

Optima Tar Heel Draft Environmental Justice Report

North Carolina Department of Environmental Quality
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1 Introduction

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (US EPA). This evaluation examines the demographic and environmental conditions in Bladen County, as well as census tracts 9502 and 9503, and the one-mile radius around the property boundary of the Optima Tar Heel facility. Finally, the demographics of the entire state of North Carolina are also considered as they compare to both the county and local census tract and radius settings.

The primary goal of the Draft EJ Report is to encourage comments and suggestions from the surrounding community, industry, and environmental groups throughout the comment period. Public comments will be considered throughout the remainder of the comment period to inform the final EJ Report.

2 Environmental Justice Evaluation

The Department of Environmental Quality (DEQ or Department) has assessed the permit application and the demographics of the communities surrounding the requested permit application. Accordingly, this Draft Environmental Justice Report includes:

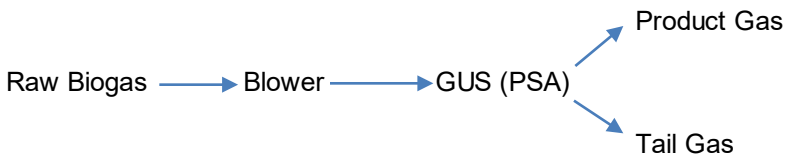
- Permit application submitted
- Facility emissions overview
- Study of area demographics [determined by utilizing the US EPA Environmental Justice tool (EJSCREEN) <https://ejscreen.epa.gov/mapper/> and current, available census data. <https://data.census.gov/cedsci/>
- Comparison of local area demographics to the county and statewide census data
- County health assessment
- Surrounding sensitive receptors
- Local industrial sites (using the NCDEQ Community Mapping System <https://ncdenr.maps.arcgis.com/apps/webappviewer/index.html?id=1eb0fbe2bcfb4cccb3cc212af8a0b8c8>).
- Community outreach plans

Demographics for Bladen County as well as the state, will be compared to the local (census tracts and project radius) level data to identify any disparities surrounding the project area using standard environmental justice guidelines from the US EPA and National Environmental Policy Act (NEPA) documentation, certain areas will be flagged as potentially underserved communities (more details in Section 5: Regional and Local Settings on page 8).

3 Proposed Project

Optima TH facility (Facility ID 0900096) is located on the property of Smithfield Fresh Meats Corp – Tar Heel (Facility ID 0900055), Tar Heel, Bladen County, NC. The Pressure Swing Adsorption equipment was originally evaluated and installed at the Smithfield Fresh Meats location. Optima TH installed a flare with the Pressure Swing Adsorption equipment and is now required to obtain a permit for the equipment. The facility purchases biogas produced by Smithfield’s wastewater treatment plant (WWTP), including existing anaerobic digesters and associated biogas collection system. It processes biogas, removes the impurities, and separates and sells methane as a renewable natural gas to Duke Energy by transporting it via the Piedmont Natural Gas Company’s pipeline.

Optima TH filters the raw biogas from the Smithfield facility, selecting for methane to produce pipeline quality renewable gas (RNG). The separation of methane from other biogas constituents occurs using the Gas Upgrading System (GUS) which employs a Guild Pressure Swing Adsorption (PSA) system.



PSA systems usually consist of two or more adsorption vessels; while one vessel is going through adsorption, the other goes through regeneration (desorption).

The recovered methane (RNG or “product gas”) must meet the requisite quality specifications prior to injection into Piedmont Natural Gas’ pipeline for off-site consumption.¹ The nonmethane constituents of the biogas, referred to as “tail gas,” are oxidized using the installed candlestick flare. The candlestick flare is also used to combust unrefined biogas during times when the upgrading system’s operation is temporarily down for maintenance and/or repairs or for unexpected events. Additionally, the candlestick flare is used to combust the “product gas,” during facility startup and when the product gas does not meet pipeline specifications. Detailed definitions for each of these terms follow:

- Biogas - Gas produced by the biological decomposition of organic wastes in the wastewater treatment plant serving the Smithfield – Tar Heel facility. The observed and anticipated average biogas composition, by volume, is as follows:
 - 65.0% methane (CH₄),
 - 34.17% carbon dioxide (CO₂),
 - 0.5% nitrogen (N₂),
 - 0.3% hydrogen sulfide (H₂S),
 - 0.02% oxygen (O₂), and
 - 0.01% ammonia (NH₃).

