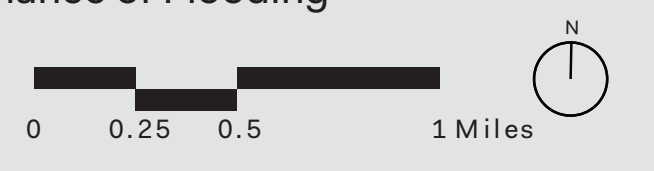




FEMA Flood Zones

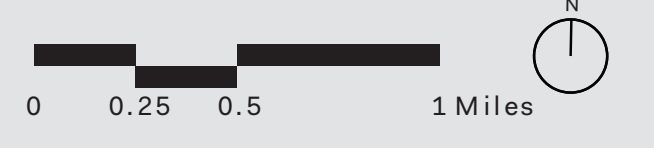
- A 1% Annual Chance of Flooding, no BFE
- AE 1% Annual Chance of Flooding, with BFE
- AO 1% Annual Chance of 1-3ft Sheet Flow Flooding
- VE High Risk Coastal Area
- X 0.2% Annual Chance of Flooding

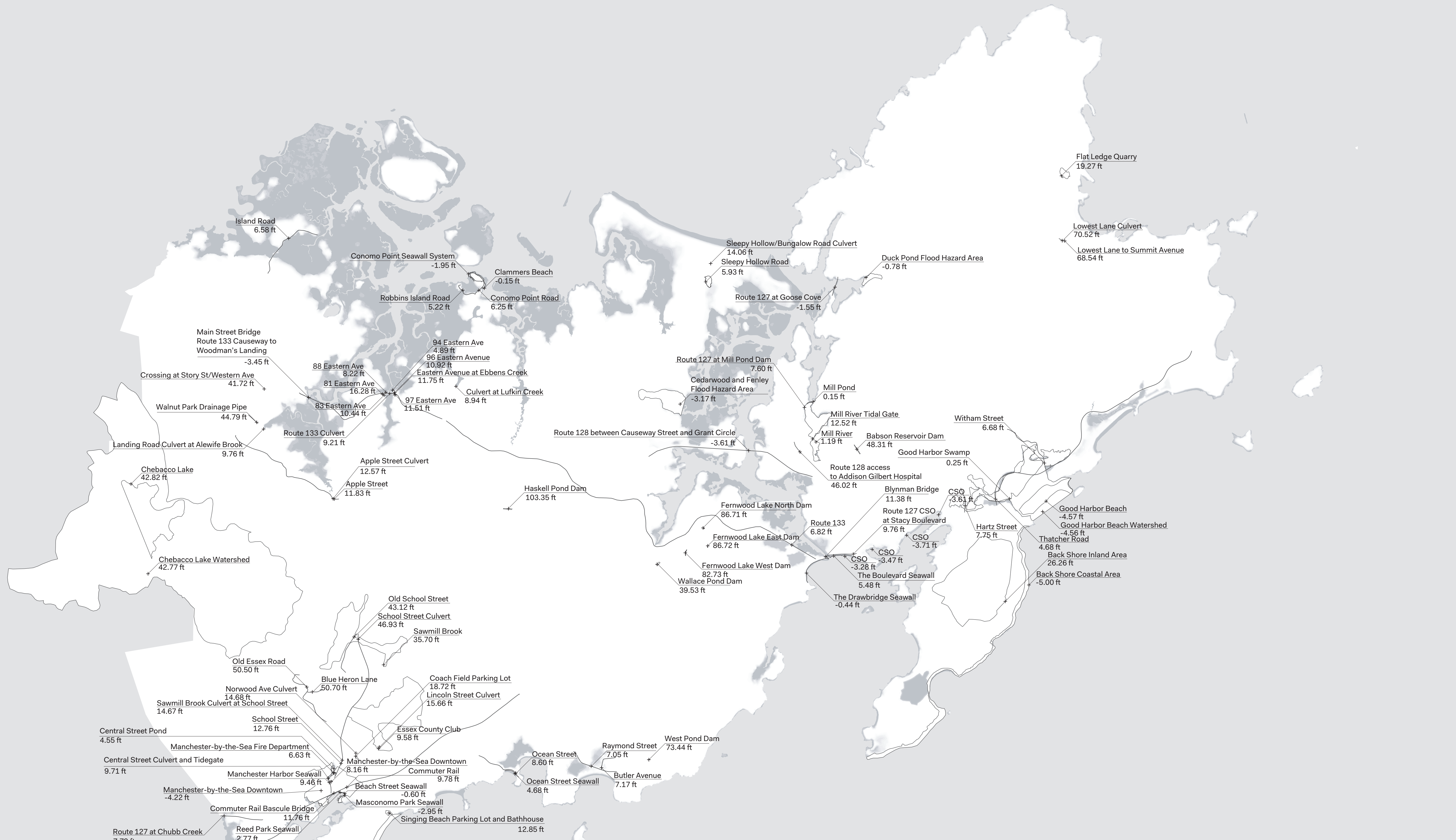




USACE Hurricane Evacuation Zones

- Zone A (Category 1 and 2)
- Zone B (Category 3, 4 and 5)

