

# Annex M Town of Zebulon

## M.1 PLANNING PROCESS

The table below lists the HMPC members who represented the Town of Zebulon.

**Table M.1 – HMPC Members**

Agency	Representative	Position or Title
Public Works Department	Chris Ray	Public Works Director
Town of Zebulon	Joe Moore	Town Manager
Planning Department	Teresa Piner	Interim Planning Director
Planning Department	Meade Bradshaw	Assistant Planning Director

## M.2 COMMUNITY PROFILE

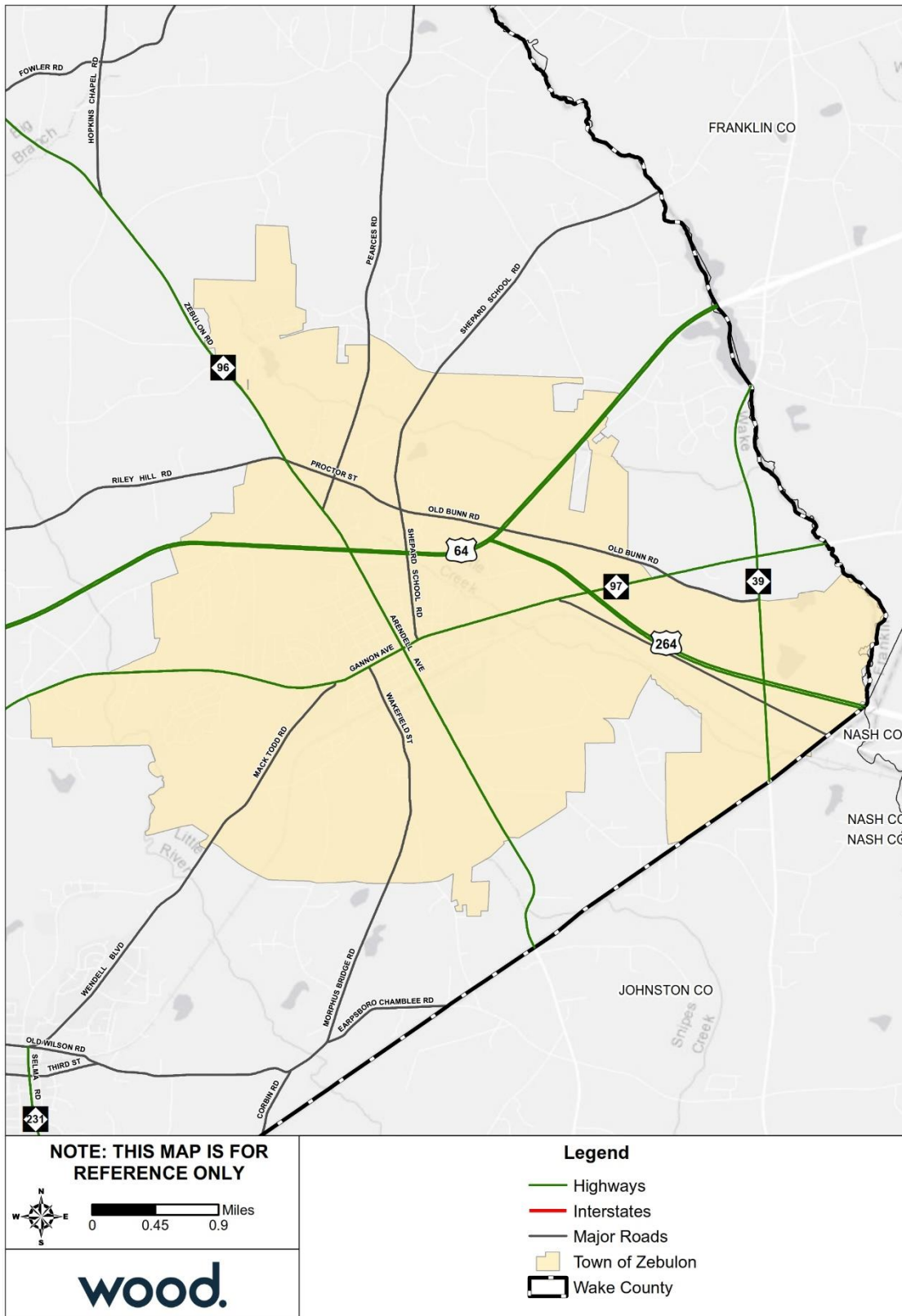
### Geography

The Town of Zebulon is located in eastern Wake County. It is neighbored by Wendell to the southwest and Franklin, Nash, and Johnston Counties to the east. The Town is part of the Raleigh, NC Metropolitan Statistical Area, which falls within the larger Raleigh-Durham-Chapel Hill, NC Combined Statistical Area. Zebulon comprises a total land area of 4.1 square miles.

According to data from the U.S. Fish and Wildlife Service’s National Wetlands Inventory, there are approximately 1,274 acres of wetlands in Zebulon.

Figure M.1 shows a base map of the major transportation routes in the Town of Zebulon.

Figure M.1 – Major Transportation Routes – Town of Zebulon



Source: Wake County GIS Open Data

## ANNEX M: TOWN OF ZEBULON

### Population and Demographics

Table M.2 provides population counts and growth estimates for the Town of Zebulon as compared to the County overall. Table M.3 provides demographic information for Zebulon as compared to the whole County.

