Workshop Three: USING COASTAL DATA TO IMPACT LOCAL PLANNING

Using Scenario Planning to Assess Land Use, Fiscal, and Environmental Impacts

BACKGROUND

Scenario-Based Planning Framework

Management Options	Climate Futures		
	Lucky	Expected	Perfect Storm
Current Development	Scenario 1A	Scenario 1B	Scenario 1C
Current Zoning Build-Out	Scenario 2A	Scenario 2B	Scenario 2C
BMP Build-Out	Scenario 3A	Scenario 3B	Scenario 3C

Future Climate Conditions

- Possible climate futures (*not predictions*)
- Varying:
  - Storminess
  - Great Lakes still water levels
- Derived by:
  - FEMA FIRMs (existing & proposed – Coastal Flood Study)
  - Observed Lake Michigan water levels (gauge data)
  - Available Digital Elevation Models (DEMs)
- "Planning storm" ~ 50 year storm

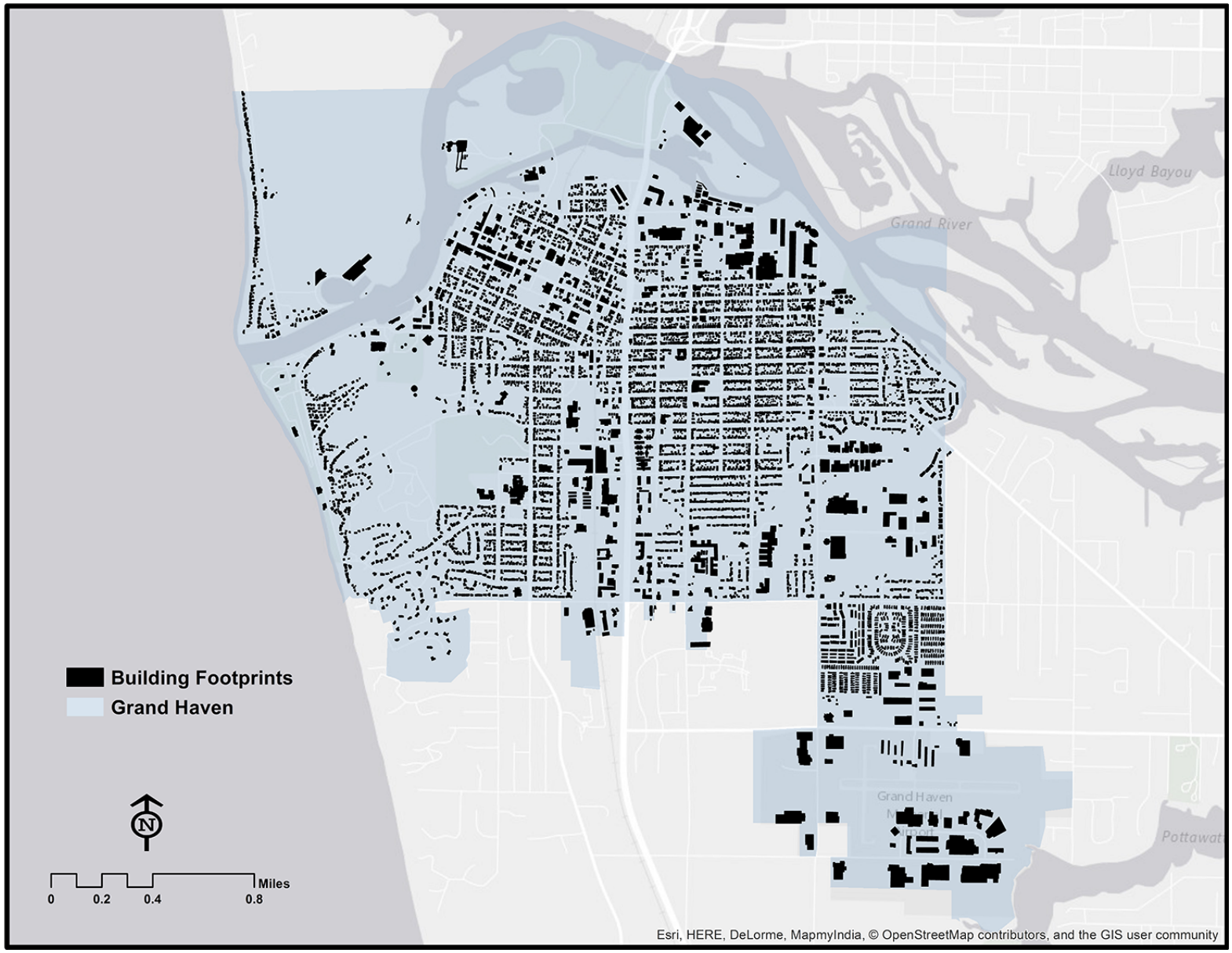
Growth Management Options

- Possible build-out futures (*not predictions*)
- Use current structures & infrastructure as a base
- Varying:
  - Zoning regulations & other growth policies
  - Allowable development in or near high risk flood areas
- Derived by:
  - Community master plan, zoning ordinance, and any other ordinances (e.g., stormwater management ordinance)
  - Spatial avoidance best management practices
  - CommunityViz software

GROWTH MANAGEMENT OPTIONS

Growth Management Options

- Current Structures & Infrastructure
- Potential Build Outs (Completed with CommunityViz)
  - Current Zoning Build-Out
  - BMP Build-Out


