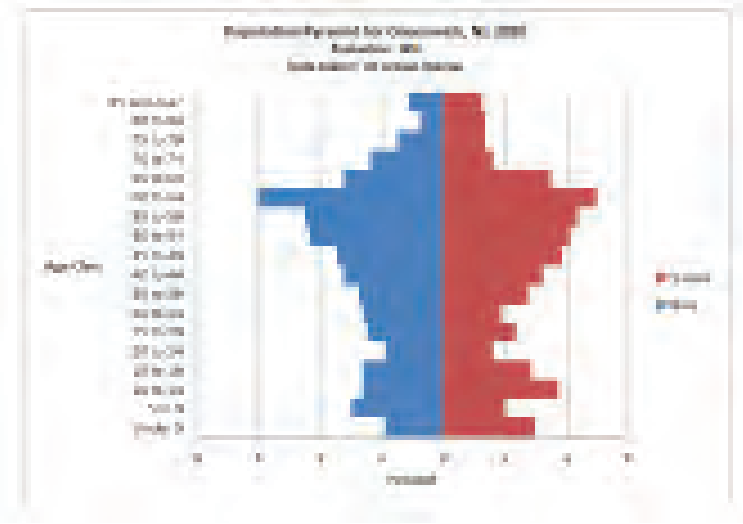
According to the 2010 US Census, Greenwich has a population of 804 people in 336 households, with 4 more males than females. The average household size is 2.39 and the average family size is 2.89, suggesting a large number of single person households. The median age is 47.7.

Over 90% percent of the population is White, a share of the population that has grown slightly between 2000 and 2010. Forty-two residents identify as being Black or African American alone or in combination with some other race, which is by far the largest non-white ethnicity. There were 24 American Indians and 21 people of Hispanic Origin. There was a small increase in the number of Asians and the number of Hispanics in Greenwich from 2000-10, but overall, Greenwich remains a predominantly White township.

There were 336 households in Greenwich in 2010, with an average household size of 2.39. 229 of those households were considered Family households, with an average size of 2.89. Only 16% of families in Greenwich were single parent, and only 30% of all families had children under 18. There were 89 single person households, 85 households with individuals under 18 years, and 107 Households with individuals 65 years and over.

The key factor influencing the future land use of the township appears to be the aging population. The median age has increased 10% in 10 years, households with residents under 18 has decreased 17% while households with residents over 65 has increased 16%. Non-family households and people living alone increased 25% and 32%, respectively, further suggesting unstable populations of aging singles. A set of population pyramids from 2000 and 2010 (see Population Pyramids) show an aging population traveling through middle age and reaching retirement age, suggesting that there is not significant migration in or out of Greenwich, but a significant amount of aging by existing residents. While these trends show that the population of Greenwich is aging, there is a lack of support services in Greenwich to support an aging population, including no physicians or hospitals, and no municipal police or a full-time Fire Department, and limited demand responsive transit service.





The assumptions taken from a decade of Census Data do not paint the full picture of the demographic future of Greenwich, so it is best to rely on population projections that extrapolate a future population from known current conditions. In 2007, the local Metropolitan Planning Organization, South Jersey Transportation Planning Organization (SJTPO), projected population for each of its planning counties, through 2030. It looked at historic trends, projections from other agencies, and job growth trends to project a growth of 10% for Cumberland County. This growth is not consistent with historic trends in Greenwich, however, which has lost 8.5% of its population since 1940 (population of 929). Since 2000, the population has decline from 839, nearly 4%, it is assumed mostly due to the aging population, with higher death and lower birth rate. One of the greatest reasons for decline in population in small towns is the loss of community service capacity. Although property taxes in Greenwich

continue to rise, there is no sewer, water, trash, police, or full-time fire service offered to the residents, so many feel unfairly burdened by taxes. However, the pressure from the projected increase in population in Cumberland County is expected to work to keep the population in Greenwich relatively stable.

ECONOMY

The 2009 County Business Patterns survey from the US Census department lists eight businesses within Greenwich; six of those have between one and four employees, one establishment has between five and nine employees, and one between 20-49 employees. There is one construction firm, one Retail trade (which is since closed), one firm classified as Administrative Support / Waste Management and Remediation Services, one Arts and Recreation firm, one Accommodation and Food Services firm, and two firms classified as Other. There is one Wholesale Trade firm, which is the largest in the Township.

According to the 2007 US Census of Agriculture, Zip Code 08323 has 28 Farm Operation, sixteen small farms with 1-49 acres, and twelve medium sized farms with 50-999 acres. 26 of the farms were classified as Crop farms, and two as Poultry farms. Six farms harvest wheat in 2007, five harvest vegetables in the open (not in greenhouses), two harvested barley, four harvested forage, hay & silage; eight harvested corn for silage; and six harvested soybeans. Fifteen farms had sales in grains, oilseeds, dry beans & dry peas, and ten has sales in horticulture (excluding cut trees & vegetable seeds & transplants).

HOUSING

Greenwich's land use policies and existing housing stock will have a significant impact on future land use. Although it is located in the highly populated mid-Atlantic region, Greenwich does not currently face high development pressure. Much of the land in Greenwich is zoned for agriculture, with six acre zoning or higher. A significant amount of that land is also in various agricultural preservation programs administered both by the State and by private NGOs. A full third of the township's land is publically held (much of this is undevelopable marsh and estuaries), and nearly half of the township's land is in flood plains (the flat bayside township has no steep slopes). Furthermore, the central residential district of Greenwich is on the National Register of Historic Places, with housing stock dating to the period of 1690-1730. These land use factors leave very little new space for development. In fact, it is unclear that there are more than a handful of parcels with road frontage, adequate land based on zoning, adequate land for a septic system and leach field, and no land preservation easements that would be available for new development. Additionally, many of the parcels in the residential district (most with 1 acre zoning), have historic houses on them, which require the means and knowledge to respect and maintain. These houses do, however, appeal more to retirees than young families.

Not all of the 2010 US Census data for housing has been released for Greenwich by the time of publication, but the Census data does show that there were 369 housing units, all but 33 being occupied. 84% percent of these are owner occupied. According to the 2000 Census, 95% percent of the housing units were single family detached, and nearly 60% of the housing stock was built before 1939. As a percentage of household income, nearly 40% of owners pay less than 15% for housing costs, but nearly 19% pay over 35%; as a measure of affordability this suggests that many households may have difficulty affording all their housing expenses.

According to a study by National Public Radio in October 2011, Cumberland County has been the worst hit all counties in New Jersey in the recent recession. One in 1,558 homes was foreclosed on in Cumberland County in October of 2011, the highest foreclosure rate in New Jersey. Cumberland County had an unemployment rate of 12.4% in September 2011, and the lowest median household income in the state in the 2010 census, at $49,312.[21]

Perhaps the most pressing issue for future development in Greenwich is the rising water table. As residents look to sell their homes with outdated septic systems, the properties do not have enough space for new systems, and therefore are not eligible for mortgages. This has happened to at least three houses (and the former Country Store), with account for 1% of the total buildings in the Township (there were 336 in 2010). This challenge begs the question of whether Greenwich actually has the land capacity to expand, or will it just remain as a shrinking agricultural community.

Stakeholders

The stakeholders that were identified in the Greenwich Studio project are individuals and constituencies that contribute, either voluntarily or involuntarily, to the management of cultural and natural resources in Greenwich, and are therefore its potential beneficiaries and/or risk-bearers.

The stakeholder identification process began after researching the history of the area, visiting the town and speaking with community leaders. Then, a list of all possible stakeholders was generated. In an effort to organize the list into a more concise and understandable document, the stakeholders were placed into groups that corresponded with their major interest in Greenwich. Four major groups were identified that categorized different types of stakeholders: Government, Cultural, Development and Environment. However, not all stakeholders were able to be categorized within one group. A few of the stakeholders that were identified had major interests in multiple categories. Due to the interconnection between stakeholders and the groups, a Venn diagram was created to demonstrate the differences and similarities.

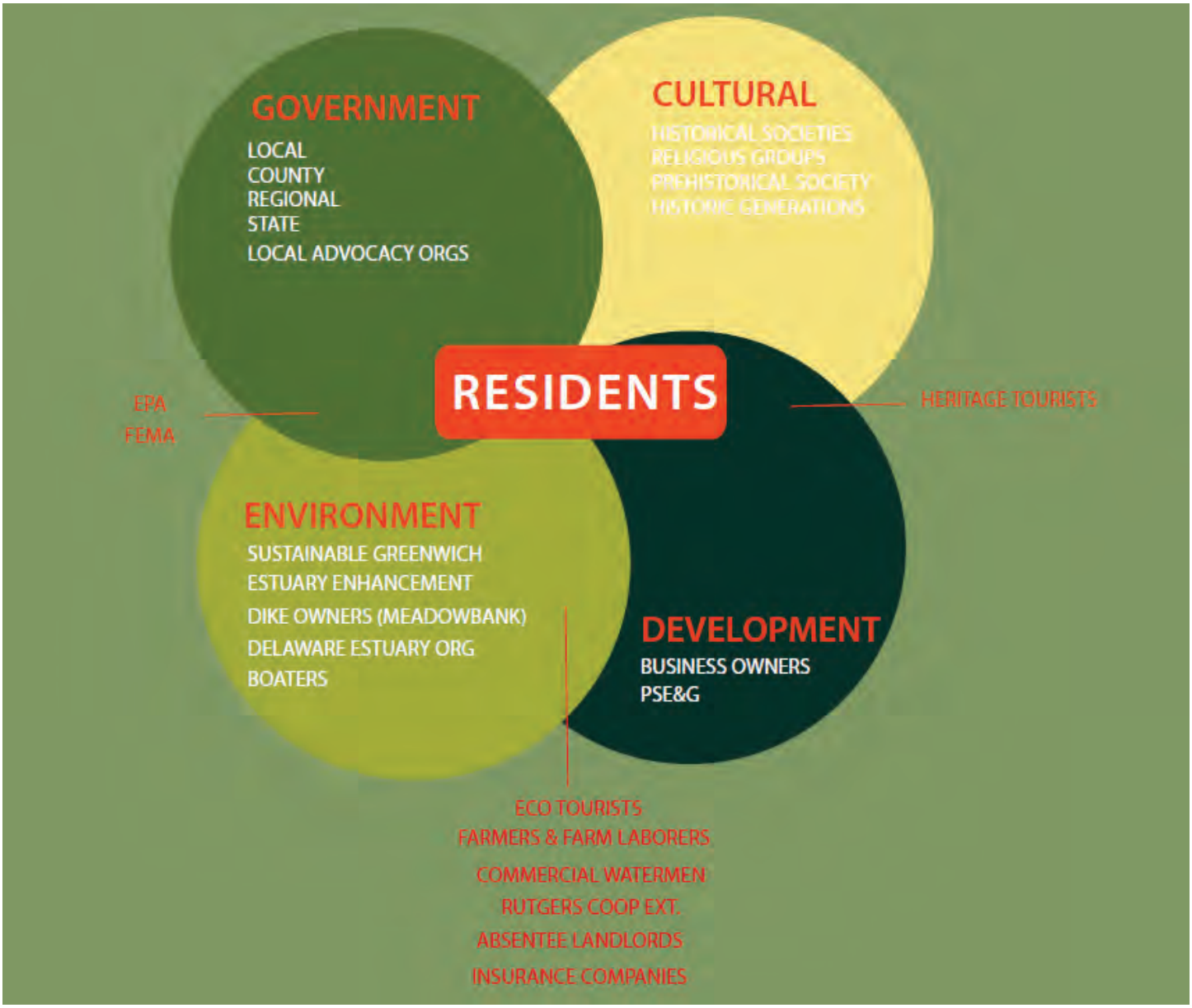
Stakeholders with an interest in the public management and maintenance of Greenwich were listed under the Government category. These entities include local, county and state government, and non-governmental advocacy organizations that were located either locally or regionally. Other governmental agencies have a balanced interest in both governance and the environment, such as the EPA and FEMA, and should were included in both the Government and Environment categories.

Stakeholders with an interest in the history and the material fabric of Greenwich were listed under the Cultural category. This group is comprised of historical societies and religious groups. Cultural heritage tourists in particular had a balanced interest between two categories. Not only were they invested in the history and material fabric of Greenwich, but they also depended on economic development for amenities, such as room and board, memorabilia, and food.

Stakeholders with an interest in the economic growth and increased commercial opportunities of the area were listed under the Development category. The constituents in this category are local and regional business owners and the Public Service Gas and Electric Company (PSG&E). Many of the other stakeholders listed above and below also have a vested interest in the economic development of Greenwich, but these are the two main stakeholders with a strong interest in development alone.

Stakeholders with an interest in the protection and management of the natural environment were listed under the Environment category. The groups and entities in this category are Sustainable Greenwich, Estuary Enhancement, levee owners, Delaware Estuary Organization, and boaters. Other stakeholders associated with the environment in Greenwich also had balanced interests in development. These groups include Eco tourists, farmers and farm laborers, commercial watermen, Rutgers Coop Ext., absentee landlords and insurance companies.

There is one group of stakeholders who are interested and invested in each of the four major categories: the Greenwich residents. They are involved in all aspects of government, infrastructure, cultural heritage management, economic development and environmental protection. They would also be the ultimate risk-bearers of any undertaking in the township that deals with the protection or preservation of cultural heritage. For this reason, they became the main stakeholder considered during the Greenwich Studio team's planning process.



Stakeholder Venn Diagram (Studio Greenwich Team)

Surveys

The Greenwich Studio team performed surveys of buildings and administered questionnaires to visitors at the Cumberland County Artisan Faire in order to better comprehend the residents and the historic fabric in Greenwich. The results from these surveys served as a base of knowledge to identify community interests and define aspects of the cultural landscape.

ARCHITECTURAL SURVEY

The architectural survey involved two visits to Greenwich and covered three areas of the township. On the first visit, the Buena Vista marina area was surveyed. The lower portion of Ye Greate Street and Springtown were then surveyed on the second visit. These three areas were targeted due to their unique housing stock and historical associations. Preparatory research provided the studio group with information regarding the colonial era structures, but showed a lack of information regarding the built heritage of later periods of Greenwich's growth that included the oyster industry and the activities of the Underground Railroad. The Studio team believed that the Buena Vista and Springtown areas were likely places to find extant examples of structures from those eras. The lower portion of the village was surveyed in order to better understand the historic core of Greenwich.

Two surveys were used simultaneously. The first focused on recording property and structural information, while the second recorded the condition and alterations to the buildings. Although the results from both surveys were different, they allowed the studio to gain a better understanding of the historic fabric and documentation of heritage in Greenwich. Also, each property surveyed was photographed.

At the marina, ten buildings were surveyed. Nine were residential and one was industrial. The industrial building is located within the marina and is associated with ship-maintenance or fishing. More buildings would have been surveyed if time allowed, however only this one could be completed. It was chosen for its authentic-looking materials and placement. The residential structures that were surveyed in this area were constructed in the late 19th century, primarily by employees of the Shillingsburg Oyster Company. Eight were occupied and five had exterior materials in good condition.

The surveys completed in Springtown revealed that the area was sparsely populated and contained more new houses than the other areas surveyed. Once a thriving population, Springtown decreased in population and many properties were left to disintegrate through neglect. Only a few properties remain that provide physical connection to the historic town and culture. A semi-circular, rusted chain-link fence at the corner of Springtown Avenue and Sheppard's Mill Road demarcate the hidden presence of old baseball diamond that has turned into a field of tall grass and moss.

Results from the survey of the lower portion of Ye Greate Street revealed that most structures were historic and in good condition. Many of the structures retain either authentic exterior materials or authentic-looking materials. However, a portion of the structures have been rehabilitated with modern materials such as vinyl siding and aluminum window frames. Most of the structures are of wood frame construction, others are of brick construction and two are made of stone.

STAKEHOLDERS SURVEY

The stakeholder questionnaire was administered at the Cumberland County Artisan Faire on September 24, 2011. Two different questionnaires were created: one to gather information from residents of Greenwich, and a second targeted at visitors from outside the township. The surveys were the same except for an extra question on the visitor survey. It asked the participant to identify where they had traveled from to come to the fair. The Greenwich Studio team operated a booth at the craft fair near the entrance and encouraged people entering the fairgrounds to participate in the survey. People stopped by to fill out questionnaires as they passed by doll making tables, potters, wicker-basket makers and the local loose-leaf tea distributer.

Although the sample of participants was over 50, the Studio team did not believe this to be a valid representation of the population of Greenwich. Many residents participated in the survey; however, the sample that did participate possibly does not accurately reflect the views of the rest of the population. Nevertheless, the results of the questionnaire revealed good information about popular activities and destinations within the township.

Sample survey forms are in Appendix B.

Character Areas

The National Park Service defines a cultural landscape as "a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values."[22]

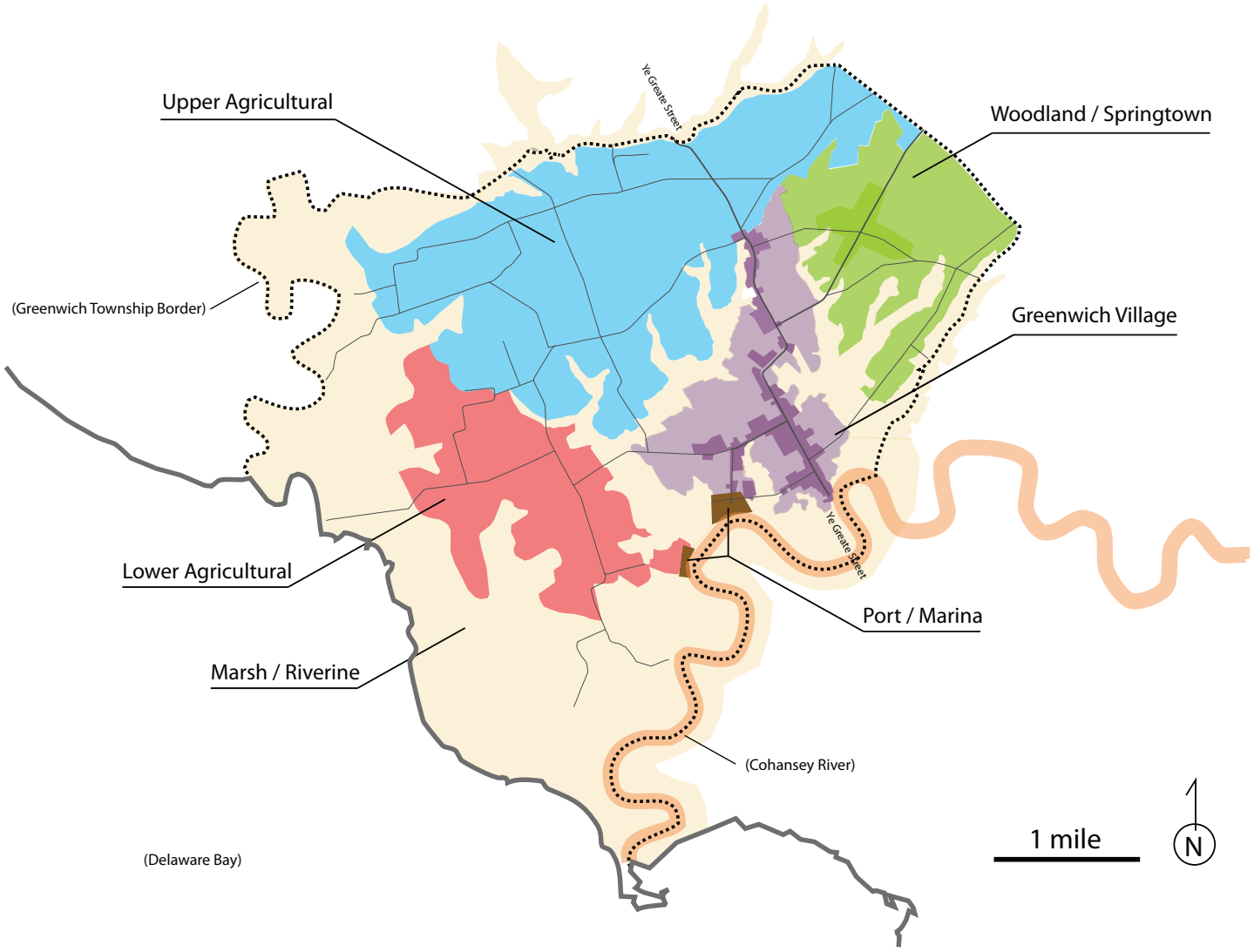
To understand a cultural landscape and define its significance, the Greenwich Studio eam used the National Park Services, Guidelines for Treatment of Cultural Landscapes.[23] The Guidelines suggest an assessment of the organizational elements of the landscape such as spatial organization and land patterns, followed by character-defining features such as topography, vegetation, circulation, water features, structures, site furnishings and objects.

By classifying these features and relationships, the landscape can be understood as an artifact, possessing evidence of evolving natural systems and human interventions over time.

We assessed the character defining elements of Greenwich and developed six distinct character areas. This process helped us better understand the relationships between various features and their connections to significance.

CONTEXT

Greenwich Township is located in Cumberland County, New Jersey. The township is bordered by four municipalities: Stow Creek Township to the north,



(Studio Greenwich Team)

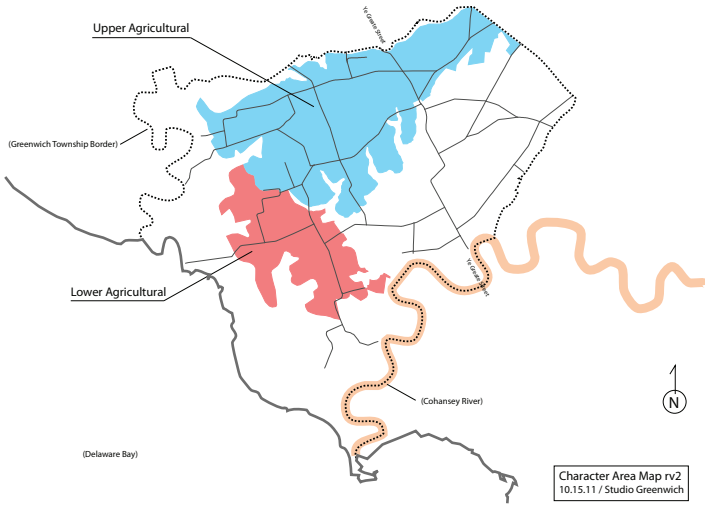
Hopewell Township to the east, Fairfield township to the south, and Alloways County Creek to the west located in Salem County. Several natural waterways border Greenwich, including the Cohansey River to the southeast, the Delaware Bay to the south and southwest and Stow creek to the west.[24]

Greenwich occupies 11,936 acres of 19 square miles, located in the Outer Coastal Plain, the southernmost of five provinces in New Jersey. The township has abundant prime farmland, although Outer Coastal Plain soils are generally regarded as less fertile than those in the Inner Coastal Plain. There are a few steep slopes located on Greenwich's northern border along Chestnut Run and Macanippuck Run, as well as a few hilly areas in the northeast part of the township. The vast majority of Greenwich is flat, with slopes of less than 10%. The south and west parts of the township are the flattest and have elevations between sea level and 30 feet.[25]

Greenwich's topography lends itself to long viewsheds of cultivated agricultural fields interspersed with traditional farmsteads, woodlots, and both fresh and saltwater wetlands. Greenwich's long history of agriculture creates the present legacy of rich agricultural farmland that surrounds the population centers of the township.

CHARACTER AREAS AND DEFINING FEATURES

UPPER AND LOWER AGRICULTURAL



Greenwich has two distinct agricultural areas. The upper agricultural zone begins at the northern end of the township extending south to the Head of Greenwich and west to Gum Tree Corner Road. This agricultural land has a slightly higher elevation than the lower agricultural land that surrounds Greenwich village, running west to the Bayside Tract.

The most distinguishing feature between the lower and upper agricultural area is the types of vegetation and crops that dominate each area. The lower agricultural fields are delineated by wetlands with low vegetation and small woody plants. Large swaths of vegetation composed of a variety of woody plants over 20' delineate the upper agricultural areas. The cultivated crops in the lower agricultural area are soybeans and corn with a few interspersed fields containing nursery stock, while the upper agricultural area consists of mostly fields of nursery stock and a few interspersed cornfields.

Spatial organization
Streams along with hedgerows of naturally occurring trees, shrubs, and grasses that have grown along lot lines, roads and wetlands dictate the spatial patterns of agricultural fields. Large farms line all of the roads between the entrance to the township, the Bayside Tract, and the Delaware Bay.

Vegetation

Agricultural land
Agricultural land is identified as cultivated fields, the majority of which contain soybeans, corn and nursery plants. Plots that contain soybeans and corn are typically larger than most plots with nursery plants. The variety of nursery plants includes coniferous and deciduous trees and shrubs.

Agricultural Wetlands
These "quasi-wetlands" tend to border natural wetlands or streams and are modified, former wetland areas that are under cultivation. These areas still exhibit evidence of soil saturation in aerial infrared photo surveys, but they do not support natural wetland vegetation. Instead they support soybeans and corn. [26]

Woodlands
Interspersed woodlands with vegetation consisting of oaks as the predominant species. Varieties include black, chestnut, red, scarlet, swamp white, pin oak and scrub oak. Other species include sweet gum and conifers, white pine, and Atlantic white cedar. Woodlands tend to be more prevalent in the upper agricultural area.

Wetlands
Wetlands occur in two distinct environments in the township: wide expanses of saltwater tidal marsh along the Bay shore and Cohansey river, and the thin linear strands of freshwater wetlands along the stream corridors.

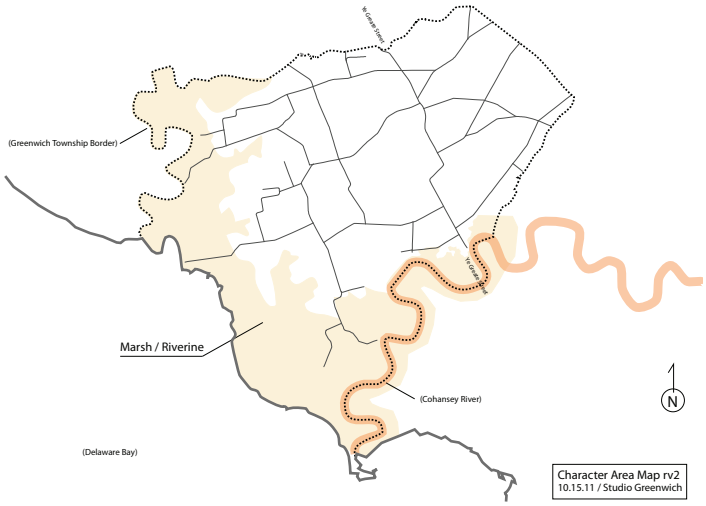
Wetlands vegetation includes salt hay, cord grass, giant foxtail, coast flatsedge, and cylindrical-headed bulrush, as well as invasive species such as Phragmites. [27]

Buildings

Farmsteads
The agricultural land is interspersed with traditional farmsteads. The farmhouses are characterized by their road setbacks and are surrounded by barns and farm architecture. These character areas are viewed along most of the streets flowing from the main populations centers. Rarely are these views disrupted by houses on small lots that do not fit into the general agricultural character of the area.

GREENWICH MARSH RIVERINE

The Greenwich Marsh and Riverine includes the Delaware Bay, the Cohansey River, salt water tidal marshes, fresh water wetlands, and deciduous wooded wetlands.



Cohansey River

The Cohansey River flows nearly 30 miles from eastern Salem County south to Bridgeton and west through Greenwich and empties into the Delaware Bay. There are many tributaries including Pine Mount Creek, Wheaton Run, Mill Creek and Mounce Creek. The entire Cohansey river watershed provides habitat for all kinds of wildlife.

Delaware Bay

Delaware Bay is a major estuary outlet of the Delaware River on the Northeast seaboard of the United States whose fresh water mixes for many miles with the waters of the Atlantic Ocean. It is 782 square miles (2,030 km2) in area.[28]

The bay is bordered by the State of New Jersey and the State of Delaware. It was the first site classified in the Western Hemisphere Shorebird Reserve Network. View sheds from much of the Bayside Tract include bay vistas, the Salem Nuclear Plant, and Delaware. [29]

Wetlands

Wetlands support unique ecosystems that serve as natural water filters and as incubators for many beneficial species.

The term "wetland" is applied to areas where water meets the soil surface and supports a particular biological community. The source of water for a wetland can be an estuary, a river, a stream, a lake edge, or groundwater that rises close to the land surface. Under normal circumstances, wetlands are those areas that support a prevalence of defined wetland plants on a wetland soil.[30]

Wetlands occur in two distinct environments in the township; wide expanses of saltwater tidal marsh along the

Bay shore and Cohansey river, and the thin linear strands of freshwater wetlands along the stream corridors.

Spatial organization

Most wetlands occur adjacent to the Delaware Bay in a swath of land ranging from a quarter mile to nearly two miles wide. The Cohansey River and its tributaries on Greenwich's southeast border are also surrounded by wetlands. Natural wetlands of all types cover 41% of Greenwich and total 4,843 acres, of which 3,294 acres are saline marshes. In addition to these saline tidal marshes, Greenwich contains a good deal of inland freshwater

wetlands. The next largest category of natural wetlands is deciduous wooded wetlands, which cover 836 acres in the township. [31]

Vegetation

Saltwater tidal marshes
The most dominant type of wetland in Greenwich is saline marshes with low vegetation, which cover 27% of Greenwich's total land.[32] Salt-water marshes support vegetation, including salt hay, cord grass, giant foxtail, coast flat sedge, and cylindrical-headed bulrush. These marshes also support invasive species, such as Phragmites where salinity is low.

Freshwater wetlands
Most freshwater wetlands running along stream corridors contain vegetation such as smartweed, wild rice, wild millet, cord grass, duckweed, and cattail and Phragmites.

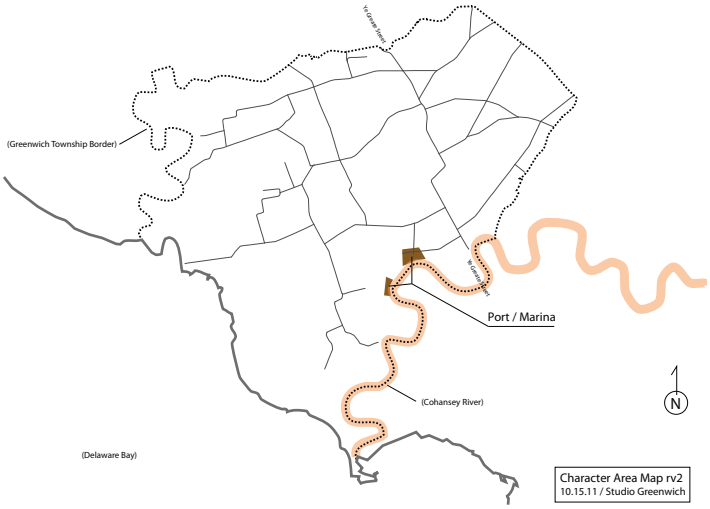
Deciduous wooded wetlands
Greenwich's deciduous wooded wetlands are concentrated in the northern part of the township, but are also found in low-lying areas along freshwater stream corridors. Deciduous wooded wetlands occupy 836 acres of Greenwich and support mixed hardwoods that flourish in low elevations. Some common trees in the area's deciduous wooded wetlands are red maple, black tupelo, ash, black willow, American beech, swamp white oak, willow oak, southern red oak, and sweet gum.[33]

MARINA/PORT/DOCK

Spatial Organization/ Topography
The intercoastal waterway passes by the Greenwich shoreline up the Delaware Bay to the Delaware Canal. The marinas located on the Cohansey River make the Township accessible by boat. Boat traffic using the marinas and the Cohansey River is predominantly local, consisting of fisherman and recreational boaters.

Hancock Harbor and the Greenwich Marina are situated on the Cohansey River within sight of each other, offering excellent views of the Cohansey and the opposite banks.

Vegetation
Phragmites is the predominant plant species on the edges of the dock. Other wetlands plants are visible across the Cohansey including a variety of wetlands grasses.



Buildings

Greenwich harbor (marina) is 50 acres and contains a series of warehouse buildings, several modern homes, a restaurant, and boats on dry dock and dock facilities.

At the entry of Greenwich Harbor there is an interpreted floating cabin from the late 1800s representing the significant sturgeon fishery developed near the mouth of Stowe Creek and the port that became known as Caviar. The town of Caviar no longer exists; the floating cabin is a surviving relic of it's past.

Delaware avenue is a small street consisting of five houses adjacent to the entry of the harbor. Although much of the fabric has been altered, these houses were built during the height of the oyster industry in 1860.

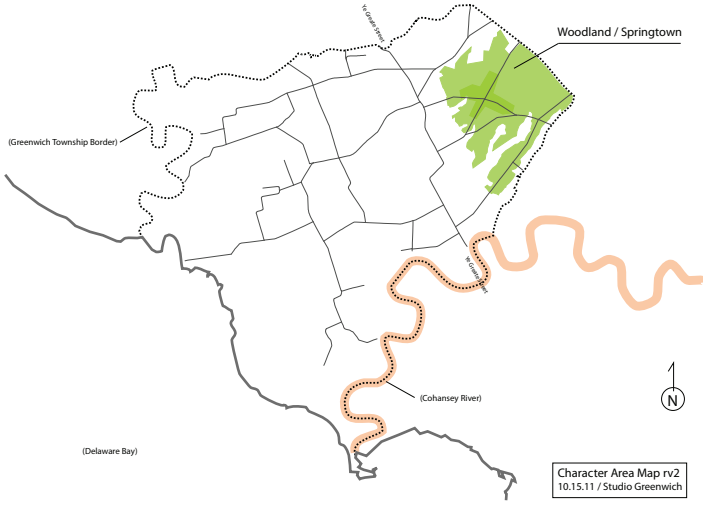
Hancock Harbor contains a few small 20th century buildings and many boats that are on dry dock.

SPRINGTOWN WOODLANDS

Spatial organization and topography
Springtown and the surrounding woodlands lie in the northeast portion of Greenwich Township. It centers on the intersection of County Roads 661 and 650 and has a higher and more varied topography than other character areas. It has a rural character and lacks pedestrian activity as the roads are used primarily for vehicular traffic.