**Table M.2 – Population Counts, Zebulon, 2010-2017**

Jurisdiction	2000 Census Population	2010 Census Population	2017 ACS Population Estimate	Total Change 2010-2017	% Change 2010-2017
<b>Wake County total</b>	<b>627,846</b>	<b>900,993</b>	<b>1,023,811</b>	<b>122,818</b>	<b>13.6%</b>
Town of Zebulon	4,046	4,433	4,943	510	11.5%

Source: US Census Bureau Decennial Census 2000, Decennial Census 2010; American Community Survey 2013-2017 5-Year Estimates

**Table M.3 – Racial Demographics, Zebulon, 2017**

Jurisdiction	White, %	Black, %	Asian, %	Other Race, %	Two or More Races, %	Persons of Hispanic or Latino Origin*, %
<b>Wake County total</b>	<b>66.5%</b>	<b>20.4%</b>	<b>6.5%</b>	<b>3.6%</b>	<b>2.7%</b>	<b>10.0%</b>
Town of Zebulon	50.0%	42.1%	1.2%	1.6%	5.1%	13.1%

Source: US Census Bureau American Community Survey 2013-2017 5-Year Estimates

\*Persons of Hispanic origin may be of any race, so also are included in applicable race categories

### Asset Inventory

The following tables summarize the asset inventory for Zebulon in order to estimate the total physical exposure to hazards in this area. The locations of critical facilities are shown in Figure M.2 on the following page. Critical facilities are a subset of identified assets from the Critical Infrastructure & Key Resources dataset. Note that the counts are by building; where a critical facility comprises a cluster of buildings, each building is counted and displayed.

**Table M.4 – Critical Infrastructure & Key Resources by Type**

Jurisdiction	Food & Agriculture	Banking & Finance	Chemical	Commercial Facilities	Communications	Manufacturing	Defense	Government	Healthcare	IT	National Monuments	Nuclear	Postal & Shipping	Transportation	Energy	Emergency Services	Water	Other	Total
Town of Zebulon	60	8	0	151	0	85	0	52	18	0	0	0	0	19	0	2	2	0	397

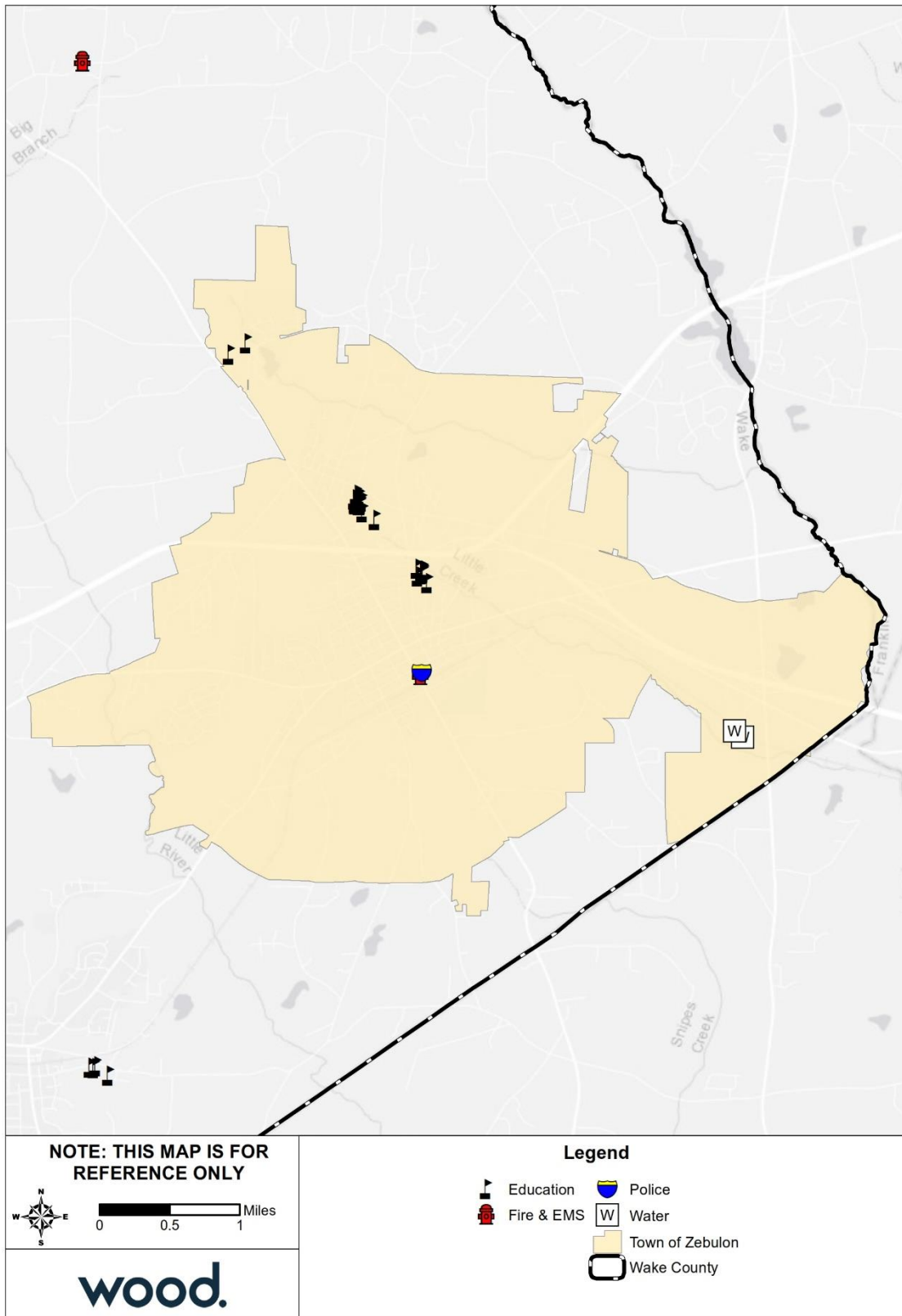
Source: NCEM Risk Management Tool

**Table M.5 – High Potential Loss Facilities by Use**

Jurisdiction	Residential	Commercial	Industrial	Government	Agricultural	Religious	Utilities	Other	Total
Town of Zebulon	3	21	15	16	0	5	2	0	62

Source: NCEM Risk Management Tool

Figure M.2 – Critical Facilities, Town of Zebulon



Source: NCEM IRISK Database, GIS Analysis

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To supplement the asset inventory and provide a clearer picture of the current asset exposure in the Town of Zebulon, current parcel data was evaluated to identify development since 2010. This information is not incorporated into the risk assessment, which was prepared using NCEM's IRISK database. However, this summary of development since 2010 provides some context to understand the degree to which the IRISK exposure and vulnerability numbers differ from current conditions.