The biogas composition and production will vary depending on weather conditions, facility management practices, and other factors. The average biogas composition listed above is

¹ Appendix F of the Piedmont Natural Gas Service Regulations, as approved by the North Carolina Utility Commission’s January 11, 2019 Order, inter alia Docket No. G-9, Sub 698.

based on historic biogas production and constituent testing provided by Smithfield to Optima TH.

- Product Gas - Gas generated by the GUS that is approximately 98-99.9% methane by volume and meets all pipeline specifications, except delivery temperature and pressure requirements of the receiving utility.
- Tail Gas - The portion of the biogas separated from the product gas and generated by the GUS as part of the biogas upgrading process, primarily composed of carbon dioxide.
- Renewable Natural Gas (RNG) - Gas that meets all pipeline specifications established by Piedmont Natural Gas, including minimum delivery pressure and temperature requirements.

Candlestick Flare (ID No. ES-1)

The installed flare will act both as an emission source and a control device for the facility. The maximum heat input capacity of flare is 50 million Btu per hour using biogas, product gas, tail gas, propane, or natural gas as fuel. The flare operation will be governed by how the GUS operates: normal operation, bypass operation, and off-spec operation.

The following (Table 1) provides a facility-wide emission summary for the Optima TH facility (flare is the only emission source). This summary is based upon the above discussions, operating scenarios, and emissions estimate provided in the project application.

Table 1. Facility Emissions Overview

Regulated Air Pollutant	Actual Emissions, tons/yr	Potential to Emit Before Controls/Limitations, tons/yr	Potential to Emit After Controls/Limitations, tons/yr
Particulate Matter (PM)	0.10	0.17	0.17
Particulate Matter < 10 microns (PM ₁₀)	0.10	0.17	0.17
Particulate Matter < 2.5 microns (PM _{2.5})	0.08	0.14	0.14
Sulfur Dioxide (SO ₂) ²	170.78	170.86	170.86
Nitrogen Oxides (NO _x)	8.72	17.70	17.32
Carbon Monoxide (CO)	26.95	67.89	66.16
Volatile Organic Compounds (VOCs)	1.08	1.82	1.77
Lead	0.0000981	0.000165	0.000161
Hydrogen Sulfide (H ₂ S) ³	0.92	0.92	0.92
Greenhouse Gases (GHGs) as CO ₂ e	24,589	41,441	40,787
Single Largest Hazardous Air Pollutant (HAP), n-Hexane	0.353	0.595	0.580
Total HAPs	0.369	0.622	0.606

² Emissions estimates for both SO₂ and H₂S are based upon the flare destruction efficiency of 99% for H₂S, as provided in the application. It should be noted that the DAQ is proposing to approve a conservative destruction efficiency of 98% (and not 99%) for H₂S. These values are subject to change throughout the permitting process.

³ Id.

4 Geographic Area

Optima TH is located at 15855 Highway 87 West Tar Heel, NC 28392 (Figure 1). The highest off-site ambient air impacts will occur at the plant fence line. A one-mile radius was used to evaluate the local demographics and socioeconomics to appropriately include the surrounding community and help inform public outreach efforts. The one-mile buffer around the Optima TH facility is located wholly within Bladen County.