Vegetation
Soils in the Springtown Woodlands are sandy and coniferous trees and large oaks mark the landscape. Agricultural fields include corn and nursery plants.

Buildings
Springtown consists of historic structures and modern buildings. Notable historic sites within the area include the AME Church and Cemetery. Springtown has historical significance as a settlement for African Americans who

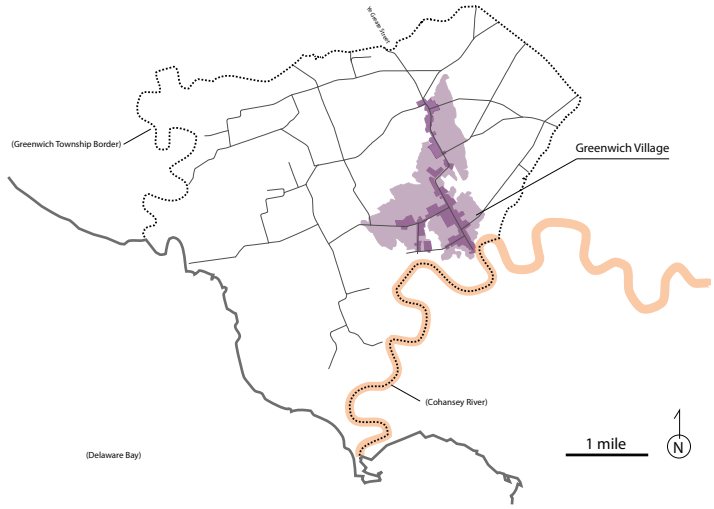


escaped slavery via the Underground Railroad. The area has a similar feel to the surrounding upper and lower agricultural character areas, but because of its historic significance and placement at a crossroads, it is identified as a separate character area. There are some abandoned and derelict structures and lots within this character area. It also appears that some historic structures have been heavily modified. It is possible that close inspection could reveal significant historic fabric disguised under modern sheathing and roofing.

GREENWICH VILLAGE AND VIEWSHED

Spatial organization and topography
Residential housing and a linear town design characterize the "village". The area is broken into two sections: the "Upper Village" and the "Lower Village". The Upper Village is located on the northern portion of Ye Greate Street and encompasses an area in the north-south direction from Springtown Road to Old Mill Road. The Lower Village sits south of the Upper Village and stretches from the Cohansey River to the Morris Goodwin School, located approximately 250 feet after the jog in Ye Great Street. While these two areas are separated by a short stretch of open landscape that consists of agricultural fields and very few built structures, the two areas share enough characteristics to be considered the same character area. The housing centers around Ye Greate Street and two secondary streets, Market Lane (also identified as County Road 641) and Bacons Neck Road (County Road 642). Large deciduous trees line the street with a setback of approximately ten feet on Ye Greate Street. The topography is flat and unvaried; there is, however, a slight increase in grade as one travels towards the upper village. The wide street allows for ample parking and safe pedestrian activity. There is virtually no thru-traffic in the village and the overall traffic volume is low.

The perimeter of the character area is delineated by a tree line that separates this character area from the adjacent



"upper agricultural" and "lower agricultural" character areas. This tree line serves a buffer between the village and surrounding agricultural industry, although the two areas are linked historically by property ownership and economy. The area is relatively peaceful with strong historical character.

Vegetation
Ye Greate Street is lined in the upper and lower village with large trees that include sycamores, oaks and maples. Some of these trees are over two hundred years old and contribute significantly to the village setting.

Buildings
The structures are timber or masonry and are of one to two stories in height. The majority of structures contain original historic fabric from the 17th, 18th, 19th, and 20th centuries and remain in good and usable condition. Aside from residential use, there are other single-purpose structures including a post office, meeting house, municipal building, historic museum, maritime museum and archaeological museum. The structures are oriented towards the road on narrow lots that stretch behind the buildings, with a viewshed that terminates at the aforementioned tree line.

CONCLUSION

The Greenwich Studio carefully assessed all of the character areas in Greenwich Township. We then worked as a team to define the project area that could most benefit from a preservation plan.

The Greenwich studio chose to focus preservation planning on the historic village and the surrounding view shed based on the following factors:

-most of the historic fabric is concentrated in the village

-the village is under significant threats from natural hazards

-the majority of the population of Greenwich lives in Greenwich and the Head of Greenwich

A preservation plan could provide the most benefits to this character area.

Greenwich Values

The studio team utilized a values-based preservation approach to understand Greenwich's significance. A values-based approach aims to move beyond traditional ideas of why we preserve what we preserve, in order to gain a more complete and holistic understanding of what is valuable about a place. Instead of focusing on traditional topics such as historic and archaeology, the values-based approach is executed by examining social, cultural and economic values as well as more traditional values. The studio team began with this expanded group of values, but then branched out even further to incorporate natural, educational, and religious values, in order capture all the values that Greenwich possesses. The final list of values, seen below, was compiled by the studio team and aided in articulating what is significant and worthy of preservation in Greenwich.

ECONOMIC
Maritime activities
Agricultural activities

EDUCATIONAL
Historical Museums
Community School
Preserved Farmland

ARCHAEOLOGICAL
Native American
Colonial

RELIGIOUS / SPIRITUAL
Quaker
Presbyterian
AME

HISTORIC
Colonial Structures
Preserved Historic Farmland
Town Layout
19th and early 20th century structures
Underground Railroad
Tea Burning
Port of entry

SOCIAL
Traditional
Place identity
Community identity

NATURAL
Water (estuary / river / bay / creeks / marshes)
Diverse fauna
Open space
Flat topography

Statement of Significance

Over a period of more than 300 years Greenwich, NJ has maintained its historic character as a colonial port town, retaining the relationship between the historic village and its natural and agricultural surroundings with limited modern development. To this day it retains its historic rural atmosphere in the face of significant development pressure in southern New Jersey. Its retention of character is evident through the prominence of historic Ye Greate Street as the village's main street, the extant colonial timber frame and masonry structures, and the contemporary agricultural and maritime activities, all of which date back to the 17th century founding of the settlement. These elements have survived due to their continued active use within a natural setting that has supported the community since John Fenwick's colonial founding of Greenwich. This example of a surviving rural and historic community is significant as a lens into a period of history in the United States that is rarely seen today.

THE VILLAGE

The settlement of Greenwich is significant to the colonial history of the United States. The land that would become Greenwich was purchased by John Fenwick in 1675.[34] Fenwick arrived in New Jersey that same year and began planning the development of Greenwich along with a sister settlement in nearby Salem.[35] His settlement of the area pre-dates that of Philadelphia and led the way for the establshment of other towns along this section of the Atlantic coast. Fenwick died in 1683, a year before the first lots were sold on Ye Greate Street, and though he never got to see Greenwich grow and prosper, his settlement was a success.[36] Greenwich became an official port of trade in 1687 and by the mid-1700s was a thriving port town.[37] The wide layout of Ye Greate Street, expanding from 80 to 100 feet as it approaches the Cohansey River, was designed to accommodate the maritime trade that helped Greenwich to become a thriving settlement.[38] This wide main road can still be seen clearly on the ground and in aerial photographs today.

The width of Ye Greate Street is just one surviving aspect of the colonial town layout. The same town lots that were sold in 1684 are also still evident on the ground today. This is especially clear where a jog exists in a middle portion of Ye Greate Street. There is no clear topographic evidence for why a jog would have been necessary, but the jog makes more sense when one realizes that this element of the street actually dates back Fenwick's colonial design of sixteen-acre town lots along Ye Greate Street39 The layout of these lots shifted at this point in the street creating this one aberration in an otherwise neat and linear main street.[40] Though the lot layouts have changed somewhat over time, the jog makes the dimension and prevalence of these historic lots clear and visible today.

Many of the colonial timber frame structures that existed on these lots are also still in use as homes today.[41] In her research on historic timber frame structures, historian Joan Berkey notes that proliferation of these buildings found today in Cumberland County, NJ "are significant as a collection of historic vernacular structures that represent a construction method that was once common in New Jersey, but of which few have survived."[42] Greenwich's timber frame structures form an essential element of this collection. Due to the fragile nature of timber and the speed with which many of these early settlement buildings were constructed, it is rare to find these early settlers' structures standing on the ground today, let alone in active use.[43] The continued use of these early colonial buildings as homes is evident in the physical fabric. It can be seen through the gradual changes and additions the buildings have acquired over time. Many have had additions in both timber and brick and some have gone through alterations to make the homes feel more contemporary.[44] Still, it is evident in the bones of the structure that the original 17th and 18th century timber framing is still in use and was never completely removed but simply built upon.[45] This continuity of use was essential to keep these colonial structures cared for and in good condition over time.

The village played an active role in the American Revolution. In December of 1774, one year after the Boston Tea Party took place, 40 members of the Greenwich community raided the basement of a British sympathizer who had been storing a shipment of British tea.[46] The tea was taken to Greenwich's Market Square where it was burned in protest.[47] The event marks an important point in Greenwich's colonial history, and is a point of pride for the town today. A monument to the event stands in the historic Market Square on Ye Greate Street.

Another important element of Fenwick's design for

Greenwich that is still evident in the village today is his Quaker belief system. Fenwick was a Quaker and he founded his settlements based on this belief.[48] The brick meetinghouse in Greenwich Village was constructed in 1737 and is still in active use by the Quaker community in Greenwich to this day.[49] The Quaker belief system also allowed for religious tolerance, and therefore a great diversity of religious practice came to the area as Greenwich expanded. In 1707 the Head of Greenwich, an area to the north of the jog in Ye Greate Street, was settled by a group of Presbyterians.[50] The historic Presbyterian church founded by this community is also still in active use today. The lasting effect of this religious tolerance and Quaker influence is seen in the settlement of Springtown in the early 19th century. Springtown was an early African-American community and was located to the east of Head of Greenwich. The community built the Bethel AME Church that still stands, in active use, in the center of Springtown today.

AGRICULTURAL AND MARITIME ACTIVITIES

Continuity of use and farmland conservation has helped preserve the agricultural lands surrounding Greenwich farmland that has supported the village since its founding. The development of farmsteads and the development of the village took place in tandem. Fenwick's design included farm parcels as large as 250 acres to the east and west of Ye Greate Street.[51] Included in the purchase price of these farm lots was a 16 acre village lot.[52] Many of the colonial inhabitants who owned farms moved to their village lots for the duration of the winter.[53] During the colonial period 85% of the population of Greenwich lived on farms. Improvements in agricultural practices led to an increase of agricultural production; products from Greenwich were distributed as far away as Philadelphia because of its accessibility to transportation first by boat and later by train, while technological advancements in canning and freezing allowed food production to continue as a relatively stable economic base in later centuries. Today over 2,500 acres of Greenwich's farmland is protected by conservation easements, which today helps protect this continuity between village and surrounding farmland.

In addition to agriculture, Greenwich Township also depended on maritime industries such as shipbuilding, harvesting of oyster and sturgeon and production of salt hay. Greenwich's history has a strong link to the Cohansey River and Delaware Bay that mark its boundaries to the east and south. Ease of access to water, and therefore also to goods, made it an attractive location for Fenwick's colonial village. Fenwick's port sat at the base of Ye Greate Street and became the official port of entry in 1687. Later the main port was moved to the Greenwich piers to accommodate the increase in fishing industry activities, and the completion of the rail line allowed for the efficient transport of goods to the urban centers of Philadelphia and Wilmington. While the commercial fishing industry has decreased in recent years, Greenwich is an active center for recreational fishing and the commercial harvesting of crabs.

THE NATURAL SETTING

Fenwick chose this location for the village because of the strengths of its location and natural wealth. Greenwich is sited on the Cohansey River, which provided easy access to the Delaware Bay, the Atlantic Coast, and to Europe. Fenwick had his pick of locations along the Cohansey, but Greenwich's flat topography was an added benefit for a village that was founded, in part, with agricultural activities in mind. Greenwich's natural setting was therefore critical both in shaping the form of the village, as well the agricultural and maritime activities that supported the village economically.

Greenwich's location along the Delaware Bay, together with Greenwich's Quaker traditions, helped Greenwich become the point of entry in New Jersey for an important Underground Railroad route.[54] This route helped to carry many slaves across the Delaware Bay, from the South to freedom in the North. The village's strong belief in emancipation due to its Quaker ideals helped make this possible, but it is also important that Greenwich was located on the water in close proximity to Maryland and Delaware. The port and the wooded lands just beyond it created an ideal location to help slaves reach freedom and avoid capture.

Today Greenwich's setting is still the same, though what it means for the town has become quite different. What was once a highly active colonial port town is now a quiet village along the highly populated East Coast. Greenwich's current isolated nature has helped it retain much of its rural colonial character. Slow growth over time has allowed many of the colonial houses and farms to remain intact and in active use, while Greenwich's setting and location has protected

it from the rampant development that has built up most of New Jersey's farmlands and natural areas.

CONCLUSION

Since Greenwich's founding, continuity of use has helped to preserve the history of the township. A lot can be learned regarding the history of colonial expansion in the United States through Greenwich's existing fabric, farmland, and village layout. It is rare to have even one of these elements in such a well-preserved state on the ground today, and it is through continued use and slow, gradual growth that this preservation has been made possible. These existing elements make Greenwich exceptionally significant, and should continue to be supported and protected in the future.

Character Defining Elements

Character defining elements are the physically tangible elements of Greenwich's significance. The identification of Greenwich's character defining elements was aided by referencing the narrative Statement of Significance, which was used to help refine the list below.

YE GREATE STREET

The village's main street is a remnant of Fenwick's colonial village plan still clearly evident on the ground today.

AGRICULTURAL LANDS

The development of the village and the surrounding farmlands happened simultaneously under Fenwick's plans for Greenwich. The farmland is integral to the village's historic viewshed which has been maintained over time through continuous, active use.

COLONIAL TIMBER FRAME STRUCTURES

These buildings are physical evidence of the construction techniques employed by the early settlers of the United States.

THE MARINA

Maritime industries have been a key component of Greenwich's economy since Fenwick's founding. The locations of the marinas have changed and expanded over time, but their continued presence is an important element of Greenwich's past and present.

TEA BURNING MONUMENT

The monument is a testimony to Greenwich's active role in the fight for our country's independence.

Pine Mount Levee Breach (South Jersey RC&D Council)

LEVEES

The levees are not an obvious visual mark on the landscape of Greenwich, but they are important historical physical interventions in the landscape that have made agricultural activities possible in such close proximity to saltwater.

HISTORIC RELIGIOUS STRUCTURES

The Quaker Meetinghouse, Presbyterian Church, and AME Church are all historic religious structures that are a physical manifestation of the religious freedom that came directly out of the Quaker belief system that Fenwick founded the town upon.

SITING ON THE COHANSEY RIVER

The water is also an important element of the village's viewshed. Ye Greate Street was designed to connect the village to the water and the river was integral to Fenwick's siting of the village in this location.

FLAT TOPOGRAPHY

Flat topography is another clear element of the village's viewshed and an element of what made this land in particular so appealing to Fenwick for the planning of a village based around farm production.

Issues

There are a host of internal and external issues in Greenwich that any preservation plan for Greenwich will need to acknowledge and consider. At first glance these issues are exceedingly complex, as the cultural landscape approach necessitates a holistic consideration of natural and cultural issues far beyond the scope of the traditional historic preservation plan. A product of primary and secondary source research, field observations, interviews, survey, and analysis that consumed the first phase of the studio's work, we distilled this complexity, as presented here, into five categories. This gave the studio a full picture of the historical and contemporary context within which a new preservation plan for Greenwich will work.

WATER

Greenwich was established near water because this was advantageous for trade, but its physical location also makes the village vulnerable to a variety of water-borne threats like flooding and storm surge. Greenwich is very low in elevation, only a few feet above sea level. It is only a few miles from the Delaware Bay, and the village is surrounded by a network of lower-lying marshland and is adjacent to the tiday Cohansey River.

The construction of several dikes in the Township the 18th and 19th centuries has served to protect the village and its fresh water supply while creating additional land for cultivation, but this infrastructure is aging and in danger of widespread failure. The breech of the Pine Mount levee in 1991 means that the area behind that dike is now open to the Cohansey, and is being naturally reestablished as a salt marsh. Although it is debatable whether allowing this marsh to 'return to nature', so to speak, will increase or decrease the Township's susceptibility to flooding, this reintroduction of salt water inland is a potential threat to the Township's drinking water. The Township's (already naturally high) water table has been rising in recent decades due to sea level rise, which affects the prevalence of lowland flooding and the performance of septic systems. These threats, combined with the potential for a much higher level of sea level rise due to greenhouse gas emissions, make it likely that these threats will only be exacerbated in the future.

NATURAL RESOURCES

The land in Greenwich is very productive agriculturally; the rich soil and mild climate supports two growing seasons per year, which has made agriculture the backbone of the Township's economy since the 18th century. Its beaches and wetlands help protect inland areas from storm surge, while providing critical habitats for plant and animal life. These same attributes also reinforce the township as a stop of international importance for birds migrating along the Atlantic Flyway. The productivity of the landscape for both human and natural systems is an important part of what makes Greenwich unique, and is innately part of its character.

LAND USE

The issue of land use, and the means with which Greenwich residents have extracted a living from their productive landscape, is another important aspect of its history and its future. Today's agricultural landscape represents a direct link to the original founding of Greenwich. While this land has been farmed continuously for over 300 years, the types of crops and other products produced by the Township's farmers has changed throughout the centuries. Starting from diversified, subsistence-based farming, the Township's farmers transitioned to the production of vegetables and poultry in the 19th Century, row crops such as corn and soybeans in the 20th Century, and most recently to nursery plants and sod for landscaping in the 21st Century. Cumberland County has the most productive farms in New Jersey, with an agricultural economy valued at over 2 billion dollars. To support this industry the county's Farmland Preservation Program is a tax-funed program that purchases conservation easements on farmland to protect it from development, ensuring its viability for agricultural use in perpetuity. This program is very active in the Township, with over 2,000 acres under permanent protection as of 2011.

Greenwich also a long-standing tradition harvesting the bounty of the Delaware Bay, with oyster, sturgeon, weakfish, and crabbing industries waxing and waning in successive waves of boom and bust due to overexploitation. Although these industries are today largely morbund, if they can in the future be managed sustainably, the inherent natural

abundance of the waters surrounding Greenwich have the potential to huge boon to the local economy.

ECONOMICS

As a rural community in a very productive landscape, Greenwich's economy is unsurprisingly dominated by agriculture. While this industry is highly valuable, it is very labor intensive with small profit margins, and does not necessarily generate high levels of local employment. While the county is resource rich, in contemporary times it is unfortunately still cash poor. Cumberland County is the poorest county in New Jersey, and the Township has few financial resources or is able to offer much in terms of municipal services, even though its property taxes are, relatively speaking, very high. An influx of relatively well-off professionals to Greenwich in recent decades has brought more personal wealth and energy to the community, but these people must by necessity commute to jobs outside the Township. Although its population is stable, the number of retail establishments in Greenwich in the past 30 years has gone from four to none, with no place left in the Township to buy basic necessities. This loss of community space has the potential to affect social cohesion in the village, as well as a drain on already low incomes, due to the time and expense required to drive to nearby cities in order to buy food and other consumer goods.

PRESERVATION

By any measure Greenwich is extremely well preserved. A large majority of its land area, either through the Bayside Tract or the Farmland Preservation Program, is permanently protected from development. Thee Township's built heritage preservation approach is, as a small community, one that emphases consensus and informality, rather than regulation. There is not a high rate of change in Greenwich so this approach generally works very well, but considering the limited financial means of many Township residents, together with the high cost of dealing with potential future threats like climate change, the current preservation framework may need to be revisited. Likewise the National Register nomination currently in place for the village is outdated. Many of its entries are now considered inaccurate, while its emphasis on its First Period architecture, together with its focus just on the village, ignores the importance both of the landscape and the other periods of significance in the Township

SWOT Analysis

In an effort to move toward the creation of a Preservation Plan and Approach, the Greenwich Studio team performed a SWOT analysis. A SWOT analysis helps to synthesize data by listing and examining Greenwich's strengths, weaknesses, opportunities, and threats. From our findings, we voted anonymously on each category in order to identify what we as a group considered the most important and most challenging. The results were then applied to the devising of our Preservation Plan. The descriptions below elaborate and summarize the Greenwich Studio team's SWOT results.

STRENGTHS

The primary strengths identified include Greenwich's historic integrity, continuity of use, and concerned citizens.

As an historic colonial town that predates prized historic cities such as Philadelphia, Greenwich maintains a high level of national historic importance. That much of its historic fabric remains intact substantiates its historic integrity.

Greenwich's built environment has grown and expanded for over three centuries, and many of these historic structures remain in use to this day. Greenwich residents have gone to great lengths to act as responsible stewards of their historic homes and municipal buildings, and as such, Greenwich's existing fabric has maintained a high level of historic integrity.

WEAKNESSES

The primary weaknesses identified include Greenwich's high taxes, the cash-poor nature of Cumberland County, and the lack of local businesses in Greenwich.

Almost all Greenwich residents, when asked what they would change about their town, commented on the remarkably high taxes they pay in exchange for the minimal municipal services they receive—for example, there is no municipal trash pick-up and police are contracted out to a neighboring municipality who do not patrol the area but rather only come when called. Furthermore, Cumberland County is the poorest county in the state of New Jersey and therefore has limited resources with which to aid Greenwich.

Finally, Greenwich has few local businesses to serve its residents. The general store that provided daily necessities such as milk and morning coffee closed in early 2011, leaving Greenwich residents with a seven-mile drive to the nearest town for basic goods.

OPPORTUNITIES

The primary opportunities identified include restoring Greenwich's ecological health, creating small businesses, and allowing for development while maintaining the township's integrity.

Due to significant land use protections, there are large areas prime for habitat restoration coupled with the civic will to do so. Habitat restoration could include restoring Greenwich's deteriorated salt marsh and oyster beds.

Sustaining Greenwich for years into the future necessitates new development that is sensitive to the historic fabric. In order to allow for new development, however, the township must first modify its zoning ordinance. Upon these modifications, Greenwich could accommodate more housing, which in turn could support more small businesses.

In a similar vein, Greenwich has many assets that could attract regional tourists seeking respite in a rural and historic landscape. With the creation of small businesses, such as a bed and breakfast or a general store, Greenwich could accommodate tourists who would help support the local economy.

THREATS

The Greenwich Studio team identified seal level rise, too much protected land, and the lack of a holistic preservation plan as the primary threats facing Greenwich's future.

Climate change and sea-level rise are issues over which Greenwich Township has little control, but it is within the Township's purview to take precautionary measures in

the event of large-scale flooding. Currently, Greenwich's breached levees do little to protect the Township in the event of such natural disasters.

In an effort to maintain Greenwich's agricultural landscape, much of the farmland in the Township is protected under the New Jersey Farmland Preservation Program. The extent to which these areas are protected, however, has grown so large in scope and therefore leaves little available land for new development and use.

Finally, Greenwich Township lacks a holistic preservation plan to address Greenwich as a cultural landscape. Though aspects of the Greenwich cultural landscape are protected—the built heritage is listed on the National Register of Historic Places and protected through local zoning, in addition to the aforementioned protected farmland—an all-encompassing preservation plan that addresses these issues as a whole is needed to bring Greenwich into the future.

CONCLUSION

An analysis of these findings revealed the complexity of Greenwich's cultural landscape. In order to synthesize and address our findings, we took a step back to identify their drivers. We found that each strength, opportunity, weakness, and threat listed corresponds to one or more of the following drivers: water, legislation, economics, ecology, and history. These drivers in combination with our SWOT Analysis results formed the means through which we devised our Preservation Plan.

	ADVANTAGES	DISADVANTAGES
INTERNAL	**Strengths** Concerned citizens Protection of place Continuity of use Wildlife Historic integrity High level of national historic importance Physical beauty	**Weaknesses** High taxes Septic field issues Cash-poor county Few local businesses
EXTERNAL	**Opportunities** Well-managed tourism Restore ecological health Direct-to-market agriculture Small business creation Inclusion of alternate historical themes Development while maintaining integrity	**Threats** Sea level rise Levee issues Too much protected farmland Rising taxes for low level of services Lack of holistic preservation/ conservation plan

Preservation Approach

The preservation approach of the Greenwich studio is a direct product of our understanding of the township's historical and contemporary significance, its values, and our modes of analyses that we used to synthesize this research. As a result, the approach that the studio has adopted is not a generalized or traditional one, but rather takes the idea of the cultural landscape to embrace all the relevant historical, environmental, and regulatory factors driving change through the whole township (and not just to the historic built environment), to enable our plan to comprehensively engage with all the local and global issues that have an impact upon the long-term health of the township. As a guiding philosophy, this approach coordinates a discreet set of policies, interventions, and recommendations that forms the core of this preservation plan. What follows is a short discussion of the process the studio undertook to formulate its approach, followed by a deeper articulation of why the approach we have chosen is the most appropriate for its time and place.

Our process began by linking our research-based understanding of Greenwich and its history, its evolution, its past and present social, economic, demographic, and natural conditions to the drivers of change that our SWOT analysis generated. The SWOT analysis distilled for the group what our preservation plan should work to maintain, introduce, improve, and mitigate. The results of this process enabled us to articulate the five core drivers of change within the township which, to reiterate as stated above, are: 1) Water 2) History 3) Economy 4) Ecology 5) Legislative.

With the five core drivers in mind, we then considered these through the lens of the cultural landscape approach, and its holistic methodology that considers both the human-made and natural components of a landscape, and how they have changed over time; these elements are either in sympathy or in conflict to varying degrees, but the fundamental premise of this approach is that nature and culture are both ever present, and always changing, in a landscape. The idea of cultural landscape is little known but not new; the approach is part of the nation's preservation framework, and the National Park Service actively maintains working definitions and practices with regards to the preservation of cultural landscapes. Under the rubric of the NPS Greenwich Township is a historic vernacular landscape, which it defines as

> "…a landscape that evolved through use by the people whose activities or occupancy shaped that landscape. Through social or cultural attitudes of…a community, the landscape reflects the physical, biological, and cultural character of those everyday lives"[55]

Thus the preservation approach of the Greenwich Studio must necessarily address a panoply of factors outside the normal scope of cultural heritage conservation, and its traditional focus on built fabric. In a natural and working agricultural landscape such as Greenwich, our studio by necessity needed an approach that could effectively embrace issues such as continuity of use, economic vitality, population loss, biodiversity, and incipient and active environmental changes, just to name a few, that have, or will have, a tangible impact upon the future of the township. With these five drivers and a methodology in hand, we then turned to linking drivers to specific actions, in order to begin thinking about how to address the specific threats to Greenwich in a viable, tangible way.

We began this next phase by thinking strategically about what actions could address the core drivers of change in Greenwich, drawing lessons from our comparables research and from preservation practice. In order to organize our thinking we crafted lists of interventions based upon four different approaches, which allowed us to envision the outcomes and effectiveness of each approach, from which would grow our final approach.

We began by considering a traditional preservation planning approach, which would focus on recording and preserving the material integrity of the built historic resources of the village. A focus on documentation and recording would provide a precise understanding of what resources exist in the village and assessing what is under threat, with the outcome being a body of knowledge that could be used to draft a risk management plan and inform a revision or expansion of the National Register nomination for Greenwich.

We then considered a community and economic development approach, which would be crafted to support the underlying social and economic factors (stemming population loss, sustainable economic development) that can foster a bottom-up preservation ethic. This approach is premised on the idea that if the community and its residents

have more financial resources and are better connected and coordinated, the community will be better able to respond to threats in the future.

We next considered a nature-based approach, which would focus on the Township's natural environment, and considered how addressing issues like ecological health, biodiversity, and environmental threats can inform the larger preservation picture. This approach has special relevance to natural disaster risk management, as well as the economic impact of unsustainable exploitation of natural systems for food and aquaculture production.

Lastly, we created a fourth approach that balanced all three above approaches equally. This exercise revealed the potential for symbiosis between the different approaches (for example, if restoring wetlands can help protect the historic village fabric by mitigating storm surge). Exploring this approach gave us a base for understanding the complexity of preservation at the landscape level, but also its many opportunities, and reinforced that nature, built heritage, and economy cannot be considered mutually exclusive.

Now armed with a long list of potential interventions, we filtered these by holistically considering several additional criteria. Besides considering their general applicability to the priority character area of the village of Greenwich and the historic agricultural lands that surround it, we also weighed the potential interventions with a strategic-level view of continuity and change in Greenwich over the past 300 + years, together with a reappraisal of the strengths and weaknesses of the preservation approach that is currently practiced within the Township.

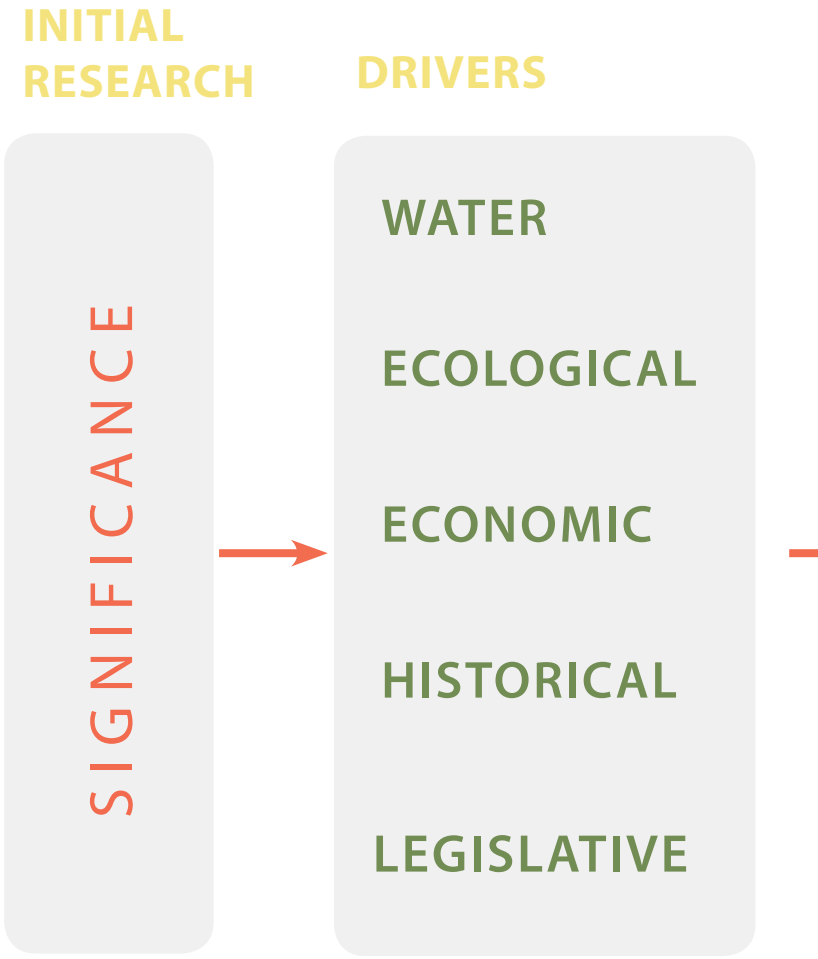
Generally speaking, we believe that current preservation approach in Greenwich to be strong, but the fact that the existing National Regional nomination applies most directly to the first-period architecture of the village, and does not apply to the landscape or other historically significant structures or periods, represents an outdated preservation approach that should be revisited. On matters related to historic fabric, the Township planning board prefers to keep things informal, rather than stringently enforcing blanket preservation codes that can potentially be expensive and/or alienating for some community members. Our interviews and field research revealed an active and concerned body of citizens who value the historic village and rich natural and agricultural values that the landscape fosters, but while the Township as a whole is resource rich, it is cash poor. Cumberland County is the poorest county in New Jersey, so while there are active government and private bodies working towards the interest of preservation in the Township, the local government and the population as a whole lacks both the financial and organizational resources to address larger-scale, systemic threats like loss of homes through abandonment, levee failure, sea level rise, and a rising water table. Thus, while the will and the organization capacity exists to effectively deal with smaller-scale issues, this very significant core strength of the community will need to be supported by additional resources in order to deal with larger-scale issues that threaten the long-term survival of the village.