Table M.6 provides a summary by land class of parcel development from January 2011 to April 2019.

**Table M.6 – Parcels Developed 2011 or Later, Town of Zebulon**

Land Class	Number of Parcels	Sum of Building Value
Acres Greater Than 10 With House	2	\$677,543
Commercial	5	\$3,743,423
EXEMPT	2	\$1,908,171
Industrial	2	\$43,774,649
Residential Less Than 10 Acres	381	\$65,244,585
<b>Grand Total</b>	<b>392</b>	<b>\$115,348,371</b>

Source: Wake County Open Data; retrieved April 8, 2019

There are three listings on the National Register of Historic Places for the Town of Zebulon. These sites are listed in the table below.

**Table M.7 – Historic Properties**

Ref#	Property Name	Status Date	Category	City
76001345	Wakelon School	5/13/1976	Building	Zebulon
86000157	Bunn, Bennett, Plantation	2/4/1986	Building	Zebulon
07000881	Barbee, George and Neva, House	8/28/2007	Building	Zebulon

Source: National Parks Service, National Register of Historic Places, October 2018

### Housing

The table below details key housing statistics for Zebulon as compared to the County overall.

**Table M.8 – Housing Statistics, Zebulon, 2010-2017**

Jurisdiction	Housing Units (2010)	Housing Units (2017)	Housing Units Percent Change (2010-2017)	Owner-Occupied, % (2017)	Vacant Units, % (2017)	Median Home Value (2017)
<b>Wake County total</b>	<b>371,836</b>	<b>411,632</b>	<b>10.7%</b>	<b>59.5%</b>	<b>7.2%</b>	<b>\$250,700</b>
Town of Zebulon	1,862	1,790	-3.9%	52.1%	6.8%	\$145,000

Source: U.S. Census Bureau 2010 Decennial Census, American Community Survey 2013-2017 5-Year Estimates

Note: Owner-Occupied and vacant-unit measures are reported as a percent of the total number of housing units.

### Economy

The following tables present key economic statistics for Zebulon as compared to the County overall.

**Table M.9 – Employment Statistics, Zebulon, 2017**

Jurisdiction	Population in Labor Force	Percent Employed* (%)	Percent Unemployed* (%)	Percent Not in Labor Force* (%)	Unemployment Rate (%)
<b>Wake County</b>	<b>564,096</b>	<b>67.2</b>	<b>3.5</b>	<b>29.2</b>	<b>4.9</b>
Town of Zebulon	2,169	57.2	3.8	39.0	6.2

Source: U.S. Census Bureau, American Community Survey 2013-2017 5-Year Estimates

Note: This table reports only the civilian labor force. The labor force in armed services accounted for 0.3% or less of the population 16 and over in all jurisdictions. \*Population employed, population unemployed, and Population not in labor force are reported as a percent of the total population aged 16 years and older.

**Table M.10 – Percent of Employed Population by Occupation, Zebulon, 2017**

Occupation	Management, business, science and arts (%)	Service (%)	Sales and Office (%)	Natural Resources, Construction, and Maintenance (%)	Production, transportation, and material moving (%)
Wake County	50.1	13.8	23.4	6.0	6.7
Town of Zebulon	35.0	22.9	20.9	8.4	12.7

Source: U.S. Census Bureau, American Community Survey 2013-2017 5-Year Estimates

### M.3 RISK ASSESSMENT

This section contains a hazard profile and vulnerability assessment for those hazards that were rated with a higher priority for the Town of Zebulon than for Wake County as a whole. Risk and vulnerability findings are also presented here for those hazards that are spatially defined and have variations in risk that could be evaluated quantitatively on a jurisdictional level. The hazards included in this section are: Flood and Wildfire.

#### M.3.1 Flood

Table M.11 details the acreage of the Town of Zebulon by flood zone on the effective DFIRM. Per this assessment, over 7 percent of the Town of Zebulon falls within the mapped 1%-annual-chance floodplains.

**Table M.11 – Flood Zone Acreage in the Town of Zebulon**

Flood Zone	Acreage	Percent of Total (%)
Zone A	5.95	0.07
Zone AE	646.923	7.40
Zone X (500-year)	63.04	0.72
Zone X Unshaded	8,022.87	91.81
<b>Total</b>	<b>8,738.783</b>	<b>--</b>

Source: FEMA Effective DFIRM; Wake County GIS

Figure M.3 reflects the effective mapped flood hazard zones for the Town of Zebulon, and Figure M.4 displays the depth of flooding estimated to occur in these areas during the 1%-annual-chance flood.

To supplement the IRISK assessment of property at risk from the 1% annual chance flood event in Section 4 and provide a clearer picture of the current property at risk in PLACE, current parcel data was evaluated to identify parcels developed since 2010. Using GIS analysis, parcels developed after 2010 were compared to the boundaries of the 1% annual chance floodplain to identify the exposure of newly developed property to the base flood. In most cases, a parcel was considered exposed to the floodplain if any portion of the parcel was located in the floodplain.

This assessment does not evaluate flood impacts or provide damage estimates. However, this summary of development in or near the floodplain since 2010 provides some context to understand the degree to which the IRISK exposure and vulnerability numbers differ from current conditions.