Lloyd Bayou
Grand River
Grand Haven
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Building Footprints
Grand Haven
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Miles
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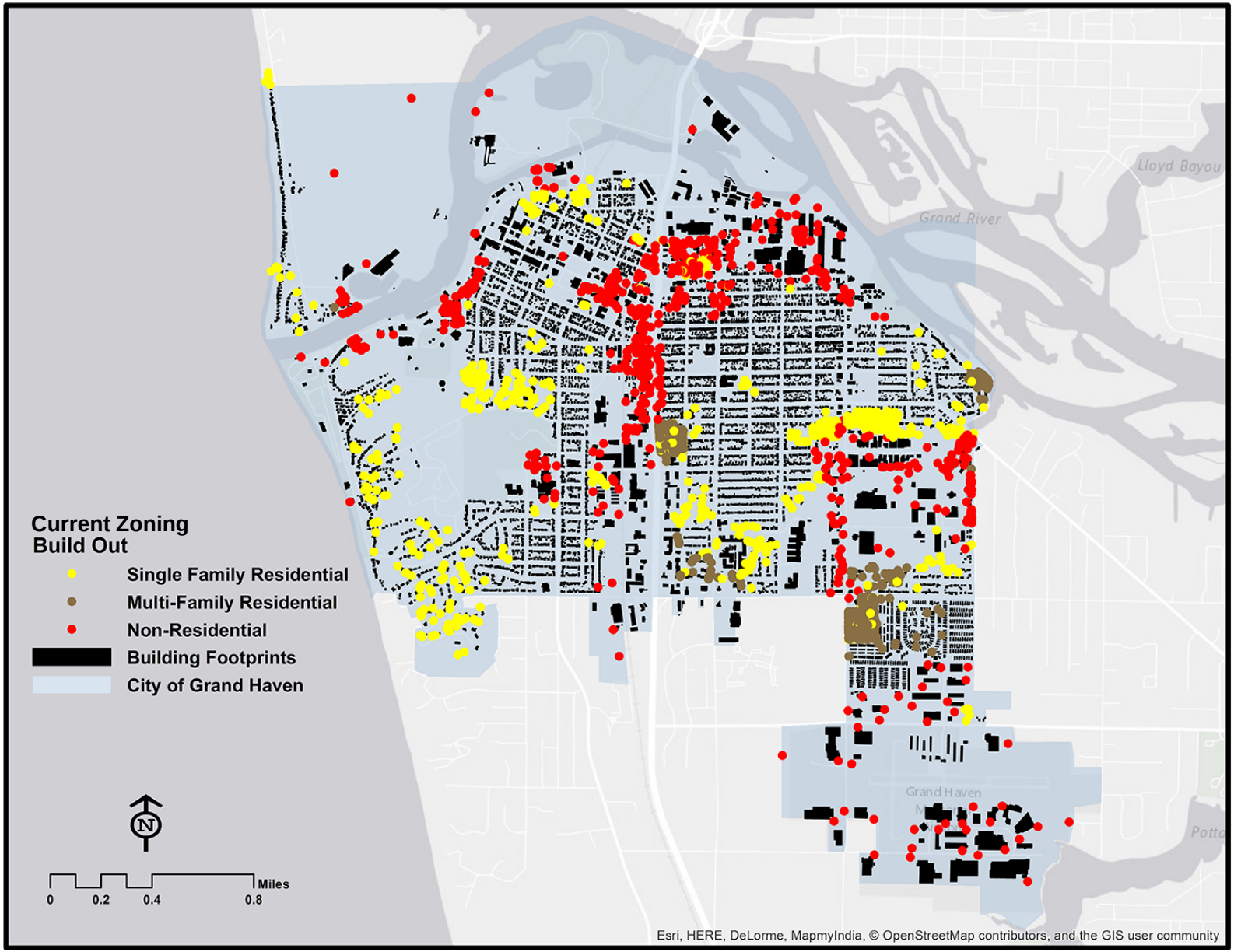
Current Zoning
Build Out
Single Family Residential
Multi-Family Residential
Non-Residential
Building Footprints
City of Grand Haven
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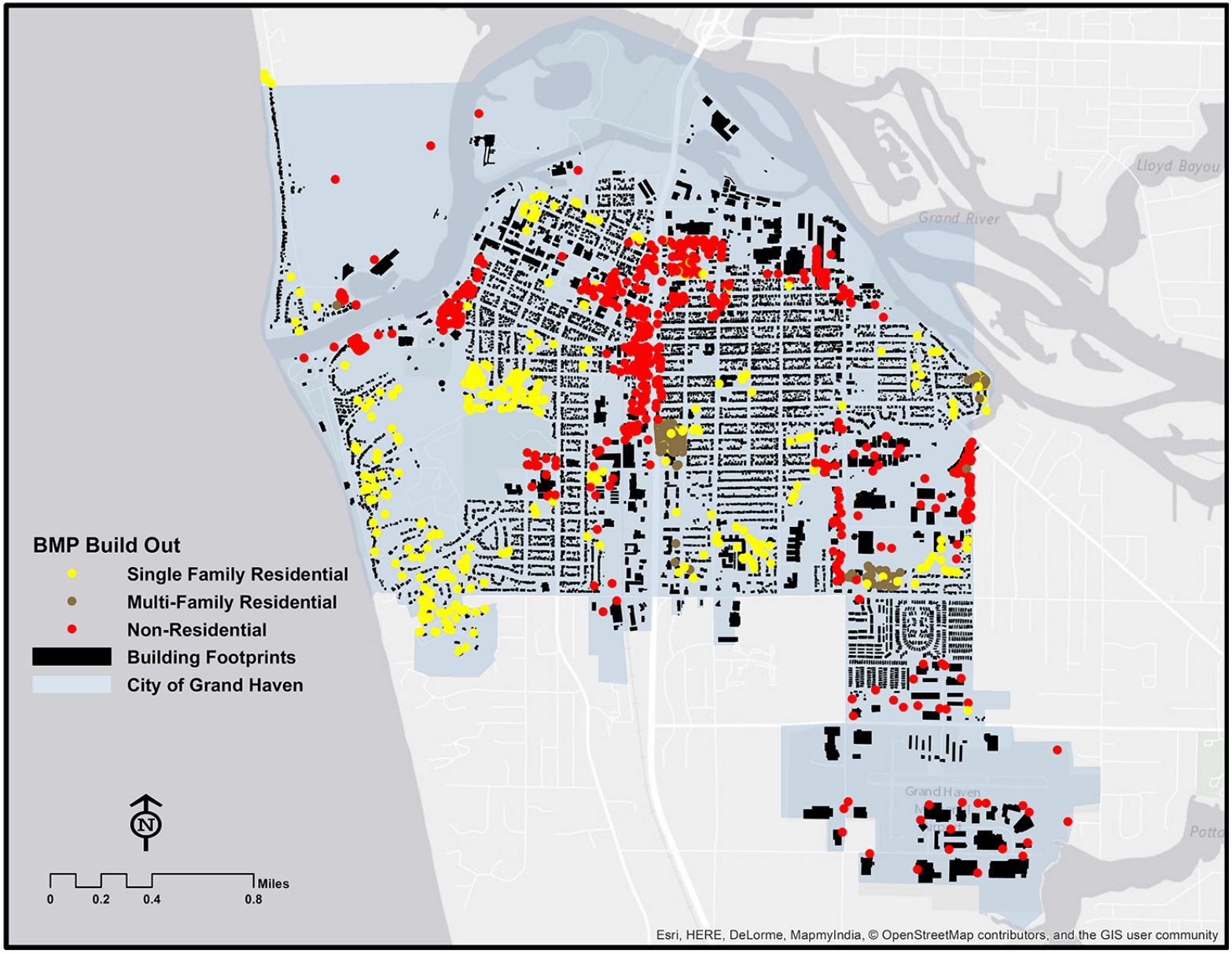
BMP Build Out
Single Family Residential
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Potential Build-Out Futures in High Risk Flood Areas