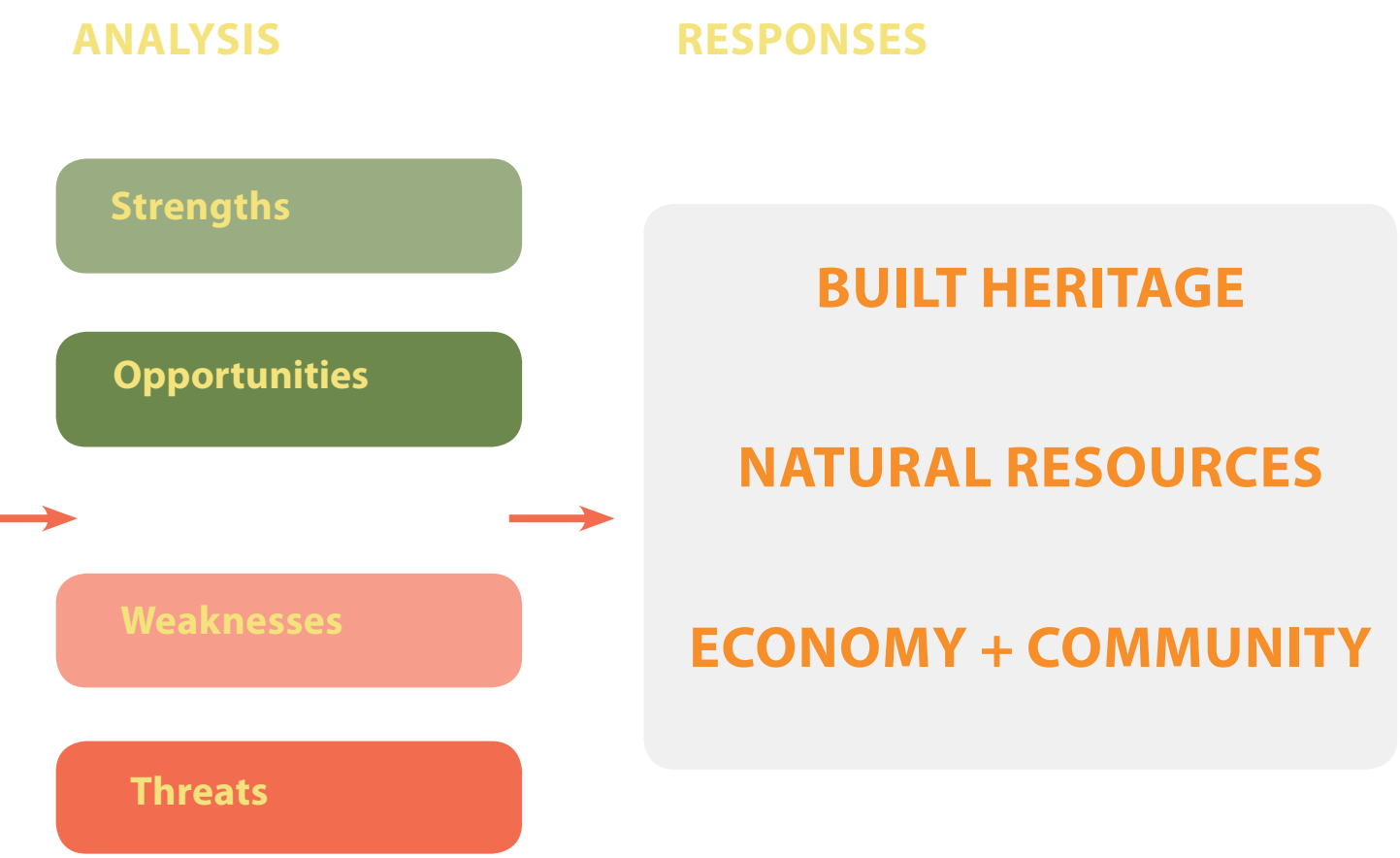
In weighing potential interventions we also considered the power of continuity in this landscape, and the significance of the cultural and economic practices that have waxed and waned over the past three centuries. Greenwich Township is blessed with incredibly natural wealth, but its productivity has been greatly abused, and in order to ensure a prosperous future for the Township, we believe that these assets need to be better managed in order to maximize their benefits at a constant, sustainable level. Greenwich is, both literally and figuratively, a backwater; its relative isolation has kept the village's incredible collection of first-period homes largely intact, and helped preserve a strong sense of community, but it also makes the place under resourced, and with the threat of larger-scale environmental and economic forces that cannot be resolved at the local level, it makes sense to create a tailored approach that best leverages the Township's natural advantages, while creating the capacity to use these strengths to tackle more significant, long-term issues.

Thus, when considering an approach that will sustain the form and long-term integrity of the Township in the face of the threats it is currently facing, we believe the right approach should have less emphasis on listing, regulation, and the village's material fabric, and more emphasis on enabling bottom-up, citizen-led solutions through an approach based in large part on a community and economic development model. By sustainably leveraging the natural and historic wealth of the township to increase its tax base and the level of citizen participation, this in turn will enable a preservation ethic, backed by increased economic resources, that will preserve historic fabric and values in the near-term, while growing the financial resources and institutional/regulatory frameworks needed to enable

sustainable preservation and successfully mitigate the present and incipient threats that the Township faces in the long-term. This approach privileges a more market-oriented approach that will enable Greenwich to continue to function as a real place, rather than a museum, while acknowledging that intangible heritage like community is actually vital to ensure its realization.

Thus the plan that follows this approach is very much a product of this very special and unique place, and should function above all to maintain what we have identified as character-defining and valuable for future generations. The cultural landscape perspective argues, at least in part, for an embrace of the 'everyday and the ordinary', and this is something that is not currently formally addressed in current preservation practice in Greenwich. It also recognizes the different values that community residents hold, and acknowledges that these values will inevitably change over time. Not everyone will want to participate in realizing this preservation plan, nor certainly is that expected nor is a requirement. An approach based largely on community and economic development model will inherently, however, have a wide variety of sticks and carrots, so to speak, and embrace, rather than ignore, the fact that people are motivated by different values, but factors like livability, and economic prosperity, are things that most people are willing to work towards.




ANALYSIS
RESPONSES
Strengths
Opportunities
Weaknesses
Threats
BUILT HERITAGE
NATURAL RESOURCES
ECONOMY + COMMUNITY


BUILT
HERITAGE
NATURAL
RESOURCES
ECONOMY&
COMMUNITY


Address Septic System
Update National Register
Address Levee Failure
BUILT HERITAGE
Update Zoning
Create Disaster Mitigation & Climate Action Plan
NATURAL RESOURCES
Design Public Space
ECONOMY& COMMUNITY
Restore + Protect Ecosystem
Create CSA + Agricultural Marketing
Develop Tourism Infrastructure
Set up Revolving Loans
Expand Web Presence

Endnotes

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16. CumberlandCounty,NewJerseywebsiteNewJersey FarmlandPreservation.http://www.co.cumberland.nj.us/content/173/251/761/2947/896.aspx Accessed December.,2011.

17. MSX is a parasitic disease that can affect oysters of all ages. Once an oyster is infected with H. nelsoni, MSX develops rapidly and kills the oyster within several weeks. H. nelsoni thrives in warm, high-salinity waters, which is why MSX is restricted to the middle and lower Chesapeake Bay. MSX was first found in the Chesapeake Bay in 1959, two years after it was first documented in Delaware Bay. There is good evidence that the disease originated with the Japanese oyster, Crassostrea gigas, which was intentionally introduced into Delaware Bay. Chesapeake Bay program, Bay Pressures

18. (Harry B. and Grace Weiss. Some early industries of New Jersey Trenton: New Jersey Agricultural Society, 1965 50,51.)

19. Greenwich Township Master Plan .

20. PSEG Esturary Enhancement Program. "In an effort of unprecedented scale, we began working in 1994 to restore and preserve portions of the Delaware Estuary in both New Jersey and Delaware. Since then, we have restored, enhanced, and/or preserved more than 20,000 acres of salt marsh and adjacent uplands to vital, healthy habitat for fish and wildlife." See PSEG Estuary Enhancement program explanation. http://www.pseg.com/inf o/environment/estuary.jsp.

21. Robert Benincasa and Nelson Hsu/NPR, "The Economy Where You Live," NPR.Org. Data from RealtyTrac Inc., U.S. Bureau of Labor Statistics, Nielsen Claritas. <http://www.npr.org/templates/story/story.php?storyId=111494514>

22. Birnbaum, Charles A. Protecting Cultural landscapes: Planning and Management of Historic Landscapes. Reproduced by Permission of the National Park Service, Washington D.C. September, 1994.

23. Ibid.6.

24. Environmental Resource Inventory for the Township of Greenwich, Cumberland County New Jersey, 2010 Delaware Valley Regional Planning Commission.11.

25. Ibid.19.

26. Ibid.42.

27. USDA National Agricultural library, Aquatic species, Phragmites austalis http://www.invasivespeciesinfo.gov/aquatics/commonreed.shtml. Accessed December 2011.

28. Delaware River Keeper. http://www.delawareriverkeeper.org/. Accessed December.2011

29. Bayside Tract - About one-third of Greenwich Township was acquired gradually by a consortium of electric power companies through a straw company called Overland Realty. Overland purchased nearly 4,500 acres–now known as the Bayside Tract–from over 90 owners, mostly farmers, for about $2.5million. Eventually, Greenwich Township and Cumberland County residents learned that the power companies intended to use this land for oil storage, refining, and nuclear-powered energy generation. Citizen opposition led to the township's first zoning ordinances in 1966, which created a historic district, but which zoned the Bayside Tract as industrial. A later revision in 1975 prohibited the specific types of uses that the companies originally sought for the Bayside Tract. Environmental Resources Inventory.17.

30. Environmental Resources Inventory.41.

31. Greenwich Township Master Plan, December 1995. 65.

32. Environmental Resources Inventory.41.

33. Greenwich Township Master Plan. 62.

34. Environmental Resource Inventory for the Township of Greenwich, Cumberland County, New Jersey, (Philadelphia: Delaware Valley Regional Planning Commission, 2010), 4.

35. Ibid.

36. Ibid.

37. Ibid.

38. Ibid.

39. Conversation with Joan Berkey, October 6, 2011.

40. Ibid.

41. Joan Berkey, A Survey of Early Heavy Timber Frame Buildings of Cumberland County, New Jersey, (Cape May Court House, NJ: Cape May County Court House, 2011), 63.

42. Ibid., 5.

43. Aaron Wunsch, Course Lecture, The University of Pennsylvania, September 22, 2010.

44. See Berkey, Survey Form #13, The Pirate House, Ye Greate Street, Greenwich, NJ.

45. Ibid.

46. Ibid., 6.

47. Ibid.

48. ERI, 5.

49. Ibid. Up until this point, Quaker meetings were held in private homes throughout the settlement.

50. Ibid.

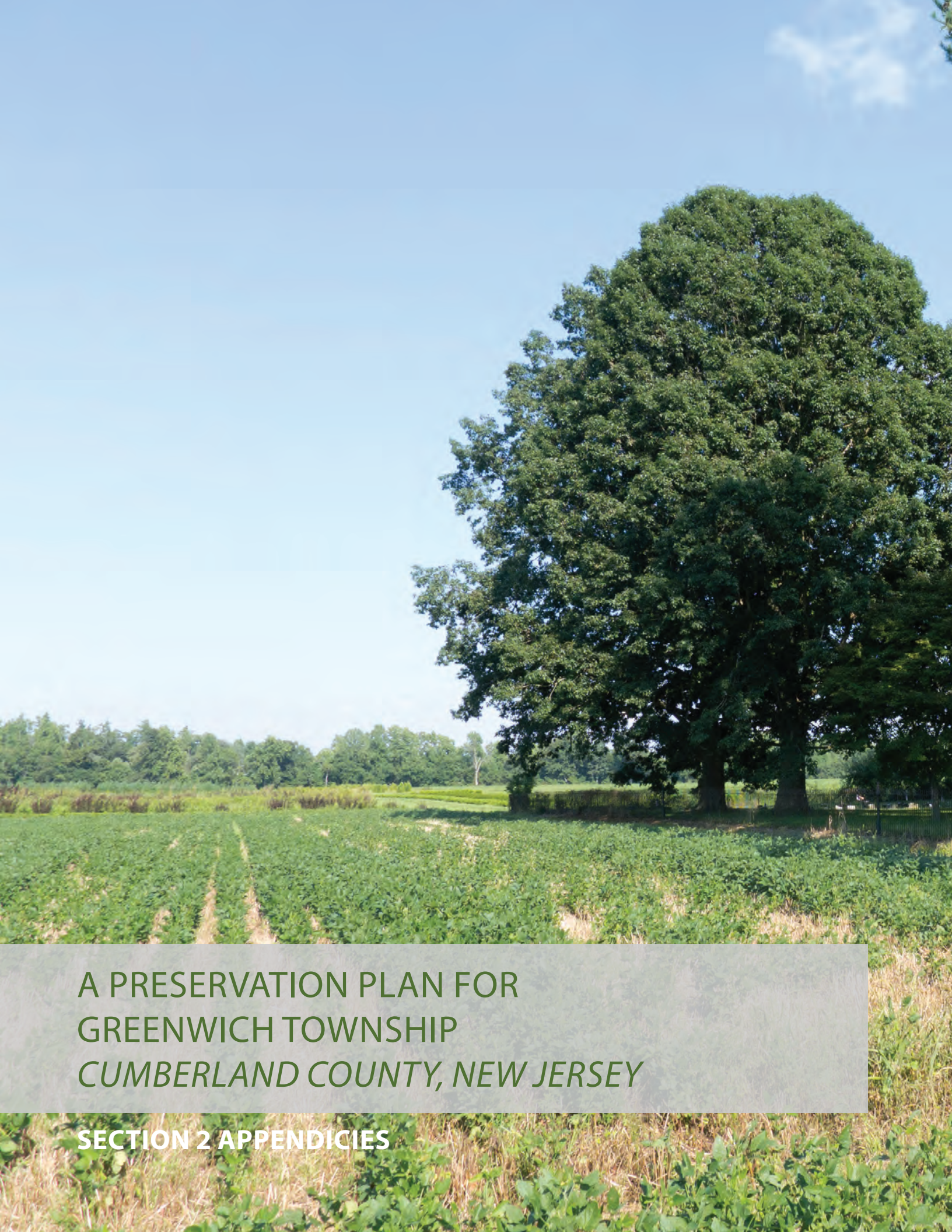
51. Interview, Joan Berkey, October 6, 2011.

52. Ibid.

53. Ibid.

54. Ibid., 6-7.

55. NPS, Preservation Brief 36: Protection Cultural Landscapes: Planning, Treatment and Management of Historic Landscapes



A PRESERVATION PLAN FOR GREENWICH TOWNSHIP
CUMBERLAND COUNTY, NEW JERSEY

SECTION 2 APPENDICIES

Appendix A: Census Tables

	2010		2000		Change	
	Total	Percent	Total	Percent	Total	Percent
Total population	**804**	**100**	**837**	**100**	-33	-3.9
Male	404	50.2	415	49.6	-11	-2.7
Female	400	49.8	422	50.4	-22	-5.2
Median age (years)	47.7		43.3		4.4	10.2
16 years and over	663	82.5	673	80.4	-10	-1.5
18 years and over	645	80.2	653	78	-8	-1.2
21 years and over	628	78.1	621	74.2	7	1.1
62 years and over	197	24.5	146	17.4	51	34.9
65 years and over	145	18	126	15.1	19	15.1
RACE						
ONE RACE	784	97.5	820	98	-36	-4.4
White	735	91.4	753	90	-18	-2.4
Black or African American	30	3.7	43	5.1	-13	-30.2
American Indian and Alaska Native	10	1.2	22	2.6	-12	-54.5
Asian	4	0.5	1	0.1	3	300.0
Filipino	2	0.2	0	0	2	na
Japanese	1	0.1	1	0.1	0	0.0
Other Asian [1]	1	0.1	0	0	1	na
Some Other Race	5	0.6	1	0.1	4	400.0
Two or More Races	20	2.5	17	2	3	17.6
RACE ALONE OR IN COMBINATION						
White	753	93.7	768	91.8	-15	-2.0
Black or African American	42	5.2	50	6	-8	-16.0
American Indian and Alaska Native	24	3	32	3.8	-8	-25.0
Asian	14	1.7	6	0.7	8	133.3
Some Other Race	5	0.6	4	0.5	1	25.0
HISPANIC OR LATINO						
Hispanic or Latino (of any race)	21	2.6	13	1.6	8	61.5
Mexican	11	1.4	4	0.5	7	175.0
Puerto Rican	9	1.1	1	0.1	8	800.0
Other Hispanic or Latino [5]	1	0.1	8	1	-7	-87.5
Not Hispanic or Latino	783	97.4	824	98.4	-41	-5.0

RELATIONSHIP						
In households	804	100	837	100	-33	
Householder	336	41.8	322	38.5	14	4.3
Spouse	192	23.9	198	23.7	-6	-3.0
Child	203	25.2	243	29	-40	-16.5
Own child under 18 years	136	16.9	151	18	-15	-9.9
Other relatives	37	4.6	55	6.6	-18	-32.7
Under 18 years	19	2.4	32	3.8	-13	-40.6
65 years and over	9	1.1	na			
Nonrelatives	36	4.5	19	2.3	17	89.5
Under 18 years	4	0.5	na			
65 years and over	1	0.1	na			
Unmarried partner	16	2	17	2	-1	-5.9
HOUSEHOLDS BY TYPE						
Average household size	2.39	(X)	2.6	(X)	-0.21	
Average family size	2.89	(X)	3.06	(X)	-0.17	
Total households	336	100	322	100	14	
Family households (families)	229	68.2	241	74.8	-12	-5.0
With own children under 18 years	73	21.7	88	27.3	-15	-17.0
Husband-wife family (Formerly Married-couple family)	192	57.1	198	61.5	-6	-3.0
With own children under 18 years	57	17	72	22.4	-15	-20.8
Male householder, no wife present	14	4.2	na			
With own children under 18 years	8	2.4	na			
Female householder, no husband present	23	6.8	26	8.1	-3	-11.5
With own children under 18 years	8	2.4	10	3.1	-2	-20.0
Nonfamily households	107	31.8	81	25.2	26	32.1
Householder living alone	89	26.5	71	22	18	25.4
Households with individuals under 18 years	85	25.3	103	32	-18	-17.5
Households with individuals 65 years and over	107	31.8	92	28.6	15	16.3
HOUSING OCCUPANCY						
Total housing units	369	100	356	100	13	
Occupied housing units	336	91.1	322	90.4	14	4.3
Vacant housing units	33	8.9	34	9.6	-1	-2.9
For rent	2	0.5	5	1.4	-3	-60.0
Rented or Sold, not occupied	3	0.8	5	1.4	-2	-40.0
For sale only	3	0.8	13	3.7	-10	-76.9
For seasonal, recreational, or occasional use	11	3	5	1.4	6	120.0
All other vacants	14	3.8	6	1.7		133.3

Homeowner vacancy rate		1		4.5		-77.8
Rental vacancy rate		3.6		10.2		-64.7
HOUSING TENURE						
Occupied housing units	336	100	322	100	14	
Owner-occupied housing units	283	84.2	278	86.3	5	1.8
Population in owner-occupied housing units	693	86.2	na			
Average household size of owner-occupied units	2.45	(X)	2.61	(X)	-0.16	-6.1
Renter-occupied housing units	53	15.8	44	13.7	9	20.5
Population in renter-occupied housing units	111	13.8	na			
Average household size of renter-occupied units	2.09	(X)	2.52	(X)	-0.43	-17.1

Selected Housing Characteristics: 2000	Number	Percent
TOTAL HOUSING UNITS	359	100
Occupied Housing Units	326	100
UNITS IN STRUCTURE		
1-unit, detached	341	95
1-unit, attached	9	2.5
2 ore more units	5	1.4
Mobile home	4	1.1
YEAR STRUCTURE BUILT		
1990 to March 2000	26	7.2
1980 to 1989	24	6.7
1970 to 1979	33	9.2
1960 to 1969	24	6.7
1940 to 1959	46	12.8
1939 or earlier	206	57.4
MEDIAN ROOMS	6.3	
YEAR HOUSEHOLDER MOVED INTO UNIT		
1999 to March 2000	134	41.1
1980 to 1989	73	22.4
1970 to 1979	55	16.9
1969 or earlier	64	19.6

SELECTED CHARACTERISTICS		
Lacking complete plumbing facilities	0	0
Lacking complete kitchen facilities	0	0
No telephone service	2	0.6
MEDIAN VALUE (OWNER OCCUPIED)	$112,000	
MONTHLY OWNER COSTS AS A PERCENTAGE OF HOUSEHOLD INCOME		
Less than 15 percent	78	36.3
15 to 19 percent	38	17.7
20 to 24 percent	35	16.3
25 to 29 percent	10	4.7
30 to 34 percent	14	6.5
35 percent or more	40	18.6
MEDIAN RENT	$742	

Appendix B: Sample Survey Forms

HSPV 701: Preservation Studio
Historic Parcel Survey for Greenwich Township

Surveyor: **Date:**

Identification

Block and Lot Number:

Street Number:

Street Name:

Property Condition **Property Integrity**

Property Notes:

Context

Tax Record Year:

Visually Inspected Year:

Current Use:
- Agricultural
- Commercial
- Industrial
- Mixed Use
- Public
- Religious
- Residenital
- Unknown
- Other

Current Name:

Styles

Dutch Colonial	DC	Queen Anne	QA
English Colonial	EC	Bungalow	BG
Georgian	GN	Colonial Revival	CR
Federal	FD	Modern	MD
Greek Revival	GR	Historic Agricultural	HA
Gothic Revival	GO	Modern Agricultural	MA
Italianate	IT		
Eastlake	EL		

Property Sketch:

N

University of Pennsylvania // School of Design // HSPV 701_Studio Course, Fall 2011

GREENWICH ARTISANS' FAIRE_Resident Survey

1. How long you have lived in the community?

_ Less than one year
_ 1-5 years
_ 6-10 years
_ 11-20 years
_ 20 years or more

2. How would you describe your primary occupation?

_ Agriculture
_ Finance
_ Government
_ Retail sales
_ Personal services
_ Management
_ Retired
_ Medical / Health
_ Clerical
_ Education
_ Utilities
_ Construction
_ Manufacturing
_ Work from home
_ Other *(please specify)*

_____

3. What kind of building do you live in?

_ Single family in town
_ Single family outside of town
_ Apartment in town
_ Apartment outside of town
_ Multi family dwelling in town
_ Multifamily dwelling outside of town
_ Other *(please specify)*

_____

4. Please indicate where your workplace is located:

_ In or within two miles of my community
_ Within 2-10 miles of my community
_ Within 11-25 miles of my community
_ Greater than 25 miles from my community

5. What activities do you participate in locally?
(please check all that apply)

_ Biking
_ Jogging
_ Bird watching
_ Fishing
_ Church events
_ Other *(please specify)*
_ Organized sports
_ Boating
_ Hunting
_ Hiking/Walking
_ Historical society events

_____

6. Please list two reasons you like living in your community:

_____

_____

7. Please list two things you would like to change about your community:

_____

_____

8. If you moved to another area, what would you miss the most about Greenwich?

_____

_____

9. If you were hosting a family member of friend, what would you want them to see or do in your town?

_____

_____

10. Have you noticed anything about your community that has changed recently?

_____

_____

11. Have you ever experienced flooding in your home or business?

_ Y _ N If yes, when? _____

12. Would be okay for us to contact you with additional questions about Greenwich Township?

_ Y _ N

If yes, what is the best way to reach you?

_____

University of Pennsylvania // School of Design // HSPV 701_Studio Course, Fall 2011

GREENWICH ARTISANS' FAIRE_Visitor Survey

1. Where are you traveling from today?

_____

2. How long you have lived in the community?

_ Less than one year
_ 1-5 years
_ 6-10 years
_ 11-20 years
_ 20 years or more

3. How would you describe your primary occupation?

_ Agriculture
_ Finance
_ Government
_ Retail sales
_ Personal services
_ Management
_ Retired
_ Medical / Health
_ Clerical
_ Education
_ Utilities
_ Construction
_ Manufacturing
_ Work from home
_ Other *(please specify)*

_____

4. What kind of building do you live in?

_ Single family in town
_ Single family outside of town
_ Apartment in town
_ Apartment outside of town
_ Multi family dwelling in town
_ Multifamily dwelling outside of town
_ Other *(please specify)*

_____

5. Please indicate where your workplace is located:

_ In or within two miles of my community
_ Within 2-10 miles of my community
_ Within 11-25 miles of my community
_ Greater than 25 miles from my community

6. What activities do you participate in locally?
(please check all that apply)

_ Biking
_ Jogging
_ Bird watching
_ Fishing
_ Church events
_ Organized sports
_ Boating
_ Hunting
_ Hiking/Walking
_ Historical society events
_ Other *(please specify)*

_____

7. Please list two reasons you like living in your community:

_____

_____

8. Please list two things you would like to change about your community:

_____

_____

9. If you moved to another area, what would you miss the most about Greenwich?

_____

_____

10. If you were hosting a family member of friend, what would you want them to see or do in your town?

_____

_____

11. Have you noticed anything about your community that has changed recently?

_____

_____

12. Have you ever experienced flooding in your home or business?

_ Y _ N If yes, when? _____

13. Would be okay for us to contact you with additional questions about Greenwich Township?

_ Y _ N

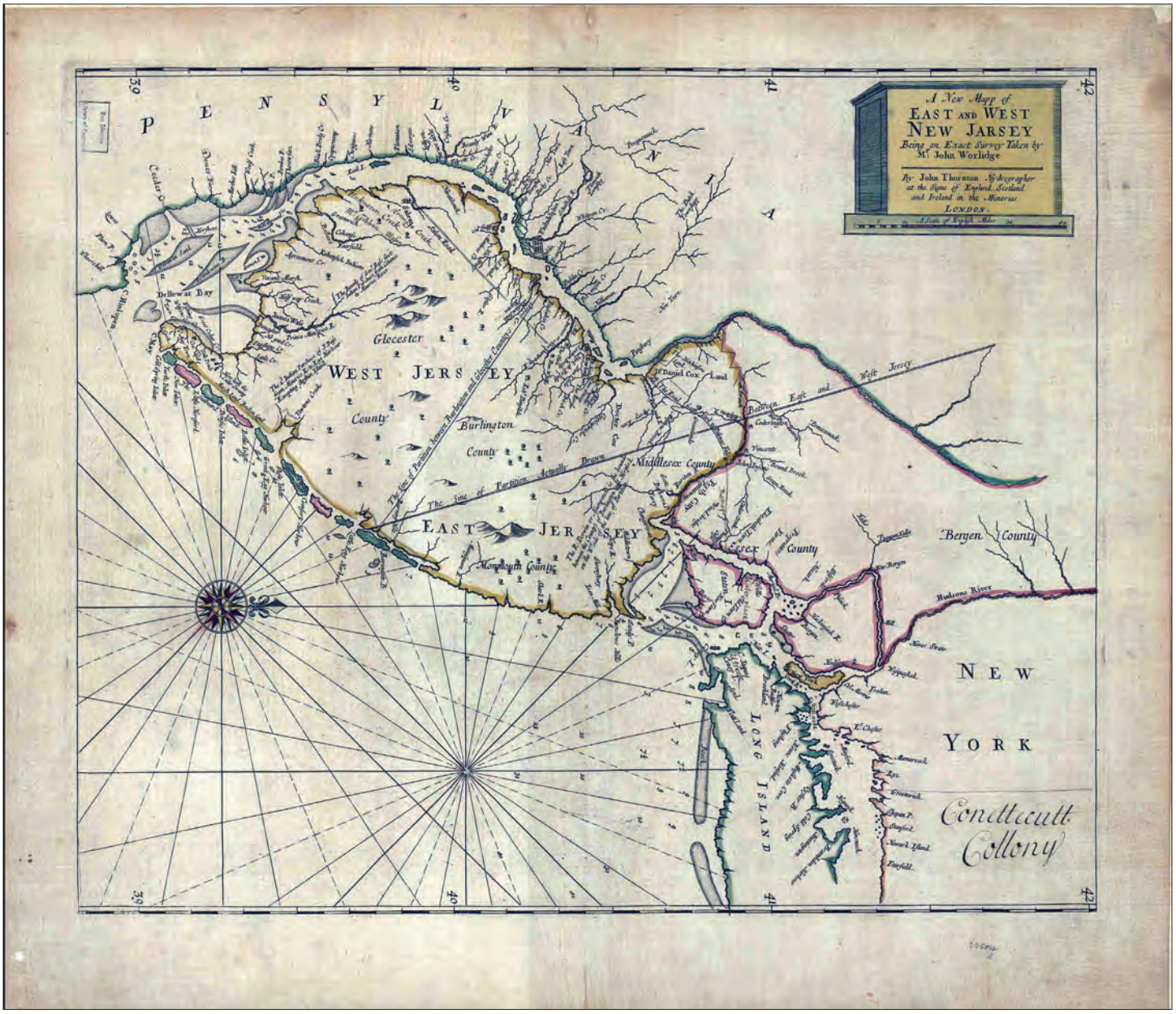
If yes, what is the best way to reach you?

_____

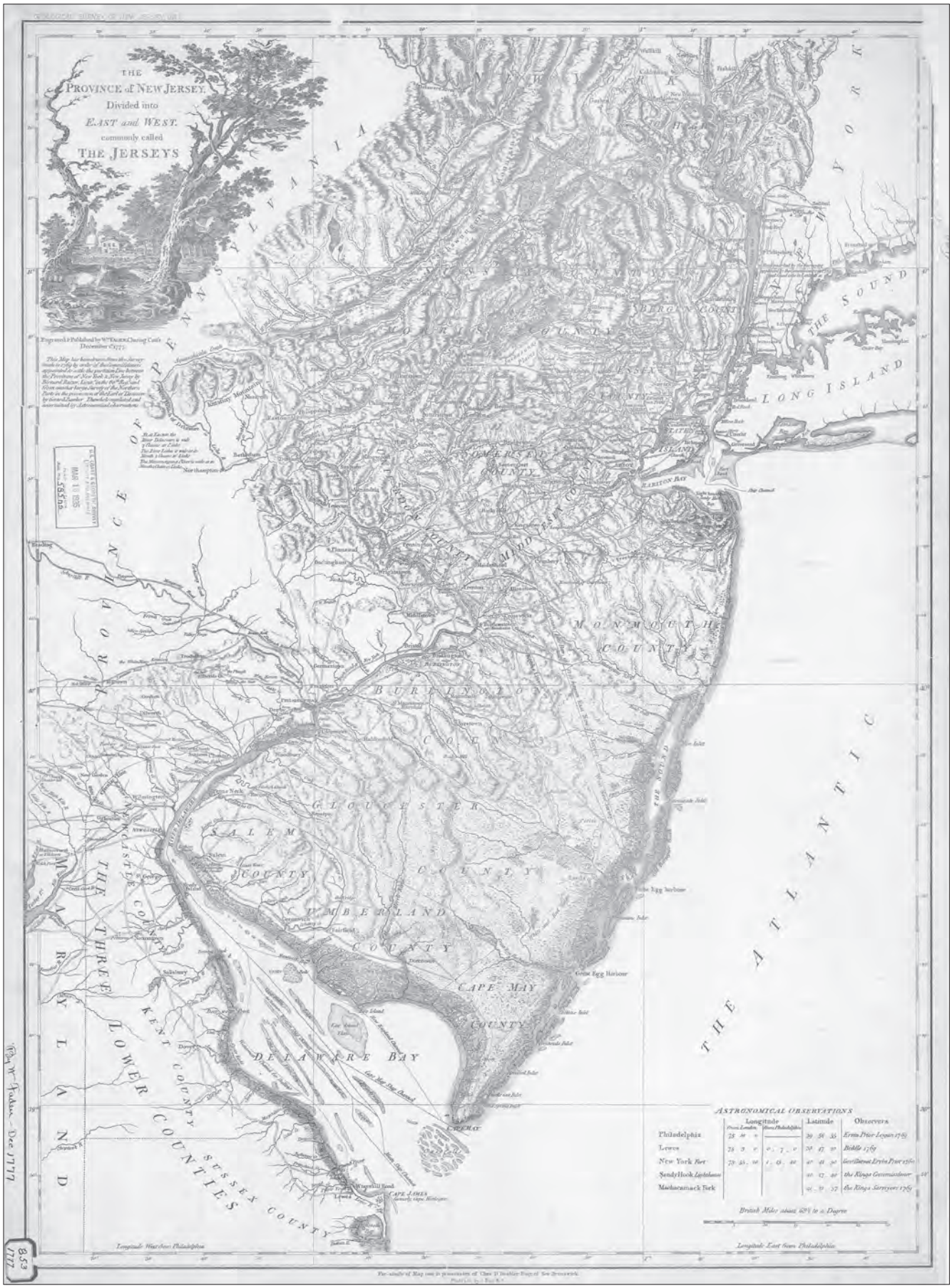
Appendix C: Historic Maps

The evolution history maps are a collection of historic maps that visually display the evolution of Greenwich Township from 1696 to 1956. They are powerful tools to show changes over time. The collection has various types of maps showing different details of Greenwich's history. These include property, road, geology, topography, and administration maps.

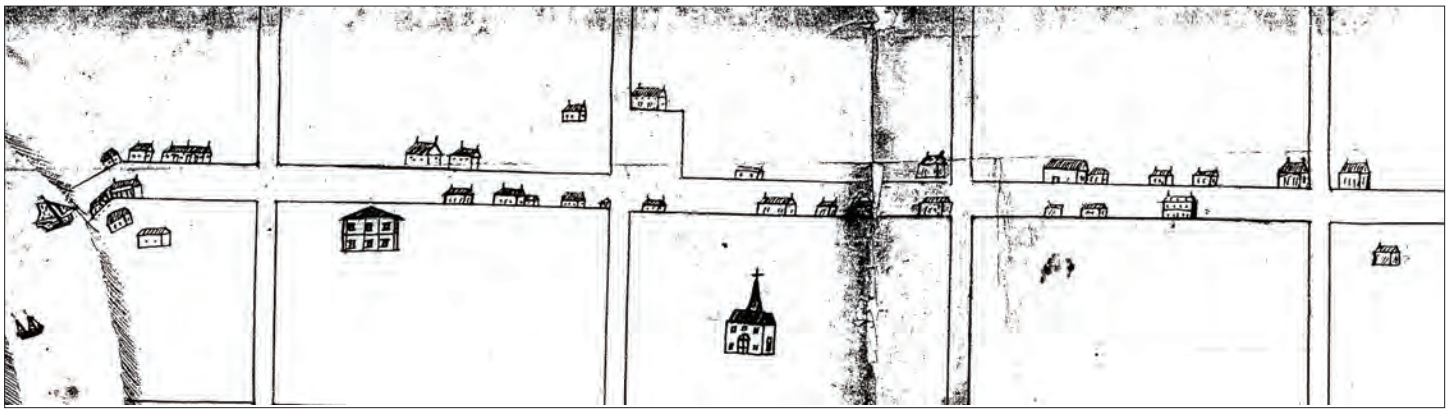
Through this map collection we can observe long-term developments of the township over the last 300 years. The collection, viewed in tandem with other documents in this dossier, enables stakeholders to conduct research on the evolution of specific elements of Greenwich's history, for example, the evolution of road systems, should this research need to be further developed in the future.