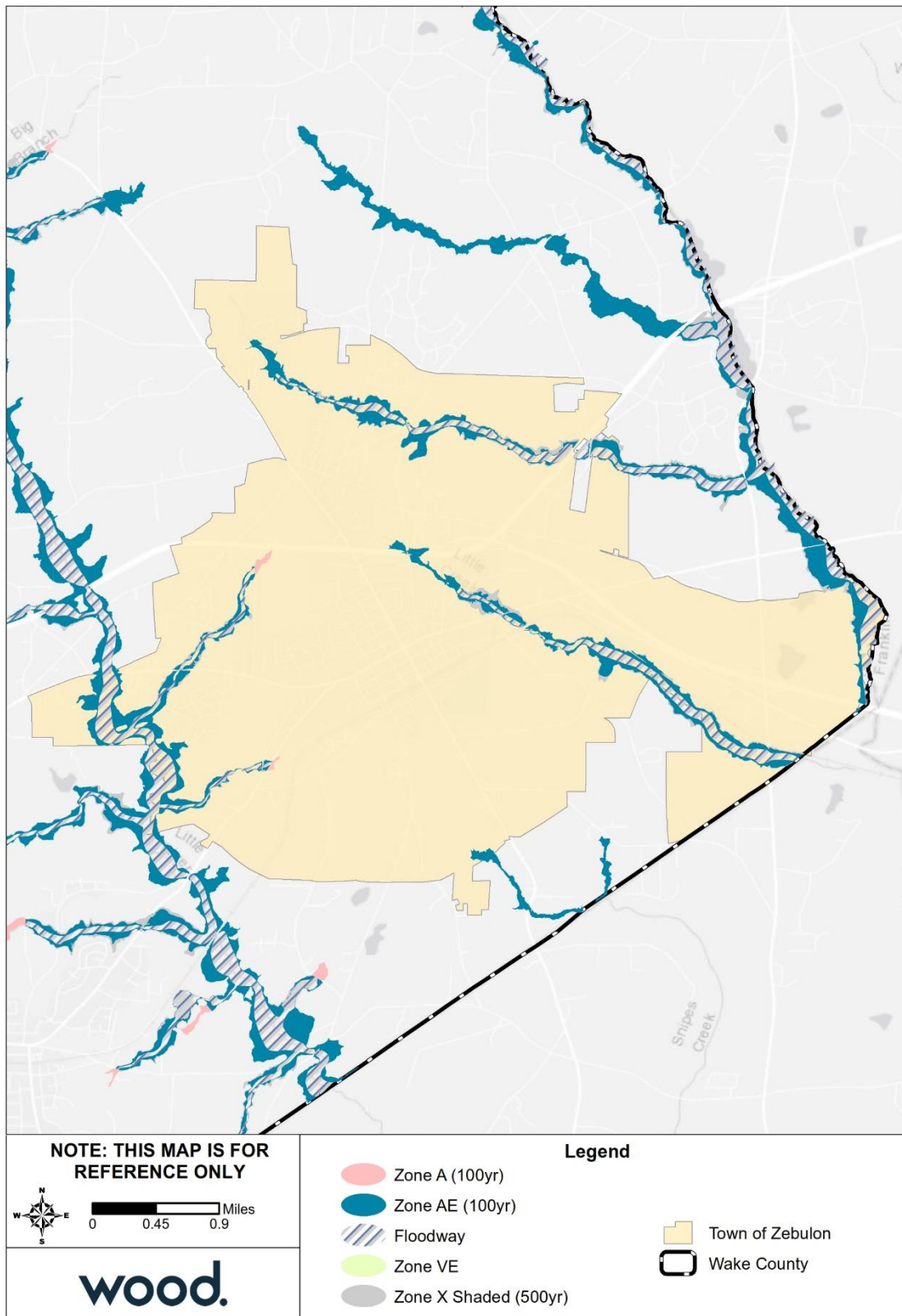
Table M.12 provides a summary by land class of parcel development located in the 1% annual chance floodplain from January 2011 to April 2019.

**Table M.12 – Parcels Developed 2011 or Later and Located in 100-Year Floodplain**

<b>Land Class</b>	<b>Number of Parcels</b>	<b>Sum of Building Value</b>
EXEMPT	1	-
Industrial	1	\$1,156,500
Residential Less Than 10 Acres	4	\$842,196
<b>Grand Total</b>	<b>6</b>	<b>\$1,998,696</b>

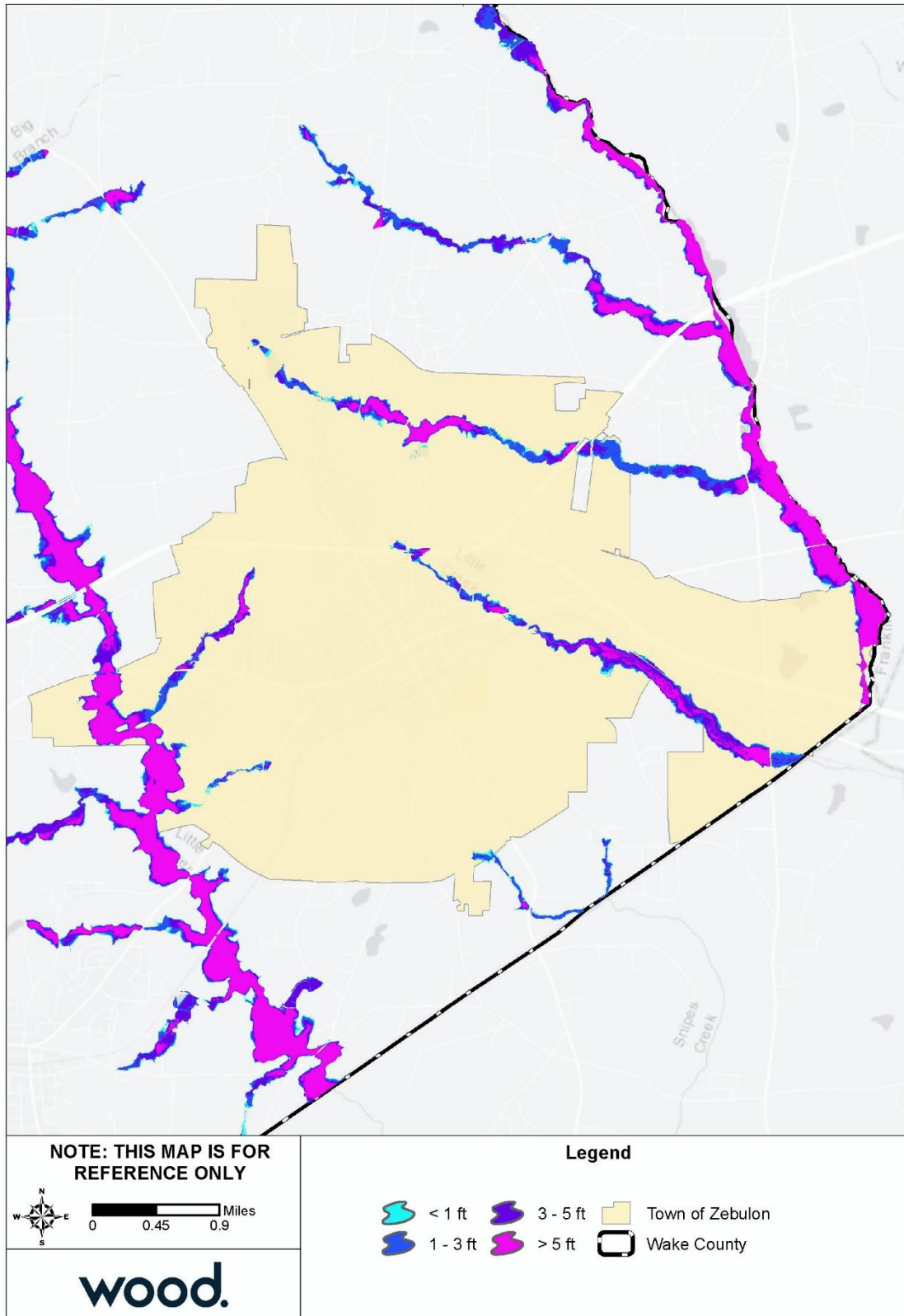
Source: Wake County Open Data; retrieved April 8, 2019; FEMA Effective DFIRM