	Lucky	Expected	Perfect Storm
Current Development	17	142	189
Current Zoning Build-Out*	+1	+182	+234
BMP Build-Out*	+2	+25	+41

* Additional potential structures in high risk flood areas

Takeaways from Potential Build-Outs

- Wetland & water buffer BMPs reduce the number of potential future structures at risk of being flooded

Other best management practices:

- Structural regulations
- Downzone development in high risk flooding areas
- Low Impact Development (LID) practices

FISCAL IMPACT ANALYSIS

Fiscal Impact: Total Property Value at Risk Under Each Climate Future

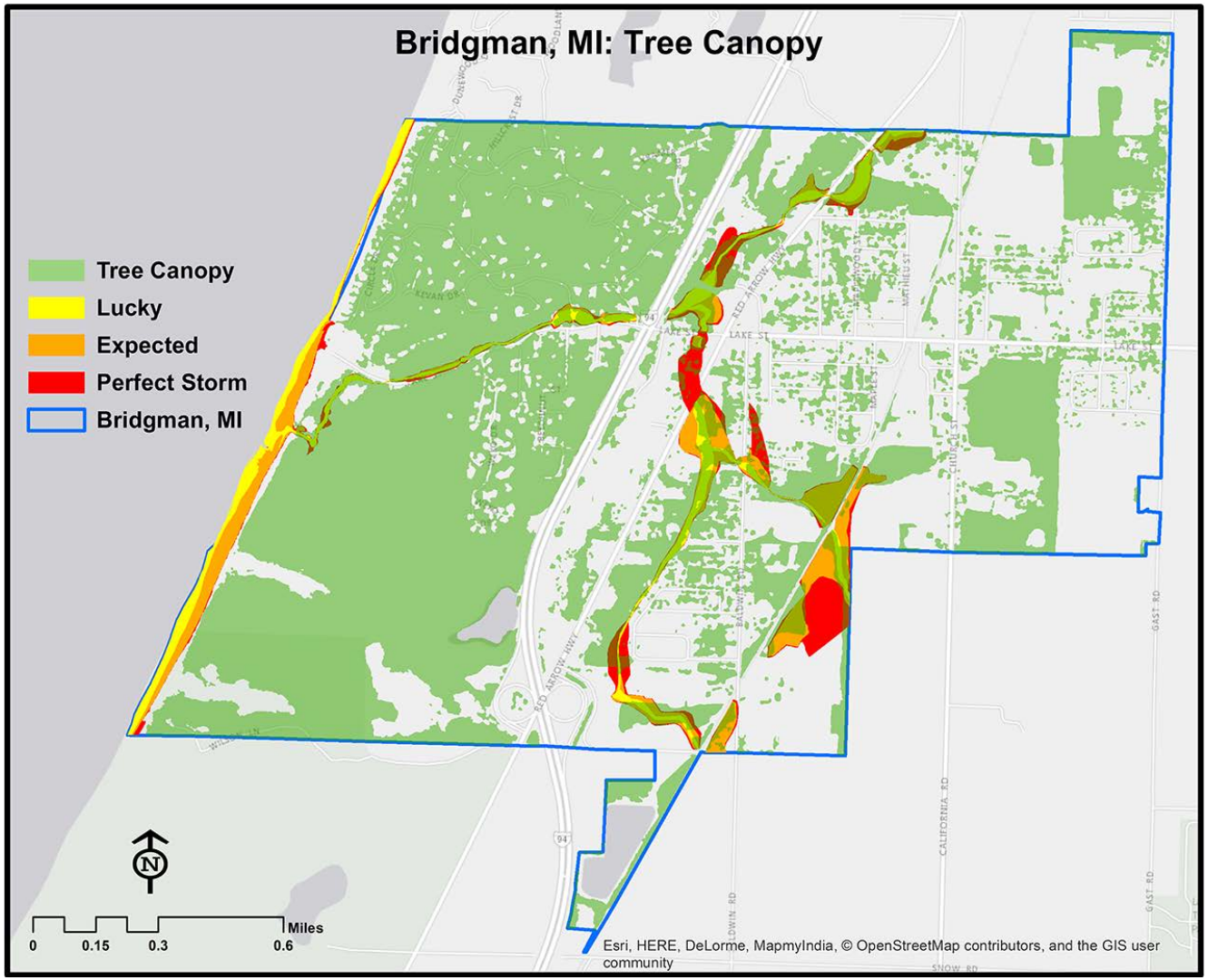
	Lucky	Expected	Perfect Storm
Current Development	~ $4 Million	~ $47 Million	~ $71 Million
Current Zoning Build-Out†	~$110 Million	~$310 Million	~$340 Million
BMP Build-Out†	~$17 Million	~$214 Million	~$230 Million