A New Map of East and West Jersey, 1696, *John Thornton*



The Province of New Jersey, 1777, *W. Faden*

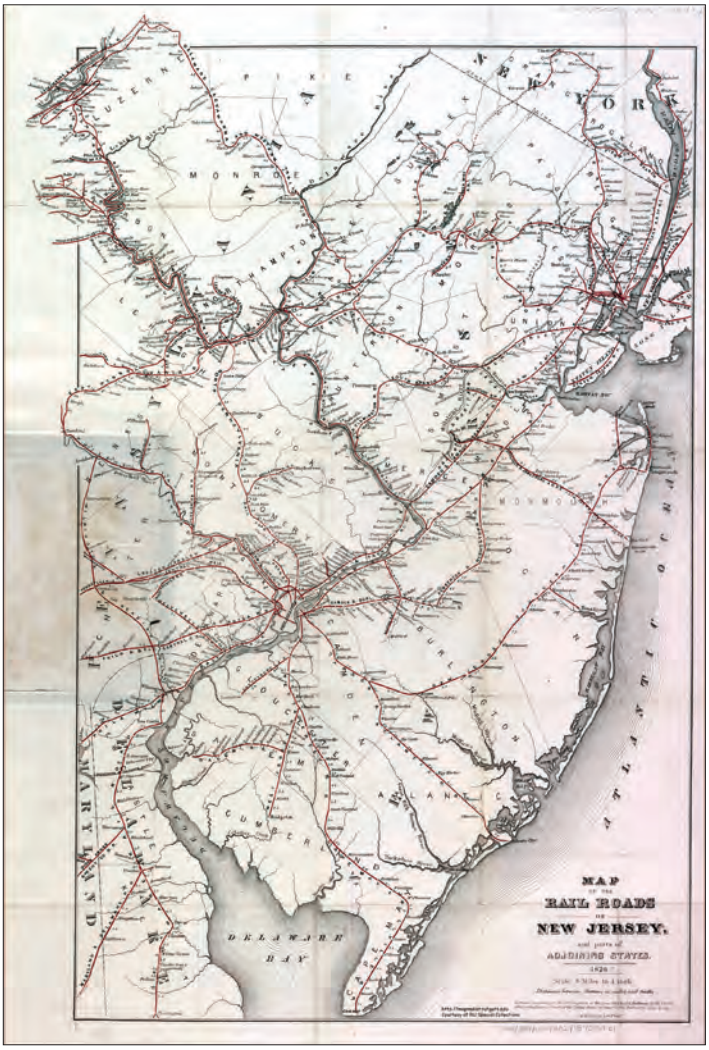


Plan of the Town of Greenwich for Mr. Amos FIthian, 1768, *Levi Heaton*

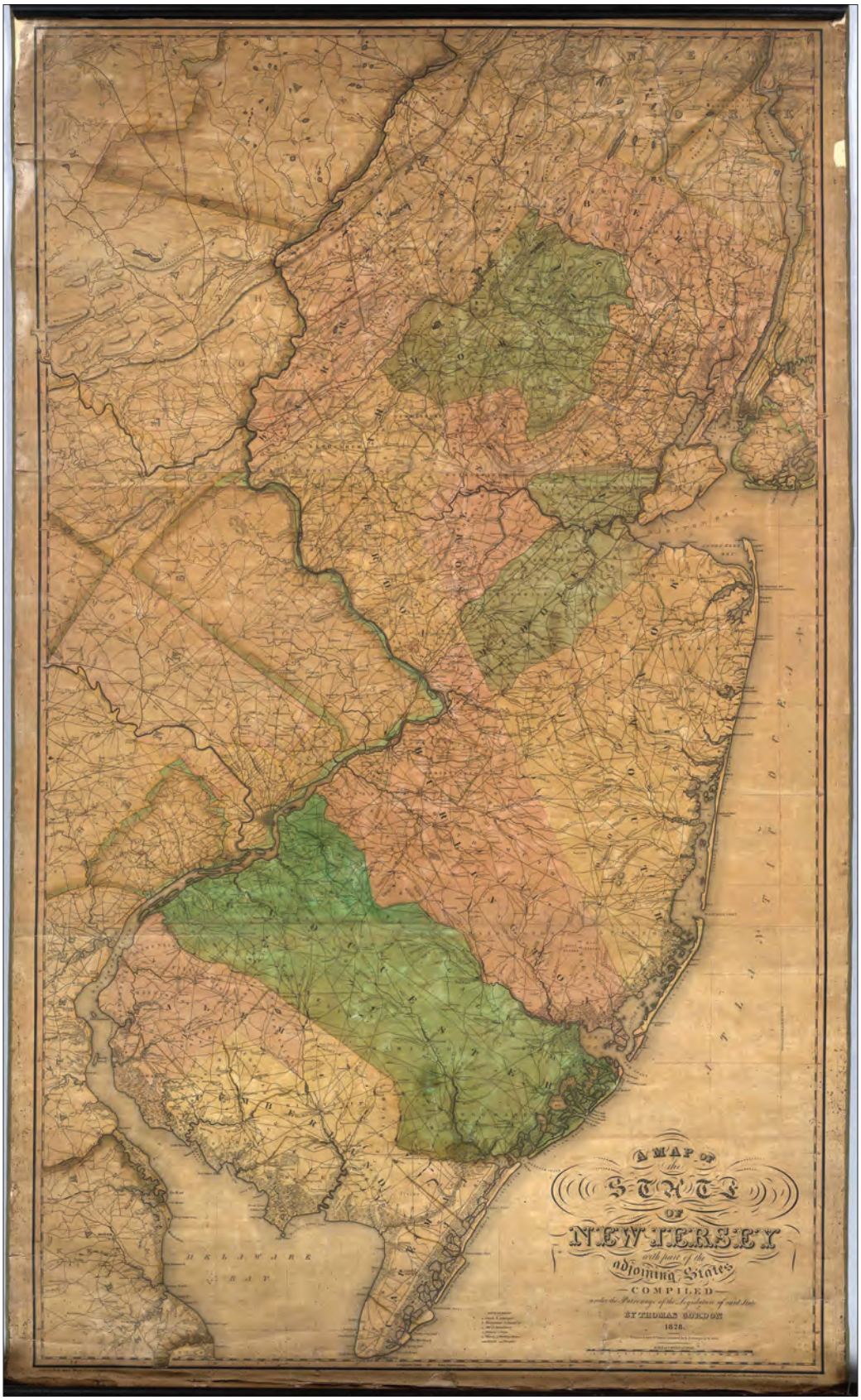
A New and Accurate Map of New Jersey, 1780, *Beft Authorities*

The State of New Jersey, 1795, *Author Unknown*

US Costal Survey, Interior of New Jersey, 1843, *F.R.Hassler*

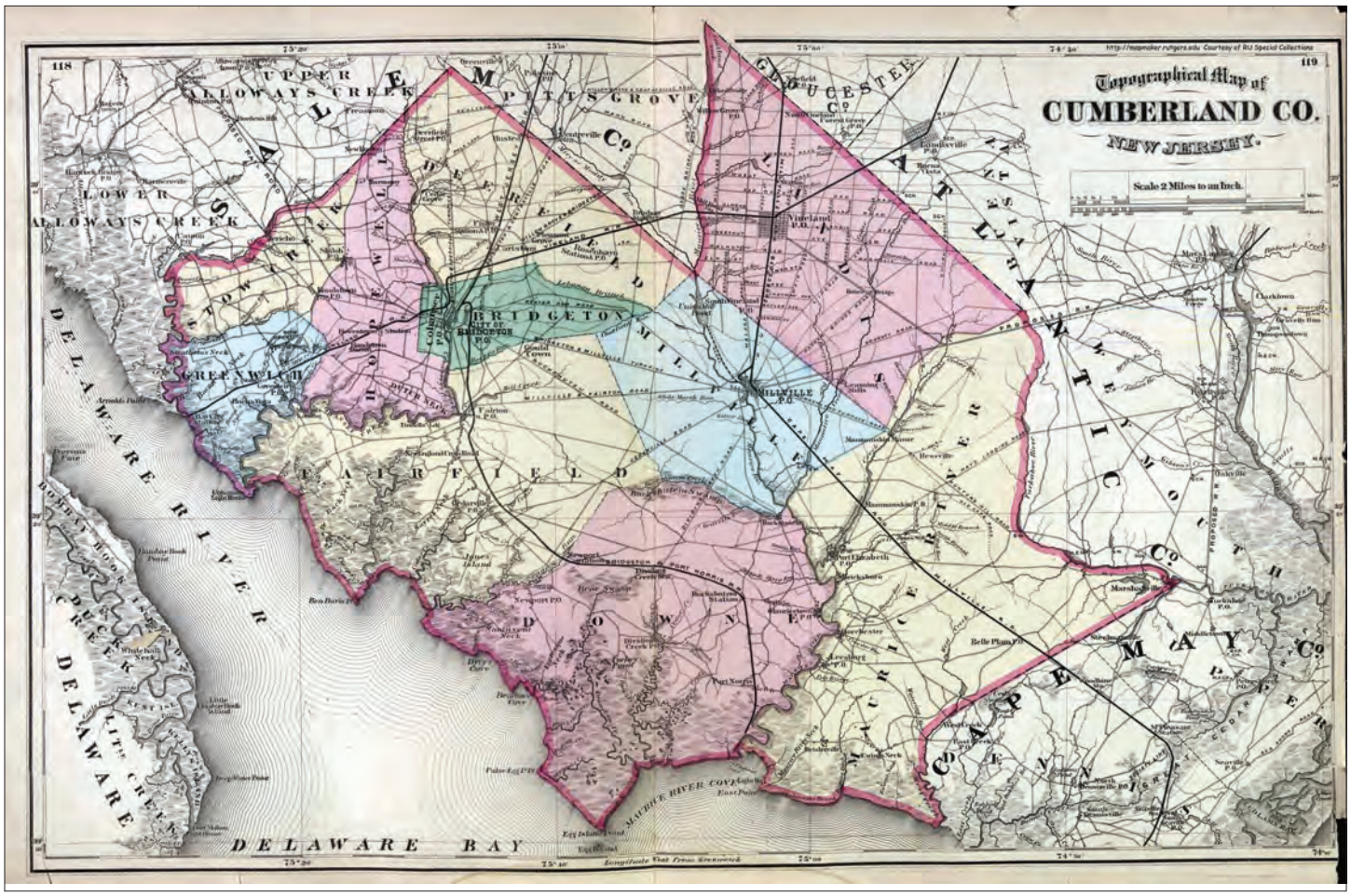


Map of Rail Roads of New Jersey, 1870, *L.A.Anderson*

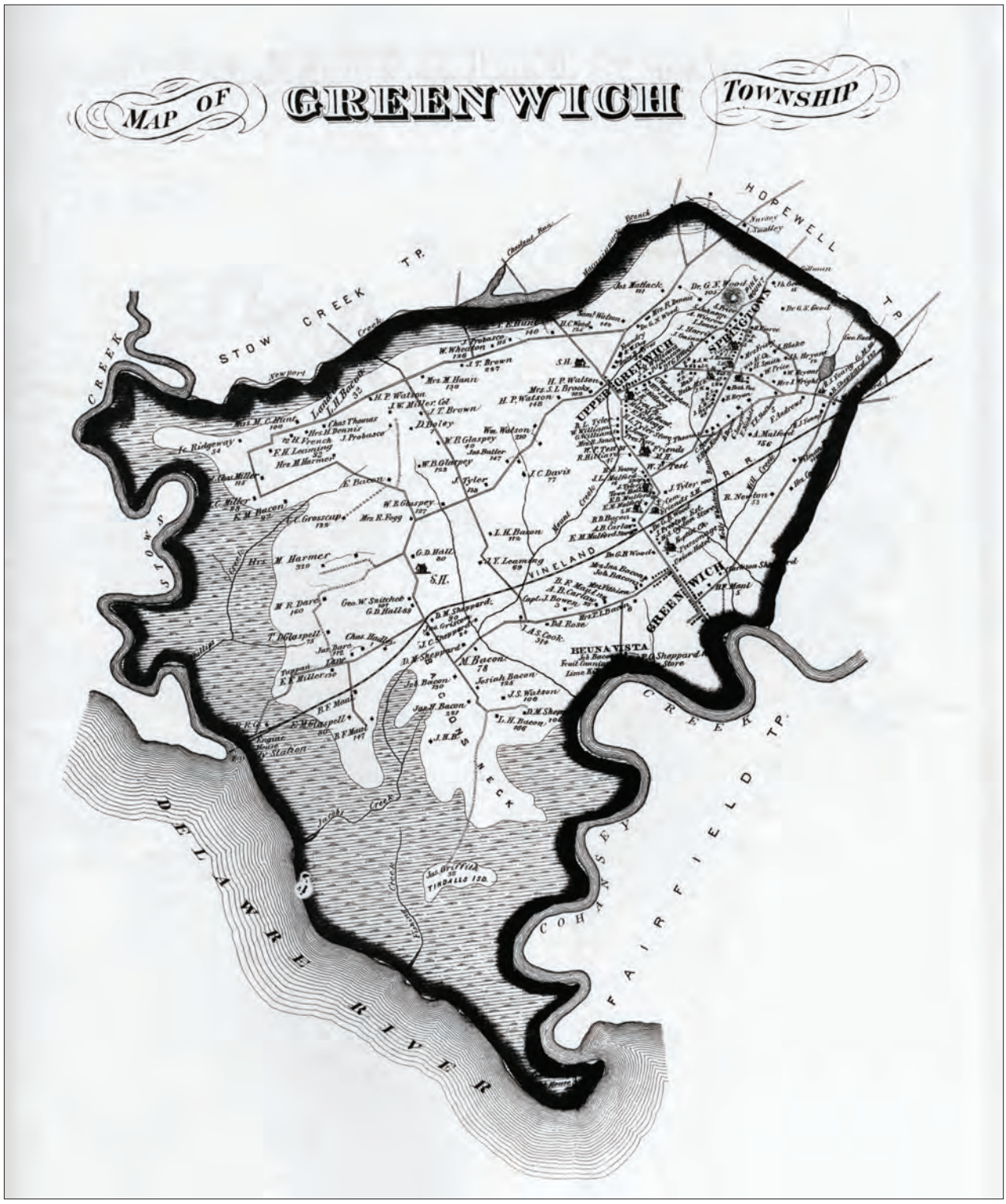


A Map of State of New Jersey, 1828, *Thomas Gord*

Map of Cumberland County, New Jersey, 1862, *L.Blake & C.S.Warner*



Topographical Map of Cumberland County, New Jersey, 1872, *Author Unknown*



Altas of Cumberland County, New Jersey. 1876, *Author Unknown*

A Topographical Map of the Vicinity of Bridgeton. 1888, *U.S. Geological Survey*

Map of Cumberland, Gloucester, and Salem County. 1913, *Wilmer Atkinson Company*

Map of Cumberland County, New Jersey. 1936, *George M. King*

Road Map, County of Cumberland, New Jersey. 1954, *George M. King*

Appendix D: Comparables

The Greenwich studio group's research included the review of several comparables. These comparables are communities that face issues of severe flooding, sea level rise, economic stability and natural resource depletion. The comparables provided the studio group with an understanding of how other communities use planning as a way to mitigate these challenges.

Oxford, MD

Oxford is a small colonial port town on the Chesapeake Bay. It was founded in 1683 and has a similar history to Greenwich in terms of the prevalence of maritime trades, particularly the rise and fall of the oyster industry. The town's small tourist trade serves as a good example of how Greenwich could explore some small-scale development without changing the nature of the town. Oxford only has a few businesses, but they are organized under the Oxford Business Association. The Association has a website with information on all of the businesses and other helpful information about what visitors could see and do while in Oxford. They also have a short brochure available for download. The group promotes day and weekend trips to the town and also has information regarding the history of Oxford and points of interest in the surrounding area as well.

The British Response to Sea-Level Rise

As an island nation England has a good deal of historic coastal assets that are threatened by rising sea levels and flooding. For this reason a lot of thought and resources have gone into conservation and mitigation plans for the future. A helpful guide to understanding how England intends to deal with these threats is found in the document "Coastal Heritage and Climate Change in England: Assessing Threats and Priorities" which was published in 2009. The standards and suggestions set out in this document can be a helpful guide for the preservation of any coastal area that is threatened by sea level rise. The document notes that the sheer amount of coastal heritage that is threatened in England demands prioritization and certain sacrifices. The piece suggests that certain sites will have to utilize "documentation by record" as it will not be possible to save everything. Decisions about what will be recorded to what level of detail and what structures will actually be relocated to safer locations will be based on risk management, the value of the particular asset as compared to the costs of relocation, and the need to comply with existing preservation legislation. In addition to documentation and interventions the piece also recommends climate change mitigation, but this is something that is out of the hands of any particular coastal town and needs to be addressed on national and global scales. The suggestions of specific modes of assessment, documentation, and decision-making criteria are all helpful to guide the preservation of a town under threat of potential sea-level rise.

Lewes Delaware

City of Lewes, Delaware Hazard Mitigation and Climate Change Action Planning

The Greenwich studio group identified a hazard mitigation and climate change action plan as a useful preservation tool for the township. The Lewes Hazard Mitigation Plan is comparable case study for the creation of a hazard mitigation and climate change action plan for the township of Greenwich.

First settled by the Dutch in 1631, Lewes, Delaware, a small hamlet where the Delaware Bay and the Atlantic Ocean meet, is known as the "first town in the first state." Home to generations of fishermen and river pilots, Lewes is proud of its maritime heritage and its, diverse collection of well-preserved historic homes, some dating back to the 1660s.

Lewes' proximity to water and well understood threats from coastal storms and flooding has made the city a leader in the field of hazard mitigation planning. With a strong hazard mitigation planning team the city works diligently to provide its citizens and visitors with a safe place to live work and play.

Like Greenwich, Lewes faces problems with storm inundation, sea level rise, erosion and salt-water intrusion. Lewes Comprehensive Plan identifies several issues that should be addressed to maintain current community character and quality of life many of which are pertinent to hazards/climate change adaptation planning. 1

Lewes has an interested and active community that has already engaged in hazard mitigation projects and collaborative community planning efforts. In June 2011 the City of Lewes released its Hazard Mitigation and Climate Change Action Plan (HMCCAP).

The goal of a hazard mitigation and climate change

action plan is to provide assistance and guidance to the township of Greenwich in the development in a unified plan for hazard mitigation and climate change adaptation that will improve community sustainability and resilience.

Today's planning choices will shape tomorrows communities and determine how vulnerable or resilient a community can be. For safety and sustainability taking action today to mitigate climate change and natural hazards will provide more resiliency in the future. Long-term goals require a lot of planning. It is necessary to motivate citizens develop adaptive capacity to implement change.
Proactive planning is more effective and less costly than reactive planning and can provide immediate benefits. According to a Fema study from 2005 every dollar spent on natural hazard mitigation planning resulted in four dollars of future benefits. Planning will end up saving municipal budgets in the future.2
Climate change will only get worse in the coming years acting today will prepare Greenwich for those worsening impacts. By gathering further knowledge about the towns vulnerability Greenwich will set itself up for increased threats that climate change poses to it existing natural hazards risks.

The plan summarizes the process and results for a pilot project, a project that has helped the City of Lewes enhance local understanding of climate change and natural hazard impacts and begin devising strategies to build resilience towards these impacts. The project engaged key local stakeholders-City staff, City Board/Commission members, and Regional /State partners- as well as the public and resulted in a summary report and six initial recommendations for the City to begin implementing.

The City of Lewes, Delaware held four workshops to determine the highest priorities for action in the town. Using their vulnerability study to determine the greatest threats and how they will impact the community, the city prioritized two key vulnerabilities. The first is Lewes water system and the combined threats of saltwater intrusion into the aquifer and the destruction of water conveyance systems that it faces from sea level rise. The second vulnerability is the destructive impacts on homes and the cities infrastructure from increased flooding. Based on these two vulnerabilities Lewes set goals for planning they include:

1. Increase overall awareness of the threats from natural hazards and climate change and create outreach materials for city officials to keep the citizens and others informed.
2. Design a methodology that integrates climate change adaptation and hazard mitigation planning which will enable the city in the future to engage in a combined planning effort.
3. Enhance understanding of Lewes vulnerability to climate change and identify data gaps to related hazards
4. Utilize prioritization system
5. Create final plan that the city can use to implement chosen initiatives,

The priorities were further broken down to actions that could occur fairly quickly with little money or other resources.
1. Update evacuation and notification procedures for the city
2. Improve storm water capability
3. Increase participation in NFIP
4. Minimize damages from high wind events
5. Implement a community outreach program
6. Continue data acquisition to the cities GIS.
7. Implement disaster preparedness outreach program
8. Facilitate the coordination of response procedures for related events
9. Develop response for specific needs of elderly, pets etc.

These priority actions were then written into the mitigation plan and integrated into the town's comprehensive plan. The planning process and priority actions based on vulnerability and stakeholder input outlined in the Lewes plan provide the basis for the Greenwich's studio groups recommendations for hazard mitigation planning for Greenwich Township.

New Orleans, LA

New Orleans' was chosen as a comparable for policy approaches to protect cultural heritage in the face of sea-level rise and flooding. Known for both its architectural heritage and high hurricane and flood risk, the City of New Orleans and the Louisiana State Historic Preservation Office entered into agreements with FEMA to develop a protocol for cultural heritage protection in the aftermath of natural disaster.
FEMA is required to follow Section 106 review for any building listed on the National Register of Historic Places prior to taking action. For structures on the National Register in danger of collapse, FEMA must consult with the City and the State of Louisiana, including the SHPO and Advisory Council on Historic Preservation, before proceeding with demolition. These consultations are meant to reduce or compensate for any negative effects that would result from demolition.

Jamaica Bay, Queens, New York
Jamaica Bay as was chosen as a comparable for ecological restoration efforts, with particular interest in salt marsh restoration. Jamaica Bay, approximately 8 miles long and 4 miles wide, sits at the eastern margins of Queens and opens into the Atlantic Ocean through the Rockaway Inlet. Urbanization and development over the past century have spoiled the Bay's delicate ecosystem, including its Marsh Islands, which are included in the National Park Service's Gateway National Recreation Area. Various local, state, and federal organizations collaborated to restore the Marsh Islands. The Marsh was restored through the placement of dredged material over the deteriorated area, and re-planting existing marsh plant hummocks within the new material.

ENDNOTES

1 The City of Lewes, Delaware Hazard Mitigation and Climate Change Action Plan. June 2011

2 FEMA, Hazard Mitigation Assistance Unified Guidance. Hazard mitigation grant Program, Pre-Disaster Mitigation program, Flood Mitigation Assistance Program, Repetitive Flood Claims Program, Severe Repetitive Loss Program June 2010

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Road Map, County of Cumberland, New Jersey, 1954, by George M. King
A Pictorial Guide to Historic Greenwich, N.J., 1976, by Cumberland County Planning Board

Locations for Further Research

Cumberland County Clerk's Office
Court House
60 W. Broad Street
Bridgeton, NJ 08302
856-453-4860
http://www.co.cumberland.nj.us/content/173/2133/3337/3363.aspx

Cumberland County Historical Society
The Warren and Reba Lummis Genealogical and Historical Library
981 Ye Greate Street
Greenwich, NJ 08323
856-455-8580
cchistsoc@verizon.net
http://www.cchistsoc.org/about.html
Contact: Warren Adams or Jonathan Wood

Cumberland County Department of Planning & Development
790 E. Commerce Street
Bridgeton, NJ 08302
856-453-2175
http://www.co.cumberland.nj.us/content/173/251/761/2947/875.aspx

Historical Society of Pennsylvania
1300 Locust Street
Philadelphia, PA 19107-5699
215-732-6200
http://www.hsp.org

A PRESERVATION PLAN FOR GREENWICH TOWNSHIP *CUMBERLAND COUNTY, NEW JERSEY*

SECTION 3 INDIVIDUAL PROJECTS

Table of Contents

SATURDAY SPACE

Greenwich Township is currently lacking a public space that can function as an informal meeting or recreation place, and that can host formal community gatherings. Greenwich also lacks a natural location that functions as the center of town, to serve both as an identifier of place, and to center a bid-rent curve in a central place model of development. Currently, the Post Office serves this purpose, maintaining the book lending library and message board, but because the Post Office hours are limited, its use as a public space is limited to those hours, and more and more, residents who work outside of Cumberland County are not able to make it to the Post Office during open hours.[1]

This projects aims to create a set of models for a public space, dubbed a Saturday Space, that will provide a visible center to Greenwich Township and Ye Greate Street, and offer an area where people can meet formally and informally.

1 This is shown by the number of residents who are choosing rural mail delivery over having a Post Office box. Rural mail delivery allows them to pick up their mail in their box whenever they would like, rather than having to pick it up during open lobby hours.

The design of the space is based on the following set of design parameters.

WHAT?

The space is intended to have three primary values; aesthetic value, use value, and local/ tourism value.

The space is intended to be a place that is aesthetically beautiful when it is not in use, to act as a formal center to the village and the township. It is intended to have identifying features so that people will know when they are there, understand its potential uses, and want to use the space, or want to direct others to use it.

The space is intended to have formal use value as well as informal use value. It will be able to hold larger community gatherings, such as concerts or other events. It will be able to offer moderate services, such electricity for events, a roof to cover activities, and possibly access to rest facilities. It will also have informal use value, by providing parking for

informal meet-ups, benches or exercise equipment, and shade and grassy areas to attempt to create an atmosphere where community members and tourists feel compelled to gather and meet.

The space is also intended to function for both tourists and locals. It will provide locals with a place to use and meet after regular business hours, and will provide them with a formal space to hold activities. Tourists will be provided information, and possibly rest facilities, as well as a place to mark their entrance and arrival into Greenwich.

Additionally, the space should act as a business anchor, by concentrating the retail and municipal functions of the town around a common area, and should be a catalyst for retail development in the former general store space.

WHERE?

A survey of the township of Greenwich shows a concentration of retail and municipal buildings, including the firehouse, churches, the post office, the school, the old school/ municipal building, museums, and the former café/ general store, all along Ye Greate Street (Image A-3. Furthermore, there is a slight concentration at the intersection of Ye Greate Street and the Bridgeton/ Greenwich Road (see Image A-2), with the Post Office, General Store, Archeological Museum, Municipal Building, and Fire House all within a few hundred feet of each other. In short, this areas seems like a natural center of the town.

The intersection of Bridgeton/ Greenwich Road and Ye Greate Street is also marked as the center of Greenwich on directional sites, such as Google (see Image A-2), and the approach from Bridgeton, on the Bridgeton/ Greenwich Road, is the recommended route on those sites.

Looking at this intersection, there is a natural park space on the northeastern intersection, in front of the archeological museum and the neighboring municipal building (see Image A-3). Some of the area directly in front of the archeological is already landscaped to create a public space. Together, these two front yards create a natural space for an urban intervention.

There are also two additional spaces that make this site work so well for a public spaces. Along the Bridgeton Road,

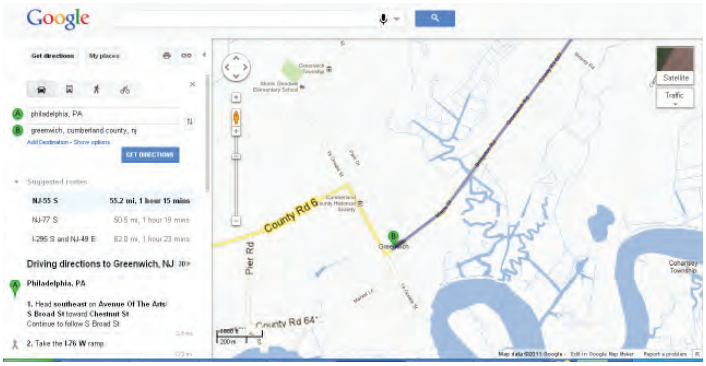


Image A-2: Directions to Greenwich, Cumberland County, New Jersey, from Philadelphia, Google Maps.

there is a half circle drive, just behind the archeological museum, that could be repurposed for parking, and behind the municipal building, there is a former playground and yard, that could be improved to again serve as a municipal playground.

Finally, the location of this space, across from the Post Office and the former General Store, provides opportunities for that building. By centering tourists and locals at this intersection, the hope is that a critical mass of people will use this new public space as a base for hikes, bikes, or runs, or as a place to meet friends or use the playground. These people will be looking for other services, such as those a general store or convenience store could sell. It would also be a natural place for new businesses, such as a Bed and Breakfast to open nearby.

Image A-3: Location of municipal and commerical buildings in the center of Greenwich.

HOW?

Many small grant programs exist to support tourism, trail creation, the creation of community spaces, the promotion of sustainable and ecological minded communities. These small grants should be used in phases to revitalize and construct the spaces in the public spaces around the archeological museum and the municipal building. The grants listed below are thought to be the most applicable for this project, but are not supposed to be exhaustive of all grant and funding opportunities.

The **Home Depot Community Impact Grants Program** gives $5,000 of in kind donations to do "repairs, refurbishments, and modifications to community facilities" when the work is done by volunteers. This money can be used for any of the site improvements, as long as a volunteer labor is used.

The **State of New Jersey Recreational Trails Program Grants,** funded by The Federal Highway Administration's Recreational Trails Program (RTP) provides funding for "maintenance and restoration of existing trails; development and rehabilitation of trailside and trailhead facilities and trail linkages for trails (e.g., parking, signage, shelters, sanitary facilities); purchase and lease of trail construction and maintenance equipment; construction of new trails in existing parks or in new right of way; for motorized use only, acquisition of easement and fee simple title to property for trails." The program is administered by the State DEP's Green Acres Program and projects are reviewed by the New Jersey Trails Council, as well as several general trail advocates and state government representatives. These grants are up to $25,000 and should be applied for after a comprehensive trail plan is completed. These funds would be used to create the new parking lot, to create the trailhead information board, and to building and maintain trails for hiking, biking, horseback riding, and canoeing/kayaking.

Small grants are available through the **Franklin Parker Small Grants Program,** "to provide support for the funding for non-profit conservation organizations working in the Garden State. These grants are designed to provide assistance to exemplary land acquisition, stewardship and restoration projects." The awards, from $1,000 to $10,000 have been used to create trails and trailheads to gain access to permanently conserved land, stewardship land, and restoration projects and should be seen as being used in conjunction with funding from the New Jersey trails funding program.

Image A-4: Schematic rendering of pavilion and welcome sign, looking north on Ye Great Street, from Bridgeton / Greenwich Road

Sustainable Jersey is a certification program for municipalities in New Jersey that want "take steps to sustain their quality of life over the long term." It provides access to grants "and identifies existing and new funding opportunities for municipalities to make progress toward the actions" to provide:

- Prosperity-support your local economy and use community resources
- Planet-practice responsible environmental management and conservation
- People-embrace social equity and fairness

In 2011, grants were up to $25,000 for communities to pursue the above stated goals.

New Jersey Destination Marketing Organization Grants and **Cooperative Marketing Grants** are state tourism marketing grants that can be used to promote tourism, travel, and tourism related business development in New Jersey.

USDA Farmers Market Promotion Grants, "are targeted to help improve and expand domestic farmers markets, roadside stands, community-supported agriculture programs and other direct producer-to-consumer market opportunities." They may be used to build a structure that will house a farmers market or farm stand on the intersection, especially if that stand promotes Cumberland County and Greenwich Township produce and goods.

WHAT?

The design of the space is considered to be a series of interventions as opposed to a comprehensive site redevelopment. The two largest obstructions to redevelopment are the varied ownership and the lack of funding, and so if and when funding is secured and ownership is worked out, various elements of this plan can be undertaken. The following design elements are therefore to be considered part of a toolbox and phased as funds become available.

Welcome Sign

A welcome sign, facing southeast, towards Ye Greate Street, seems obvious and overly quaint. But Greenwich currently lacks any such marking, and because of the strong connection between the village and the surrounding agricultural lands, there is a strong lack of sense of where the village actually is. "When you are there, you will know it," is fine as a directing technique, but it does little for marketing and branding to outsiders, and it also does not instill a sense of a strong community, especially in light of the actual strength and involvement of the community. The sign, which may be able to be placed in the public right-of-way, can be of various designs, but should be at a scale appropriate to the street. In regards to the sign itself and the landscaping surrounding it, the implementation should assume that funding for maintenance will negligible, and therefore look at materials and plantings that may cost more up front, but which will be the most durable and require the least maintenance.

One aesthetic idea would be to hire the LOCAL BOAT builder to construct the sign using ship building techniques and materials to be durable, highlight the maritime history, and to employ a local firm.

Pavilion and patio

The main physical improvement to the site is the inclusion of a multi-use pavilion and adjoining patio. This element is designed to wrap the east side of the archeological museum with a structure that can be used by the community and which adds a more formal aesthetic styling to the archeological museum building, and shifts its frontages to line up with the standard set backs on both Ye Great Street and Bridgeton/ Greenwich Road. In the past several years there has been some minor architectural updates to the archeological museum, suggesting that there is a will to improve the appearance of the structure. It is suggested that the pavilion can act as the east façade, heighten the overall roofline, and tie into some new architectural elements on the south, front, façade. The design should be sympathetic to the aesthetics of the village, and because it is in the historic district, should and will be reviewed by the design review board. The pavilion space will be anchored on the southern and eastern sides with a patio that is lined with a stone knee wall. The patio will expand the usable space of the pavilion, and the knee wall can act as seating. The current brick walkways and benches should be preserved as possible, but should be extended to connect to the new parking on the west side of the property.

The programming of the pavilion is also expected to be central to the design of the entire Saturday Space. The name

of this project comes from the idea that there will be weekly, or regular, programming in the pavilion. This could include a farm stand for a local producer to sell goods on a weekday afternoon or a weekend morning. This could also include a weekly swap meet, Friday evening concerts, or other cultural events. The preferred use would be for a weekly farm stand, and a local farmer who may not find adequate traffic to their on-farm farmstand, may be convinced to sell their goods once per week on Ye Greate Street. They may also serve as a cost share partner in the construction of the structure, or may enter into a formal lease agreement with the property owner, as a way to circumvent the problem of property ownership. A copy of a producer only farm market contract is included at the end of this section.

Whichever programme is decided, it is important to the space that some sort of regular schedule for programming is kept. This will ensure, at least for the first several months or year, that community members and tourists understand that they can expect to meet other community members at a given time at the space. The programming is based on the informal meetings that currently take place at the waste transfer station, where community members not only drop off their trash, but expect to meet friends and neighbors. This design tries to recreate that informal meeting, in a central location in the township, and also open up this meeting to tourists and visitors.