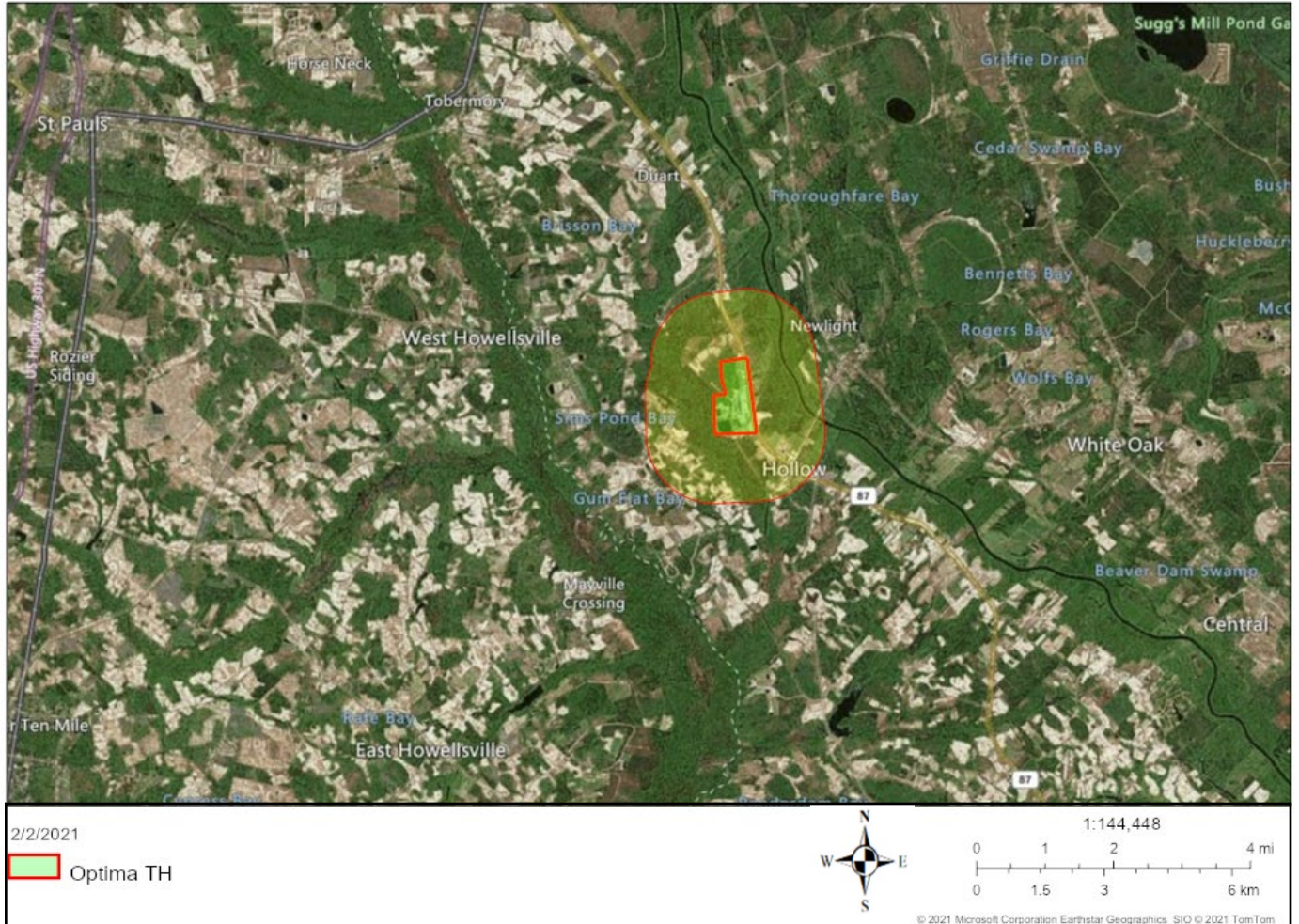


Figure 1. Optima Tar Heel facility location with one-mile radius.