* The current total property value for the City of Grand Haven is about $2.4 Billion. So, Roughly 3% or less of the current total property value is at risk.

† Based on previously mapped climate futures

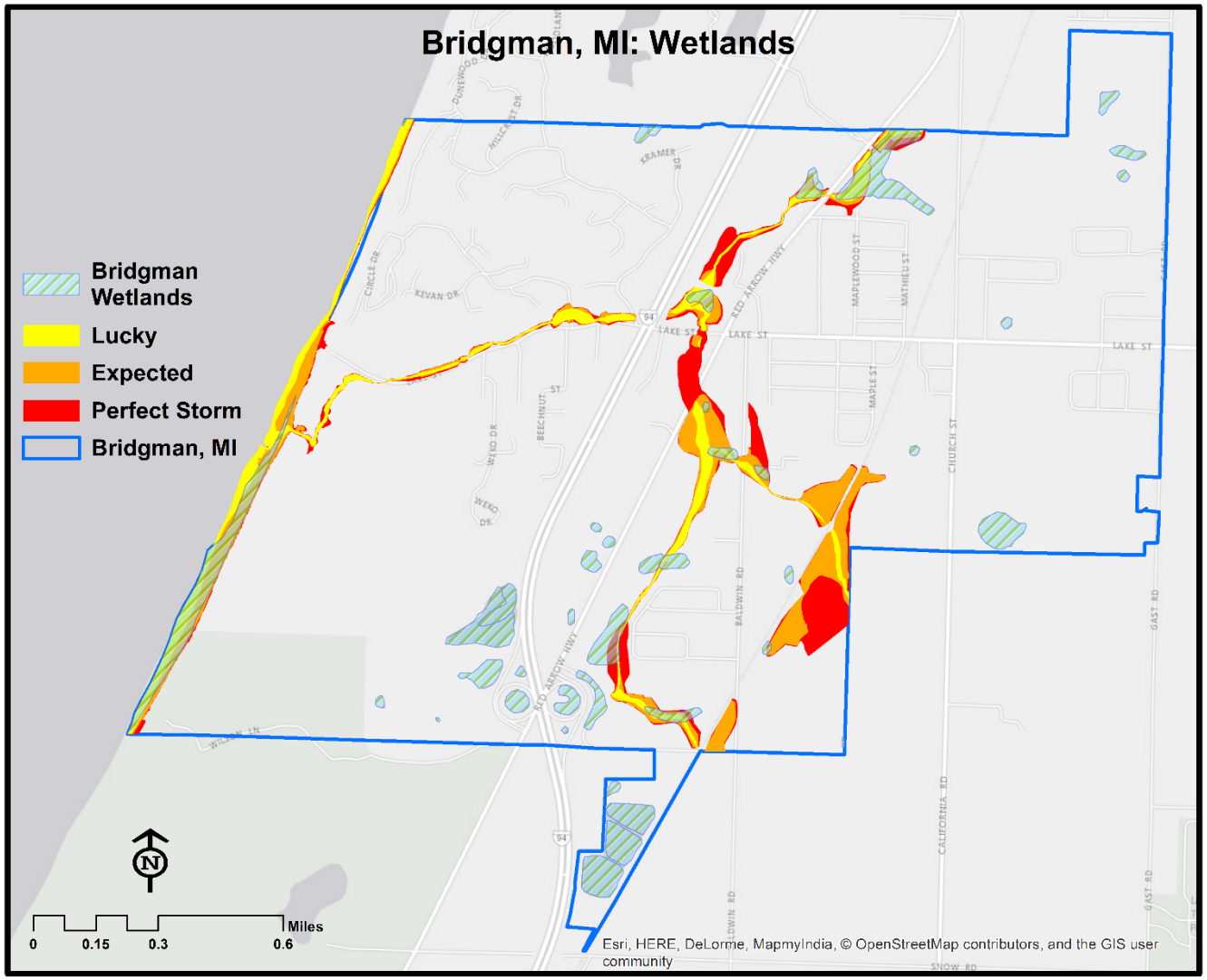
ENVIRONMENTAL ASSESSMENT

Environmental Assessment



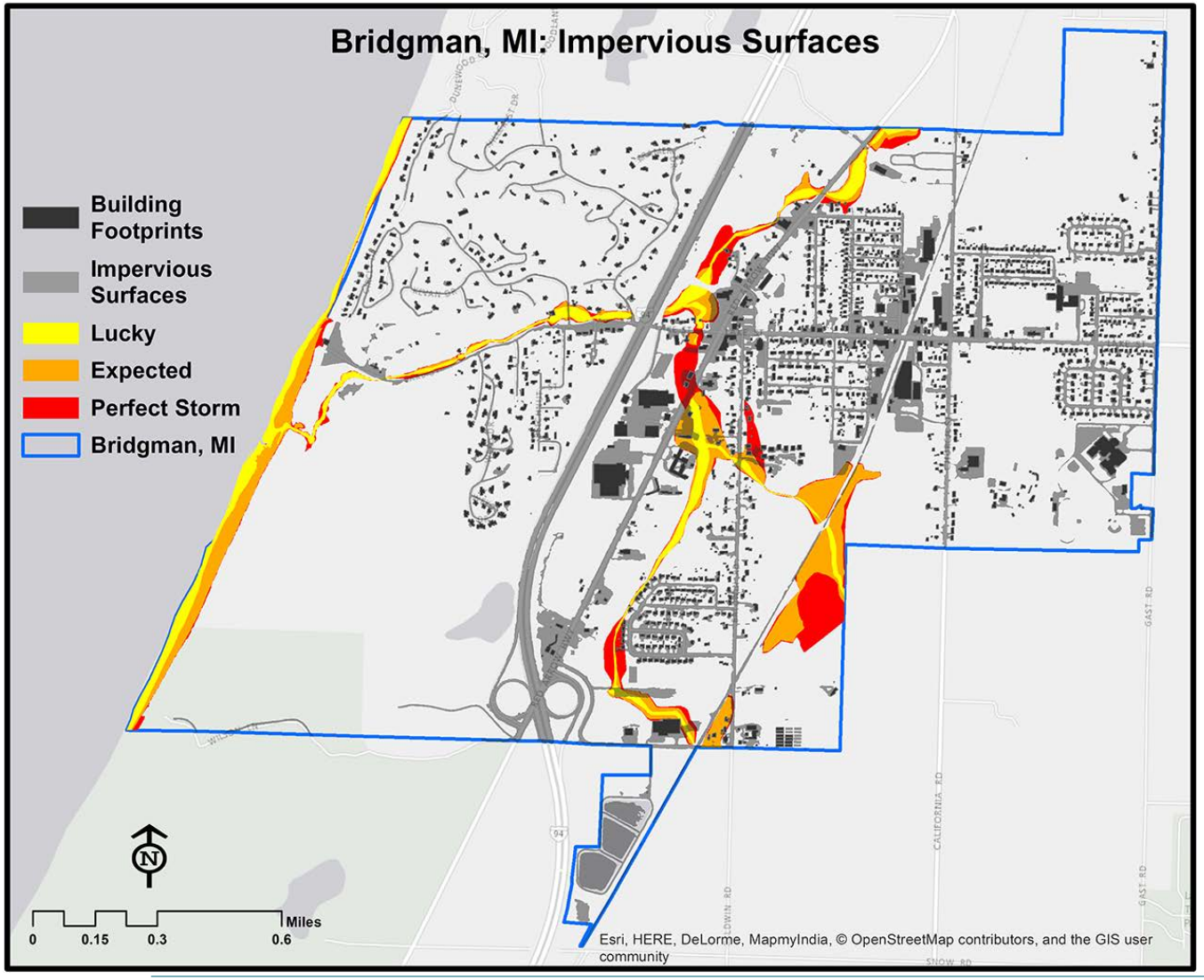
- Total Acres of Tree Canopy:
  - 980.2 acres (~52% of Bridgman)

Environmental Assessment



- Total Acres of Wetlands:
  - 80 acres (~4% of Bridgman)

Environmental Assessment



- Total Acres of Imperviousness:
  - 341 acres (~18% of Bridgman)

Environmental Assessment

	% Tree Canopy	% Wetlands	% Impervious
Lucky	53%	26%	3%
Expected	44%	22%	6%
Perfect Storm	41%	17%	7%
Bridgman Total	52%	4%	18%

Environmental Assessment

	% Tree Canopy	% Wetlands	% Impervious
Lucky	53%	26%	3%
Expected	44%	22%	6%
Perfect Storm	41%	17%	7%
Bridgman Total	52%	4%	18%

Takeaways:

- Want % Tree Canopy and % Wetlands to trend up from Lucky to Perfect Storm
  - To help mitigate flooding, prevent runoff, and filter pollutants prior to entering water features

- Want % Impervious to trend down from Lucky to Perfect Storm
  - To reduce runoff vulnerability

