

New Britain



The City of New Britain is distinct from the rest of the region in a number of ways. It is denser, younger, and more diverse than the other towns. In 2000, 71,538 people lived in New Britain's 13 square miles, giving it a population density of 5,503 people per square mile. Median age in the city is 35, and it is aging less quickly than any of the other towns in the region; projections show less than 25% of the city's population aged 60 and older in 2030. According to the 2000 Census, 30% of the population identifies as minority or mixed-race,

while 43% speak a language other than English at home.

Physically, the city is also built out more than the other towns in the region. According to CCRPA's 2007 regional Plan of Conservation and Development, only 280 net developable acres remained in New Britain—a mere 3% of the city's land area. The city's densely developed core comprises primarily older, multi-story buildings supported by a world of aging infrastructure. Tucked in among the buildings, however, are 1200 acres of parks and open space, as well as numerous bodies of water.

Challenges

As in other towns, flooding and winter storms present the biggest challenges in New Britain. Several water bodies in the city flood on occasion: Webster Brook, Bass Brook, and the Quinnipiac River all give rise to minor flooding issues at times, while Willow Brook and West Canal create more frequent and severe flooding problems.

Willow Brook is a well-known source of flooding in the City. Overflow from the brook floods a southwest neighborhood where 60-80 properties are affected, as well as the New Britain stadium. A strong storm in June of 1992 caused extensive flooding from Willow Brook, which was the subject of a study by the Maguire Group, who catalogued the damage wrought by the flooding (see appendix). According to their report, the 1992 flooding resulted in over \$650,000 of damages.

West Canal is another source of frequent flooding in the city, although it is undocumented on FEMA's FIRMs due to its high elevation. The 1992 storm caused the canal, built in 1908, to breach; flooding washed out nearby streets and inundated homes. The City paid out \$30,000 in damages to homeowners, who were not eligible for reimbursements under the NFIP. Development in the area impacted by flooding from West Canal is not limited by the City's flood control regulations, which apply only to areas documented in FIRMs.

Drainage infrastructure and water and sewer lines throughout the City are in need of major upgrades. The majority of the infrastructure was constructed in or around 1872 and was not designed to support the level of development the city has seen. Undersized pipes result in flooding, sewer backups, system leaks, and other problems.

New Britain also faces the usual challenges during winter storms; ice and snow make roads impassable, knock down tree limbs which in turn disrupt utility service. The combined effect leaves people stranded in their homes, potentially without heat or power. New Britain's hills pose a particular problem; to mitigate the problem, the city will pre-treat hilly streets with salt before a big storm.

Finally, New Britain has more concern about earthquakes than other towns. Although earthquakes are rare in this area, New Britain is almost fully built-out with many older buildings that could sustain serious damage in the event of a quake. In response to concerns, the city's building code was changed in 2005 to accommodate seismic requirements for new structures.

Current Mitigation and Response Activities

- Flood control regulations limit development in "special flood hazard areas," which are defined as "the area within New Britain subject to one percent or greater chance of flooding in any given year, as identified by New Britain's FIRM." These regulations prohibit manufactured homes and recreational vehicles while imposing restrictions on residential and non-residential construction regarding base elevation, materials, construction methods, etc.
- Seismic standards were added to the building code in 2005.
- Town participates in National Flood Insurance Program

Goals, Objectives, Strategies

Goal: reduce losses of life and property, and minimize economic consequences of natural hazards.

Objective 1: Improve municipal response capabilities

	Strategy	Priority	Lead	Hazard
S1	Improve communication and coordination between response personnel in different departments (Police, Fire, Water, Public Works) by holding regularly scheduled, multi-agency exercises of the EOP	High	Emergency Management	All
S2	Create guidelines for releasing water from dams during storm events to avoid dam breakage	High	Planning, Public Works	Flooding, Dam Failure

Objective 2: Enable residents to better help themselves through preparedness education

	Strategy	Priority	Lead	Hazard
S1	Develop and distribute pamphlet about preparedness for residents (English, Spanish, and Polish); post on city website	High	Emergency Management	All
S2	Encourage preparedness workshops in schools	High	Emergency Management	All