Parking Lot/Trail Head

Currently, along the Bridgeton Road, there is a half circle drive that serves as parking for the archeological museum. This would be an ideal space for a municipal parking lot. It is contiguous with the backside of the municipal lot, which is designed to be returned to its former use as a playground. If the lot was purchased and combined with the currently

Image A-5: Schematic rendering of playground and bathroom facility, looking east from rear of Municiapl Building, with new parking visable to the south. (Ali Church)

municipally owned lot, the two could function extremely well together. The site design calls for the removal of the overgrown bushes on the north side of the small lot, with are serving as a screen between the lots. They should be replaced with low planting to visually separate the municipal park/ playground from the parking. The half circle drive should be laid out as a gravel parking lot, to fit up to ten cars. As a municipal lot it will provide parking as necessary for any use at this corner of Greenwich, including for the Post Office, general store, municipal building, archeological museum, updated playground, or new uses in the pavilion. It will also serve as a trail head, for visitors. They will be able to park their cars and switch to bicycle, or walk through the village. Clear maps and information panels will offer direction and ideas of what they should see.

TEMPORARY BIKE RENTAL BUSINESS

On summer weekend, in a gravel parking lot near Minnewaska State Park and Mohonk Preserve recreation area, outside of New Paltz, New York, Lightsey Cycles bike shop sets up a trailer with 25 mountain bikes for daily or hourly rental. Lightsey Cycles has a brick and mortar shop in a village 10 miles away, but by bringing the bikes to the tourists, they provide more access to the bike rentals than they could with just their shop. The nonpermanent nature of the business makes it ideal for the natural setting, but allows a connectivity between the bike rental business and the users.

This would also be an ideal location to store a set of municipal bicycles. Greenwich is a wonderful place to bike, and until such a time as a privately owned bike rental business sets up a permanent or temporary retail space, the municipality should consider a bike lending program. By accepting donations of used bicycles and painting them all a bright color, the township, with little expense could provide tourists with the opportunity to explore the village and the township by bicycle. The bicycles would be borrowed on the honor system, and stored in a shed or at a bike rack near the trailhead sign.

The parking lot should be screened on the east side, with a row of hedges or small trees, to protect the privacy of the home which borders closely to the east.

Bathrooms

One of the biggest barriers to a significant increase in tourism in Greenwich is the lack of facilities, especially restrooms. Although bathroom facilities would be one of the most expensive parts of this design project, if there was to be a large increase in tourists, they would be necessary. This design calls for restroom facilities to be built as an addition to the utility shed that is currently on the back of the municipal lot. The simple clapboard siding can be applied to various prefabricated public restroom systems, which not offer plenty of options for low-impact, composting toilets.

Playground

Very simple cleaning and improvements to the existing playground equipment can make it usable again. There are currently no swings on the swing-set, and the merry-go-round is in need of painting. For safety, a layer of soft material under the play equipment is advisable. Additionally, municipal liability insurance may not cover the playground.

1 WELCOME SIGN

2 PAVILION/ PATIO

3 PARKING/ TRAILHEAD

4 BATHROOMS

5 PLAYGROUND

Image A-6 (Ali Church)

EXISTING CONDITIONS

Below, the space behind the municapl building is underused. On the right, the archeological museum is out of scale and design witht the rest of the surrounding buildings.

Image A-7 and A-8 (Greenwich Studio Team)

Image A-9 and A-10 (Ali Church)

Expand Web Presence

One of great advantages that digital technology can offer to a small scale township or organization is that, it enables them to disseminate their less-known resources, such as building heritage, natural resources, etc. Also, the digital technology enables the information to be accessed by potential visitors in a more time-efficient and cost-effective manner, which currently may still a patent of famous historic sites or tourist attractions.

Thus, in terms of Greenwich Township, an elegant and informative website has been set up for community use; however, new additions to current website that restore and disseminate Greenwich's historic maps and photos will make the website more informative. Not only will a wider group in a regional and national scale be able to access historic information of Greenwich township, those additions can play roles of powerful marketing tools for community tourism, online databases for academic research, and digitalized museums to raise public awareness of preservation. More importantly, they are experiments of documenting historic information in a digitalized format, which is an very important trend in future development of historic preservation subject.

TARGET GROUPS

Anyone or organization that is related to Greenwich will be targeted as potential user groups. For local community, a fact is that the Internet connection speed is slow currently. However, the infrastructure will finally be improved in a near future; plus Greenwich currently has a text-based well functional website that can provide them enough information under such condition thus it should not be a huge limitation. Especially, Trudy Hanson, leader of "Sustainable Greenwich" program, has planned to started a new website to keep collecting and storing historic photos of Greenwich, the new webpages can also be used a basis for future community use.

TECHNOLOGY

Comparative photos

(In terms of how photos were taken, please refer to "comparative photos" part in Appendix)

Photoshop software was used to process raw images, to ensure the similarities of historic and current photos and create comparison photos, then "animation" function of Photoshop was used to create transitional view.

After all materials were prepared and uploaded into a web server, they were geo-located on Google Earth via dropping a tag on each of the building on 3-D map and adding a link on its info. Thus, once the tag is clicked, the info box will pop out automatically to show comparative photos.

Lastly, the products of Google Earth, the kml file, were embedded into a webpage and disseminate online.

Geo-maps

All maps were collected as a courtesy of West Jersey Historic Documentation Project, Library of Congress, and Rutgers the State University of New Jersey.

All maps were cropped to reduce size via Photoshop and rectified through ArcGIS to conform to "Greenwich Roads" gis shapefile provided by Cumberland County Planning Commission under the coordinate system of WGS 1984. (Since Google Earth is using it)

All maps were overlayed in Google Earth with a treatment of their opacities, thus you will be able to compare the historic map with current aerial map, with a collection of kml file being saved (Double-layer map: one historic map and current aerial map).

All kml files were embedded into a webpage and disseminate online; additionally, the kml is also available to download online in order to play with a more interactive multi-layer map.

PRODUCTS

A web page about "Geo-history"

- A collection of historic maps (see Appendix)

- A webpage that overlays all historic maps and current Google Map, via turn on and off different layers, the user will be able to compare historic map and current map. (http://www.liyi0910.com/digitalgreenwichnj/?page_

id=110)

A web page shows examples of comparative photos between now and past

- A collection of black and white historic photos and their current photo as a comparison (see Appendix)
- A webpage shows those comparative photos in embedded Google Earth (http://www.liyi0910.com/digitalgreenwichnj/?page_id=187)
- A DIY Manual for community use

DIY MANUAL OF COMPARATIVE PHOTOS

Thinking about creating your own comparative photo? This is your DIY Manual Guide!

If you follow the steps below, the whole process will be quick, easy to learn, and free of cost. All your need are basic IT knowledge, free online album, a free software called Google Earth from Google.

Let us get started! Please follow three steps one by one.

Photo Taking

1. Take a look at the historic photo you want to work on, make notes on its photographing angle, direction, and scale

2. On site, took a photo of its current condition from similar angle, direction and scale if possible (you should try to do as similar as you can; the more similar the photos are, the better impact of comparison they will generate)

3. Make sure both historic and current photos are rescaled into 300 pixels in length (the best length to represent photos in google earth window). Image processing software such as Photoshop will be sufficient; however, if you do not have them, you can use free online resizer: http://www.picresize.com/

Photo Processing

1. Now that you have your photos, you need to store your photos in a web server. It can be your blog server, your flicker account or anything else that can provide you a link. Here, I will recommend Panoramio, an online album sharing website created by Google: http://www.panoramio.com/, if you do not have one before.

2. Register an account for free, and then all you need to do is to upload all photos you want to process in one album.

Photo Geo-locating

1. Download the latest version of Google Earth from Google website: http://www.google.com/earth/download/ge/

2. Following the default instructions to install it in your computer

3. Open Google Earth program, on the top-left corner of the program, click on fly to tab and input: "Greenwich, Cumberland, NJ", this will zoom a global map into the aerial view of Greenwich.

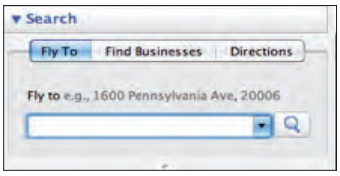


Image B-1: Image from Google Earth

4. After you zoom into the scale of Greenwich Township, you can now start search for your house on the aerial map. If you find a little difficulty to find it (i.e. some houses are completely covered by trees), you can zoom the map into largest extent to enter street view, which will provide you actual view along your street; or if you happen to know the address of your building, just type it into the search box that was mentioned on step 3.

Image B-2: Aerial Map of Greenwich Township in Google Earth

Image B-3: Street View of Gibbon House from Google Earth

5. Now that you find you house, the next step is to Geo-locate your photo into the aerial map. In order to do this, click the 'Add Placemark' button on the top of aerial map view window:

Image B-4: Image from Google Earth

Then, drag the placemark on top of your target house, here; take Upper Meeting House as an example:

Image B-5: Image from Google Earth

After placing a placemark, right click on it, select 'Get Info' option, you will be able to see a new window, click on 'description' sub-tab and then click on add image, you will be able to see an input box to ask for Image URL:

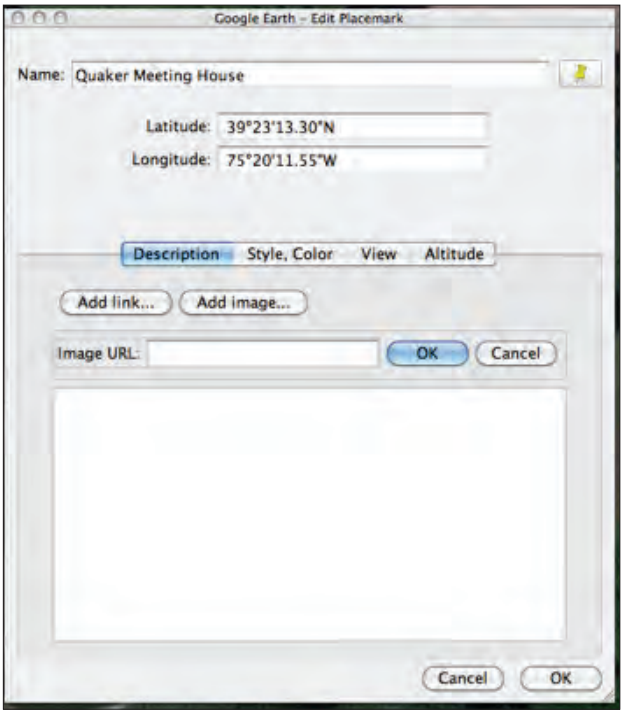


Image B-6: Input field from Google Earth

In the box, copy and paste the link of the historic photo in Panoramio.
Here, the link of the example photo is http://www.panoramio.com/photo/63479246.

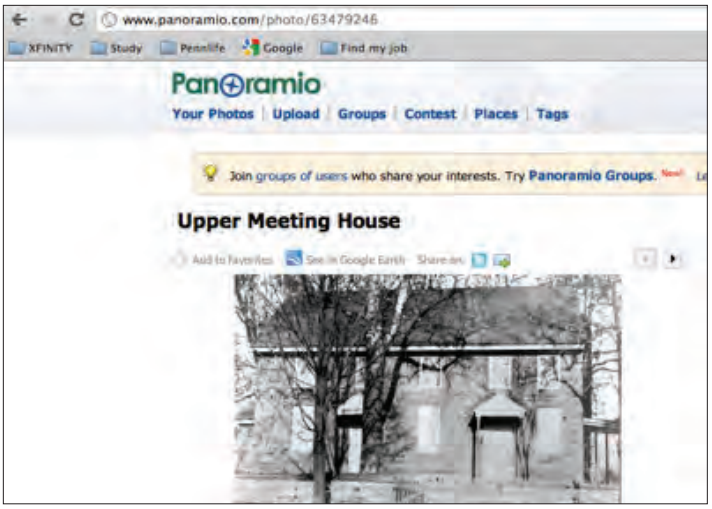


Image B-7: Image from panoramio.com

Click OK when you finish and follow the same step to insert the current photo. Now left click on the yellow placemark symbol, you will be able to see your photo appears in a pop-up window in a few moments. (It really depends on Internet connection speed thus if you do not see it immediately, please be wait patiently)

In addition, you can click on the 'Add Polygon' tool on the right of 'Add Placemark', by doing which you will be able to draw a polygon to record the direction and angle of your photo.

If you want to manipulate more functions inside 'Get Info' option, please refer to Google's official help page for more information:
https://support.google.com/earth/bin/answer.py?hl=en&answer=148142&topic=22367&ctx=topic

6. When you insert all photos you want to geo-locate in your Panoramio album, you can right click on the folder which you use to store your placemarks and select save as … function, a window will pop up to ask you selecting storage location. (It does not matter if you save it as a kml or kmz file).

7. Finally, you can start to embed your xx.kml or xx.kmz file into your website! Google's official help page has detailed instruction on how this can be achieved; it is very simple and does not require any programming knowledge.

Please click on the link below and follow instructions:
http://earth.google.com/outreach/tutorial_kmlembed.html

(This manual is written by Li Yi, graduate student from Historic Preservation Program, University of Pennsylvania, as a purpose for Individual Project of HSPV 601 Studio course. All Rights Reserved, 2011)

Low-Impact Tourism

The economic benefits of tourism are widely acknowledged in the United States, particularly in the field of historic preservation. A 2009 study shows that 118. 3 million adults tourists participate in some form of cultural heritage activity and contribute $192 billion annually to the United States economy. [1] In 2008, tourism contributed $38 billion to New Jersey's economy alone. [2] In 2010, the state of New Jersey created a new master plan for heritage tourism and urged many other municipalities to take charge of the economic opportunity of tourism through management and planning. Several municipalities near Greenwich have done so, with larger municipalities, such as Cape May County, generating $4. 854 billion in 2006.

It is necessary to develop a tourism plan for Greenwich Township for two reasons. First, tourism can assist in creating an economically sustainable community and secondly, Greenwich must consider the implications of tourism before it happens organically and without a management plan. Greenwich is a rural town, whose residents and visitors appreciate the quietude and rural nature of the landscape. Therefore a tourism plan for Greenwich that respects the character defining elements of Greenwich and accommodates the needs of residents is necessary for the township's preservation.

Based on the studio team's observations of Greenwich, it is advised that low-impact and sustainable tourism plan be developed for Greenwich. Low-impact tourism means that the tourism should be small scale, with daily visitor counts that does not overwhelm the resources or ambiance of the place. The term sustainable, while often synonymous with low-impact, is used here to state that tourism will be self-sustaining economically; tourism will not deplete the economic resources of the community, but instead regenerate them. Sustainable also means that the local way of life in Greenwich will not be greatly disrupted, or negatively influenced by tourism.

The goals of a tourism plan in Greenwich should include: promotion of activities that *generate revenue* for the township, *protect* its natural and historic resources as well as its people and community, and *interpret* the culture, history, and ecology of the township. Greenwich has the resources, that with some planning and marketing could attract cultural heritage tourists, eco-tourists, and recreational tourists.

Images C-1 - C-3: Activities in and around Greenwich. (Greenwich Studio Team)

A suggested list of activities and business opportunities for Greenwich are listed in addition to a short analysis of the assets and opportunities in the township related to tourism. Community meetings, interviews with stakeholders, and quantitative studies, should take place and this proposal amended in order to create a tourism plan that would be accepted and welcomed by the community and stakeholders it might affect.

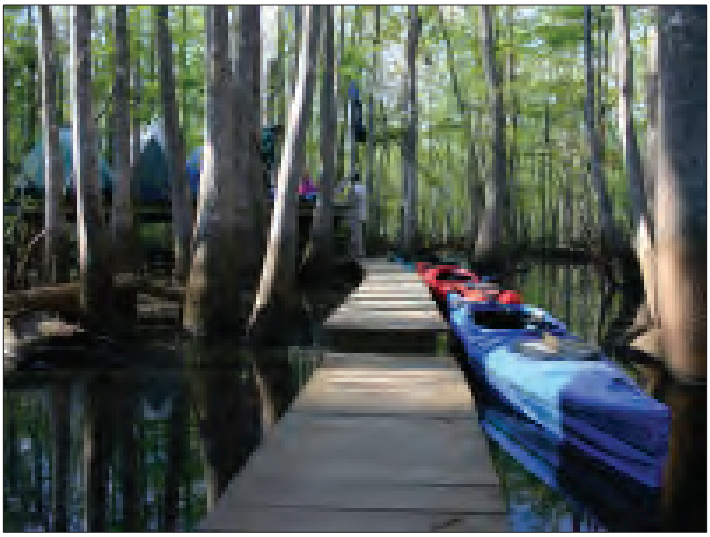
CASE STUDIES

Delmarva

www.dliteonline.net

Delmarva is a name given to the peninsula between the Delaware and Chesapeake Bays. Delmarva's name comes from the three states that make up the peninsula: Delaware, Maryland, and Virginia. The region, like Greenwich, is known for its agricultural economy, flat topography, low population density, and small towns. As an area rich in natural and cultural heritage, it has capitalized on tourism and has an inter-state alliance, DLITE (acronym for "Delmarva Low Impact Tourism Experience), whose mission is "to strengthen and promote low-impact tourism on Delmarva. Low-impact tourism plans, manages, and promotes the enjoyment and protection of the environment and local culture to generate income, employment, and the conservation and sustainability of local ecosystems".[3] DLITE has had success in its ability to promote recreational and cultural heritage activities on a regional scale that bring tourists to their municipalities. They offer a web site for tourists, which effectively combines maps, trail information, business directories, special events, and other pertinent information for tourists in one place. Their blog provides a place for people to share their experiences in the region, particularly as related to special events or activities. The blog currently appears under-used by those outside of the region. Additionally DLITE has also assisted in the development of various trails, including cycling, birding, and kayaking.

DLITE has promoted eco-tourism in the region with events such as a bioblitz, for which people raise money and participate in a day of wildlife surveying. This provides valuable information to naturalists and biologists for a relatively small or no amount of money, while at the same time providing an activity for tourists and local residents



alike. Due to the short time frame in which it is completed and the novelty of visiting a new setting create a festival like atmosphere for those involved, thus encouraging participation annually.

Greenwich can learn much from DLITE's tourism strategy, especially the concept that connecting with other municipalities and having one managing person or group, can make the most of limited financial resources. Additionally, it strengthens an area's connection to its tourists because potential tourists have can find relevant

Monterey, VA

www.highlandcounty.org

Monterey is a town of approximately 222 residents in the highlands of western Virginia. It is an example of small town that has leveraged its natural and historical resources to entice tourists. The town encourages tourism through its many bicycling maps, hunting information, and seasonal festivals. The community is part of a larger tourism plan as part of the surrounding county and its success is evident in the bed and breakfasts, farm stays, and restaurants advertised on its website.

Of particular interest, is the Highland Center Business and Community Incubator. This center is housed in a historic school building within the town of Monterey and serves as a support center for entrepreneurs. It has a resource library, high-speed DSL Internet connection, computers, scanner, and fax machine. Additionally, the center has a state-inspected, commercial grade kitchen available for food-based businesses and community organizations. This allows local entrepreneurs the chance to start a restaurant or bed and breakfast without the start-up

cost of expensive refrigerators or cooking equipment. The center has also partnered with the nearby James Madison University to provide free and confidential business counseling as well as economic development workshops. A center such as the one described could be useful to a town like Greenwich. It could be incorporated into the "Saturday space" and provide local residents a place to prepare foods to sell at a local bake swap, craft fair or farmers' market. More importantly, it could encourage local residents to become entrepreneurs and open bed and breakfasts or sandwich shops where locals and tourists alike could buy food.

Cape May, NJ

www.capemay.com

Cape May is located southeast of Cumberland County and is bordered by the Deleware Bay to the west and Atlantic Ocean to the east. While Cape May boasts a larger population and the attraction of a seaside location, it shares many similarities with Greenwich Township that make it a worthwhile study.

Cape May boasts many activities for tourists, including activities for the naturalist such as birding and wildlife observation. Currently, Cape May has a bird observatory, with a website detailing recent sightings and a birding forecast. They advertise programming such as walks and boat rides. Cape May also partners with the Wetlands Institute of Stone Harbor, NJ, which specializes in programming to promote wetland education and conservation.

At this stage in the planning process, there is not enough information to determine if a large wetlands center, like the one in Stone Harbor, would be viable in Greenwich. However, it is likely that some form of interpretation of the wetland habitat combined with an marketing campaign, would be successful as part of the tourism plan in Greenwich.

OPPORTUNITIES

Greenwich needs to consider linking to other tourism networks such as Cumberland County's Tourism and Recreation office and the state's Visit New Jersey promotional website. Because of the natural resources available in Greenwich, the town should consider partnerships with organizations dedicated to ecological tourism, birding, kayaking and cycling. By updating Greenwich's National Register form, the town can bring greater attention to its historic resources and promote on websites such as Gozaic.com and the New Jersey Historic

Images C-5 (Greenwich Studio Team)

FACILITIES AND CHANGES NEEDED TO OPTIMIZE TOURISM POTENTIAL IN GREENWICH

- Bed & breakfast
- Restrooms
- Restaurant
- Convenience store
- To-go food
- Web or application-based guides, info, and maps
- Printed trail guides

ACTIVITIES THAT CAPITALIZE ON THE RESOURCES ALREADY IN GREENWICH TOWNSHIP AND WOULD BE EASILY MARKETABLE TO TOURISTS

- Fishing
- Birding
- Kayaking/Canoeing
- Boating
- Camping
- Picknicking
- Cycling
- Photography
- Museum tours
- Walking tours

Trust. Additionally, Greenwich should consider researching a branding strategy that would unify the town's resources and activities. The following is a list of changes in zoning and development that could make Greenwich a preferred destination for tourists.

ZONING CHANGES

Bayside Tract

It is recommended that regulations be altered to allow camping, expansion of foot trails, and an expansion of a commercial and recreational area. Currently the commercial area is limited to the marina. However, by expanding this area, entrepreneurs would have the opportunity to open kayak rentals, or snack shops in other locations.

Historic District

It is recommended that zoning be revised to allow commercial activity including retail, food, and lodging. This will permit residents to operate bed and breakfasts or restaurants along Ye Great Street.

Agricultural Area

It is recommended that zoning by changed to permit commercial activity including lodging and sales of prepared food. This would allow owners of property in the agricultural area to capitalize on tourism by operating bed and breakfasts, restaurants, or a farm stay experience.

CONCLUSIONS

Greenwich has potential through its natural and historical resources to generate revenue through tourism. Small scale entrepreneurship is well suited to Greenwich's aging population. Its proximity to nearby metropolises, such as Baltimore, Philadelphia, Trenton, and New York make it an ideal location to draw tourists who desire a weekend or day trip out of the city to a peaceful and rural setting.

Greenwich should connect with regional and state-level tourism organizations to maximize its resources. The township should also invest in the research and development of a branding strategy for the town that could link its various resources together to form a cohesive promotional strategy for the town. Zoning codes should be revised to encourage entrepreneurship while still respecting the small scale of the place. Greenwich can also encourage small-scale entrepreneurship through incentives, training, and a business incubator.

Tourism in Greenwich can work as part of other recommendations in the preservation plan, such as the Saturday space, cultural resource mapping, website, and National Register nomination. The Saturday space can provide a centralized location for parking, information regarding the town, and a place to house events that might attract tourists. Cultural resource mapping will provide an inventory of all cultural resources, from which tourist attractions can be made. A tourist map and predicted traffic pattern can be derived from this exercise as well. The website is essential for publishing information to the broader public about Greenwich. It will provide information on businesses and activities for the tourist. Lastly, an update to the National Register nomination will give more property owners the chance for tax incentives and access to resources, both educational and financial, to encourage entrepreneurship. A listing on the National Register also gives Greenwich recognition as a worthwhile heritage site, which could capture a portion of the cultural heritage tourist.

Endnotes

1 Mandala, Laura. "News Release." CulturalHeritageTourism.org. culturaheritagetourism.org, 21 October 2009. Web. 22 Dec 2011.

2 State of New Jersey. Office of Governor-Elect. Report of the Transition Subcommittee on the Department of State. Web. <http://www. state. nj. us/governor/news/reports/State.pdf>.

3 DLITE. "About Us." <http://www.dliteonline.net/about/about.html>. 28 November 2011.

Updating Greenwich's National Register Listing: A Guide

The National Register of Historic Places (NRHP) "is the official list of the Nation's historic places worthy of preservation."[1] It was created under the National Historic Preservation Act of 1966.[2] Listing serve an obvious honorific purpose, as placement on the National Register (NR) does not guarantee any legal protections, but it also serves other important purposes. NR properties are protected should the Section 106 process be invoked, which takes place any time a NR or NR eligible property is effected by a federal action. It is important that NR listings be complete and up to date so that this review process can be carried out as completely as possible and protect as strongly as possible all of those structures that contribute to a district's significance. National Register listing files hold concrete and secure documentation of the Country's important historic places. Should the place ever be severely damaged or lost, it is essential for this document to contain the most detailed, complete, and up-to-date information as is possible.

THE CURRENT LISTING

Greenwich was listed on the National Register in 1971. Early listings like these, which date from the latter half of the 1960s and the early 1970s, use the same basic form that is used up to today. Still, the specific information included is often oversimplified and lacking in specific, concrete archival documentation and secondary resources. For this reason, many early listings are being reexamined today and either updated or completely rewritten.

More specifically, the process for noting what buildings are found within the district's listed boundaries, and which of these buildings are considered to be contributing to the district's significance, has changed greatly. The current listing has extensive boundaries but only lists 19 of these structures as contributing to Greenwich's significance. Many of the construction dates cited in the listing would benefit from more detailed archival research and a visual inspection of each building's structural materials. The methods for conducting this research and the rationale behind it are explained in greater detail below.

In addition, ideas of what we consider historically significant to the Nation's past have expanded significantly. The current listing's Narrative Statement of Significance focuses on the Colonial period of Greenwich's history. This history is, of course, significant, but Greenwich has existed for over 300 years. There is a rich and significant history in the township that extends beyond the Colonial which is embodied in the built fabric and should be acknowledged. This is especially true as some of the buildings currently listed as contributing structures date to the mid-19th century.

THE PROCESS OF UPDATING A LISTING

A National Register listing can be updated in two ways: all at once by submitting an entirely new nomination form, or incrementally by submitting continuation sheets that amend the current listing form on file with the National Park Service (NPS). Either of these processes could be employed for Greenwich, and the path chosen may depend mostly on available resources. The necessary forms can be acquired through the New Jersey Historic Preservation Office (NJHPO) and any questions or concerns can be directed to this office as well (see specific contact information listed below). The materials produced are then submitted to the NJHPO for review. The process of amending the current nomination has the benefit of being able to be written incrementally and filed as each is completed. An entirely new form, though, can also be written in pieces over time; the filing simply will all have to take place at one time at the completion of the writing.

All filings take the same route as the original nomination form, starting at the NJHPO and then being passed on to NPS for final approval and filing. Should the chosen path be to amend the nomination form, all appending documents go through this same process but incrementally over time.

The only change that cannot be made with a continuation sheet is a boundary increase. If there is an interest in increasing the current boundaries of Greenwich's NR district, this would need to be treated as a new nomination. The nomination form would only include information that pertains to the new area being covered. For instance, this new boundary nomination would have its own, separate Narrative Statement of Significance that would focus only

on the area and structures within the additional boundary space. This would be written separately from any update that might be written and submitted as a continuation sheet for the current listing that is on file. This update would only pertain to structures within the current listing's boundaries. Should a boundary increase be seriously considered, it may be more straightforward to write a completely new NR nomination for Greenwich that includes these new boundaries.

WHAT NEEDS UPDATING

There are a number of key differences between current nomination processes and those employed in the 1970s.[3] The contemporary elements that are missing from Greenwich's current listing can be added through amendments to various sections of the form. One of these potential amendments would be an amendment to the current Narrative Statement of Significance. This statement focuses on Greenwich's colonial history. The town did not stop growing in the 18th century. Colonial structures have been added to over time and 19th century structures have filled in the spaces around them. Greenwich had a strong and thriving oyster industry in the 19th century that greatly affected the physical fabric of the town. The industry continued the active use of the colonial port well after transport routes shifted from water to rail and led to the expansion of existing colonial homes as well as the construction of new structures in the village and surrounding area. This information should be added to the current listing and could also justify a separate boundary extension to include the 19th century homes and maritime architecture of Buena Vista.

The information provided in the listing's Physical Description is quite different from what a contemporary nomination would contain. The Physical Description could be amended to include a more general overview of the characteristics of the whole district. This would include the relationship of the structures to the landscape and the street, the prominence of the wide, colonial main road, the abundance of trees that line it, the water that it leads to, and the surrounding agricultural lands that make up the majority of the district's viewshed. The amendment would then go on to describe the particular types of buildings that are prominent in the district, laying out their common and defining features. This could include early timber frame structures, colonial masonry structures, 19th century structures, and the many additions that have been made to all of these buildings that mark their active use and expansion over time.

Much of the information that is included in the current Physical Description, a list of specific contributing structures with their dates of construction and brief individual descriptions, could be more clearly laid out and expanded upon in an appended Resource Inventory. The Resource Inventory lists every structure within the district's boundaries. There is no official form for this listing, but it can include information such as addresses, dates of construction and of any additions, architects, historic names, stories and bays, construction materials, whether or not the building is a contributing structure in regard to the district's significance, and whether or not the building is listed individually on the National Register. Though you may not be able to obtain all of this information for every structure, it is helpful to have a list of every building within the district and basic facts about its location and significance. This list can even include demolished buildings that once stood in the district.

Documentary photographs are filed with all nominations to illustrate clearly what the fabric on the ground looks like in its current form. Though photographs were clearly filed with the 1971 listing, it would be useful to increase the photographic documentation on file with the nomination. This is especially true if boundaries are going to be increased and if a more detailed Resource Inventory is going to be created for the listing. This will create a richer stock of structures to be documented. Having photographs of these structures on file will be helpful should flooding or sea level rise affect Greenwich's physical fabric to any great degree in the future. Simply having a visual physical document of how the town looks and detailed images of historic construction materials and techniques will preserve Greenwich for the future, should the physical fabric come under threat or be destroyed completely.

THE RESEARCH PROCESS

Researching the history of colonial-era buildings is not an easy or simple task. The process involves visiting multiple county offices and archives in order to trace the history of a structure from the present day back to its construction. Titles, deeds, and wills, as well as more general collections of historic information, are spread between the Cumberland

Image D-1: The Stone Tavern, Greenwich, NJ (Greenwich Studio Team)

County Historical Society (CCHS), the Cumberland County Clerk's Office, the Historical Society of Pennsylvania (HSP), and the New Jersey State Archives. The addresses and contact information for these archives and offices, along with detailed information on procedures at each, are listed below for reference.

To understand the process of researching structures in Greenwich firsthand I chose two different colonial masonry buildings on Ye Greate Street and conducted archival research in an attempt to date them more accurately. I worked closely with Joan Berkey, an architectural historian who researches colonial heavy timber frame structures and who has done a lot of research on structures in Cumberland County and in Greenwich. Ms. Berkey's familiarity with the relevant archives and materials along with her understanding of many of Greenwich's colonial structures made her an invaluable resource for a project like this one. I chose to focus on masonry buildings due to the level of detail and comprehensiveness of Ms. Berkey's work on the colonial timber structures in Greenwich. An exploration of the masonry structures would fill a gap in the current research regarding the village's built heritage.

I decided to focus on the Stone Tavern and the Bond House both of which are located on the lower portion of Ye Greate Street. Both of these structures are currently listed as contributing structures in Greenwich's National Register district. Little is known about the Bond House. There is no specific file on the building at CCHS. As such, conducting research on this structure seemed like a useful endeavor.

The construction date of the Stone Tavern had been questioned as early as 1969 by Carl Williams, an early 20th century historian, in a letter to Sally Watson, former President of the Cumberland County Historical Society.[4]

Williams asserted that the tavern, believed to have been constructed in 1728 and to have been the location where the Tea Burners stored the stolen shipment of British tea, was not constructed until 1791-92.[5] He cited a 1791 deed between Phineas Carll, Thomas Daniel, and Richard Wood which proves the lot had been vacant.[6] Additionally, Williams noted that the 1786 Heaton map, a sketched map of the structures along Ye Greate Street in 1786, does not show the Stone Tavern.[7] The difference in date and its potential impact on the historical significance of the building was so extraordinary that additional research was warranted.

The first step in my research process was to visit the Cumberland County Historical Society and examine the information they had collected on these buildings. CCHS has an extensive file on the Stone Tavern, but held no specific and separate information on the Bond House. The file on the Tavern confirmed the building's street address, which would be important to know when I began my deed research, but for the Bond House I needed to look elsewhere for this information. My next stop, therefore, was the Greenwich Post Office to make sure I had the correct and official addresses for both buildings.

I used these addresses in New Jersey's "Assessment Records Search" online in order to find out the current owners of these properties and also the most recent deed book and page number for each.[8] I then took this information to the Clerk's Office, where I searched through their physical collection of deed books to begin to create a complete chain of title for each building. The more recent deeds are easy to navigate. They are all typewritten and each deed references the previous owners of the building and

Image D-2: The Bond House, Greenwich, NJ (Greenwich Studio Team)

property and the book and page numbers for the previous transactions.

The process becomes murky, though, when you get into the handwritten deeds of the late-19th century and earlier. Many of these deeds are difficult to read, the language is complex, and often they don't cite prior deeds. I had this issue with my chain of title for the Bond House. I created a concrete chain of title back to an 1898 deed between William and Nettie Stewart and Henrietta Stewart.[9] These deed included transactions for three separate properties, and, unfortunately, the Bond House property's description did not reference an earlier deed.[10] This is where Ms. Berkey's expertise was extremely useful and made it clear that this process often cannot take place in a vacuum. Ms. Berkey created a deed-mapper database for all of her Cumberland County research. This database helped Ms. Berkey to gain an understanding of the bigger picture of lot ownership. The majority of Greenwich's deeds delineate property lines by referencing adjacent property owners. By relating adjacent parcels to one another on actual parcel maps through her deed-mapping program, Ms. Berkey was able to gain an understanding of who owned the adjacent properties and at what time period even if a deed cannot be found. Ms. Berkey had only researched timber frame structures in her work. Still, she was able to find three references to the Bond House property from her research.[11] The information Ms. Berkey found, though not concrete, suggests that Benjamin Tyler built the Bond House sometime between 1763, when a deed makes it clear that Tyler owned the lot, and 1801, when a later deed shows that Dr. Levi Bond had purchased the property.[12] Even without the actual deed between Tyler and Bond, we can narrow the dates to the latter half of the 18th century through Ms. Berkey's mapping technique.