Environmental Assessment

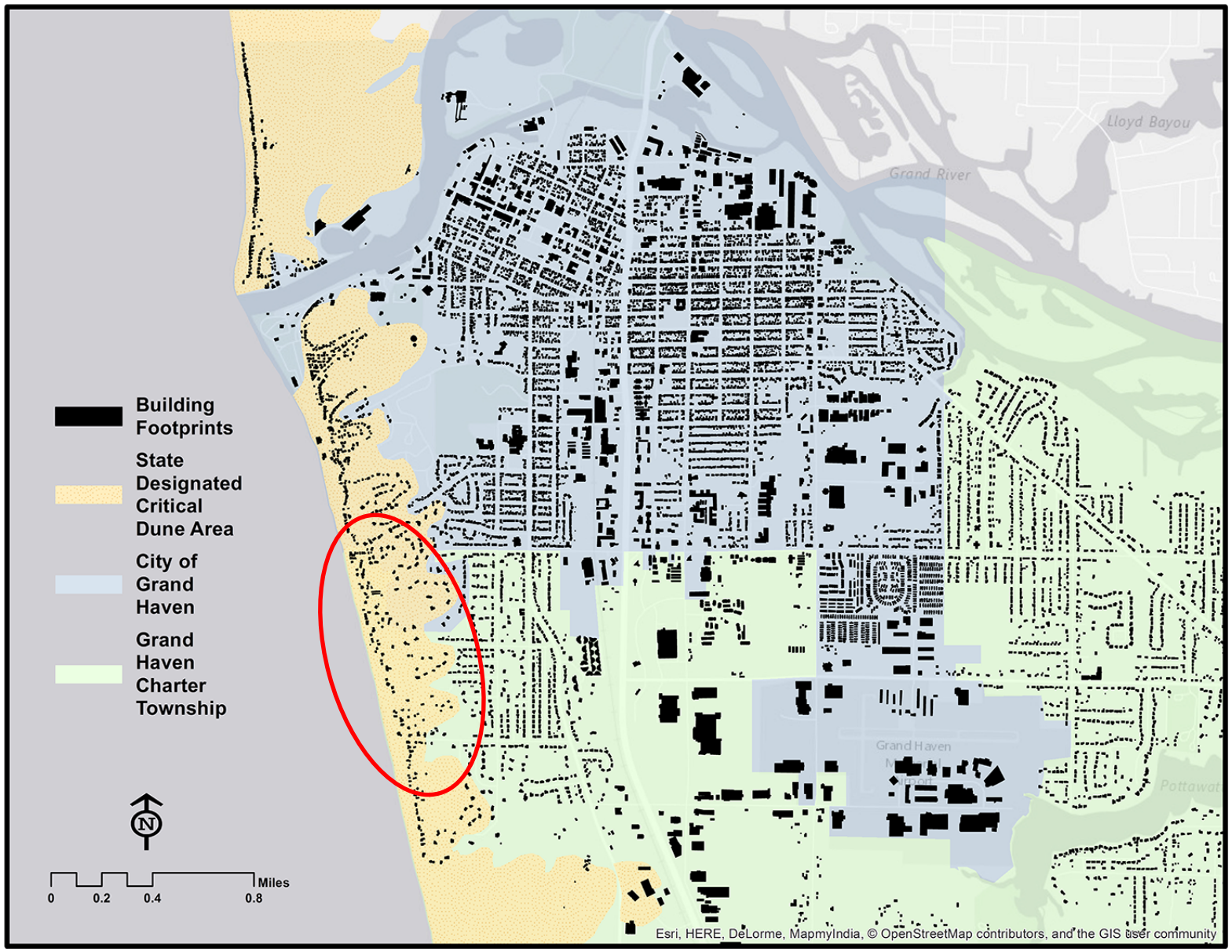
	% Tree Canopy	% Wetlands	% Impervious
Lucky	53%	26%	3%
Expected	44%	22%	6%
Perfect Storm	41%	17%	7%
Bridgman Total	52%	4%	18%

IDEALLY:	A Lot More More	A Lot More More	A Little Less Less

Takeaways:

- Want % Tree Canopy and % Wetlands to trend up from Lucky to Perfect Storm
  - To help mitigate flooding, prevent runoff, and filter pollutants prior to entering water features
- Want % Impervious to trend down from Lucky to Perfect Storm
  - To reduce runoff vulnerability

CRITICAL DUNE AREAS


Building Footprints
State Designated Critical Dune Area
City of Grand Haven
Grand Haven Charter Township
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Miles
Lloyd Bayou
Grand River
Grand Haven
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Coastal Resiliency Training Workshop