Objective 3: Upgrade aging infrastructure to improve City's capacity to deal with inundation

	Strategy	Priority	Lead	Hazard
S1	Create a plan for repairing/replacing aging infrastructure including water, sewer, and stormwater drainage lines throughout the City	High	Planning, Public Works	Flooding
S2	Coordinate improvement plans with utility companies re: putting utility lines underground	Medium	Planning	Winter Storms, Wind Storms

Objective 4: Align planning policies with affected areas

	Strategy	Priority	Lead	Hazard
S1	Amend the City's Flood Control Regulations to apply to the West Canal area despite that area not being included on FEMA's FIRMS*	High	Planning	Flooding

*(The current regulations read, "This article shall apply to all special flood hazard areas within the jurisdiction of the City of New Britain," where "special flood hazard area" is defined as "the area within New Britain subject to one percent or greater chance of flooding in any given year, as identified by New Britain's FIRM.")

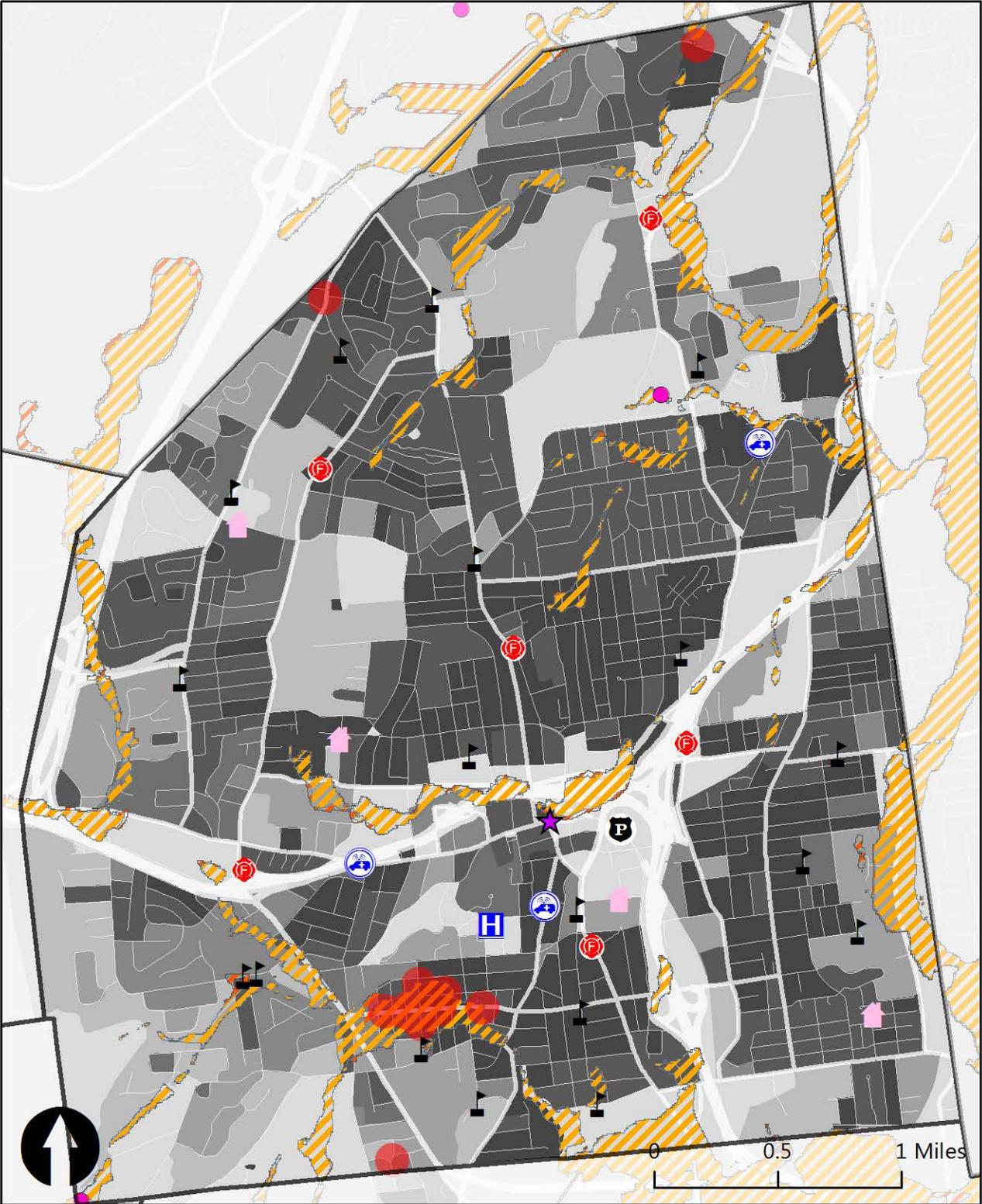
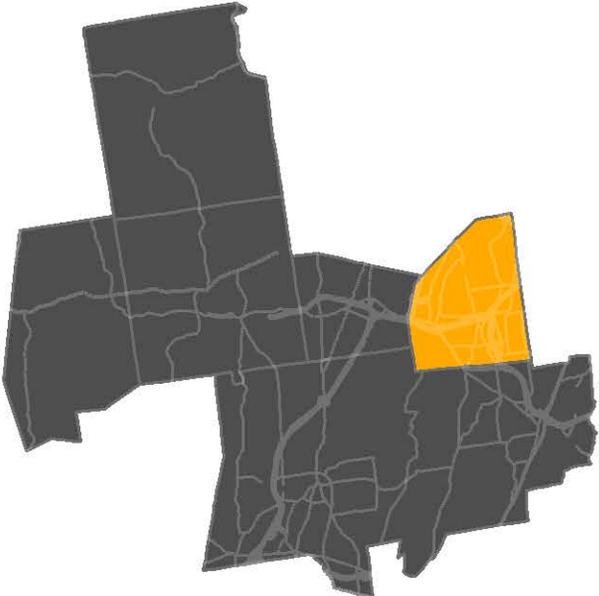
Objective 5: Continue Participation in National Flood Insurance Program