The Stone Tavern was much easier to assemble a chain of title for, as an 1852 deed listed a chain of title going back to 1791.[13] Unfortunately, I was not able to locate the 1791 deed. I was able to locate another cited deed, that of Maskill M. Carll to John Waithman in 1815.[14] This deed makes it clear that the Stone Tavern was standing on the lot in 1815.[15] The deed also references Phineas Carll's will in which he left his property to his son Maskill.[16] The library at HSP holds the abstracts of Cumberland County's colonial wills, but Phineas Carll's will appears to not have been abstracted. Carl Williams asserts that he located the 1791 deed and that this deed proves that the Stone Tavern was constructed in 1791-92.[17] A more thorough search for this document in HSP and the Clerk's Office would be warranted. At this point an inspection of the physical fabric of the building would also make sense. Many of Ms. Berkey's findings regarding building dates rely on an inspection of framing and construction techniques to confirm assumptions made through deed research. Especially in the case of this important structure, an inspection of the framing would make sense.

CONCLUSION

This research can feel like a daunting task, but it will be much more logical when taken on as a comprehensive project. As Joan Berkey has shown, this type of research is best when not done in a vacuum. Knowledge of certain lots and their boundaries will begin to answer questions of ownership and transfer dates, and lead the researcher in the direction of information that could not have been known otherwise. This research, once completed, will provide a more holistic understanding of how Greenwich expanded and changed over time. It will give greater depth to a revised Physical Description and Narrative Statement of Significance, as well as adding concrete facts to the Resource Inventory. Once filed, this information will be saved as a public record and document the history and significance of Greenwich for generations.

HELPFUL CONTACTS

Bob Craig
Registration Program Coordinator
New Jersey Historic Preservation Office
609-984-0541

Contact Bob with questions regarding the filing process.

Lisa Deline
National Register Reviewer (for states including New Jersey)
National Park Service
202-354-2239
lisa_deline@nps.gov

Contact Lisa if you have further questions about the process that Bob is unable to answer.

Christine Messing
Archivist
National Park Service
202-354-2262
christine_h_messing@nps.gov

As of the time of this writing, the Greenwich Listing has not yet been digitized. First check http://nrhp.focus.nps.gov/natreghome.do?searchtype=natreghome to see if a copy has been digitized. If not, contact Christine to obtain a copy of the file from NPS.

Joan Berkey
Architectural Historian
609-861-2208
Joan123B@aol.com

Copies of Ms. Berkey's reports on the heavy timber frame structures of Cumberland County can be obtained from the Cumberland County Historical Society, and reference copies are on file at the County Library as well as with the New Jersey Historical Commission and the NJHPO. She is open to research questions and assistance and has a wealth of knowledge on the physical fabric of Greenwich and research methods for the township.

RELEVANT ARCHIVES

Cumberland County Historical Society
The Warren and Reba Lummis Genealogical and Historical Library
981 Ye Greate Street
Greenwich, NJ 08323
856-455-8580
cchistsoc@verizon.net
http://www.cchistsoc.org/about.html
Contact: Warren Adams or Jonathan Wood

Hours are posted on the website, but it is a good idea to check with Warren or Jonathan before you go. You can request to have information on certain topics pulled for you in advance. There is a parking lot in the rear of the building, and you enter from the rear door. There is a wealth of information in the library, but many dates and owners of particular buildings will need to be confirmed by further archival research.

Cumberland County Clerk's Office
Court House
60 W. Broad Street
Bridgeton, NJ 08302
856-453-4860
http://www.co.cumberland.nj.us/content/173/2133/3337/3363.aspx

Open weekdays from 8:30 until 4:00. The Clerk's Office holds titles and deeds going back to the late 18th century. Before you arrive, you can find out the current owner and the book and page number of the most recent deed by visiting http://tax1.co.monmouth.nj.us/cgi-bin/prc6.cgi?&ms_user=monm&passwd=data&srch_type=0&adv=0&out_type=0&district=0606. Generally each deed references the book and page number of the previous and this information can be used to trace ownership back to the late 18th century. Photography is discouraged, but copies can be made for $0.05 and $0.10 a piece, depending on the size of the paper. Deed books earlier than books in the 400s are located in the basement. No special permission is needed to access the basement. Simply follow the stairs down and walk straight back to the back room to find the earlier deed books. Directions and hours are available on the website. Enter the building from the rear.

Historical Society of Pennsylvania
1300 Locust Street
Philadelphia, PA 19107-5699
215-732-6200
http://www.hsp.org

The library is open Tuesday through Friday afternoons, with some extended hours as posted on the website. Admission is $8.00. The library's microfilm room contains deeds and wills from Cumberland County. The deeds have grantor and grantee indexes by last name, also on microfilm. The deed books start with the earliest recorded deeds in 1785 and go up to 1861. The numbers on the box do not directly correlate to deed book numbers, as the earliest Cumberland County deeds are actually by letter. If you are looking for deed book B.B., for example, it is there. You will just need to search by the year of the deed, not the specific book number or letter, when selecting a reel of microfilm. The library also has an extensive collection of books regarding New Jersey's colonial history. These include a complete collection of colonial will abstracts. The reference librarians are extremely helpful, and there is also an online catalog available on the website to make notes of call numbers before your visit.

New Jersey State Archives
225 West State Street
Trenton, NJ 08625
609-292-6260
archives.reference@sos.state.nj.us
http://www.state.nj.us/state/darm/links/archives.html

The archives are open weekdays from 8:30 until 4:30. The website has some searchable databases as well as an online catalog. The archives hold colonial deeds and wills for Greenwich as well as indexes and some historic maps and photographs.

ENDNOTES

[1] "National Register of Historic Places," *National Park Service*, 2011, http://www.nps.gov/nr/ (accessed December 17, 2011).

[2] Ibid.

[3] Examples of more contemporary listings and their components can be found at http://www.nps.gov/nr/sample_nominations.htm

[4] Letter from Carl Williams to Sally Watson, August 19, 1969, private collection of Joan Berkey.

[5] Ibid.

[6] Ibid.

[7] Plan of the Town of Greenwich for Mr. Amos Fithian, map drawn in 1786 by Levi Heaton, private collection of Joan Berkey.

[8] See web address listed below under "Useful Archives: Cumberland County Clerk's Office."

[9] Cumberland County Clerk's Office, Deeds, William W. Stewart et ux. to Henrietta Stewart, Feb. 16, 1898.

[10] Ibid.

[11] Email conversation with Joan Berkey, December 7, 2011.

[12] Ibid.

[13] Cumberland County Clerk's Office, Deeds, William B. Adams to George B. Wood, July 10, 1852.

[14] Historical Society of Pennsylvania, Cumberland County Deeds, Maskill M. Carll to John Waithman, Aug. 25, 1815.

[15] Ibid.

[16] Ibid.

[17] Email conversation with Joan Berkey, November 27, 2011.

Springtown: History and Documentation

Throughout this semester, the Greenwich Studio team has wrestled how and where Springtown fit into our preservation plan. Though historically significant, Springtown is under-documented and under-interpreted. It is often prized for its role in the Underground Railroad, yet receives little mention for its late 19th- and 20th-century history. Furthermore, there is little existing historic fabric to show for its historic significance. As such, the components of this project are twofold. First, this project seeks to articulate the significance of Springtown, both in its early stages as a stop along the Underground Railroad and as a later semi-autonomous black community. Second, this project includes a preliminary survey of existing historic fabric in Springtown, mostly through informed speculation, with the intention of providing foundational information for an updated National Register nomination of Greenwich Tonwnship.

Image E-1: 1862 Cumberland County Atlas, showing Springtown as a settled community, Cumberland County Historical Society

SPRINGTOWN HISTORY

A little ways from Greenwich Village, where Sheppards Mill Road meets Springtown Road, sits the village of Springtown. The earliest known settlement in Springtown dates to 1802, when Jacob Bryant, a New England soldier of a black regiment in the Revolutionary War, purchased property for $101. As early as the 1820s, escaped slaves from Delaware and Maryland took refuge in Springtown, some simply stopping along their way to larger cities, while others settled, creating the foundations for what would become a vibrant, free black community.

With the passage of the Act for the Gradual Abolition of Slavery in 1804, New Jersey's first abolition law, fugitive slaves seeking refuge in the Northern States began to pass through and sometimes settle in New Jersey.[1] Due to the Quaker's strong opposition to slavery, Greenwich Township and nearby Springtown provided shelter and protection from slavecatchers. According to the autobiography of Samuel Ward, and early Springtown resident via the Underground Railroad, "at Springtown, there were numerous coloured people…the Quakers in that region were truly, practically friendly…and when slavecatchers came prowling about the Quakers threw all manner of peaceful obstacles in their way."[2]

From the mid-nineteenth century to the mid-twentieth century, Springtown endured as a black community with work rooted in the agricultural fields on Greenwich Township, but with a spirited civic and cultural life of its own. In this time, Springtown was home to three churches—the Methodist Episcopal Church, the AME Church, and the Union Methodist Church, each with their own congregations. Furthermore, the Springtown Schoolhouse, built in 1912, functioned as an all-black school—a separation that was in part due to the Greenwich policy that farm and village children should attend the school in closest walking distance, but intentional on the part of Springtowners as well, in the interest of community.[3] The Springtown community hosted festive public events in its high times as well. According to the memories of Charles Nichols, a Springtown resident,

1 New Jersey Historical Commission, "A Guide to the Underground Railroad in New Jersey," Trenton, NJ, 6.
2 Samuel Ringold Ward, Autobiography of a Fugitive Negro: his anti-slavery labors in the United States, England, and Canada (Johnson Publishing Company: 1970), 19.
3 Maria Boynton, "Springtown New Jersey: explorations in the history and culture of a black rural community," (Ph.D. diss., University of Pennsylvia, 1986), 173.

"Springtown was a Christian town…In the dances in the [A.M.E.] Hall there would be piano playin'…People would come out of Bridgeton to go there...Springtown was a leading town back then."[4]

In subsequent memories, when asked about the Baseball Diamond at the intersection of Sheppards Mill and Springtown Road, Nichols recalled:

"Springtown had a team that would take on other black teams. The main play-offs were exciting public events that would be heldon national holidays. Black people would come from all around, teams would come from other areas…"[5]

Image E-2: Bethel AME Church, 2011 (Greenwich Studio Team)

Prosperous times for Springtown reached their height in the 1920s, as many Springtowners found employment as serviceworkers for Greenwich residents. During the 1930s, however, the Great Depression hit and many Springtowners subsequently lost employment and therefore lost the ability to pay land taxes. As such, many Springtowners lost their land in these years—between 1919 and 1931, according to Greenwich Township records, the Township sold over eighteen Springtown plots of land at Sheriff's sale.[6]

As employment opportunities and land titles dwindled, so too did Springtown. Though Springtown remained, many left to find work in larger cities such as nearby Bridgeton, Philadelphia, and New York.[7] Church congregations dwindled, and in the 1950s the Springtown school closed. In 1957, the Springtown School building was moved from the Township, and by 1964 it was rehabilitated for use as a summer cottage elsewhere in New Jersey.[8]

Springtown has experienced renewed vitality in the past decade, with the restoration of the AME Church in 1994. By the early 1990s, after over a century of deterioration, the AME Church had become infested with termites and was threatened with demolition. Present and former community members, however, sought resources to rehabilitate the Church, with the hope the rehabilitation could spark revitalization. When ruminating on the Church's renewal, Reverend Derek Gatling spoke of it as a catalyst or rebuilding the community—"We want to bring companies and jobs back…We want to try and help the youth in this community," he said.[9] Though companies and jobs have not returned to the town, the Bethel AME Church serves as a beacon of hope for the long stagnant community.

SPRINGTOWN INTEGRITY & DOCUMENTATION

Springtown Cottages

In the early stages of Springtown, settlers built cottages of heavy timbers, many of which were salvaged from older structures. These early houses of a similar style and footprint were mostly construced between the 1850s and 1880s. The facades were typically symmetrical, and the cottages were small in scale with simple room differentiation and usage.[10] When many Springtowners left for larger cities in the mid-20th century, these cottages were left abandoned in fields. [Image E-4] Few remain today, though there is evidence that upon further investigation, some Springtown cottages may exist either as attachments to buildings, hidden behind vinyl siding, or as separate garages.

The building at 943 Sheppards Mill Road is likely an old Springtown cottage. [Image E-5] The timber frame, chimney, and similar footprint suggest it was once a cottage for Springtown residents that is now used as a garage or storage. That it is on a new cinderblock foundation

4 Ibid., 173.
5 Ibid., 167.
6 Ibid., 87.
7 Dennis Rizzo, Parallel Communities: The Underground Railroad in South Jersey, (Charleston, SC: The History Press, 2008).
8 Boynton, 157.
9 Stephen Graff, "A Journey to Springtown," Philadelphia City Paper, 11-18 November 1999, accessed online: http://archives.citypaper.net/articles/111199/feat.cover2.shtml
10 Boynton, 108.

corroborates this speculation, since it was likely moved from a nearby field and repositioned in its current location.

With further research, the home at 1069 Sheppards Mill Road could prove to be a composite of former Springtown cottages, now clad in siding. [Image E-6] The home, made up of four separate buildings of similar shape and size, resembles the footprint of Springtown cottages. Furthermore, that this home has no uniform plan but is rather made of different parts suggests that perhaps these buildings were salvaged in the late 20th century and joined together to form one house.

Alex-Manluff House

The Alex-Manluff House, at 681 Springtown Road, was likely built between the years of 1890 and 1900. [Images E-7, E-8] Beginning in 1880s, at a time when Springtown experienced growth and a relatively large population, families who had been living in Springtown and working in Greenwich for some time began to build larger, two-story structures.[11] The Alex-Manluff House remains as one of the existing two-story houses, with evidence of early twentieth-century additions, and still in use as a residence today. Given its integrity and continuous use as a Springtown residence, this house should be incorporated into an updated National Register nomination for Greenwich Township.

11Boynton, 127.

Wesley M.E. Church Ruins:

The Wesley M.E. Church ruins at the intersection of Sheppards Mill Road and Springtown Road are evidence of a once strong spiritual community in Springtown. [Images E-9, E-10] Destroyed by fire a few years back,[12] the Wesley M.E. Church was once a strong civic institution of Springtown. Currently, the ruins at the former site remain dilapidated, and though there is no hope for rehabilitation and no congregation to support its reconstruction, the Church ruins should be documented and interpreted before their memory is removed from the landscape.

Image E-3: Overgrown Springtown Baseball Diamond, 2011 (Greenwich Studio Team)

NEXT STEPS

Using this preliminary documentation as a guide, the next steps involve including Springtown in the proposed updated National Register nomination for Greenwich Township. Springtown's compelling history can stand alone, but in concert with the history of Greenwich Village, the township as a cultural landscape tells many stories, each with their own tales of endurance, that further the importance of sustaining Greenwich into the future.

12 As told by Greenwich resident Michael Henry.

IMAGES

E-4: Robinson House, since demolished, typical Springtown Cottage (Boynton, 1986)

E-6: 1069 Sheppards Mill Rd (Greenwich Studio Group)

E-5: 943 Sheppards Mill Rd (Greenwich Studio Group)

E-7: Alex Manluff House (Boynton, 1986)

E-8: Alex Manluff House (Greenwich Studio Group)

E-9: Wesley M.E. Church (Boynton, 1986)

E-10: Wesley M.E. Church (Greenwich Studio Group)

Cultural Resource Mapping

When the Greenwich Studio Team visited the Cumberland County 40th Annual Greenwich Artisans' Faire in September of 2011, they were amazed by the community support and participation in the event. Booths were set up and picnic tables formed lined rows as people from around the southern region of New Jersey flooded to the faire grounds to enjoy the live bluegrass music, homemade baked goods and other crafted knick-knacks. The Faire was held at the Gibbon House Museum and Grounds, which is managed by the Cumberland County Historical Society. The house museum offers a unique experience to visitors due to the accessibility to extant, historic architectural fabric from the 20th, 19th, 18th and 17th centuries.

Cultural experiences, such as the Annual Artisans' Faire, are important for establishing relationships between cultural resources and people who want to interact with them. The management and maintenance of cultural resources is integral in preserving heritage, which is a major goal for Greenwich and Cumberland County. In order to effectively manage these resources, it is important to define and monitor the use, function and purpose of the resources through time. Most maps are able to accurately identify the spatial location and demographic information regarding cultural resources, however many maps and monitoring methods fail to accurately portray how a resource is used or how it is remembered by the local population. By studying memories of a place and histories of interaction, a better understanding of significance will be gained.

This project will study the usefulness of psychogeographic techniques to link memories, purpose, and geographical location to cultural resources in order to demonstrate how non tangible assets of heritage like function, purpose and community perception can be represented in a map.

A form was created to elicit memories of Greenwich from studio participants and allow them to be expressed two dimensionally on paper. The participants were instructed to use any form of graphic communication to describe their memories, be it writing or drawing. There was only one test session and it lasted for ten minutes. Before the forms were distributed, the group was led through a visualization to better elicit graphic images of Greenwich from their memory. The following is the script for the visualization technique:

Image F-1: Artisans' Farie, Greenwich, NJ, 9/2011 (Greenwich Studio Team)

We have all visited Greenwich at least once and now we will attempt to describe our experience on paper. In the blank space below, we will use our memories of Greenwich to depict where we went and what we saw. To help draw out these memories, think about the drive down to Greenwich...Where did you start your journey? What did you see as you traveled through the countryside? How long did it take to get there? Picture in your minds eye what you saw when you knew that you had finally arrived in Greenwich. What was it? What did it look like? When you have this image in your head, recognize any other objects that were around it.

Moving past this memory, imagine where you were when you got out of the car. Where did you park? Where did you go once you were outside? What were your impressions of the atmosphere and feeling of the village? Now remember a journey you took through the township. Where did you go within the village? Did you visit Springtown? Or Hancock Harbor? Were you looking at the landscape for clues about agriculture or heritage? Did you see anything that made you sad? Or worried? Did you see anything that made you laugh? Or smile? Do you remember what Greenwich looks like in sunlight?

Continue imagining your experience throughout Greenwich and take note of memories that stand out as vivid and personal. Take a few moments to hone in on a few of these memories and images as your final impressions of Greenwich. Choose about 5 things that you just remembered about Greenwich and think of a location of where these events occurred. In the next 10 minutes, please use the space below to draw, sketch and annotate these memories.

There were a total of 8 participants. After the forms and the personal memory maps were completed, each were analyzed and coded for cultural resources mentioned. The types resources within the cultural landscape that were associated with the memory map exercise are listed below. Two types of maps were generated to illustrate how the Greenwich Studio Team used and perceived the cultural and natural resources in Greenwich Township during time spent in the area. The first was an illustrated culture map and the second was a computer-generated cultural experience distribution map. Both maps were able to demonstrate where the interactions with the landscape occurred, however the culture map was able to show how the participants interacted and the distribution map was able to show the density of interactions and memorable experiences across the landscape. Both maps indicate that

ASPECTS OF THE GREENWICH CULTURAL LANDSCAPE

Old Homes

Memorials

Ruins

Gravestones

Levees

Boats

Locals

Birds

the most memorable experiences occurred around the village, Springtown and Bayside Tract.

The results are only applicable to the participants who completed the forms from the Greenwich Studio Team. However, further study may be able to show that these results can apply to tourists, as well. Although the Greenwich Studio Team did not directly participate in any recreational or ecological tourist activities, they did travel extensively throughout the township and studied most of the historic sites that would be part of a cultural-heritage tourist route. Their experiences with cultural resources were similar to what other tourists would experience. The maps created through this project may help the municipality and those interested in cultural resources in Greenwich understand how resources are perceived and locations throughout the township where tourist interact with the resources. These result may also effect hazard mitigation and land use management. If the function and perception of places with high rates of cultural resource interaction are studied, public officials will be able to estimate economic or cultural-heritage loss if a disaster was to occur.

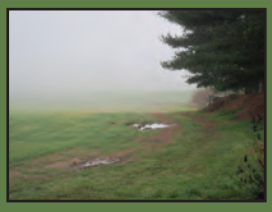
Future studies in cultural resource mapping should include how local residents of Greenwich Township and Cumberland County perceive and interact with their heritage. The functionality of natural and cultural resources throughout the township would be benefit external tourism in Greenwich, however it could also foster more internal tourism and sustain the rural-community values. When tourists from outside the county travel to the township, they support external tourism to Greenwich. However, when local residents participate as tourists within the township, they are performing internal tourism. This type of tourism is very important to the economy because it can occur during off-season periods.

This project was small in scope, yet shows that it can be affective in communicating how cultural resources can affect personal experience and patterns of memorable experiences within a landscape. This concept of mapping perceptional and function of cultural resources can benefit tourism, hazard mitigation and cultural resource management within Greenwich. In the future, studies of this sort could lead to strategies that encourage appropriate and appealing interactions with cultural and natural resources, and better understanding of how to ensure the functionality and relevancy of heritage places within Greenwich.

Agriculture

Open Fields

Paths



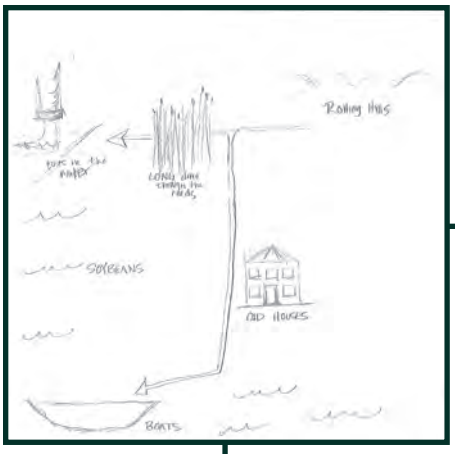
Forest

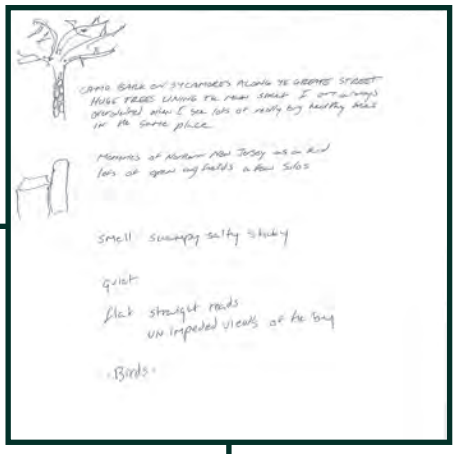
Signs

Open Roads

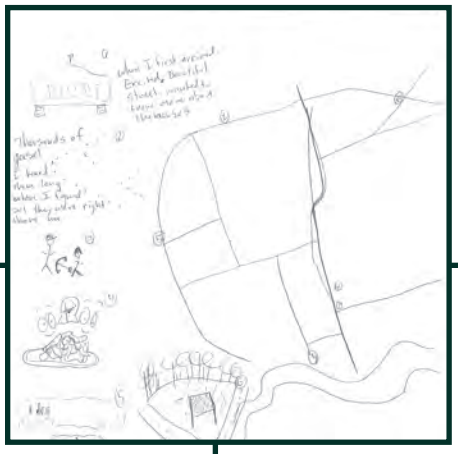
Wetlands

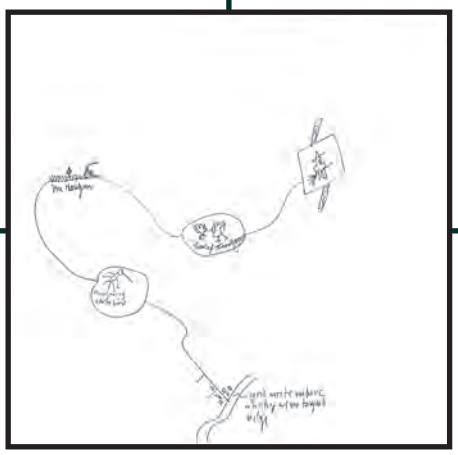
Tidal Water





GREENWICH ON THE MIND

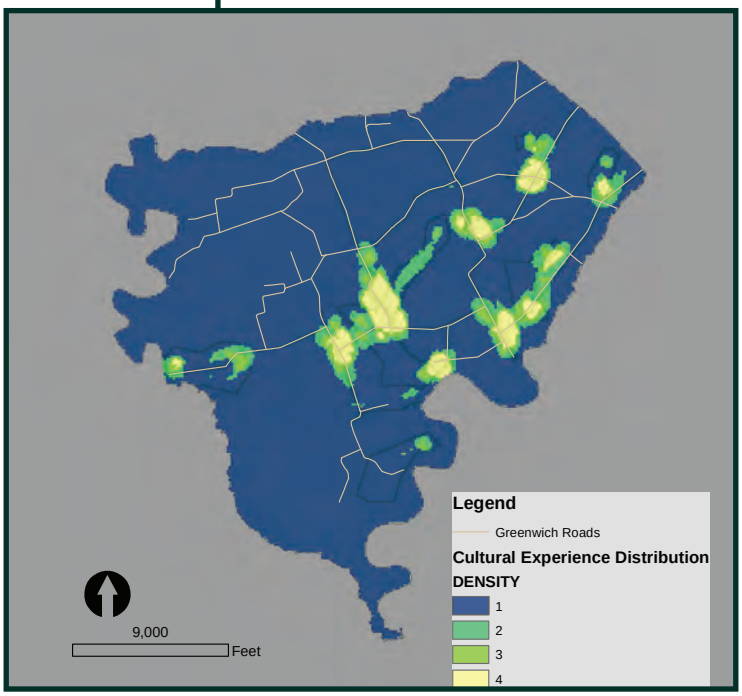




MEMORY MAPS

Above are feature all of the memory maps created by the Greenwich Studio Team as part of the psychogeographical cultural resource assessment. These results were analyzed and codified in order to create the Greenwich Cultural Map and the Greenwich Experience Distribution Map. Both of the results showed that the studio team remembered cultural resources the best when the density of cultural resources was high, like in the village or marinas; if there was a tactile experience, like stepping into the water or picking flowers; and beautiful viewsheds that included natural resources.

GREENWICH EXPERIENCE DISTRIBUTION MAP



STUDY OF DENSITY

ArcGIS was used to create a map of memory locations. Starting with a map of Greenwich, each location described by the studio team during the memory mapping exercise was located on the map and drawnwith either a line or a point. Then, spatial analyst was used to determine the kernel density at any given point on the map. This map was the output. It shows that most of the memories occured as people entered the township. There were a surprising amount of memories concerning the lower agricultural area.

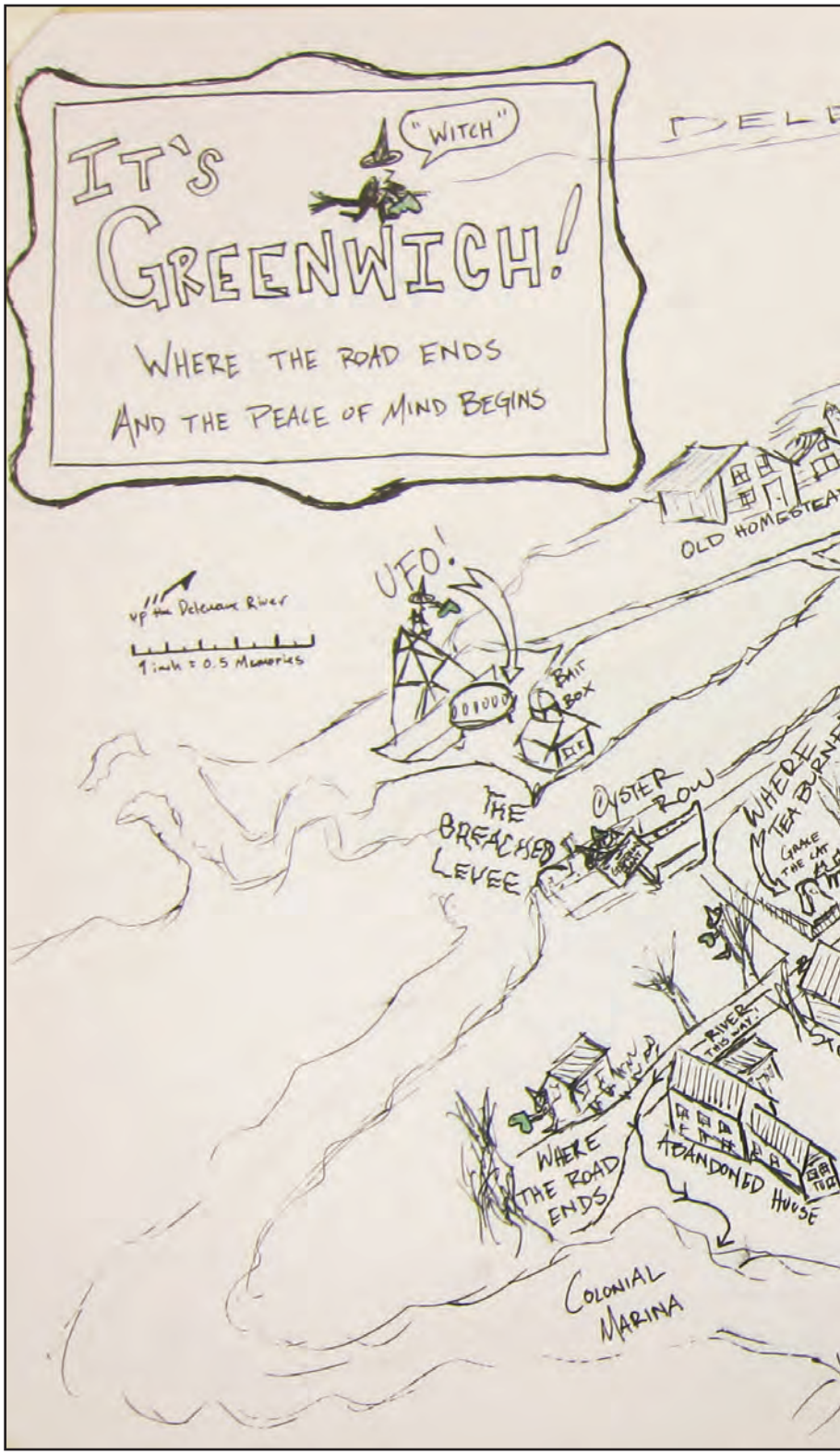
GREENWICH CULTURE MAP

STUDY OF MEMORY

Elements from each of the memory maps created during the studio exercise were drawn on to a sheet of paper within a notebook. This served as a way to begin combining the collective memory of Greenwich that was gathered from the studio team. Repetition of memories of old homes, agricultural fields and the Cohansey River mixed together to form a more complete view of Greenwich from the standpoint of a tourist or visitor. Many people seemed to remember the Greenwich sign posted around the township with an illustration of a green witch on it. She was manifested throughout the culture map as a sort of mascot guiding the way.

GREENWICH CULTURE MAP

All aspects of this map were generated from experiences the Greenwich Studio Group had while in Greenwich. Illustrations were gathered from photographs taken by the studio while on site and the memory mapping process outlined previously.




PENNSYLVANIA
PHILADELPHIA, PA
PUT YOUR TOES IN THE SAND!
DRIVE THROUGH THE REEDS
GOLDENROD FLOWERS
BARNS & SILOS
PIRATE HOUSE
STONE TAVERN
TAVERN OF THE TABURNERS
HOUSE MUSEUM
OLD SCHOOL HOUSE
AME CHURCH
BASE BALL ANYONE?
OLD COTTAGE
OLDEST GRANARY IN AMERICA!
PRE-HISTORIC MUSEUM
ARTISANS FAIR
SPRINGTOWN

Greenwich Levees

Located in a region rich in history, wildlife, coastal marsh and wetlands, and fertile agricultural soils, Greenwich residents enjoy a high quality of life, benefiting from natural resources that support the economy, offer recreational opportunities, and create an attractive place to live. Plagued however by the issue of aging levees built over two centuries ago, Greenwich residents and local planning agencies today face tough decisions on how to best manage the complex problem of flood control.

The Dutch and English immigrants who settled Greenwich in the 17th- and 18th-centuries brought with them their Old World agricultural traditions of dike-building (Sebold, 1992). Farmers in Greenwich and surrounding coastal areas built artificial "banks" to reclaim fertile agricultural purposes. These "banks," called levees or dikes, were man-made structures, usually an earthen embankment, constructed to control or divert water in order to reduce risk from temporary flooding. The original dikes were typically built to heights of 37 feet above the marsh and were set back out of the reach of strong currents and storm waves. Farming depended on excluding the tides but keeping the land high enough to drain. The protected areas would thus dry out, consolidate, and settle, leaving the land surface lower. The dikes had to cover a large area extent to be effective. By 1866, 20,000 acres of marshes had been reclaimed from the New Jersey side of Delaware Bay and converted to farmland, mostly in Salem and Cumberland counties. (Sebold, 1992) Because they were expensive to build, needed constant maintenance and directly impacted neighboring lands, the farmers and land owners established state-chartered cooperatives called "Meadow Bank Companies" to keep their dikes from failing and the land from flooding.1

Many of the agricultural dikes still in operation today represent the earliest attempts by European settlers to cultivate the land/prosper from it and the State Historic Preservation Office has identified several preserved early farms in New Jersey that include diked fields as eligible for the State and National Historic Registers (SJLI, 2010).2

Then as now, dike construction and maintenance is a labor intensive and expensive undertaking. Several levees today are still legally owned by the meadow bank companies which have become financially unstable, leaving them unable to finance the maintenance works necessary. These earthen structures built two centuries ago are now aging infrastructure with serious maintenance problems and when repairs are neglected, levees are subject to further deterioration due to lack of funds and neglect.