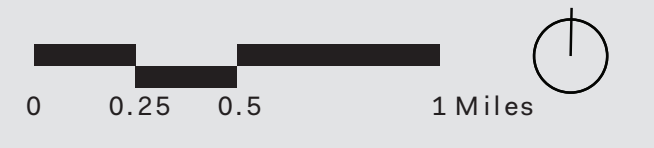


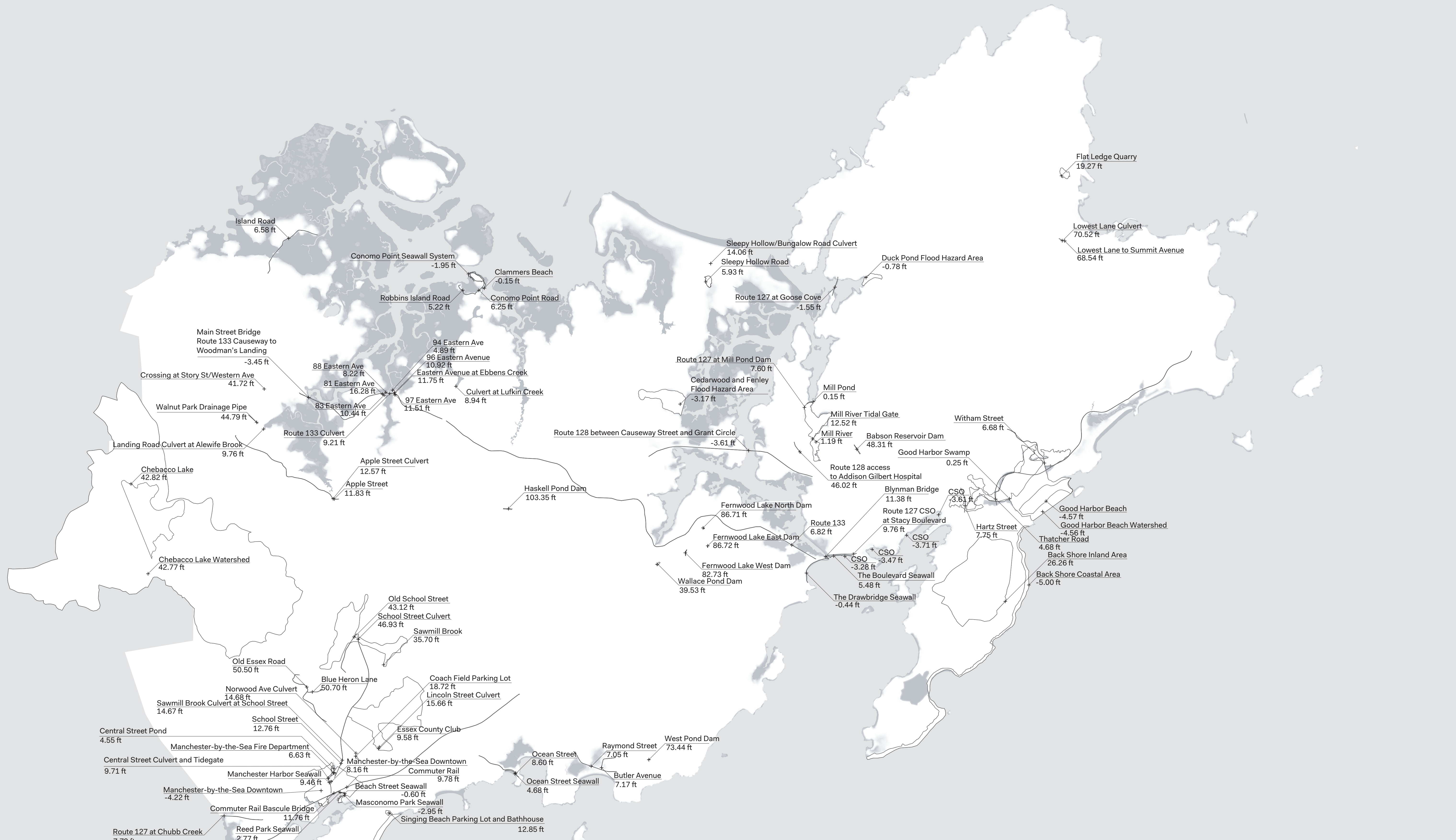


Key Infrastructure Impacts by Storm Surge and Flooding

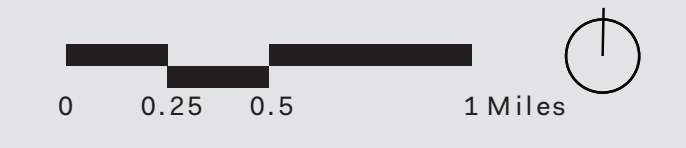
+ Lowest point elevation

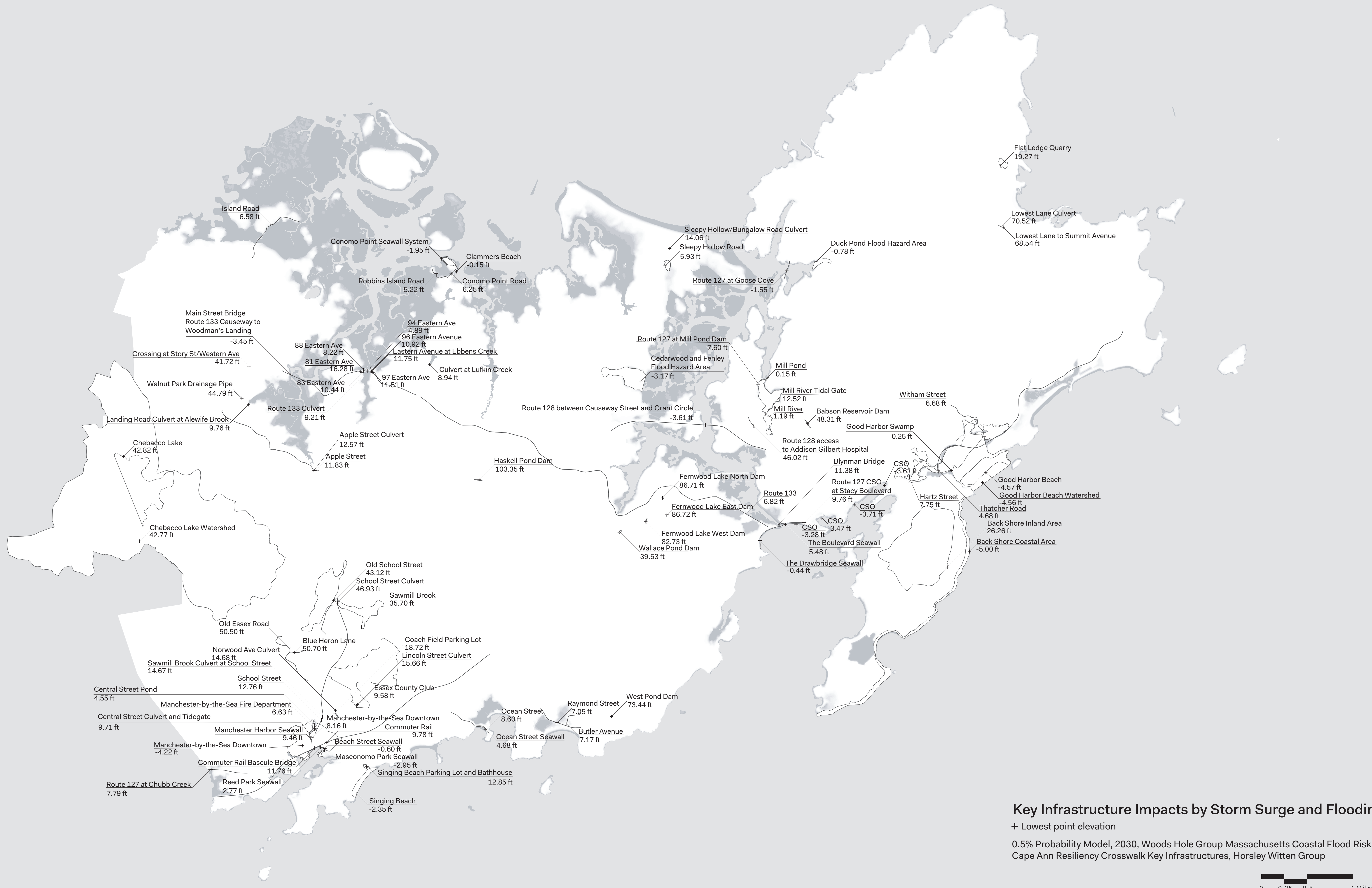
1% Probability Model, 2030, Woods Hole Group Massachusetts Coastal Flood Risk Model
Cape Ann Resiliency Crosswalk Key Infrastructures, Horsley Witten Group