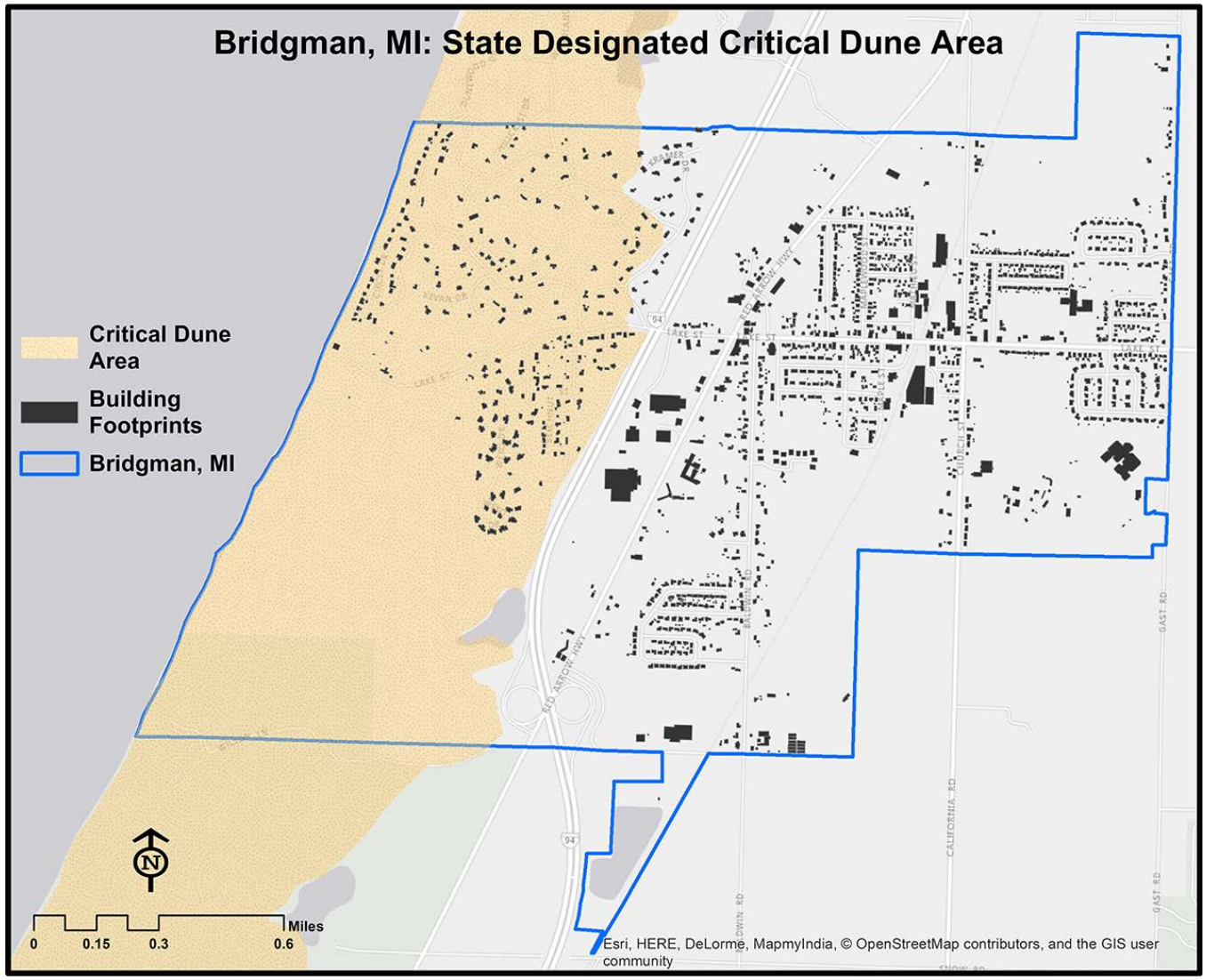
Grand Haven Charter Township's Fire and Rescue team have access such as the photo above to help access hard to reach areas. In the case of fire, however, large trucks are often needed to haul heavy equipment.

This condemned structure in Grand Haven Charter Township has been damaged by the natural movement of dune systems over time. Homes within the shorelands may be subject to erosion, sand movement, and other coastal dynamics.

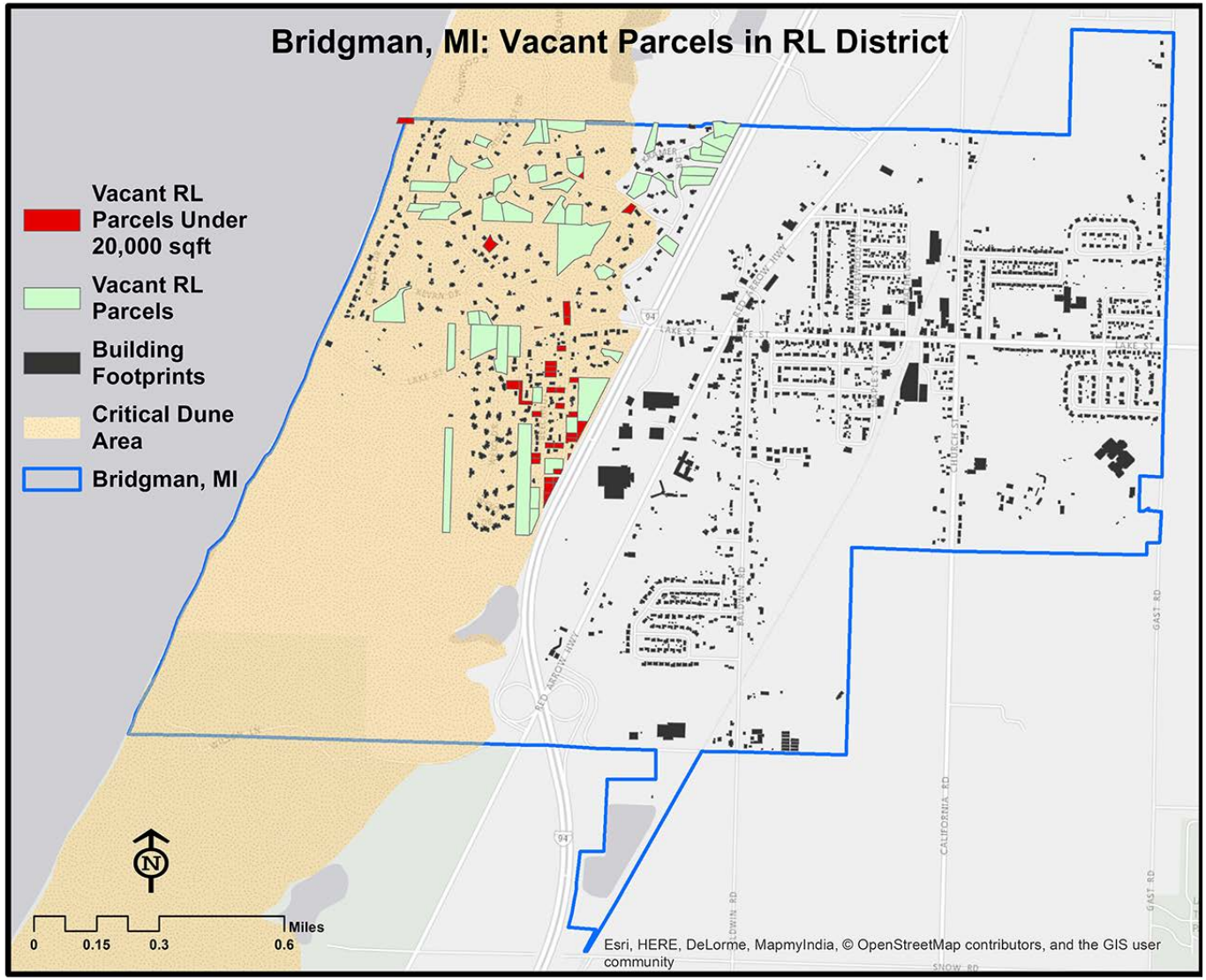
Decades of development in the township's dunes have created challenges for emergency response and fire department workers to reach homes.