Figure M.3 – FEMA Flood Hazard Areas, Town of Zebulon



Source: FEMA Effective DFIRM

Figure M.4 – Flood Depth, 1%-Annual-Chance Floodplain, Town of Zebulon



Source: FEMA Effective DFIRM

**M.3.2 Wildfire**

Table M.13 summarizes the acreage in the Town of Zebulon that falls within the Wildland Urban Interface (WUI), categorized by housing density. Areas in the WUI are those where development may intermix with flammable vegetation. 20 percent of the Town of Zebulon is not included in the WUI.

**Table M.13 – Wildland Urban Interface Acreage, Town of Zebulon**

	Housing Density	Total Acreage	Percent of Total Acreage
	<i>Not in WUI</i>	1,747.8	20.0%
	LT 1hs/40ac	1,200.3	13.8%
	1hs/40ac to 1hs/20ac	677.7	7.8%
	1hs/20ac to 1hs/10ac	932.6	10.7%
	1hs/10ac to 1hs/5ac	1,102.3	12.6%
	1hs/5ac to 1hs/2ac	1,471.9	16.9%
	1hs/2ac to 3hs/1ac	1,581.0	18.1%
	GT 3hs/1ac	7.2	0.1%
	<b>Total</b>	<b>8,720.7</b>	

Source: Southern Wildfire Risk Assessment

Figure M.5 depicts the WUI for the Town of Zebulon. The WUI is the area where housing development is built near or among areas of vegetation that may be prone to wildfire. Figure M.6 depicts the Fire Intensity Scale, which indicates the potential severity of fire based on fuel loads, topography, and other factors. Figure M.7 depicts Burn Probability based on landscape conditions, percentile weather, historical ignition patterns, and historical prevention and suppression efforts.

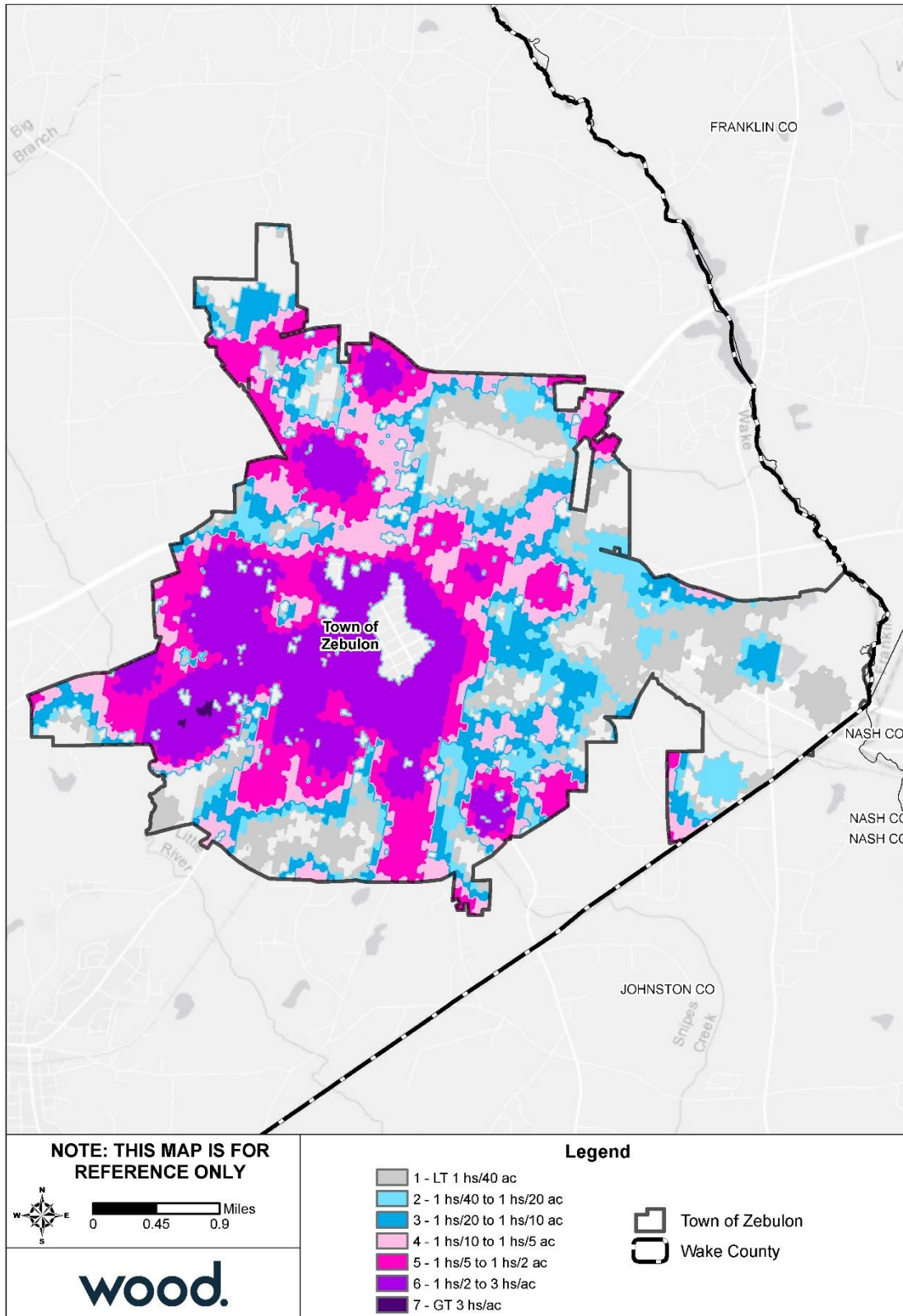
Potential fire intensity is highest in east and west Zebulon; however, these areas are largely outside of the WUI and have low burn probabilities. The area with the highest burn probability, in northwest Zebulon, does not overlay with high potential fire intensity and is partially outside of the WUI.