Key Infrastructure Impacts by Storm Surge and Flooding
 + Lowest point elevation
 0.5% Probability Model, 2030, Woods Hole Group Massachusetts Coastal Flood Risk Model
 Cape Ann Resiliency Crosswalk Key Infrastructures, Horsley Witten Group



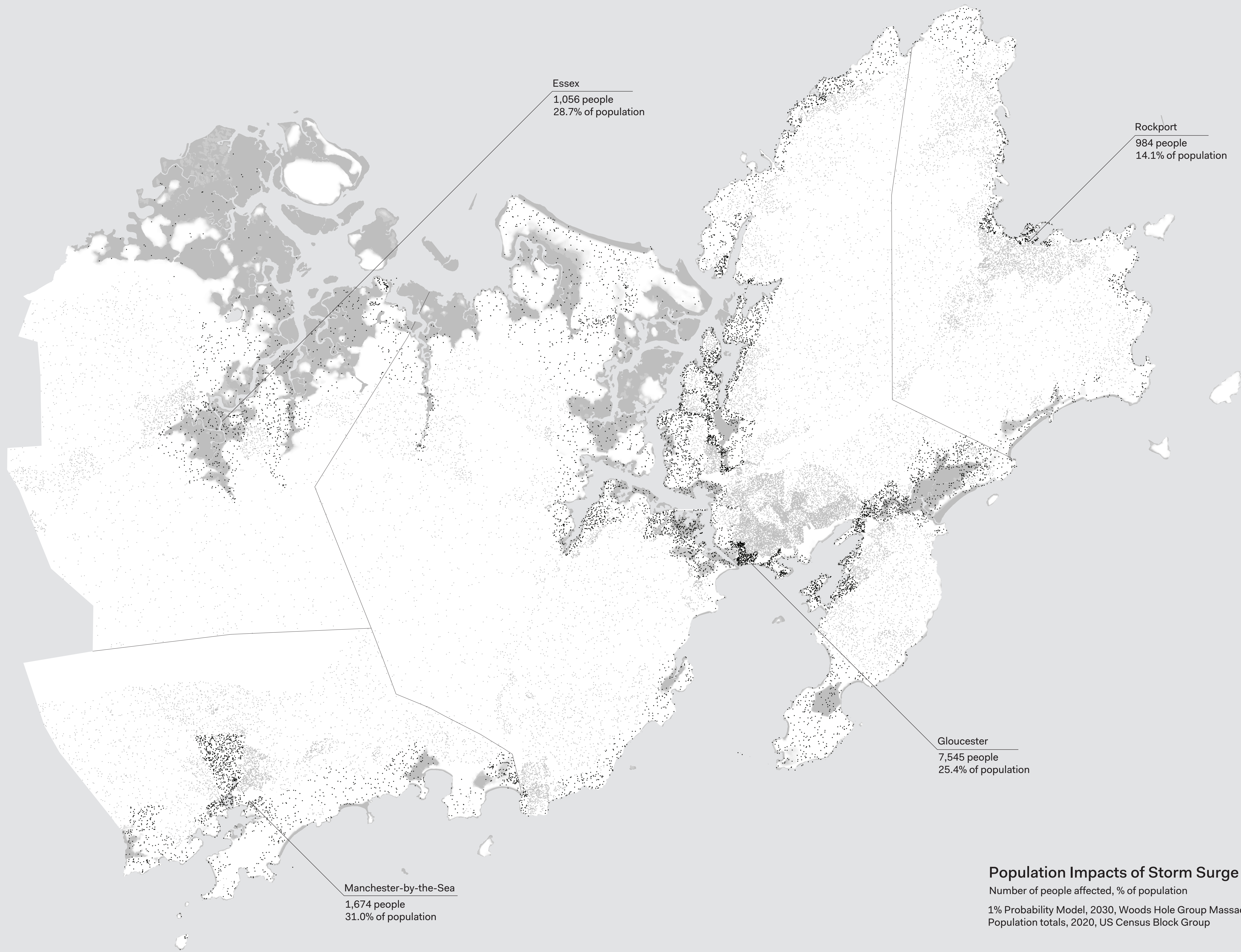


Key Infrastructure Impacts by Storm Surge and Flooding

+ Lowest point elevation

0.5% Probability Model, 2030, Woods Hole Group Massachusetts Coastal Flood Risk Model
 Cape Ann Resiliency Crosswalk Key Infrastructures, Horsley Witten Group