	Strategy	Priority	Lead	Hazard
S1	Continue enforcement of floodplain management ordinances by regulating all new and substantially improved construction in flood zones	High	Planning	Flooding
S2	Work with FEMA to update FIRMS as necessary	High	Public Works	Flooding
S3	Continue to distribute information about the NFIP to homeowners	High	Planning	Flooding
S4	Continue to assist homeowners with amendments to NFIP maps as necessary	High	Planning	Flooding

Contributors

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Flood Zones & Critical Facilities New Britain



Critical Facilities

-  Power_Plant
-  Hospitals
-  Ambulance
-  Fire
-  Police
-  Waste Water
-  Schools
-  Primary Shelters
-  RLP Zone
-  Class C Dams
-  Town Halls

Flood Zones

-  100 Year Flood
-  500 Year Flood

Pop/square mile

-  0 - 1,000
-  1,000 - 2,000
-  2,000 - 3,000
-  3,000 - 4,000
-  4,000 - 5,000
-  5,000 - 10,000
-  10,000+

Hazus-MH: Flood Event Report

Region Name: New Britain

Flood Scenario: Flood100

Print Date Wednesday, October 1, 2014

Disclaimer:

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social

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General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The flood loss estimates provided in this report were based on a region that included 1 county(ies) from the following state(s):

- Connecticut

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 13 square miles and contains 750 census blocks. The region contains over 28 thousand households and has a total population of 72,274 people (2000 Census Bureau data). The distribution of population by State and County for the study region is provided in Appendix B .

There are an estimated 18,692 buildings in the region with a total building replacement value (excluding contents) of 5,331 million dollars (2006 dollars). Approximately 90.80% of the buildings (and 75.14% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 18,692 buildings in the region which have an aggregate total replacement value of 5,331 million (2006 dollars). Table 1 and Table 2 present the relative distribution of the value with respect to the general occupancies by Study Region and Scenario respectively. Appendix B provides a general distribution of the building value by State and County.