Bladen County is designated as a Tier 1 county by the NC Department of Commerce. According to the Department of Commerce, Tier 1 counties encompass the 40 most distressed counties based on average unemployment rate, median household income, percentage growth in population, and adjusted property tax per capita. Tier 2 counties encompass the next 40 counties based on this ranking system. Optima Tar Heel and the one-mile radius surrounding the proposed project is located within census tracts 9502 and 9503 in Bladen County (Figure 2). Census tracts are small, relatively permanent statistical subdivisions of a county with a unique numeric code (US Census Bureau). These census tracts do not encompass land within a state-designated tribal statistical area. However, the neighboring county is Robeson County (identified as a county in which the Lumbee tribe resides by the commission of Indian Affairs).

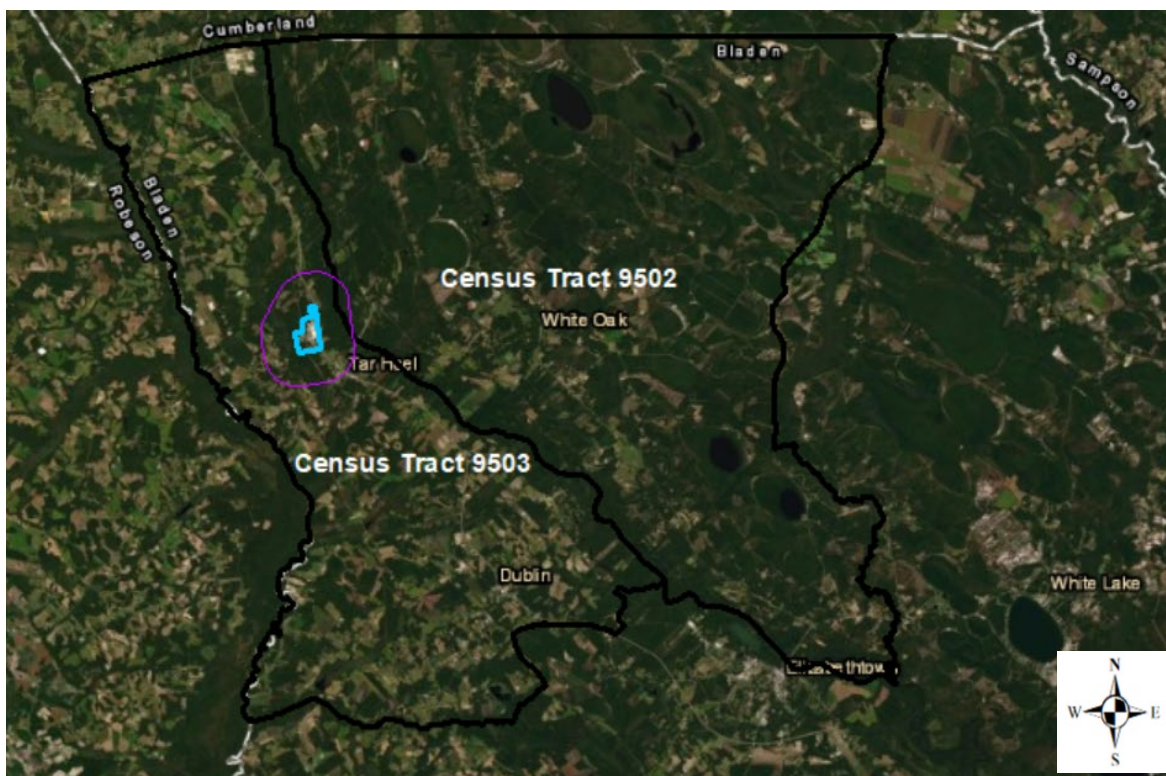


Figure 2. Census tracts encompassing the facility location and one-mile radius.