Table M.14 provides building counts and estimated damages for Critical Infrastructure and Key Resources (CIKR) buildings by sector at risk to wildfire hazard.

**Table M.14 – Critical Facilities Exposed to Wildfire, Town of Knightdale**

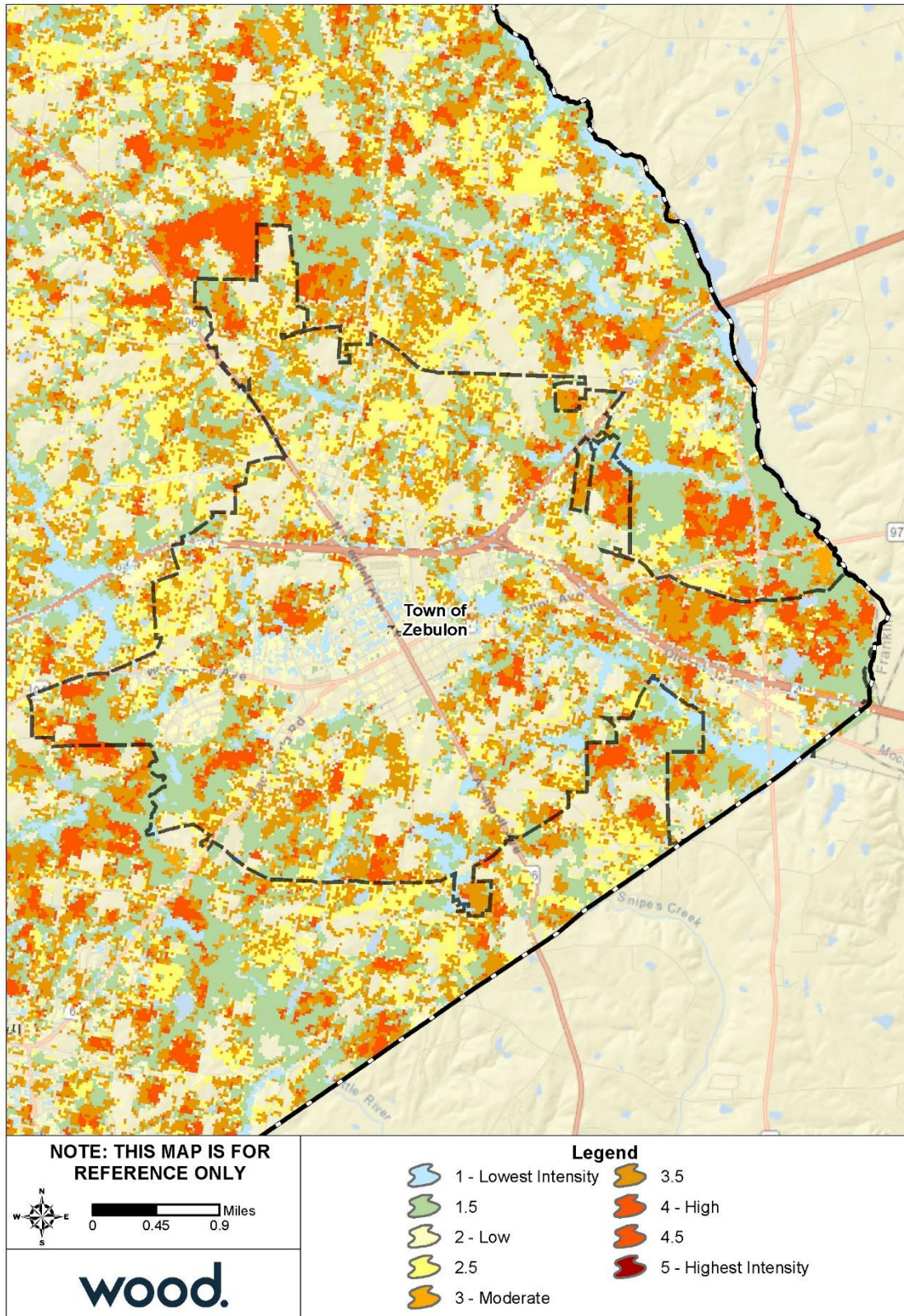
Sector	Event	Number of Buildings at Risk	Estimated Damages
Critical Manufacturing	Wildfire Hazard	1	\$71,156
<b>All Categories</b>	<b>Wildfire Hazard</b>	<b>1</b>	<b>\$71,156</b>