Essex
1,056 people
28.7% of population

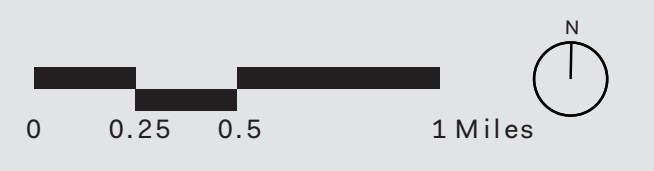
Rockport
984 people
14.1% of population

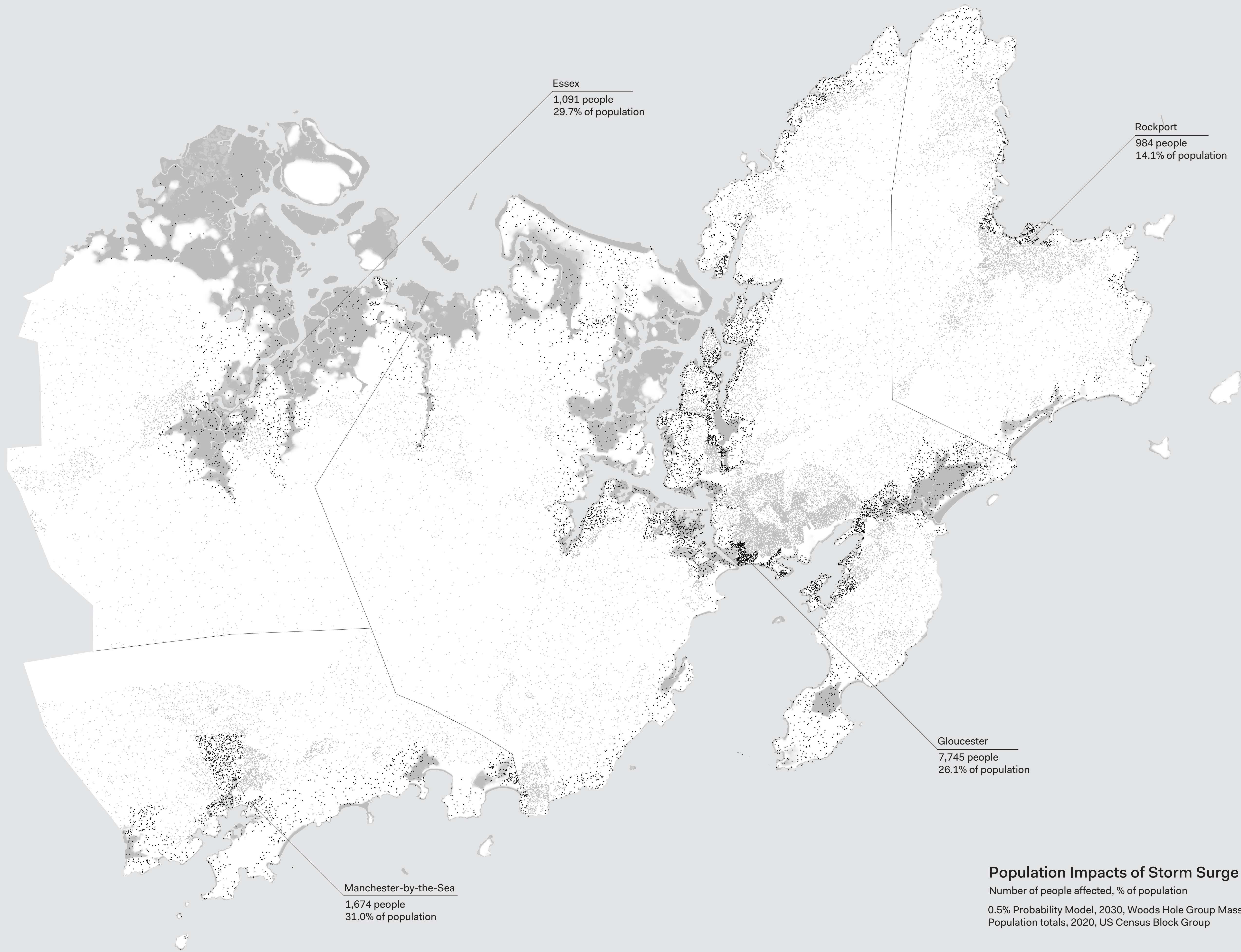
Gloucester
7,545 people
25.4% of population

Manchester-by-the-Sea
1,674 people
31.0% of population

Population Impacts of Storm Surge and Flooding

Number of people affected, % of population
1% Probability Model, 2030, Woods Hole Group Massachusetts Coastal Flood Risk Model
Population totals, 2020, US Census Block Group





Essex
1,091 people
29.7% of population

Rockport
984 people
14.1% of population

Gloucester
7,745 people
26.1% of population

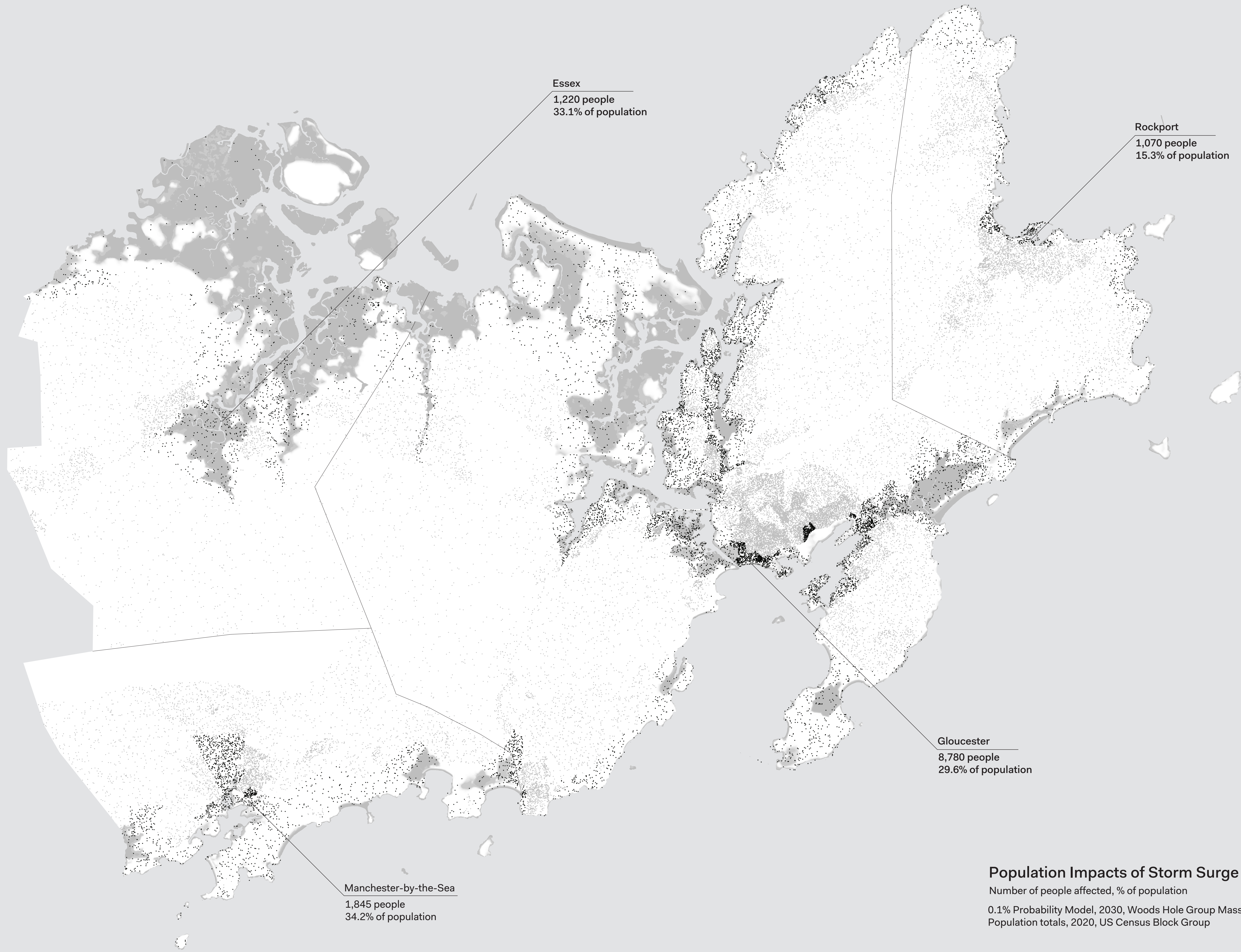
Manchester-by-the-Sea
1,674 people
31.0% of population