5 Regional and Local Settings

The following sections on race and ethnicity, age and sex, disability, poverty, household income, and Limited English Proficiency (LEP) populations are based on U.S. Census Bureau data, first at a state and county level (regional setting), and then at a census tract- and project-radius level (local setting). The surrounding census tracts included are those that overlap into the one-mile radius. Demographics of the county will be compared to the local level data to identify any disparities surrounding the project area. Using standard environmental justice guidelines from the US EPA and NEPA documentation, the following conditions will be flagged as potentially underserved communities:

1. 10% or more in comparison to the county or state average
2. 50% or more minority
3. 5% or more in comparison to the county or state average for poverty

For example, if a census tract has 35% of the population classified as low income but the county consists of 30% low income, the census tract would exceed the county average by 16.7% and thus be flagged as a potential area of concern. For this report, census data from 2010 and census data estimates from 2011-2015 and 2015-2019 were used. 2010 Census Bureau data is real data gathered every ten years, whereas the estimates from the more recent years are modeled based on the real data. For the data gathered from the 2011-2015 and 2015-2019 estimates, the margin of error (MOE) has been included. This value is a measure of the possible variation of the estimate around the population value (U.S. Census Bureau). The Census Bureau

standard for the MOE is at the 90% confidence level and may be any number between 0 and the MOE value in either direction (indicated by +/-).

5.1 Race and Ethnicity

Regional Setting

According to the 2010 US Census Data Table 9: Hispanic or Latino, and Not Hispanic or Latino by Race, North Carolina's population totaled 9,535,483 individuals (Table 2). The three most common racial groups across the state were White (65.3%), Black or African-American (21.2%), and Hispanic or Latino (of any race) (8.4%).

Bladen County had a total population of 35,190 individuals (Table 2). The three most common racial or ethnic groups within Bladen County were White (54.7%), Black or African American (34.7%), and Hispanic or Latino (7.1%). Black or African American and American Indian or Alaska Native in Bladen County are both greater than 10% different as compared to the state.

Table 2. Regional Setting - Race and Ethnicity

Subject	North Carolina		Bladen County	
	Number	Percent	Number	Percent
Total Population	9,535,483	100.0	35,190	100
White	6,223,995	65.3	19,242	54.7
Black or African American	2,019,854	21.2	12,202	34.7
American Indian or Alaska Native	108,829	1.1	712	2.0
Asian	206,579	2.2	67	0.2
Native Hawaiian and Other Pacific Islander	5,259	0.1	5	0.0
Some other Race	15,088	0.2	29	0.1
Two or More Races	155,759	1.6	431	1.2
HISPANIC OR LATINO (of any race)	800,120	8.4	2,502	7.1
Source: US Census Bureau, 2010 Census				
All bolded and orange cells indicate a difference that is greater than 10% when compared to the State				

Local Setting

According to the 2010 US Census Data Table 9: Hispanic or Latino, and Not Hispanic or Latino by race or ethnicity, the largest population within Census Tract 9502 was White at 48.8%, followed by Black or African American at 40.5%.

The largest population within Census Tract 9503 was White at 58.9%, followed by Black or African American at 25.6%. Within the one-mile radius, White (48.8%) was the largest population, followed by Black or African American (40.5%). Black or African American and Hispanic or Latino (of any race) for both census tracts and the one-mile radius were all greater than 10% different when compared to the county and state or just the state (Table 3).

Table 3. Local Setting– Race and Ethnicity

Subject	Project Area - 1 Mile		Census Tract 9502		Census Tract 9503	
	Number	Percent	Number	Percent	Number	Percent
Total Population	410	100	3,366	100	6,719	100
White	200	48.8	1,712	50.9	3,956	58.9
Black or African American	166	40.5	1,092	32.4	1,720	25.6
American Indian or Alaska Native	9	2.2	37	1.1	90	1.3
Asian	1	0.2	9	0.3	5	0.1
Native Hawaiian and Other Pacific Islander	0	0.0	2	0.1	1	0.0
Some other Race	29	7.1	1	0.0	2	0.0
Two or More Races	5	1.2	47	1.4	90	1.3
HISPANIC OR LATINO (of any race)	38	9.3	466	13.8	855	12.7
Source: US Census Bureau, 2010 Census						
All bolded and orange cells indicate a difference that is greater than 10% when compared to the State						
All bolded and blue cells indicate a difference that is greater than 10% when compared to the county and the State						

5.2 Age and Sex

Regional Setting

According to the 2010 US Census Data Table P 12: Sex by Age, and Table P13: Median Age, North Carolina had a total population of 9,535,483 individuals (Table 4). The largest percentage of the total state population (63.1%) was between the ages of 18 and 64, followed by under 18 years (23.9%), and 65 years and older (12.9%).