Figure M.5 – Wildland Urban Interface, Town of Zebulon



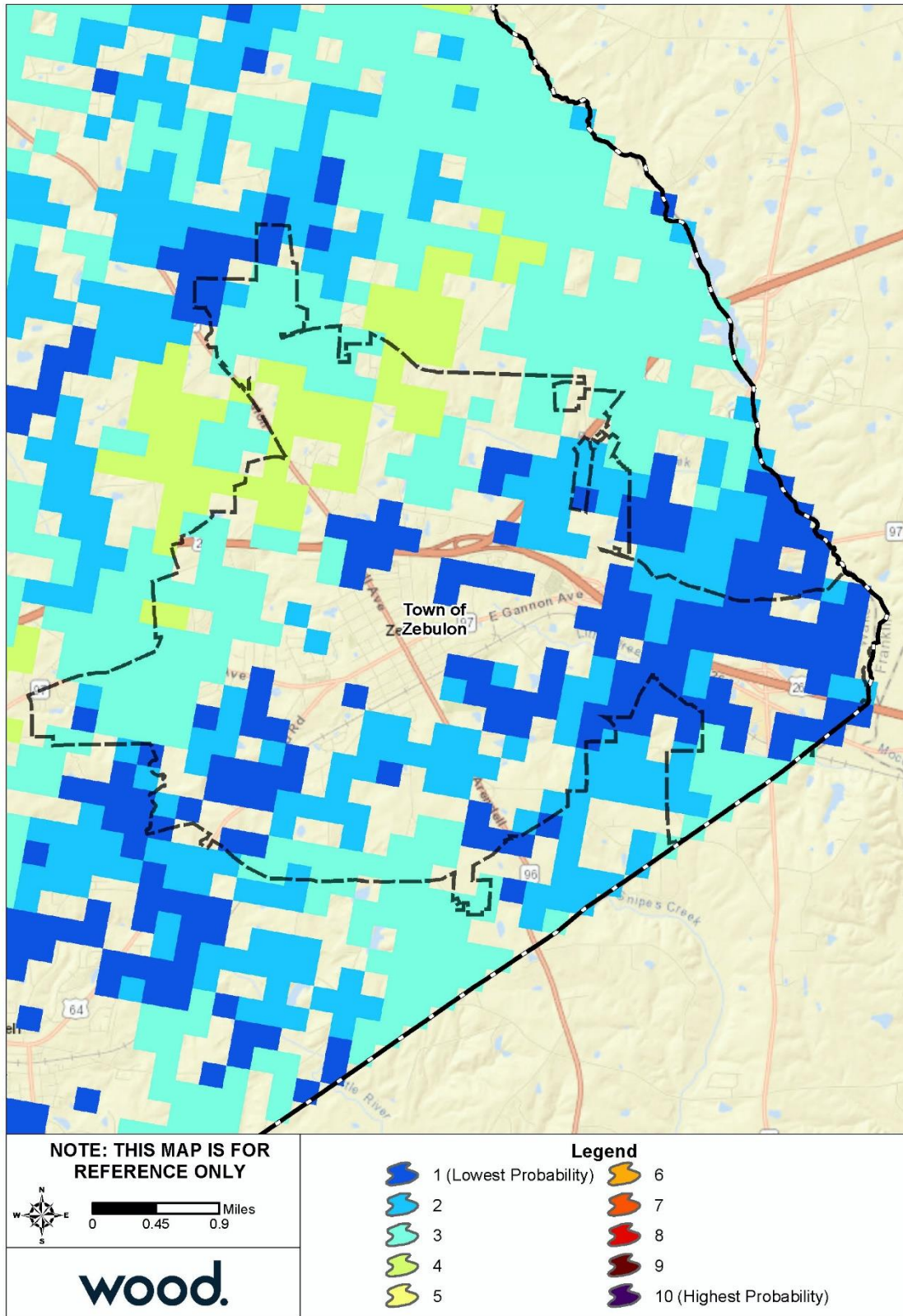
Source: Southern Wildfire Risk Assessment

Figure M.6 – Fire Intensity Scale, Town of Zebulon



Source: Southern Wildfire Risk Assessment

Figure M.7 – Burn Probability, Town of Zebulon



Source: Southern Wildfire Risk Assessment

**M.4 CAPABILITY ASSESSMENT**

**M.4.1 Overall Capability**

Details on the tools and resources in place and available to the Town of Zebulon were provided by the Town’s HMPC representatives and are summarized in Section 5 Capability Assessment. Based on that information and using the scoring methodology detailed in that section, Zebulon has an overall capability rating of Moderate. The Town’s Self-Assessment of key capability areas is summarized in Table M.15 below.

**Table M.15 – Capability Self-Assessment, Zebulon**

Capability Area	Rating
Plans, Ordinances, Codes and Programs	Moderate
Administrative and Technical Capability	Moderate
Fiscal Capability	Moderate
Education and Outreach Capability	Moderate
Mitigation Capability	Limited
Political Capability	Moderate
Overall Capability	Moderate

**M.4.2 Floodplain Management**

The Town of Zebulon joined the NFIP through emergency entry in August 1974 and has been a regular participant since July 1978. The following tables reflect NFIP policy and claims data for the Town categorized by structure type, flood zone, Pre-FIRM and Post-FIRM.