Population Impacts of Storm Surge and Flooding

Number of people affected, % of population

0.5% Probability Model, 2030, Woods Hole Group Massachusetts Coastal Flood Risk Model
Population totals, 2020, US Census Block Group





Essex
1,220 people
33.1% of population

Rockport
1,070 people
15.3% of population

Gloucester
8,780 people
29.6% of population

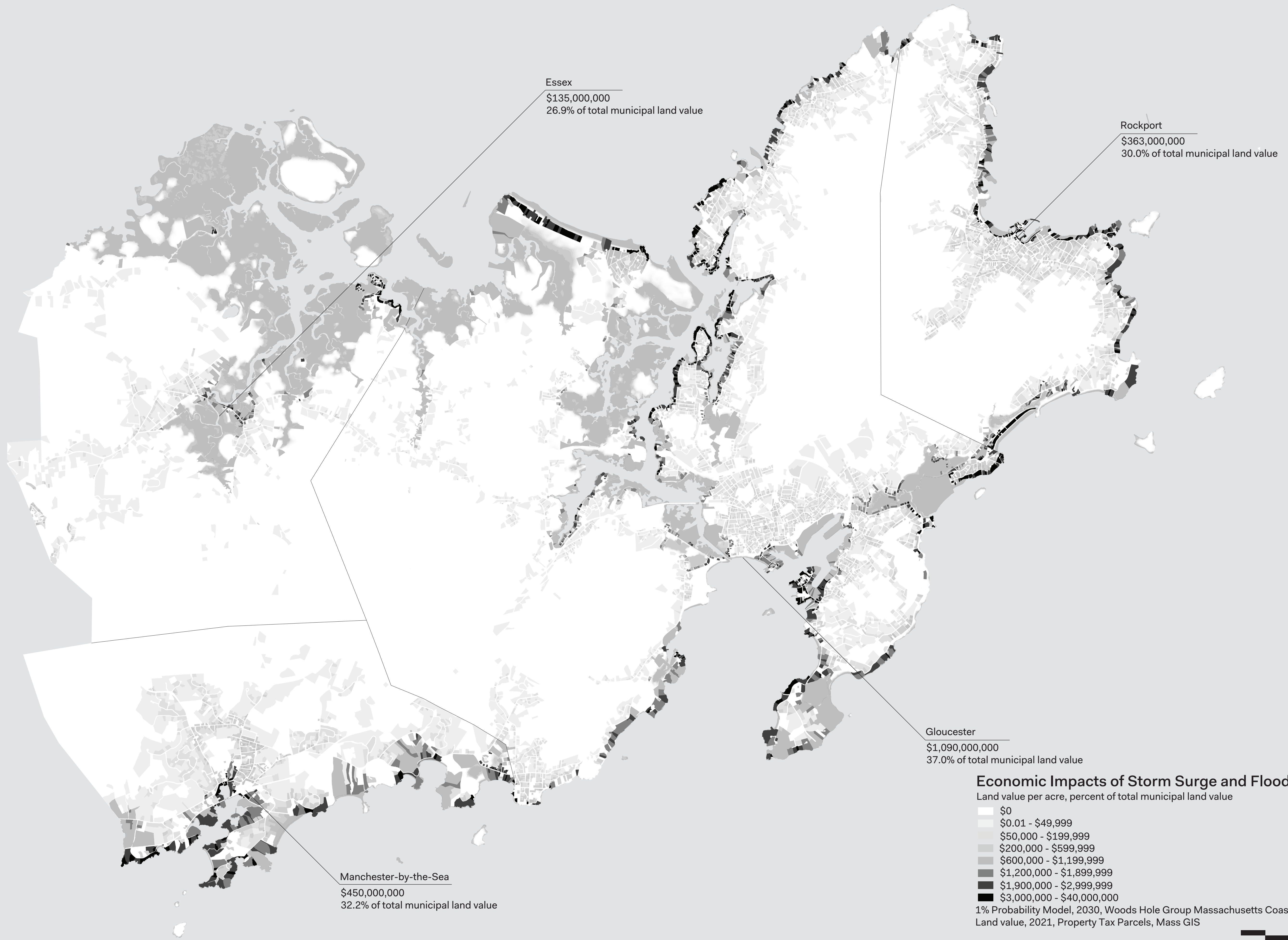
Manchester-by-the-Sea
1,845 people
34.2% of population

Population Impacts of Storm Surge and Flooding

Number of people affected, % of population

0.1% Probability Model, 2030, Woods Hole Group Massachusetts Coastal Flood Risk Model
Population totals, 2020, US Census Block Group