Bladen County had a total population of 35,190 individuals. The largest percentage of the total population (61.4%) was between the ages of 18 and 64, followed by under 18 years (23.1%). The median age for Bladen County was slightly higher than for the state as a whole.

Table 4. Regional Setting- Age Groups and Sex

Age	North Carolina						Bladen County					
	Number			Percent			Number			Percent		
	Both sexes	Male	Female	Both sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
Total Population	9,535,483	4,645,492	4,889,991	100	100	100	35,190	16,887	18,303	100	100	100
Under 5 years	632,040	322,871	309,169	6.6	7	6.3	2,131	1,083	1,048	6.1	6.4	5.7
Under 18 years	2,281,635	1,167,303	1,114,332	23.9	25.1	22.8	8,117	4,099	4,018	23.1	24.3	22.0
18 to 64 years	6,019,769	2,954,233	3,065,536	63.1	63.6	62.7	21,592	10,519	11,073	61.4	62.3	60.5
65 years and over	1,234,079	523,956	710,123	12.9	11.3	14.5	5,481	2,269	3,212	15.6	13.4	17.5
Median Age	37.4	36	38.7				41.3	39.7	42.8			

Source: US Census Bureau, 2010 Census
 All **bolded and orange** cells indicate a difference that is greater than 10% when compared to the State

Local Setting

According to the 2010 US Census Data Table P 12: Sex by Age, and Table P13: Median Age, Census Tract 9502 had a similar median population to Census Tract 9503 (Table 5). Both census tracts had slightly higher median ages than the state, and slightly lower than the county.

Table 5. Local Setting- Age Groups and Sex

Age	Census Tract 9502						Census Tract 9503					
	Number			Percent			Number			Percent		
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
Total Population	3,366	1,661	1,705	100	100	100	6,719	3,269	3,450	100	100	100
Under 5 years	200	114	86	5.9	6.9	5.0	492	250	242	7.3	7.6	7.0
Under 18 years	841	445	396	25.0	26.8	23.2	1,672	842	830	24.9	25.8	24.1
18 to 64 years	2,072	1,017	1,055	61.6	61.2	61.9	4,110	2,009	2,101	61.2	61.5	60.9
65 years and over	453	199	254	13.5	12.0	14.9	937	418	519	13.9	12.8	15.0
Median Age	38.3	37.1	40.1				38.1	37.4	38.7			

Source: US Census Bureau, 2010 Census

All **bolded and orange** cells indicate a difference that is greater than 10% when compared to the State

All **bolded and green** cells indicate a difference that is greater than 10% when compared to the county.

Project Radius

EJSCREEN identified a population of 410 individuals in the one-mile radius surrounding the proposed facility. The largest population was 18+ years (77%), followed by under 18 years at 23% (Table 6).

Table 6. Project Radius- Age Groups and Sex

Age	Project Area - 1 Mile					
	Number			Percent		
	Both sexes	Male	Female	Both sexes	Male	Female
Total Population	410	198	212	100	48	52
Under 5 years	26			6		
Under 18 years	93			23		
18+	317			77		
65 years and over	60			15		

Source: US Census Bureau, 2010 Census. Obtained through EJSCREEN 2019

5.3 Disability

Regional Setting

According to the 2019 American Community Survey 5-Year Estimates, Table S1810 Disability Characteristics from the US Census Bureau, the state of North Carolina had an estimated total population of 10,060,249 noninstitutionalized citizens. Of those individuals, an estimated 13.4% (MOE +/- 0.1%) had a disability. The largest population of disabled civilians were 75 years and over (49.2%, MOE +/- 0.4%). The second largest population was the 65 years to 74 years at 26.6% (MOE +/- 0.3%). By race, American Indian and Alaskan Native had the highest estimated disability rate of 18.2% (MOE +/- 0.8%). Black or African-American and White (not Hispanic or Latino) were the next highest population estimates with disabilities in North Carolina, at 14.6% (MOE +/- 0.2%) and 14.5% (MOE +/- 0.1%), respectively (Table 7).