**Table M.16 – NFIP Policy and Claims Data by Structure Type**

Structure Type	Number of Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Single Family	28	\$11,775	\$5,471,600	8	\$173,307.69
2-4 Family	0	\$0	\$0	0	\$0.00
All Other Residential	0	\$0	\$0	0	\$0.00
Non-Residential	0	\$0	\$0	2	\$13,757.62
<b>Total</b>	28	\$11,775	\$5,471,600	10	\$187,065.31

Source: FEMA Community Information System, accessed November 2018

**Table M.17 – NFIP Policy and Claims Data by Flood Zone**

Flood Zone	Number of Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
A01-30 & AE Zones	18	\$8,406	\$2,616,600	4	\$48,093.86
A Zones	0	\$0	\$0	0	\$0.00
AO Zones	0	\$0	\$0	0	\$0.00
AH Zones	0	\$0	\$0	0	\$0.00
AR Zones	0	\$0	\$0	0	\$0.00
A99 Zones	0	\$0	\$0	0	\$0.00
V01-30 & VE Zones	0	\$0	\$0	0	\$0.00
V Zones	0	\$0	\$0	0	\$0.00
D Zones	0	\$0	\$0	0	\$0.00

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Flood Zone	Number of Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
B, C & X Zone					
Standard	0	\$0	\$0	3	\$14,133.86
Preferred	10	\$3,369	\$2,855,000	3	\$124,837.59
<b>Total</b>	<b>28</b>	<b>\$11,775</b>	<b>\$5,471,600</b>	<b>10</b>	<b>\$187,065.31</b>

Source: FEMA Community Information System, accessed November 2018

**Table M.18 – NFIP Policy and Claims Data Pre-FIRM**

Flood Zone	Number of Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
A01-30 & AE Zones	0	\$0	\$0	1	\$44,120.87
A Zones	0	\$0	\$0	0	\$0.00
AO Zones	0	\$0	\$0	0	\$0.00
AH Zones	0	\$0	\$0	0	\$0.00
AR Zones	0	\$0	\$0	0	\$0.00
A99 Zones	0	\$0	\$0	0	\$0.00
V01-30 & VE Zones	0	\$0	\$0	0	\$0.00
V Zones	0	\$0	\$0	0	\$0.00
D Zones	0	\$0	\$0	0	\$0.00
B, C & X Zone	1	\$300	\$175,000	4	\$79,347.69
Standard	0	\$0	\$0	3	\$14,133.86
Preferred	1	\$300	\$175,000	1	\$65,213.83
<b>Total</b>	<b>1</b>	<b>\$300</b>	<b>\$175,000</b>	<b>5</b>	<b>\$123,468.56</b>

Source: FEMA Community Information System, accessed November 2018

**Table M.19 – NFIP Policy and Claims Data Post-FIRM**

Flood Zone	Number of Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
A01-30 & AE Zones	18	\$8,406	\$2,616,600	3	\$3,972.99
A Zones	0	\$0	\$0	0	\$0.00
AO Zones	0	\$0	\$0	0	\$0.00
AH Zones	0	\$0	\$0	0	\$0.00
AR Zones	0	\$0	\$0	0	\$0.00
A99 Zones	0	\$0	\$0	0	\$0.00
V01-30 & VE Zones	0	\$0	\$0	0	\$0.00
V Zones	0	\$0	\$0	0	\$0.00
D Zones	0	\$0	\$0	0	\$0.00
B, C & X Zone	9	\$3,069	\$2,680,000	2	\$59,623.76
Standard	0	\$0	\$0	0	\$0.00
Preferred	9	\$3,069	\$2,680,000	2	\$59,623.76
<b>Total</b>	<b>27</b>	<b>\$11,475</b>	<b>\$5,296,600</b>	<b>5</b>	<b>\$63,596.75</b>

Source: FEMA Community Information System, accessed November 2018

## M.5 MITIGATION STRATEGY

Town of Zebulon											
Action #	Description	Goal	Objective	Hazard(s) Addressed	Relative Priority	Lead Agency/ Department	Estimated Cost	Potential Funding Sources	Implementation Schedule	2019 Status	Status Comments/Explanation
<b>Prevention</b>											
P-1	Prepare Plan maintenance report.	2	2	All	High	Zebulon Planning Department	Staff time	Town of Zebulon	2019, Annually	Not Started – Carry Forward	Plan maintenance meetings have been held annually and will continue to be held going forward.
P-2	Enforce subdivision standards for development in flood hazard areas.	3	2	Flood	High	Zebulon Planning & Inspections	Staff time	Town of Zebulon, Wake County	2019	In-Progress – Carry Forward	UDO Revision is in final stages.
P-3	Further restrict development in floodplain by prohibiting development or requiring 2 feet of freeboard.	3	2	Flood	High	Zebulon Planning	Staff time	Town of Zebulon	2019	In-Progress – Carry Forward	UDO Revision is in final stages.
P-4	Revise floodplain ordinance.	4	1	Flood	High	Zebulon Planning	Staff time	Town of Zebulon	2019	In-Progress – Carry Forward	UDO Revision is in final stages.
P-5	Require burial of power lines for new developments.	3	1	Hurricane, Tornadoes, Winter Storms/ Freezes	Moderate	Zebulon Planning	Unknown	Town of Zebulon	2019	In-Progress – Carry Forward	UDO Revision is in final stages.
<b>Structural Projects</b>											
SP-1	Resolve localize flooding issue that occurs in/around West Sycamore Streets, Gannon Avenue, and North Arendell Avenue during heavy rainfall events.	3	2	Flood	Moderate	Zebulon Administration, Zebulon Public Works	\$900,000	Town of Zebulon	2020	New	The town has completed design and permitting of project improvements and is currently acquiring easements.
<b>Emergency Services</b>											
ES-1	Develop an Emergency Operations Plan	2	2	All	Moderate	Zebulon Fire Department	TBD	Town of Zebulon	2019	New	The Town has been in the process of developing an Emergency Operations Plan and hopes to adopt the plan within the year.
<b>Public Education and Awareness</b>											
PEA-3	Require disclosure of flood hazard in real estate transactions.	1	1	Flood	Moderate	Zebulon Planning Department	Little to no cost	Town of Zebulon	2019	In-Progress – Carry Forward	N/A
PEA-2	Develop a public education program to provide hazard risk and preparedness education via social media	1	1	All	High	Zebulon Fire Department	Staff time	Town of Zebulon	2019	New	The Town is currently using social media for some public education but will formalize a program for hazards awareness.