The Wilderness community of the township prides itself on having a strong rural character built around the dunes, yet coastal residents often do not anticipate increased response times that their remote location causes for emergency service providers.

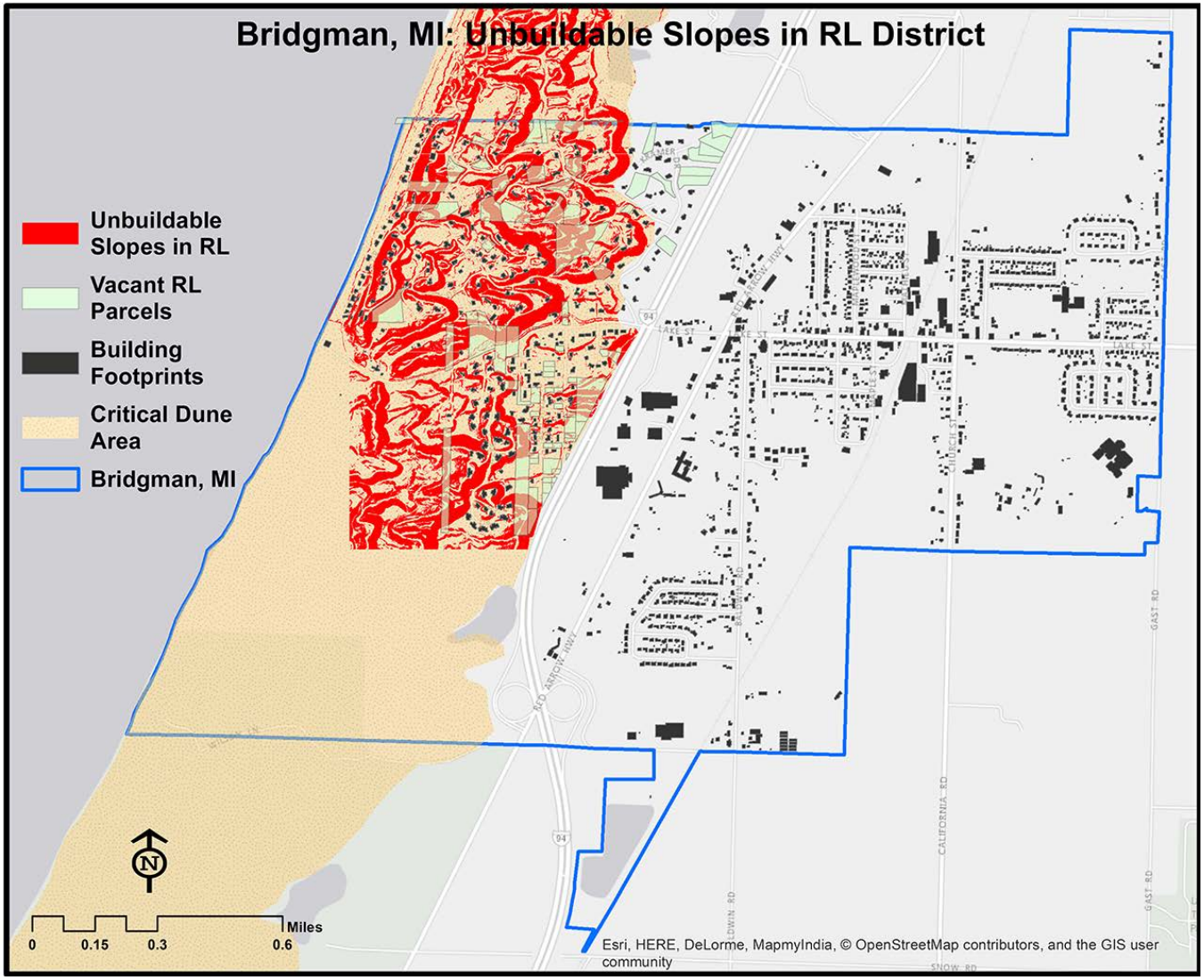
The Grand Haven Township Fire and Rescue Department has 7 full-time and 24 part-time staff. The average response time community-wide to emergencies is three minutes, but narrow roads in the dunes make it difficult and sometimes impossible for fire trucks to reach homes.



- Total Acres of Critical Dune Area:
  - 675.5 acres (~36% of Bridgman)



- Total Vacant Parcels in RL District Under 20,000 sqft:
  - 34 parcels (~43% of Vacant Parcels in RL District)



A significant amount of land located within the RL District, which is part of the state designated CDA, cannot be built on because of its slope

- Areas where the slope is > 1 on 3 or 33%

Total Vacant Parcels in RL District that have steep slopes:

- 64 parcels (~81% of Vacant Parcels in RL District)

Total Vacant Parcels in RL District that have steep slopes AND small parcels:

- 29 parcels (~37% of Vacant Parcels in RL District)

QUESTIONS?