Bladen County had an estimated total population of 33,117 noninstitutionalized citizens. Of those, an estimated 18.9% (MOE +/- 1.6%) had a disability. The largest population of disabled civilians was 75 years and over (54.5%, MOE +/- 7.2%), followed by 65 to 74 years (30.3%, MOE +/- 5.0%). The majority of subjects displayed estimates that were greater than 10% different when compared to the state.

Table 7. Regional Setting- Disability

Subject	North Carolina						Bladen County					
	Total		With a Disability		Percent with a Disability		Total		With a Disability		Percent with a Disability	
	Estimate	Margin of Error (+/-)	Estimate	Margin of Error (+/-)	Estimate	Margin of Error (+/-)	Estimate	Margin of Error (+/-)	Estimate	Margin of Error (+/-)	Estimate	Margin of Error (+/-)
Total civilian noninstitutionalized population	10,060,249	2,163	1,352,783	8,378	13.4%	0.1	33,117	136	6,248	527	18.9%	1.6
SEX												
Male	4,835,943	2,335	647,162	4,957	13.4%	0.1	15,893	153	2,844	334	17.9%	2.1
Female	5,224,306	1,813	705,621	5,998	13.5%	0.1	17,224	163	3,404	338	19.8%	2.0
RACE AND HISPANIC OR LATINO ORIGIN												
White alone	6,919,092	9,190	955,704	7,264	13.8%	0.1	19,144	381	3,902	406	20.4%	2.1
Black or African American alone	2,144,532	5,119	312,780	4,850	14.6%	0.2	11,434	193	2,032	326	17.8%	2.8
American Indian and Alaska Native alone	120,813	1,815	22,048	842	18.2%	0.8	845	52	208	85	24.6%	9.5
Asian alone	290,103	1,968	15,414	800	5.3%	0.3	48	51	0	26	0.0%	44.4
Native Hawaiian and Other Pacific Islander alone	6,694	677	638	183	9.5%	2.7	0	26	0	26	-	-
Some other race alone	313,224	7,444	16,846	1,231	5.4%	0.4	1,334	388	39	51	2.9%	3.6
Two or more races	265,791	6,168	29,353	1,430	11.0%	0.4	312	160	67	55	21.5%	16.5
White alone, not Hispanic or Latino	6,357,724	2,614	919,485	7,082	14.5%	0.1	18,199	57	3,781	406	20.8%	2.2
Hispanic or Latino (of any race)	942,342	855	59,694	2,120	6.3%	0.2	2,474	22	169	83	6.8%	3.4
AGE												
Under 5 years	605,019	768	4,499	587	0.7%	0.1	1,760	27	0	26	0.0%	2.0
5 to 17 years	1,687,816	954	94,973	2,773	5.6%	0.2	5,197	46	290	122	5.6%	2.4
18 to 34 years	2,242,794	2,501	147,341	3,404	6.6%	0.2	6,092	128	593	210	9.7%	3.5
35 to 64 years	3,936,905	2,104	548,036	5,679	13.9%	0.1	13,182	160	2,637	298	20.0%	2.2
65 to 74 years	966,819	985	252,200	3,597	26.1%	0.4	4,233	71	1,281	215	30.3%	5.0
75 years and over	620,896	974	305,734	2,709	49.2%	0.4	2,653	110	1,447	194	54.5%	7.2
Source: US Census Bureau, ACS 2019 5-year Estimates												
All bolded and orange highlighted cells indicate a difference that is greater than 10% when compared to the State												

Local Setting

According to the 2019 American Community Survey 5-Year Estimates, Table S1810 Disability Characteristics from the US Census Bureau, Census Tract 9502 had an estimated total population of 3,099 noninstitutionalized citizens (Table 8). Of those individuals, an estimated 24.5% (MOE +/- 5.5%) had a disability. The subject group with the largest population of disabled civilians in Census Tract 9502 was 75 years and over (64.4%, MOE +/- 17.5%). The largest population with a disability by race was White alone at 30.5% (MOE +/- 6.4%). The majority of population groups had estimates that were greater than 10% when compared to the state and the county.