The structural stability and capacity of these historic levees needs to be closely examined; significant threats to levee resilience such as severe storms or long term sea level rise could have catastrophic consequences should one or more of the levees fail. Although many of these levees originally protected relatively low value agricultural land, today they are relied on to protect high value land including residences, businesses, public roads and historically significant architectural heritage. In addition, these levees provide for a freshwater supply for agricultural irrigation, protection of public and private well water supplies, mosquito control and wildlife habitat. These circumstances make it imperative to document these historic structures before traces of their existence are literally washed away. At the same time, local stakeholders and the planning and regulatory agencies responsible for managing local development need a long term plan that addresses risks stemming from levee instability that threaten the efforts of local residents to preserve and maintain the early American cultural history of their village.

Within the last ten years, multiple studies in the New Jersey and Delaware Valley area have been conducted on coastal ecology, water quality, wildlife habitat, soil quality, flood control and agricultural resources and the

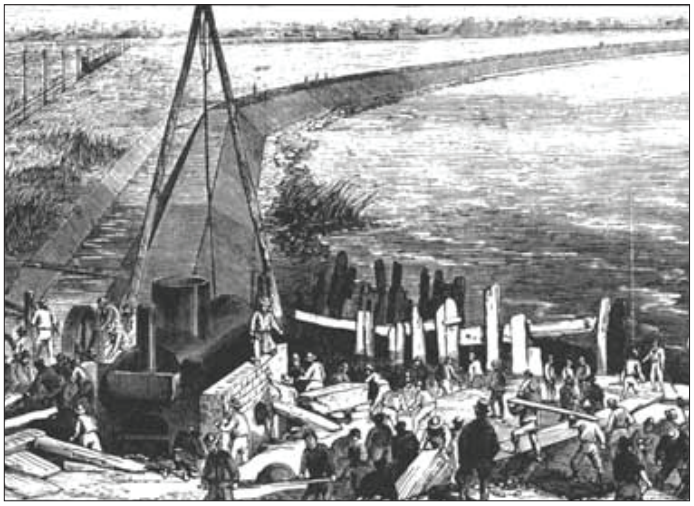


Image G-1: Enough men were hired to ensure the bank was stable before the following high tide. (K. Sebold, *From Marsh to Farm - The Landscape Transformation of Coastal New Jersey*)

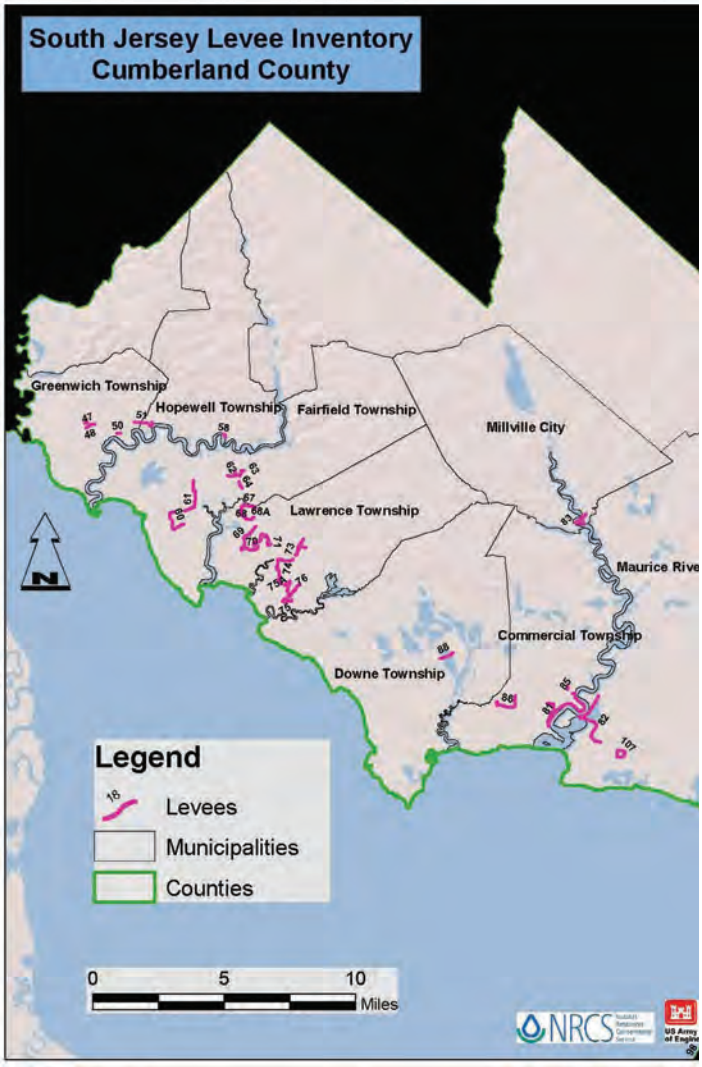
results have been published. The Greenwich Master Plan Re-examination, the Environmental Resource Inventory, and the Cumberland County MHMP all indicate the need to repair dikes within the township. Although the township's dikes were not designed for storm protection, the community relies upon them to lessen the consequences of flooding and storm surge. As residents and farmers consider mitigation actions that consider options to expensive levee reconstruction, these studies can provide important information on factors that contribute to flooding, climate change, natural habitat evolution and funding opportunities available through Federal, State and County agencies.

One such study, The South Jersey Levee Inventory report, completed in 2010, identified 107 levees in 22 municipalities in the four-county region of South Jersey. Four of those levees are in Greenwich Township and protect portions of the historic village and a significant amount of local preserved farmland.

The studies call to attention the internal and external influences that can turn hazards into serious threats if not addressed in land use planning activities and emergency planning outreach. A brief summary of these threats follows here:

Severe Storms and Flooding

Properties along the Cohansey River and surrounding diked areas of the township are susceptible to minor flooding during spring tide events. A large portion of the township inland from the coast is susceptible to storm



Images G-2 and G-3: A recent study by the USDA Natural Resources Conservation Service identified levees in South Jersey and in Cumberland County. (South Jersey Levee Inventory, 2010)

surge inundation of a category two hurricane. Flooding of large areas can result in the destruction of private and public property, disruption of government services, and unsanitary conditions. The impact on historic resources in the township could be severe and also result in short-term disruption of agricultural production; especially if freshwater resources are impacted by saline intrusion.

Several levees also protect roads into and around the township, such as the Mill Creek dike. These routes are of exceptional importance; Greenwich Township must be able to support agricultural production and must remain capable of evacuating during a possible nuclear fallout.

Saltwater Intrusion

Saltwater intrusion can contaminate drinking water and impact the area's overall ecology. One cause of saltwater intrusion is the loss of levees which act as a buffer by preventing saltwater from penetrating farther inland and upstream in rivers, bays, wetlands, and aquifers. If levees erode due to lack of maintenance, saltwater can seep into inland waters, affecting the municipal drinking water supply (ERI, 2011).

Sea Level Rise

The precise rate of sea level rise is uncertain but current models indicate that climate change will cause the rate to increase. The trend of sea level rise from 1961 through 2003 would indicate a rise in sea level of almost 6-inches by the end of this century. When taking climate change into account, this projection increases to 7 to 21 inches by 2100 (NJ Coastal Zone Management). This increase could lead to more extreme storm surges, increased coastal erosion, escalating inundation of coastal wetlands and saline intrusion. These changes collectively will threaten the stability and level of protection that existing levees in South Jersey provide (SJ Inventory Report, 2010).

Regulation

The maintenance and rehabilitation of many South Jersey levees are threatened by conflicting or inefficient land-use policies and regulations. These include uncertain or fragmented ownership, the lack of local sponsorship, lack of funding for ongoing operation and maintenance, permit costs and time frames, and lack of policy coordination and communication among Federal, State, County and Local government agencies.

MITIGATING RISK OF LEVEE FAILURES

Considering these threats, it is necessary to re-examine their limitations of aging levees in disrepair. It is however important for residents and local decision makers alike to understand that levees reduce risk from flooding events, but they do not eliminate it.

There is always the chance a flood will exceed the capacity of a levee no matter how well it is built. Levees are designed to manage a certain amount of floodwater and can be overtopped or fail during flood events that exceed the level for which they were designed. Levee failures can also be caused by structural failures resulting from improper maintenance, inadequate foundations, earthquakes, erosion, seepage and burrowing animals. When a levee does fail, the result can be more catastrophic than if the levee had not been present.

Structural Measures

The main purpose of flood control structures is to protect existing floodplain development. Structural measures generally provide adequate protection but often involve high economic and environmental costs. In addition, correcting a flooding problem in one location may aggravate flooding in another. For instance, stream channelization may allow floodwaters to move downstream faster, but might be detrimental to aquatic environments and may increase flooding downstream.

Nonstructural Measures

This approach is primarily used to reduce future flood damage. It involves floodplain regulations, flood proofing buildings, relocation of flood prone development, floodplain easements, and land acquisition. The purpose is to restrict future development in floodplains to minimize flood damage.

Coastal Inundation Mapping

Mapping of potential sea level rise inundation areas is necessary to determine the geographic extent of coastal vulnerability to sea level rise and is a key tool for guiding the development in and around Greenwich. In the time

since the FEMA Flood Inundation Risk Maps (FIRMs) for Greenwich were prepared, more recent and more accurate elevation data has become available through recent surveying in the form of ortho-rectified aerial photos, or light detection and ranging (LIDAR). This base map has 1-foot contour intervals that are more accurate than that used to prepare the FIRM. The 100-year flood elevations from the Flood Insurance Study's flood profile should be plotted on it to determine where boundaries of the floodplain hazard areas should be different. The township's leaders need access to updated risk and vulnerability assessments, including maps and potential costs of hazards.

Flood Insurance & Liability

None of the levees in Greenwich meet the requirements of the US Army Corps of Engineers for eligibility for their emergency assistance program in the event of levee failure. Buildings that are located behind levees that have not been accredited as providing sufficient flood control by FEMA have to have flood insurance (SJLI Report, 2010).

The National Flood Insurance Program3, 4 provides flood insurance to property owners at a reduced rate if the municipality where they live participates in the Program. In Cumberland County, Greenwich is the only community that is participating in the National Flood Insurance Program's Community Rating System to improve risk management and decrease flood insurance premiums for policy holders, limiting financial exposure in the case of flooding and speeding recovery in case of flood-damaged properties. Reduced financial exposure can benefit all parties involved, including property owners, levee owners, the State and local governments. Participating municipalities must adopt floodplain management regulations that comply with the requirements of the National Flood Insurance Program.

IN ORDER TO MINIMIZE RISKS ATTRIBUTED TO LEVEE FAILURE, THESE THREE APPROACHES CAN INFORM PLANNING EFFORTS:

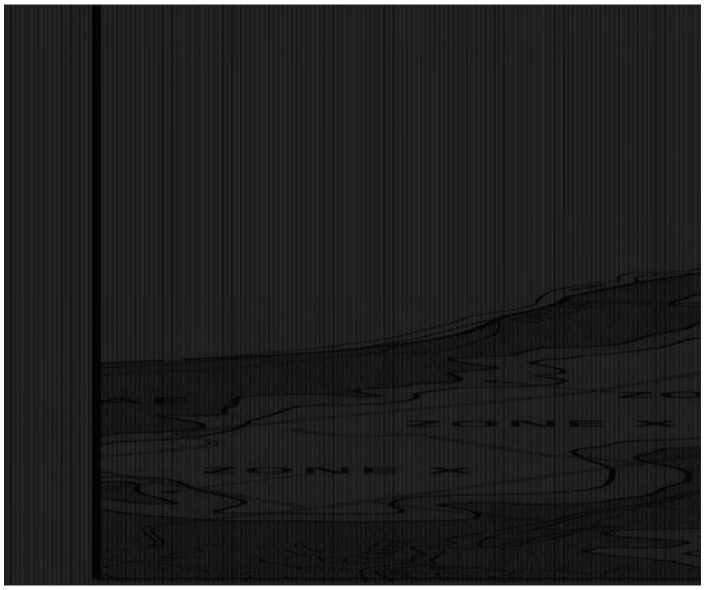
1. Structural measures (larger taller levees, flood walls, and stream channelization)

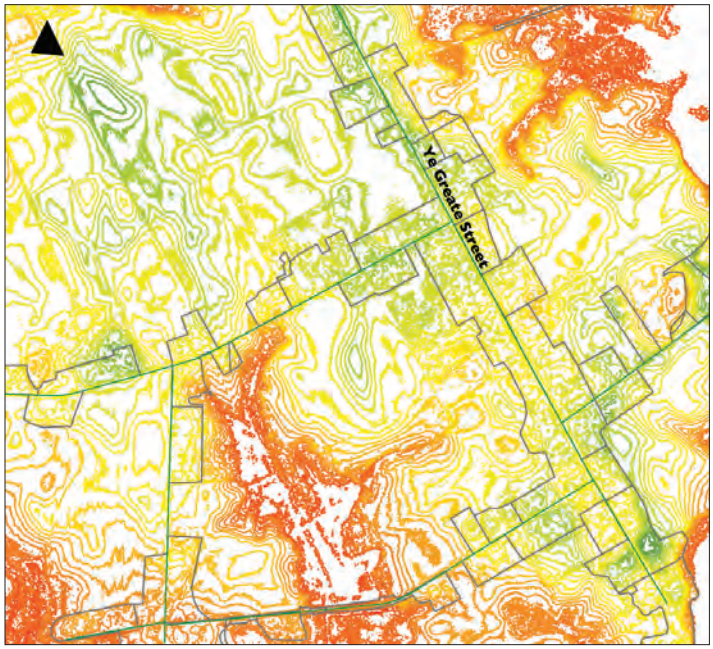
2. Nonstructural measures (development regulation, acquisition, and easements)

3. FEMA's National Flood Insurance Program (provision of flood insurance and development regulation)

RECOMMENDATIONS

Recommendations on how to incorporate the historic significance of the levees can provide direction for the County, local municipalities, and citizens in their efforts





Flood Mapping
Top: Outdated flood mapping from FEMA complicates the calculation of NFIP premiums due to inaccurate representation of flood prone areas.
Bottom: example of LiDAR map with 1-foot contour intervals

to continue the high quality of historic preservation in Greenwich. By identifying Federal, State and County agencies that have funding programs available for historic preservation, organized efforts can be aligned with goals and objectives for flood control and natural habitat conservation.

Several groups in Greenwich advocate the need to repair dikes within the township, which relies upon dikes and levees to lessen the consequences of flooding and storm surge. Dike restoration however requires partnerships to finance and to maintain and the township's dikes were not designed for storm protection but were originally constructed to protect agricultural lands. Today these levees can actually increase flood risks by attracting development to the floodplain and giving property owners an exaggerated sense of protection. It would be best for Greenwich to consider implementing a variety of flood mitigation approaches that are not solely based on the structural integrity and long term funding of levee maintenance.

In responding to the issue of the aging levees, the following observations need to be considered by decision-makers at all levels.

The existing levees are physical evidence of the region's history; they need to be documented and possibly added to local and/or national historic registers.

Greenwich is not the only community in South Jersey currently having to address issues related to historic earthen levees and associated flood risks.

Flood maps need to include structures of historic significance that would be at increased risk of flooding in case of levee failure.

A flood hazard mitigation plan that focuses on the maintenance of one or two levees and considers options in the case of failure of other levees; such measures could include:

b) Relocation of significant structures located in lower elevations.

c) Elevation of other threatened structures above the 100-yr flood level.

Where inactive Meadow Companies have led to deterioration of levees through neglect, legislative action is necessary to address public safety issues with the levees.

Measures to provide on-going technical and cost share assistance for existing levee operation and maintenance to private landowners, meadow bank companies, county and local units of government.

Provide information on flood control and storm protection methods that do not compromise the historic character of the community.

The structural stability and capacity of historic levees needs to be closely monitored for the public safety; should one or more fail during a severe storm, the consequences to the historic resources of Greenwich would be irreplaceable. Given that levee construction and maintenance is a labor intensive and expensive undertaking, local stakeholders and the planning and regulatory agencies responsible for managing local development need a long term plan that addresses risks stemming from levee instability that identify available resources.

Coordination between organizations, authorities and property owners takes time and commitment and planning flood control measures is a long term activity. Mitigation strategies should focus on the long term reliability of flood control methods instead of short-term attempts to address localized symptoms of a large-scale issues. By developing solid regulatory measures that will remain in effect over a period of time, residents and farmland owners can coordinate land-use decisions that are an efficient use of the resources available in addition to setting out what resources need to be actively sought to maintain the decisions made.

MOVING FORWARD

Opportunities for further research on this complex topic include:

- The Agency responsible for the coordination of potential rehabilitation and maintenance projects funded by Federal, State and County agencies and other parties needs to be identified.

- Greenwich should explore land acquisition funds, such as FEMA's Hazard Mitigation Grant Program and Flood Mitigation Assistance.

- Further research and evaluation of maintenance and monitoring funding opportunities through county and state agencies and organizations.

AGENCIES AND FUNDING OPPORTUNITIES

USDA-Natural Resources Conservation Service (NRCS)

The Natural Resources Conservation Service (NRCS) provides assistance to private land owners in the conservation and management of their soil, water, and other natural resources, including assistance reduce damages caused by floods and other natural disasters. Financial assistance is also available in some cases. Participation in these programs is voluntary.

NRCS works in cooperation with the New Jersey Association of Conservation District (NJACD) and other partners include Resource Conservation and Development Councils .

Natural Resources Conservation Service Soil Scientists develop and maintain the Soil Survey. In New Jersey, Soil Surveys provide soil descriptions, interpretations and maps for each county. Information about soil characteristics and capabilities in their county assist communities, landowners and government in land-use planning.

Flood Mitigation Assistance Program (FMA) is administered by the New Jersey Office of Emergency Management (NJOEM). The Program provides funding for interested municipalities to reduce flood damages to their repetitive flood loss structures. Funding covers up to 75 percent of the cost of development and implementation of the plans. Implementation measures may include elevating structures, relocating structures or buying out and removing structures from the flood zone.

The flood mitigation planning process is directed by a locally led committee made up of municipal officials, including local emergency management coordinator, engineer, planner and others, as well as flood-impacted property owners. The process uses NRCS interdisciplinary expertise in engineering, soils, biology, geology and other disciplines and in facilitating with locally-led committees to produce a plan for solving the repetitive flood loss problem.

State Agriculture Development Committee (SADC)

The SADC provides planning incentive grants to municipalities or counties to help purchase development easements to permanently preserve large blocks of reasonably contiguous farms in project areas they have identified. The SADC also provides grants to municipalities, counties and nonprofits to help them

Soil and Water Conservation Grants

Farmers in permanent or eight-year farmland preservation programs are eligible to apply to the SADC for grants to help fund approved soil and water conservation projects. These projects not only protect soil and water resources, but increase productivity and profitability for the farmer. Eligible projects include those designed for the control and prevention of soil erosion and sediment damages; the control of pollution on farmland; the impoundment, storage and management of water for agricultural purposes; or the improved management of land and soils to achieve maximum productivity.

The National Committee on Levee Safety contends that states, not the federal government, should have primary authority for implementation of a National Levee Safety Program within their borders. States are best positioned to organize, implement and oversee levee safety programs, as they have the combination of necessary legal authorities to implement rules, regulations and procedures, and statewide reach and relationships with local governments to be successful.

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ENDNOTES

1 There have been appeals for the state to repair and maintain these facilities to protect houses from floods, but New Jersey has not exhibited much interest. In 2001, the state wrote a letter referring the problem back to the nonfunctioning private meadow companies that own the structures. Local interests have also appealed to FEMA and USACE for funds and assistance, but the dikes were not federally constructed and they are in private ownership. In an exception, the USACE has been involved with the Gibbstown/Repaupo Levee. In addition, FEMA has provided a predisaster mitigation planning grant to a hazards planning group made up of Cumberland, Salem, Camden, and Gloucester counties.

1 Meadow Bank Companies were essentially cooperative ventures of benefiting farmers who financed their reclamation projects. Memberships eased the high construction and maintainable costs and taxation was proportional to the amount of marshland owned. Company members could relied on elected officials to assist with problems . In 1788, New Jersey passed a law to improve property through reclamation; Sebold explains this as an extension of a similar law enacted by the colonial legislature permitting farmers to incorporate as meadow companies. Amendments were made in 1806, 1829, 1839, 1849, 1878, 1903, 1926, and 1957 - but officers' duties and members' rights virtually unaltered. Meadow Bank Companies have all but disappeared as economic forces and modern agriculture and ownership issues complicated by inheritance have impacted their business.

2 "One example of early agriculture which relied on levees is the 150 acre farm owned by the Howell family in Fairfield Township, Cumberland County. This farm, now in its tenth generation of family ownership, is approximately four feet above sea level and produces salt hay, soybeans, alfalfa and beef cattle (http;//www.co.cumberland.nj.us). The Abel Nicholson House (1722), a patterned brick or Flemish-bond pattern house (http://www.nps.gov/history) is located in Elsinboro Township, Salem County and its surrounding acreage was formerly protected by the Mason Point Meadow Company levee. Levees were once common along the Maurice River in Cumberland County. Figure 24 shows the Burcham Farm in Millville City where the levees are still maintained." (SJ Levee Inventory, 2010)

3 There is discussion about how insurance invites property owners to develop land in the floodplain, under a false sense of security that were their property damaged, insurance would cover related costs: "The current price of flood insurance both subsidizes new development in flood zones and subsidizes risk for those who already built in flood zones. The NFIP also causes environmental damage, by externalizing the risk of building in ecologically-sensitive floodplains."

Hazard Mitigation Planning for Greenwich, New Jersey

The primary purpose of hazard mitigation planning is to identify community policies, actions, and tools for implementation over the long term that will result in a reduction in risk and potential for future losses community-wide. This is accomplished by using a systematic process of learning about the hazards that can affect your community or state, setting clear goals, identifying appropriate actions, following through with an effective mitigation strategy, and keeping the plan current. Effective planning forges partnerships that will bring together the skills, expertise, and experience of a broad range of groups to achieve a common vision for the community or state, and can also ensure that the most appropriate and equitable mitigation projects will be undertaken.

Hazard mitigation planning is most successful when it increases public and political support for mitigation programs, results in actions that also support other important community goals and objectives, and influences the community's or state's decision making to include hazard reduction considerations.

Communities with up-to-date mitigation plans will be better able to identify and articulate their needs to state and federal officials, giving them a competitive edge when grant funding becomes available. Planning also enables communities and states to better identify sources of technical and financial resources outside of traditional venues. Many residents assume that current building codes, zoning regulations, subdivision review processes, and/or permitting will adequately protect them, but this is not always the case. Education is a key part of the planning process, and overcoming a lack of awareness should be an integral part of the planning process.

While Greenwich Township has made great progress towards preserving its historic and natural landscape, coastal hazards threaten agriculture, historic properties, tidal wetlands, and the safety of township's residents.[1]

A disaster mitigation and climate change action plan allows Greenwich to proactively mitigate natural hazards and adapt to climate change. Due to the fact that significant time is required to motivate and develop adaptive capacity and to implement change acting now will allow for the time needed to achieve these long- term goals. Currently, there is a Cumberland County, New Jersey Multi-Jurisdictional Hazard Mitigation draft plan.[2] This plan addresses the hazards facing Cumberland County and recommends that Townships take action to protect their resources. A Greenwich plan would further the recommendations made by the Cumberland County Plan and work to mitigate threats that are specific to Greenwich Township including saltwater intrusion, flooding, and sea level rise.

Lewes, Delaware was the site for a pilot project that produced the Lewes, Delaware Hazard Mitigation and Climate Change Action Plan earlier this year. This plan provides a useful case study for instigating the development of a plan for Greenwich. Many aspects of the plan have been implemented through changes in zoning, community education, GIS information improvement technology, and grants for purchasing threatened land. Although Lewes, Delaware is a larger community (3000 full time residents) sea level rise and increased storm activity impacts the areas in the same way. The Greenwich Township vulnerability assessment will be the guiding document for undertaking this project.

PROJECT GOALS

My independent project is two fold. I assembled a list of resources to help initiate a Hazard mitigation plan. These resources include in depth how to guides for small towns interested in developing a plan. A list of grants that are available to fund planning efforts. Technical assistance available for planning and outreach materials to engage the community in the planning process.

Then, using the Greenwich Vulnerability Assessment and information obtained from interviews with members of the Greenwich community I assessed the climate change and natural hazards threatening Greenwich and developed a list of scenarios in which a mitigation plan can help Greenwich to achieve some its preservation goals.

ORGANIZE RESOURCES

Greenwich should focus on the resources needed for a successful mitigation planning process.

1. Engage community members in project planning. Identify and organize interested members of the community as well as technical expertise required during the planning process. In order for planning to be successful it is important to engage the community in the process. A

plan has a much better chance of being implemented if the community understands its importance and is willing to champion the cause. Outreach can happen in many ways. Greenwich is a very small community with many interested and concerned citizens. Greenwich residents also have a long history of being proactive in their approach to protecting what they value. Distributing information of how and why hazard mitigation is important could be done with a tax bill or bulletins in the post office and other municipal buildings. Greenwich studio team members had the opportunity to attend a planning board meeting that was very well attended with people interested in hearing about our preservation plan. The City of Lewes held a series of workshops that engaged citizens, government officials, business owners, planning professionals and technical

Image H-1: Historic District Lewes, Delaware
(Lewes Historical Society)

experts to gain an understanding of how the community rates priority reactions to various hazards.
2.Planning guides
FEMA provides an excellent resource for planning in their: State and Local Mitigation Planning How-to Guide: Getting Started Building Support for Mitigation Planning 2002.
3. Funding/ financial resources The Pre-Disaster Mitigation Program (PDM), authorized by DMA 2000, can provide funding to states, communities, and tribes for cost-effective hazard mitigation planning activities that complement a comprehensive mitigation program and reduce injuries, loss of life, and damage and destruction of property before a disaster strikes. Check with the FEMA regional office on the status of funding.
The Flood Mitigation Assistance Program (FMA) provides funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other insurable structures. The three types of grants available through FMA are planning, project, and technical assistance grants. Only communities that participate in the National Flood Insurance Program (NFIP) can apply for project and technical assistance grants.[3]
4. A Guide to State Grants and Loans that support Sustainability Initiatives Prepared by: New Jersey Department of Environmental Protection Division of Science, Research and Technology Bureau of Sustainable Communities and Innovative Technologies. May 2007[4]

ASSESS COMMUNITY GOALS

Once the resources are assembled an assessment of the goals for the Township of Greenwich listed the Greenwich Master Plan 1995 and update from 2010 and an assessment of the vulnerabilities the Township faces outlined in the Coastal Community Vulnerability and Resilience assessment will provide an understanding of how hazard mitigation planning will help in the preservation of the Township of Greenwich. The Greenwich Master Plan outlines the priorities for the townships future. The approach of Studio Greenwich's Cultural Landscape Preservation Plan treats Greenwich Township as a cultural landscape. As such, a preservation approach must look at the place holistically and develop a plan that integrates the protection of economy, community history and natural resources.

Greenwich Township is working to protect its heritage. Natural hazards and climate change are threats that must be addressed as part of the preservation plan. The 1995 Master Plan lists the following as the goals of the community:

1. Preserve the existing historical character of Greenwich Village, Head of Greenwich, Springtown and the surrounding communities.
2. Protect the environment and natural resource base.
3. Maintain agriculture as a mainstay of the community.

4. Designate and manage the cultural landscape as a special quality of life feature of the township.

5. Allow for housing opportunities that are in keeping with existing community character.

6. Provide for limited locally oriented development opportunities.

7. Provide for sustainable economic and recreational opportunities adapted to the Township's natural resource. [5]

Image H-2: Historic house, Greenwich (Studio Greenwich Team)

ASSESS RISKS

Using the framework of workshops similar to those carried out in Lewes and the vision outlined in the Comprehensive plan it is necessary to assess the risks that these mainstays of the cultural landscape face. Greenwich Township's Risk Vulnerability Assessment was completed in May of 2011. "Key vulnerabilities are those that are of greatest concern to the community."[6] The following vulnerabilities were listed in the Coastal Community Vulnerability and Resilience Assessment Pilot (CCVRAP). It has recently been reported that the statistical analysis is not entirely accurate in the Vulnerability Assessment. Most significantly the level of flooding that will occur in Greenwich Village based on the 50 and 100-year flood projections is not accurate. However the assessment does address key threats that are causing salt-water intrusion into the fresh water aquifer, erosion and the impact on natural and cultural resources including failing levees.

1. Built environment vulnerability

Properties along the Cohansey River and the surrounding diked area are susceptible to flooding during spring tide events. A large portion of the township would be susceptible to storm surge inundation of a category two hurricane.

The destruction of a hurricane or major nor'easter could have an immense impact on the historic resources in the township and result in short term disruption to agricultural production especially from salt-water inundation.

All of the buildings along Ye Greate Street have septic systems. Salt-water inundation threatens all of the structures in Greenwich Village and Delaware Avenue by the marina.

According to Richard Delks Emergency Management Coordinator for Greenwich, problems impacting Greenwich are multifaceted. One of the main problems is erosion at the mouth of the Cohansey River. Trenching in the Delaware Bay that began as early as 1920 triggered increased erosion. Shipping lanes were dredged in the Delaware Bay twice during a ten -year period. Because pumping stations draw fresh water from the lower Delaware River taking water from the lower Delaware for New York and New Jersey more salt water is coming up the river. The salinity of the bay is salinity is slowly increasing and saltier water making problems greater in the Cohansey. The width of the mouth of the Cohansey has increased five times since 1920.

Saltwater inundation can have a big impact on Greenwich built environment. If the levees are repaired then the fresh water would return and the salinity impacting Greenwich's water supply would drop. Ground water is slowly creeping up and will impact wells and septic systems adversely.

The vulnerability assessment also recommends flood vents, elevating low lying homes and installing protective window treatments to ensure historically significant structures community character and public safety are not threatened. Additionally, new development should be designed to withstand hurricane force winds and flood impacts. [7]

According to Michael Henry the Market Lane dike currently poses the largest property threat. Survey data for the Market Lane dike from the County Engineer's office and the top of that dike ranges 5.62 feet to 7.56 feet (using NAVD 1988 as a datum). The Market Lane Dike protects most of the historic district, the greatest concentration of constructed property and all of the town's emergency services. Henry states:

"The Market Lane dike protects the drainage areas from

river flooding, but it also impounds storm water runoff (on the village side, until the river is low enough to drain out the sluice. Since the historic district has the greatest concentration of impervious cover, and therefore the most runoff, and the storm water drainage system is weak, there is a potential for flooding from impounded storm water on the village side of the dike, especially in the coincidence of high river levels (but not necessarily over topping the dike) and very intense rainfall. While a small and very vocal group of residents affected by the Pine Mount breech have kept attention focused on that dike. A much larger group could be affected by a breach of the Market Lane dike. In the end, though, all three are critical."[8]

Image H-3 (top) : Natural wetland tree buffer
Image H-4 (bottom): Wetlands (Studio Greenwich Team)

2. Natural environment vulnerability

Wetlands plants make up nearly one third of the vegetation in Greenwich Township most of which is the Bayside Tract. The Delaware Bay is one of the largest stopovers for migratory birds in the United States. It is also one of the prime spawning grounds for horseshoe crabs. Increased rates of erosion and changes in salinity threaten these unique habitats; these tidal wetlands also serve as an important buffer for the historic resources and agricultural land.

Storm damage including flooding, erosion, dike/ levee failure and salt-water intrusion will threaten existing habitats. In the past decade a former agricultural dike failed allowing saltwater intrusion that damages fresh water wetlands. Although these dikes were man made over 300 years ago for the production of salt hay they continue to protect sources of fresh water for irrigation and recharge the fresh water aquifer.
The stream buffer is the region immediately beyond the banks of a stream that serves to limit entrance of sediment, pollutants, and nutrients into the stream itself. Stream buffers are effective at filtering substances that wash off the land. The vegetation of the buffer traps sediment and can actually utilizes a percentage of the nutrients flowing from lawns and farm fields. When forested, a stream buffer promotes bank stability and serves as a major control of water temperature. The buffer region also serves as a green corridor, a greenway for wildlife to move between larger forested habitat areas. Residents can utilize these greenways for recreation with the addition of trails, bikeways, and access points to water for fishing and canoe/kayak launching.

The importance of a healthy, intact buffer zone (also referred to as a "riparian corridor") has been well documented scientifically over the past 20 years, especially for headwater streams. There is less agreement and much continuing research on the appropriate minimum width of a buffer. In literature on this issue, a recommended minimum buffer width of 100 feet is most common, with differing activities permitted in each of three zones within the buffer. [9] Buffers of up to 300 feet are recommended for wildlife corridors and potential passive recreational use, such as walking trails. Many of the agricultural land in Greenwich lies at the edges of streams and wetlands lacking appropriate buffers.

3. Social vulnerability

In the event of hurricanes residents need to be aware of evacuation procedures. Plus possible threats for damage to the Salem Nuclear Power Plant. A vulnerability index has been developed by the State of New Jersey using census data etc. The data was not clear for Greenwich and inconclusive results were shown. The lack of GIS data and a current emergency registry poses a greater threat to the citizens of Greenwich.

4. Coastal vulnerability

The CCVRAP uses a model called the CVI:
"The CVI is a composite, environmental constraint model that incorporates six over arching inputs, including geomorphology, low slopes, flood prone areas, storm surge scenarios, and poorly drained and erosion prone soils. While these factors contribute to the vulnerability of coastal lands, other geospatial factors can be incorporated into a coastal vulnerability index. By combining the available data sets, the CVI revealed that the most hazard prone areas in and around Greenwich Township include the salt and freshwater wetlands in and around the community. High and Very High vulnerable areas correspond with the national Flood Insurance programs 100- and 500-year flood zones".[10]

5. Sea level rise vulnerability

Marshes, natural areas, preserved land, and marinas appear to be the most susceptible to permanent inundation from sea level rise. While increased flooding and higher spring tides will not impact most structures in the community, tidal wetlands may be subjected to permanent inundation, resulting in the loss of substantial habitat and breeding grounds for aquatic species and migratory birds. Substantial loss of vegetated marshlands will make Greenwich Township more vulnerable to coastal storms due to the decreased storm buffer surrounding the community, and it will also result in the loss of carbon sequestration capacity.

The inward movement of tidal waters could easily topple existing agricultural dikes and contaminate freshwater resources and wells with saltwater thus, impacting agricultural production and water supply. Many dikes or levees are also associated with protecting roads into and around the township, such as Pine Mount, Mill Creek dike.