Table 1
Building Exposure by Occupancy Type for the Study Region

Occupancy	Exposure (\$1000)	Percent of Total
Residential	4,005,989	75.1%
Commercial	835,735	15.7%
Industrial	317,308	6.0%
Agricultural	5,027	0.1%
Religion	95,804	1.8%
Government	16,346	0.3%
Education	55,280	1.0%
Total	5,331,489	100.00%

Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	1,389,698	68.7%
Commercial	390,322	19.3%
Industrial	162,071	8.0%
Agricultural	1,839	0.1%
Religion	28,661	1.4%
Government	9,218	0.5%
Education	40,777	2.0%
Total	2,022,586	100.00%

Essential Facility Inventory

For essential facilities, there are 2 hospitals in the region with a total bed capacity of 458 beds. There are 21 schools, 1 fire stations, 2 police stations and 1 emergency operation centers.

Flood Scenario Parameters

Hazus used the following set of information to define the flood parameters for the flood loss estimate provided in this report.

Study Region Name:	CCRPA Disaster Resilience
Scenario Name:	Flood100
Return period Analyzed:	100
Analysis Option Analyzed:	No What-ifs

General Building Stock Damage

Hazus estimates that about 73 buildings will be at least moderately damaged. This is over 17% of the total number of buildings in the scenario. There are an estimated 12 buildings that will be completely destroyed. The definition of the ‘damage states’ is provided in Volume 1: Chapter 5.3 of the Hazus Flood Technical Manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 summarizes the expected damage by general building type.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agricultural	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	2	40.00	3	60.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	2	100.0	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	2	2.94	6	8.82	23	33.82	25	36.76	12	17.65
Total	2		7		6		23		25		12	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)								
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
ManufHousing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Masonry	0	0.00	1	25.00	1	25.00	1	25.00	1	25.00	0	0.00
Steel	1	25.00	3	75.00	0	0.00	0	0.00	0	0.00	0	0.00
Wood	0	0.00	2	3.08	5	7.69	22	33.85	24	36.92	12	18.46

Essential Facility Damage

Before the flood analyzed in this scenario, the region had 458 hospital beds available for use. On the day of the scenario flood event, the model estimates that 458 hospital beds are available in the region.

Table 5: Expected Building Damage by Occupancy

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	1	0	0	0
Hospitals	2	0	0	0
Police Stations	2	0	0	0
Schools	21	0	0	0

If this report displays all zeros or is blank, two possibilities can explain this.

- (1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.
- (2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.

Induced Flood Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 3,188 tons of debris will be generated. Of the total amount, Finishes comprises 85% of the total, Structure comprises 9% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 128 truckloads (@25 tons/truck) to remove the debris generated by the flood.

Social Impact

Shelter Requirements

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 1,027 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 2,419 people (out of a total population of 72,274) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the flood is 94.70 million dollars, which represents 4.63 % of the total replacement value of the scenario buildings

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 94.26 million dollars. 0% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 31.53% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.

Table 6: Building-Related Economic Loss Estimates

(Millions of dollars)

<u>Category</u>	<u>Area</u>	<u>Residential</u>	<u>Commercial</u>	<u>Industrial</u>	<u>Others</u>	<u>Total</u>
<u>Building Loss</u>						
	Building	18.15	6.27	7.04	1.01	32.48
	Content	11.68	20.17	19.32	6.58	57.74
	Inventory	0.00	0.71	3.32	0.02	4.05
	Subtotal	29.83	27.15	29.68	7.61	94.26
<u>Business Interruption</u>						
	Income	0.01	0.02	0.00	0.01	0.04
	Relocation	0.01	0.09	0.00	0.02	0.11
	Rental Income	0.01	0.02	0.00	0.00	0.02
	Wage	0.02	0.17	0.00	0.08	0.26
	Subtotal	0.03	0.29	0.01	0.10	0.44
<u>ALL</u>	Total	29.86	27.44	29.69	7.71	94.70

Appendix A: County Listing for the Region

- Connecticut
 - Hartford

Appendix B: Regional Population and Building Value Data

	Building Value (thousand of dollars)			
	Population	Residential	Non-Residential	Total
Connecticut				
Hartford	72,274	4,005,989	1,325,500	5,331,489
Total	72,274	4,005,989	1,325,500	5,331,489
Total Study Region	72,274	4,005,989	1,325,500	5,331,489