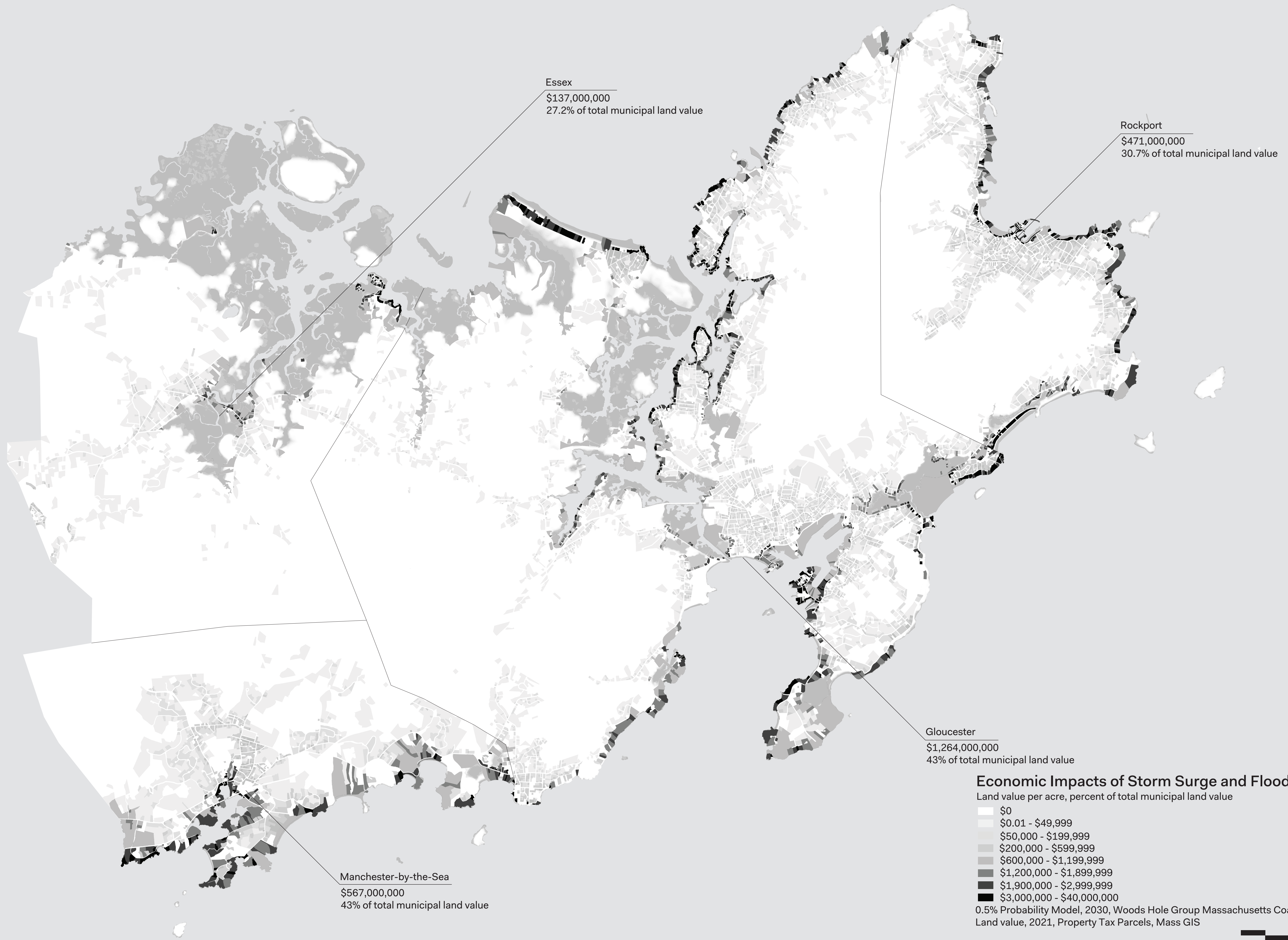


Economic Impacts of Storm Surge and Flooding

- Land value per acre, percent of total municipal land value
- ☐ \$0
 - ☐ \$0.01 - \$49,999
 - ☐ \$50,000 - \$199,999
 - ☐ \$200,000 - \$599,999
 - ☐ \$600,000 - \$1,199,999
 - ☐ \$1,200,000 - \$1,899,999
 - ☐ \$1,900,000 - \$2,999,999
 - ☐ \$3,000,000 - \$40,000,000

1% Probability Model, 2030, Woods Hole Group Massachusetts Coastal Flood Risk Model
 Land value, 2021, Property Tax Parcels, Mass GIS





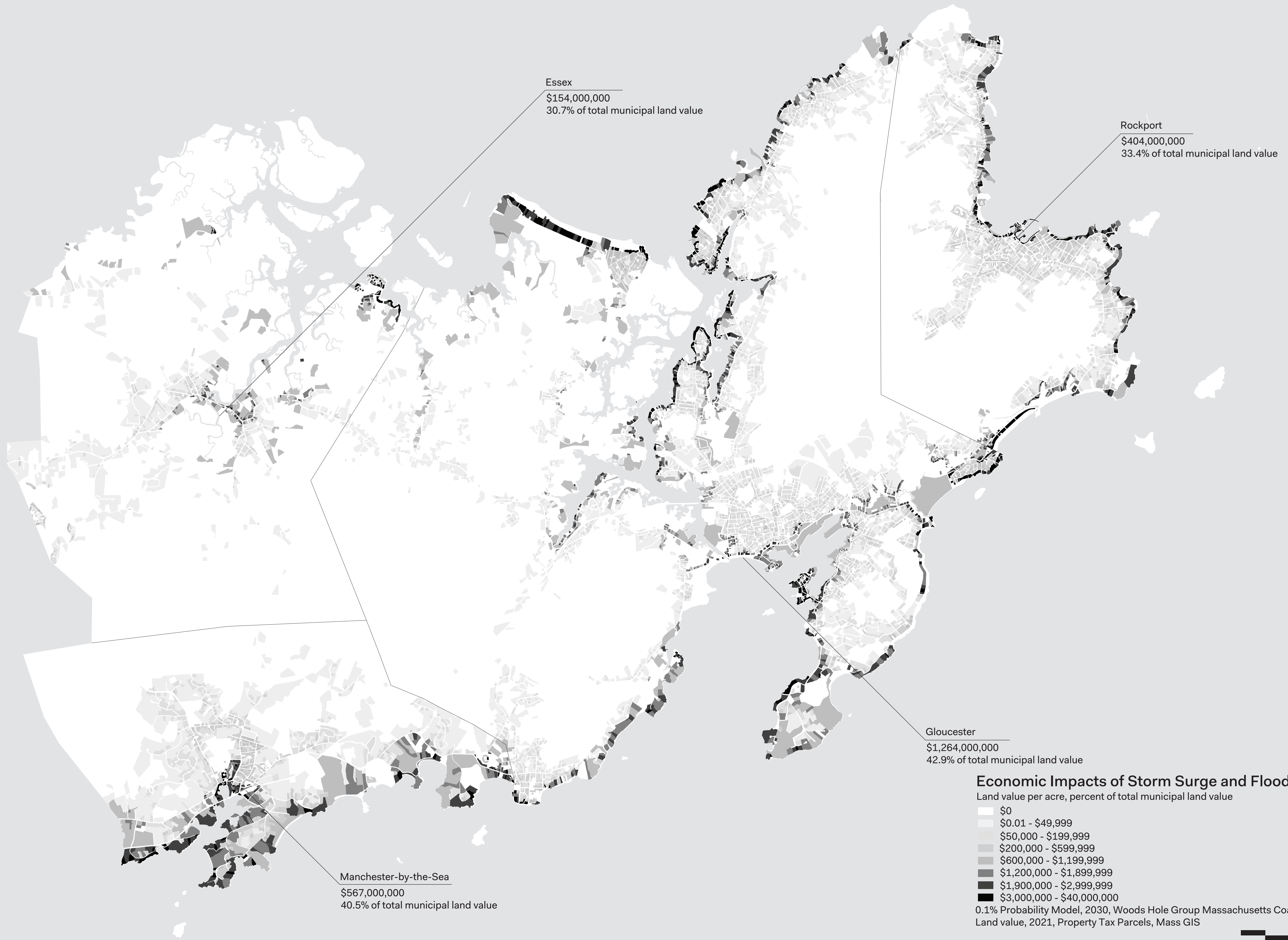
Economic Impacts of Storm Surge and Flooding

Land value per acre, percent of total municipal land value

- ☐ \$0
- ☐ \$0.01 - \$49,999
- ☐ \$50,000 - \$199,999
- ☐ \$200,000 - \$599,999
- ☐ \$600,000 - \$1,199,999
- ☐ \$1,200,000 - \$1,899,999
- ☐ \$1,900,000 - \$2,999,999
- ☐ \$3,000,000 - \$40,000,000

0.5% Probability Model, 2030, Woods Hole Group Massachusetts Coastal Flood Risk Model
 Land value, 2021, Property Tax Parcels, Mass GIS