Historically, Greenwich Township has experienced approximately 4 mm/year of sea level rise since 1965. If this trend were extrapolated without the consideration of accelerated rates of sea level rise due to climate change, Greenwich Township could experience approximately 0.4 meters (16 inches) of sea level rise over the next century. Sea level rise projections incorporating global climate trends indicate the Delaware Estuary will experience approximately 0.5 - 1.5 meters (20 - 60 inches) or greater of sea level rise by 2100. [11]

As climate change alters the natural processes of the New Jersey shore, Greenwich Township will likely experience more regular shallow coastal flooding events, greater rates of salinity intrusion into freshwater resources, changes in and loss of critical habitat, and more intense and frequent coastal storms.

DEVELOP MITIGATION PLAN

Once the risks are understood communities need to determine what their priorities should be then look at possible ways to avoid or minimize undesired effects. The result is the hazard mitigation and climate action plan and the strategy for implementation.

Using the list of scenarios outlined in the vulnerability assessment the citizens of Greenwich can develop a set of actions and responses to help mitigate these events. By developing a list of priority actions Greenwich can invest time and money in areas that will have the most impact in protecting their town.

Image H-5: Salt water intrusion into freshwater wetland (Studio Greenwich Team)

Image H-4: Pine Mount Levee Breach 1989 (South Jersey RC & D Council)

POTENTIAL PRIORITY ACTIONS FOR A GREENWICH PLAN

Rebuild levees
High Priority/10 years

Knowing that freshwater resources are threatened by saltwater intrusion and habitat conversion, Greenwich Township has some difficult and potentially costly decisions to make now and into the future. Agricultural dikes were established in the township over three centuries ago. These dikes not only provide water for irrigation, they provide habitat and groundwater recharge.

While these dikes were not installed for flood protection, many of them now serve that purpose, as homes and roads have been built in the areas behind them. These dikes now serve a much greater purpose than they were originally intended, and their failure could impact water supply, agriculture, and habitat for threatened and endangered species. Greenwich Township is working with county, state, and federal partners to reestablish these dikes. Partnership for dike restoration will be costly, but restoration should also consider at least 1.0-meter sea level rise.[12]
The 2010 Greenwich Comprehensive Plan update specifically recommends the repair of the levees if Greenwich is going to protect its cultural heritage. The Hazard Mitigation Plan could further this initiative by outreach education, citizen involvement and tax programs or funding campaigns. Increase capacity to target funding initiatives and public opinion to drive this process forward. Also townships that have mitigation plans are more competitive for federal and state funding grants. Many townships in New Jersey are faced with the same levee issue that Greenwich faces, Mitigation planning can help to coordinate planning efforts between towns and provide a stronger base of support as a unit to pressure state government to take action sooner and more effectively.

Change zoning codes
High Priority/1-2Years

Specific action:
1. Create and adopt a conservation design ordinance and regulations including, wetlands wellhead and recharge protections, open space and wetlands buffers.
2. Research, write and adopt ordinances to protect wetlands, wellhead and water recharge areas including riparian buffers.
3. Consider allowing for above ground or mound septic systems as alternatives to existing systems.
4. Create overlay zone that would protect historic resources.

Purchase land that acts as buffers
Medium Priority/1-5 years

As sea level rise occurs and more natural erosion continues along the Delaware Bay, wetlands and agricultural land will act as buffers for the historical resources of Greenwich. Greenwich's farmers and community members can play an important role in the reestablishment of buffer zones between agricultural land and wetlands.

<u>Available Project funding for wetlands buffers</u>
Support is available from the Conservation Reserve Enhancement Program for the State of New Jersey.

The New Jersey Conservation Reserve Enhancement Program (CREP) is designed to help farmers reduce damage from agricultural water runoff sources in an effort to improve water quality along both impaired and unimpaired New Jersey streams. Retiring highly erodible cropland and planting it to protective vegetation will enhance water quality; reduce water treatment costs for New Jersey's cities; and provide shelter, nesting areas and food for many species of wildlife. Buffers planted along stream banks and rivers will filter phosphorus, nitrogen and sediments from the waterways and reduce biological impairment in the Atlantic Ocean.

CREP is a federal-state natural resource conservation program that addresses state and nationally significant agricultural related environmental problems. Under CREP,

program participants receive financial incentives from USDA's Farm Service Agency (FSA) to voluntarily enroll in the Conservation Reserve Program (CRP) in contracts of 10- to 15-years. Participants remove marginal pasture land or cropland from agricultural production and convert the land to native grasses, trees and other vegetation. The Food Security Act of 1985, as amended, authorizes CRP.[13]

The Open Space Institute's Conservation Finance program (CFP) helps protect threatened landscapes by delivering conservation dollars where they are needed, when they're needed. By providing short-term low cost bridge loans and grants for land transactions the CFP accelerates the rate and effectiveness of land protection at the time when conservation needs are acute and funding limited. Priority landscapes include: Lands under immediate threat for development. Habitat for rare or endangered species. Critical water resources, such as trout streams and public water supplies, public recreation lands, sustain ably managed farms and forests that enhance local communities and economies.[14]

Educate the public
High priority/ Ongoing

A grassroots effort to educate the public about storm vulnerability, disaster preparedness, and evacuation procedures will build capacity for community resilience. Education and outreach about natural hazards, climate change, potential community impacts and what can be done to prepare for and mitigate impacts can have multiple benefits. Public education can foster public support for preparedness planning at the government level and influence changes in behaviors to decrease vulnerability and risks to natural hazards and climate change. Besides land conservation and habitat restoration, Greenwich Township and Cumberland County should actively engage residents through information sharing on coastal hazard vulnerability. The township should utilize public forums and/or provide informational materials to its residents and businesses at least on a yearly basis.

1. All education activities should begin immediately
2. Outreach should be considered an ongoing activity rather than a one-time event.
3. Activities can be implemented at any time.
4. Coordinate education efforts within the township and county.
5. Identify areas for expanding outreach opportunities, Determine which education / outreach materials should be updated to include additional natural hazard, climate change and mitigation activity information.
6. Develop a coordinated education outreach plan that meets a variety of needs and purposes.
7. Include a variety of information in the township website. Use sustainable Greenwich as an outreach opportunity to improve community information.
8. Provide fact sheets at the post office and other gathering places.
9. Develop a schedule of public meetings and workshops about hazard mitigation planning. 10. Develop a list of topics and speakers to provide important information to the community about planning and response.
10. Make sure planning committee members have training in hazard mitigation planning.
11. Keep hazard mitigation in the news with awareness programming and newsletters.Work with other townships in Cumberland County to improve information gathering and distribution.

Develop preparedness materials "Register Ready program"
High Priority/ 1-2 years

The township could also partner with the county to help develop county wide programs and preparedness materials. Emergency responders could benefit from developing a local registry program or utilizing Register-Ready Program to account for individuals or families that may need assistance in a disaster event.

GIS mapping
Medium priority/1-5 years

Switch from paper mapping to GIS format for easy change and updates to vulnerable areas. GIS mapping GIS mapping is also beneficial for keeping records of individuals who will need assistance in the case of emergency.

Conduct comprehensive analysis of the townships infrastructure and vulnerability
High priority/2 years

Develop flood mitigation plan promote awareness upgrading emergency communication and warning systems within the city.

Reduce impervious surfaces in Greenwich
High priority 2-4 years

In July 2007 Greenwich Township enacted a storm water control ordinance, which establishes design and performance standards for storm water management measures. For wastewater management Greenwich is working with Cumberland County Utilities authority to draft an ordinance and plan for their section of the County Wastewater Management Plan.[15]
Storm water runoff is an issue for Greenwich. Educate public about storm water runoff. Reduce impervious surfaces in the village area.

Comprehensive analysis of infrastructure is important for mitigation planning, Town firehouse (Studio Greenwich)

PLANNING TOOLS

The City of Lewes Hazard Mitigation and Climate Change Action Plan presents a planners toolbox and includes ways that hazard mitigation can be implemented. These planning tools could be utilized by Greenwich to improve resiliency and integrate hazard mitigation planning into regular planning:

1. Planning tools
Integrate climate change and natural hazards into Local Comprehensive Plans
Consider water resources in all planning efforts

2. Information gathering tools
Survey of vulnerable homes based upon home heights relative to storm surge.
Increase understanding of aquifer dynamics and amount of influence of recharge zones

3. Regulatory tools
Zoning and floodplain overlays
Setbacks
Water conservation requirements

4. Spending tools
Capital improvements
Acquisitions of vulnerable lands

5. Tax and market-based tools
Additional financial incentives for building above the building code
Storm water utilities

6. Community engagement tools
Improve outreach and education focused on successful behavior changes related to home building and retrofits
Create water monitoring or storm monitoring programs that utilize citizens while also providing useful data to the city.

7. Ecosystem based tools
Create buffer zones for inland migration of natural resources
Restore the health of the natural water purification systems.[16]

IMPLEMENT PLAN AND MONITOR PROGRESS

Greenwich can implement the plan in many ways ranging from specific mitigation projects to changes in day-to-day local government. In order to make sure the plan remains relevant it is important to conduct periodic evaluations and adjust and revise accordingly.

CONCLUSION

A recent study by FEMA indicates that, for every dollar expended on mitigation, a $4 savings is subsequently realized.[17] Hazard mitigation planning can help Greenwich continue to maintain its rich historic fabric and help protect the community. The final product of this project will be a printed Greenwich How-to guide for hazard mitigation and climate change action. This guide will be available on-line and in print for Greenwich residents to guide the planning process.

ENDNOTES

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16. The City of Lewes Hazard Mitigation and Climate Change Action Plan. A community guide developed to improve public safety, minimize losses and create greater citywide resilience. Prepared by the City of Lewes Mitigation Planning Team. June 2011.
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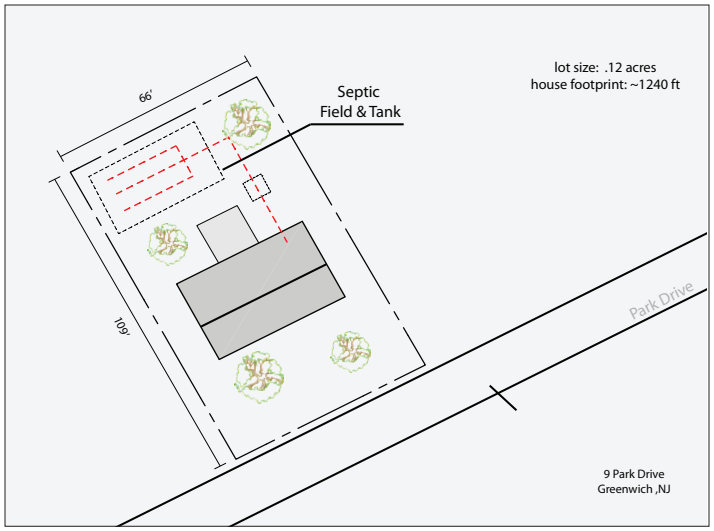
Greenwich Development Futures

INTRODUCTION

This project addresses several long-term threats, that are today either present or incipient within Greenwich Township, that has the potential to significantly impact the historic fabric of Greenwich village in the coming decades of the 21st Century. Ranging from the mundane (septic system requirements) to the profound (global warming), these threats are not currently being addressed by the Greenwich community in an organized and deliberate way. This project is intended to demonstrate that even seemingly intractable problems like global sea level rise can be feasible addressed in Greenwich if enough foresight and planning, combined with the right internal and external partners, is committed to by the Township.



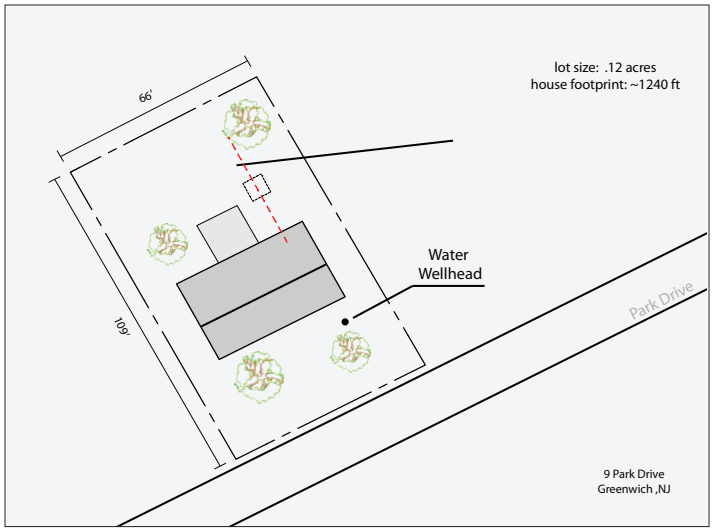
Basic Septic System Requirements

LOT SIZE & HOUSE ABANDONMENT

Like many rural areas, Greenwich Township does not have municipal water or sanitary sewer systems. These services are instead provided by individual wells and septic field and tank systems that serve each house. The legacy of historically small lot sizes in Greenwich village, means that existing water and waste disposal systems are often unable to be upgraded or replaced to meet contemporary environmental and regulatory requirements. These requirements dictate that a house's water wellhead be a minimum of 100' from its (or any neighbors') septic field, while these same requirements specify the wellhead to be placed a minimum of 10' from the lot boundary. While older systems that do not meet these newer standards can be grandfathered under existing New Jersey building and water quality codes, banks will often refuse to offer a mortgage to the buyer when a home with an older system is put on the housing market, even though the home is technically up to code, because the existing septic system will not perform to the equivalent standard of a newer system on a larger lot.

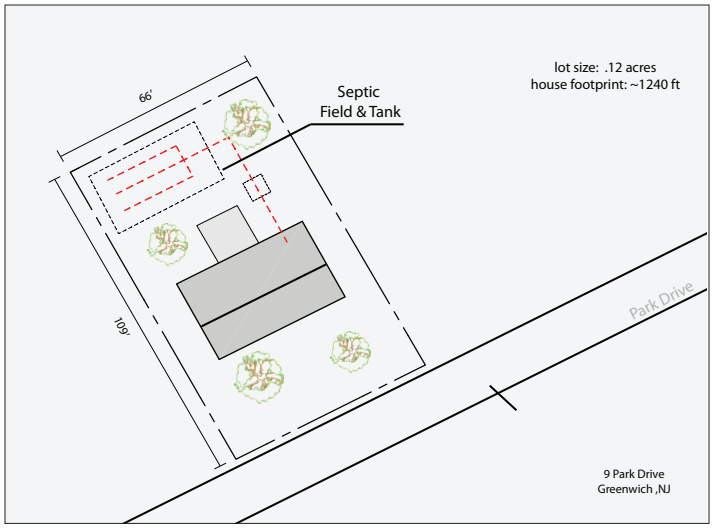
Given these circumstances, if the home is on a lot that is large enough to meet contemporary requirements, then either the seller or the buyer will need to incur a large capital investment (typically $10-12,000), to replace the existing septic system with a newer one. If the house is for sale because the homeowner has died, then what can result is a situation of circular causality, with a house that needs a buyer to replace the septic system, but without the possibility of obtaining a mortgage to buy the house (and thus the means to replace the system, if the potential buyer does not have liquidity to pay for the upgrade in cash), a willing buyer will not materialize. With houses on smaller lot sizes, this situation is compounded by physical constraints that make it technically impossible to meet these code requirements with a newer septic field and tank system.

In Greenwich this phenomenon has resulted in the demolition of two houses, and one house being moved, in the past 30 years. In 2011, two houses with this issue are currently on the market unsold, while one house recently sold after the buyer replaced the system at great expense. Although the average loss of one house per decade in the village does not sound like a high rate, the village is small, and the large proportion of smaller-sized lots, combined with a rising water table which effects the performance of septic systems, means this problem will continue to be an issue in coming decades. If projecting this rate of loss 100 years into the future over 10% of the village's housing stock will be lost due to this issue alone. This is an unacceptable rate of loss of historic fabric, and although this issue is a difficult one to address, it should not be considered an insurmountable one.



Scenario 1: Drip Distribution System

There are two potential solutions to this issue. The first solution is, for those able to afford it, is for new homebuyers in Greenwich to install what is called a drip-distribution septic system. At $25-30,000 dollars these systems are 2-3 times as expensive as a traditional septic field, however these systems purify wastewater so completely that the 100' minimum distance rule between well and septic field does not apply. Thus, under this scenario a homebuyer is able to buy an historic home on a small lot and upgrade its wastewater system to a contemporary standard, although due to its prohibitive cost this solution is unlikely to be a widely implemented one.



Scenario 2: Municipal Water System

A more cost-effective and larger-scale solution this issue is for Greenwich to install a municipal water system. Although the Township has few financial resources, the USDA Rural Development program offers grants and low-interest loans for small communities to build this sort of infrastructure, and this program will pay for all associated costs including design, land acquisition, initial operation and maintenance. With a municipal water system the 100' foot rule between septic field and water wellhead can again be circumvented, meaning that every house that is connected to the new system will not be bound by this requirement. The neighboring city of Bridgeton has successfully applied for several grants from this program to improve its water system, suggesting a precedent that Greenwich Township can build upon.

This solution has the added benefit that, when necessary, homeowners can replace or upgrade their system with a modern (traditional) septic field that is significantly less expensive than the drip-distribution system. In concert with a new water system, the Township could implement a wider-spread modernization of the village's septic systems by applying for a no interest loan from the New Jersey Environmental Infrastructure Trust. This program offers funds to improve water quality in the state by upgrading waste disposal systems, and the program will pay for the upgrading of individual, private septic systems if the program is administered at the local government level. This program does offer loans, not grants, but the loans' terms under this program is 20 years, which makes it affordable for a much wider-range of individual homeowners to install a new system.

Installing a new municipal water system is the best opportunity for Greenwich to prevent further loss of historic fabric due to abandonment. The only other large-scale solution to this issue, the installation of a municipal septic system, is not considered a recommended nor viable option. Greenwich is designated as a 'no-growth' area by the NJDEP, which means the likelihood of it approving the construction of a sewer system is extremely low. The Township could not afford such an expensive infrastructure investment, which would in any event be likely to significantly increasing residential development pressure in the Township. This would cause far more damage to Greenwich's historic integrity than threat currently posed by the small lot / septic system issue. So, when all things considered, while the use of individual septic systems do have drawbacks as illustrated above, in considering the long-term preservation of Greenwich it will be far better to work within and improve the existing system which preserves Greenwich's rural character, rather than replacing

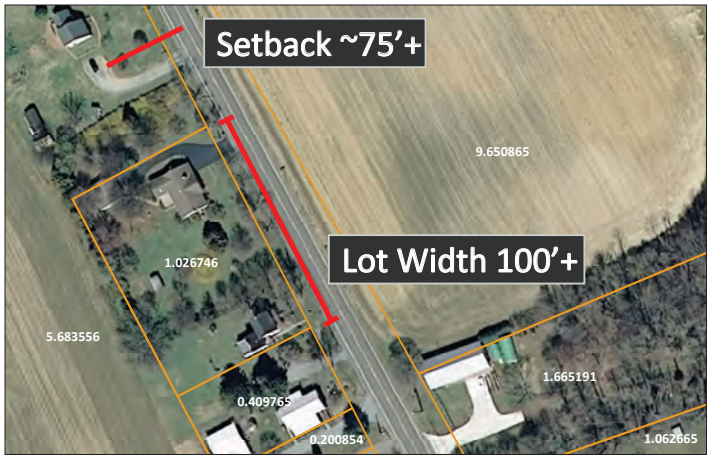
it entirely and run the risk of widespread suburbanization within the Township.

FUTURE GROWTH IN THE VILLAGE & TOWNSHIP

Although there is currently very little development pressure in Greenwich, the day may come that internal or external forces bring increased residential development to the village and township. The community may decide that it wants to increase the number of households in the township to build the property tax-base, or changing demographics may create demand for multi-family or senior housing. Whatever the cause, it is important for the community to ensure that any future residential growth is sympathetic to the historic fabric of the Township. While zoning in Greenwich as a whole is very restrictive against residential development, current zoning does allow growth within and adjacent to the historic village that is not necessarily in character with its historic fabric. If existing ordinances are unchanged, over the next few decades new residential development could potentially disrupt the character defining features of Ye Greate Street and the surrounding agricultural context.

Key Spatial Characteristics of the historic village

GIS analysis of basic spatial characteristics of the village show that the average lot size for houses in Greenwich village is .57 acres, with an average setback from the centerline of 50', and an average lot width (frontage) of about 70'. Current zoning rules, however, dictate a minimum lot size in the village of .75 acres (min 1 acre gross), with a 100' of frontage. Newer homes also tend to larger setbacks, typically 75' plus. When considering that dozens of lots in the village are actually much smaller



Key Spatial Characteristics at the rural fringe

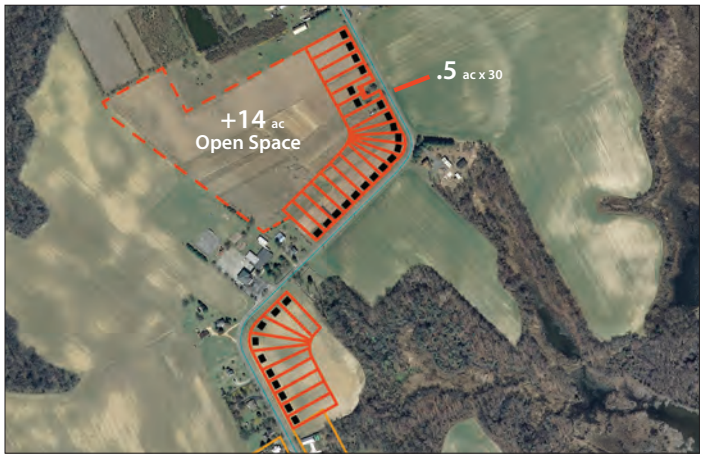
than these average area and dimensions, it is clear that current zoning rules encourage a disconnect between newer development and the character of historic houses in the village. As an urban design issue, newer development has the potential to disrupt the character-defining continuity of Ye Great Street, by allowing development that looks and feels much different than its traditional historic fabric.

Considering there is not much room within the village Historic Conservation area for future development (5, 10 lots maximum), this issue is likely only a concern in the areas just outside the village. In these fringe areas, where the village zoning area meets rural zoning, these differences are exaggerated even further, with much larger lots, wider setbacks, and the discontinuation of the allee along roadway that is one of the village's main character defining features.

The area around the village is zoned for agricultural use, but the code does currently allow the development one of house every six acres. It is thus theoretically possible, however unlikely at least in the near term, for the non-conserved agricultural lands along Ye Great Street between the village and Head and Greenwich to be developed as six-acre lots. This eventuality would be detrimental both to the surrounding viewshed of the village, out of character with the historic areas along Ye Great Street, and greatly restrict the number of houses that could potentially be built, in a much more sympathetic way, next to the village in the far future.

In order to give the community much greater flexibility and control over the character of the village in the future, it is therefore recommended that Greenwich adopt a form-based residential zoning ordinance that would encourage

6 acres lots on Ye Great Street



0.5 acre lots on Ye Greate Street

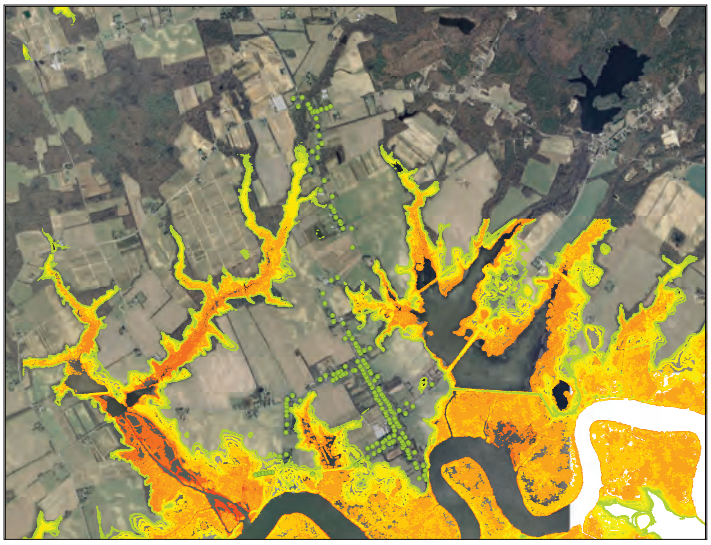
urban growth in a way that sympathetic to the historic built environment of the village. This ordinance would dictate lot size, setback, and frontage requirements based upon the historic character defining elements of the village. A lot size of .5 acres would allow enough room for a septic system to be within code, while shorter setbacks and smaller frontages will give new development an urban character similar to the historic village.

This type of form-based zoning also works better with the goals of Cumberland County's Farmland Preservation Program. Instead of five houses on 30 acres, for example, 30 houses could be built on 16 acres, with the balance preserved as open space that could be preserved by easement and leased back to a farmer. Although it may seem extreme to argue for what is in essence a Smart Growth model of urban growth in a rural area with almost no development pressure, reforming the zoning code in this way would ensure the community can adequately deal with development pressure should it eventually arrive, as well as ensure that the piecemeal growth the village is currently experiencing now happens in a way that does not disrupt the integrity of the village and its viewsheds.

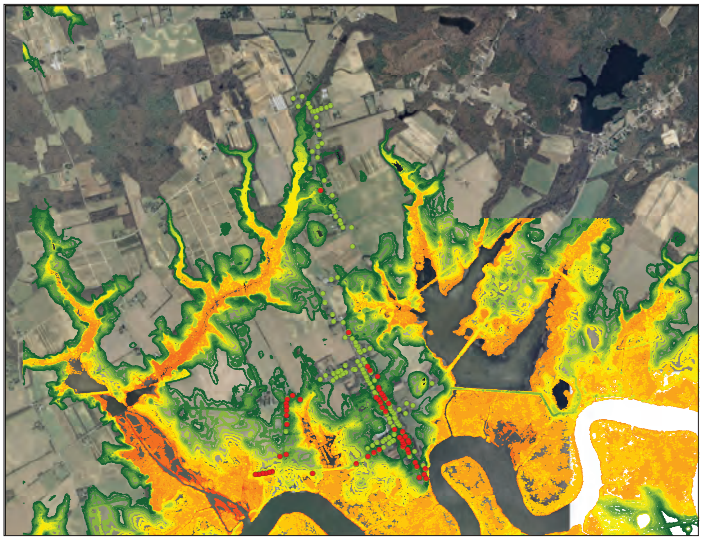
LAND CONSERVATION AND CLIMATE CHANGE

Lastly, this project considers the impact of global sea level rise on Greenwich, and what the constraints and opportunities might be for the village if catastrophic climate change were to occur. As noted in Volume 1, much of the Township's land area is under permanent conservation easement. In 2011 9,939 acres, or 79% of the total land area, of the township is permanently protected from development. Cumberland County's Farmland Preservation Program has targeted an additional 1,491 acres for the program, and if all these targeted parcels are brought into the program at the current rate of acquisition, by 2025 over 91% of the Township will be permanently protected from development. This is, of course, on balance a good thing, and it demonstrates the foresight and effectiveness of the county's program to protect its agricultural economy and ensure the historic character of Greenwich is not ruined by widespread residential development.

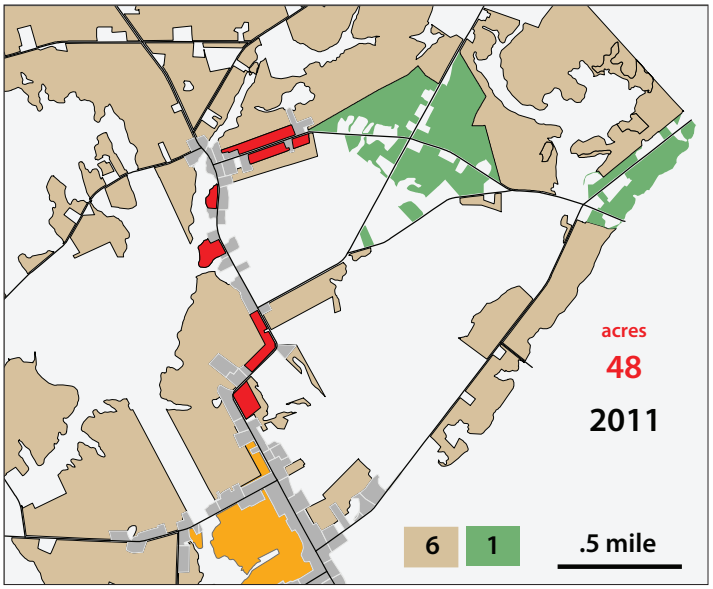
Thinking 100 years into the future, however, what might the impact of land conservation be if catastrophic sea level rise requires part or all of the village to be moved? Since 1965 the sea level at Greenwich has risen by .18m, and by 2100 seas may rise as much as 1.5 meters, according to the worst case scenario projected by the UN. According to a vulnerability assessment published in 2008, only the lowest-lying areas near Greenwich Harbor would be severely affected by sea level rise even in this worst case scenario. The conclusions of this study have been called into question locally, however, due to lack of tide data that was incorporated into the flood models this conclusion was drawn from. Thus, at this point it is still an open question whether Greenwich is going to be severely affected by climate change. For the conclusions that follow this report does not attempt to create more accurate flood maps in order to gauge the risk of flooding, but rather takes the extent of the current 100-year floodplain (the areas 7' and below in elevation) and extrapolates this figure by the highest expected level of sea level rise (1.5 m, or a bit under



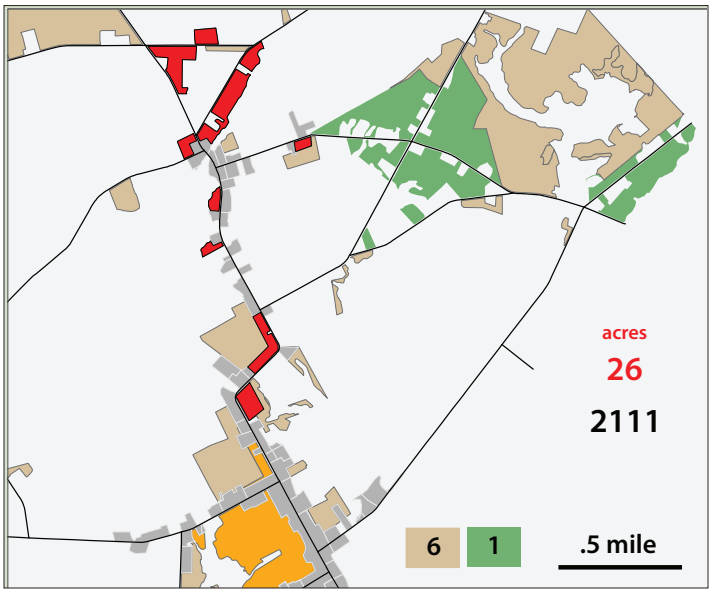
Greenwich 7' Flood Plain



Greenwich 12' Flood Plain



Village (in Red) Move Scenario: 2011



Village Move Scenario: 2111

5'), to find the areas within the village that will be must susceptible to flooding and storm surge if sea levels do rise.

Under this scenario, 55 structures in the village will be within the new 100 year flood plain by 2100. Assuming then that these structures should be moved in order to save them from destruction, what are the options within the Township for where they can physically go? Ideally these homes would simply be moved to higher ground along Ye Great Street within the village character area, a strategy that would preserve their context and the continuity of the village's urban form.

55 houses would require 31.35 acres with a total street frontage of 4,125' feet, if one follows the historic characteristics of the village as discussed above. If this move were to happen in 2011 there is enough developable land within the village character area to accommodate these structures, although the number of conservation easements currently in place mean that the houses could not be reassembled together on both sides of Ye Greate Street as would be ideal.

If the Farmland Preservation Program continues its current rate of acquisitions, however, by 2025 there will be only 986 acres of gross developable area available in the township, and only 26 acres available within the village character area. This means that it would not be possible to keep these 55 structures within their historic context; the village would have to be, in effect, split in two, with these houses having to move to the nearest available parcels of land north of Head of Greenwich. This figure of 26 acres is also a theoretical maximum, and does not account for the likelihood of other residential development in the area that will occur between now and 2111 that will further decrease the amount of land available, both inside the village character area and the Township as a whole.

Whatever the extent and affect that climate change might have on Greenwich, the community should consider what needs to happen now to ensure the village will stay a viable place to live far into the future. This means the Township should consider modifying its zoning ordinances to adopt a form-based code that will allow Greenwich to grow in a manner that will complement, rather than detract from, the historic village. The New Jersey Smart Growth office offers grants to help communities adopt Smart Growth policies, so this is a possible resource if the community chose to pursue it. Greenwich should also consider establishing a community land trust, which is a non-profit group that can buy and manage land for the future use of a group or municipality. This would give the citizens of Greenwich a means to allow the option to move part or all of the village in the far future, should this unfortunately be a necessity. Although the community would have to pay for the land the trust acquires, of course, the trust could defray its costs by renting its acquisitions back to farmers, generating a revenue stream to leverage borrowed funds if the community collectively cannot afford to buy land outright with cash.

The Farmland Preservation Program should also consider supporting the efforts of the community land trust by reconsidering the further purchase of conservation easements on farmland surrounding Greenwich, which would help keep the village's options open for the future by making more land available for a future village move. If the land trust adopted legally binding agreements, say 30-year renewable leases with farmers that could only be broken when certain conditions, (ie imminent environmental catastrophe), the goals of the FPP to preserve farming would still be furthered.

CONCLUSION

While this scenario demonstrates the potential limitations of farmland preservation when combined with vulnerable historic fabric threatened by sea level rise, on the whole, at least in the short-term, the village of Greenwich at the FPP complement each other well. The conservation easements in place in Greenwich help protect the continuity of the historic village within its agricultural context, and it also supports the agricultural economy that supports many Greenwich residents. The danger here lies with the permanence of the conservation easement, which under New Jersey law can only be adjusted by modifying or striking down the enabling legislation; to change this law would set a dangerous precedent, which could result in the widespread weakening of this highly effective technique of controlling growth and preserving the landscapes communities value. Instead, their use within the context of the FPP should perhaps be weighed more carefully against the long-term environmental threats that valuable places like Greenwich may face in the next 100 or more years,