Essex
 \$154,000,000
 30.7% of total municipal land value

Rockport
 \$404,000,000
 33.4% of total municipal land value

Gloucester
 \$1,264,000,000
 42.9% of total municipal land value

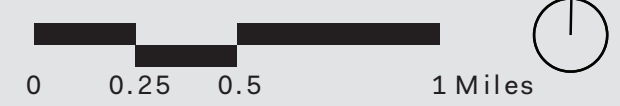
Manchester-by-the-Sea
 \$567,000,000
 40.5% of total municipal land value

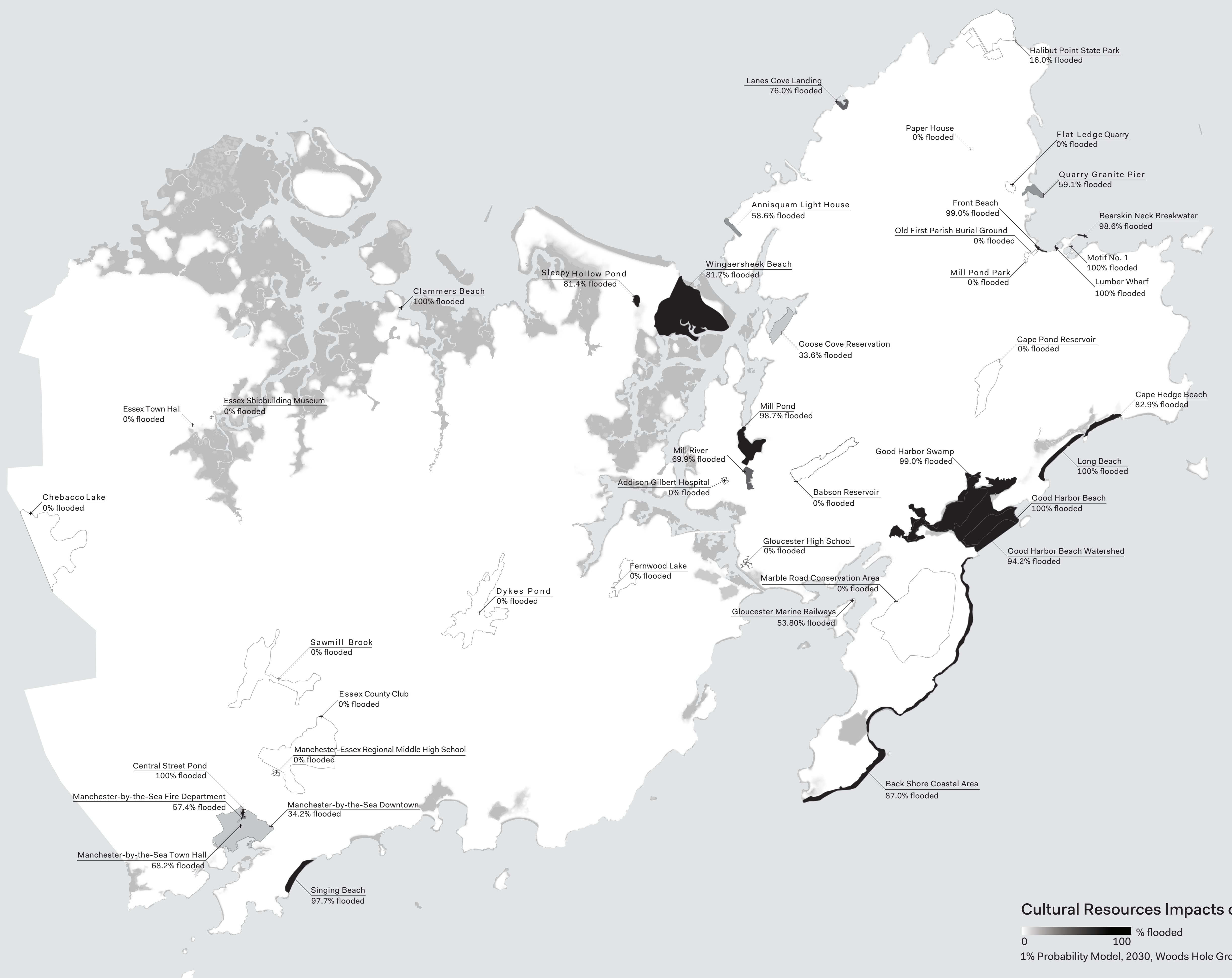
Economic Impacts of Storm Surge and Flooding

Land value per acre, percent of total municipal land value

- ☐ \$0
- ☐ \$0.01 - \$49,999
- ☐ \$50,000 - \$199,999
- ☐ \$200,000 - \$599,999
- ☐ \$600,000 - \$1,199,999
- ☐ \$1,200,000 - \$1,899,999
- ☐ \$1,900,000 - \$2,999,999
- ☐ \$3,000,000 - \$40,000,000

0.1% Probability Model, 2030, Woods Hole Group Massachusetts Coastal Flood Risk Model
 Land value, 2021, Property Tax Parcels, Mass GIS



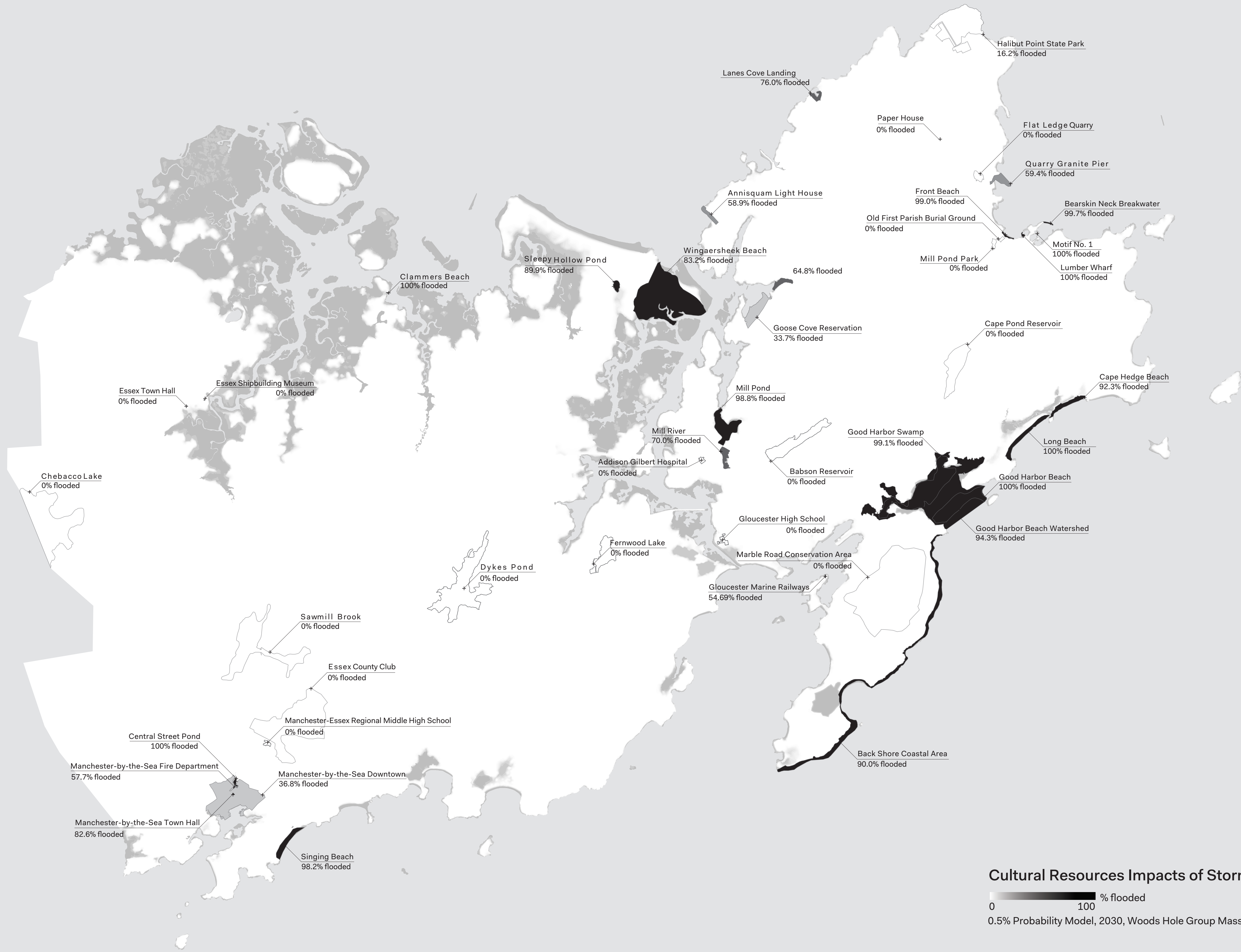


Cultural Resources Impacts of Storm Surge and Flooding

0 100 % flooded

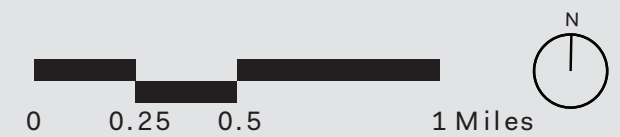
1% Probability Model, 2030, Woods Hole Group Massachusetts Coastal Flood Risk Model

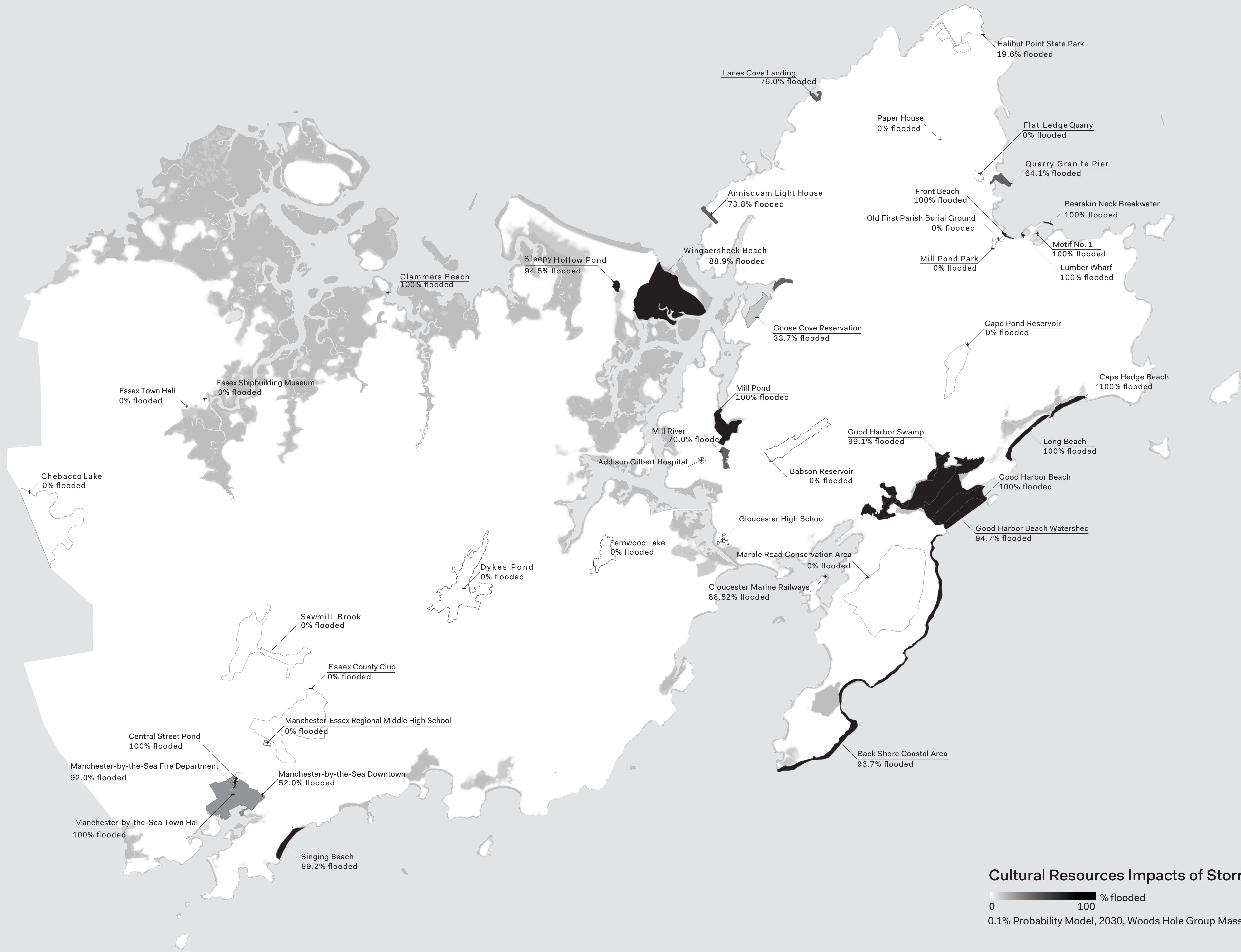




Cultural Resources Impacts of Storm Surge and Flooding

0 100 % flooded
 0.5% Probability Model, 2030, Woods Hole Group Massachusetts Coastal Flood Risk Model





Cultural Resources Impacts of Storm Surge and Flooding

0 100 % flooded
 0.1% Probability Model, 2030, Woods Hole Group Massachusetts Coastal Flood Risk Model