Census Tract 9503 in Bladen County had an estimated total population of 6,537 noninstitutionalized citizens. Of those individuals, an estimated 16.3% (MOE +/- 4.1%) had a disability. The subject group with the largest population of disabled civilians was the population 75 years and over (46.0%, MOE +/- 14.6%). The largest population by race was two or more races at 21.8% (MOE +/- 39.7%). None of the estimates were greater than 10% different when compared to both the state and the county; only compared to the state alone.

Table 8. Local Setting- Disability

Subject	Census Tract 9502						Census Tract 9503					
	Total		With a Disability		Percent with a Disability		Total		With a Disability		Percent with a Disability	
	Estimate	Margin of Error (+/-)	Estimate	Margin of Error (+/-)	Estimate	Margin of Error (+/-)	Estimate	Margin of Error (+/-)	Estimate	Margin of Error (+/-)	Estimate	Margin of Error (+/-)
Total civilian noninstitutionalized population	3,099	379	758	163	24.5%	5.5	6,537	643	1,064	273	16.3%	4.1
SEX												
Male	1,455	213	399	117	27.4%	7.6	2,939	305	464	158	15.8%	5.2
Female	1,644	295	259	124	21.8%	8.0	3,598	469	600	188	16.7%	5.2
RACE AND HISPANIC OR LATINO ORIGIN												
White alone	1,994	333	608	158	30.5%	6.4	3,946	502	709	199	18.0%	4.9
Black or African American alone	881	271	150	77	17.0%	8.7	1,883	431	303	143	16.1%	7.5
American Indian and Alaska Native alone	0	12	0	12	-	-	69	54	9	14	13.0%	22.1
Asian alone	0	12	0	12	-	-	33	42	0	17	0.0%	53.6
Native Hawaiian and Other Pacific Islander alone	0	12	0	12	-	-	0	17	0	17	-	-
Some other race alone	207	163	0	12	0.0%	15.5	519	357	24	42	4.6%	7.6
Two or more races	17	31	0	12	0.0%	74.6	87	96	19	26	21.8%	39.7
White alone, not Hispanic or Latino	1,823	346	508	144	27.9%	6.2	3,487	487	694	203	19.9%	5.6
Hispanic or Latino (of any race)	371	199	100	61	27.0%	17.2	1,054	345	48	48	4.6%	4.9
AGE												
Under 5 years	87	63	0	12	0.0%	31.9	334	170	0	17	0.0%	9.9
5 to 17 years	541	218	80	86	14.8%	13.8	1,241	265	59	62	4.8%	5.1
18 to 34 years	428	181	9	15	2.1%	3.6	1,175	279	41	44	3.5%	3.9
35 to 64 years	1,370	221	327	105	23.9%	7.3	2,507	336	527	187	21.0%	7.1
65 to 74 years	378	144	152	95	40.2%	18.8	656	174	150	73	22.9%	11.0
75 years and over	295	91	190	82	64.4%	17.5	624	161	287	114	46.0%	14.6

Source: US Census Bureau, ACS 2019 5-year Estimates
 All **bolded and orange** highlighted cells indicate a difference that is greater than 10% when compared to the State
 All **bolded and blue** highlighted cells indicate a difference that is greater than 10% when compared to both the County and the State

5.4 Poverty

Regional Setting

According to the Census Table S1701, Poverty Status in the Past 12 Months, 2019 American Community Survey 5-Year Estimates, from the US Census Bureau, North Carolina had an estimated population of 9,984,891, with 14.7% (MOE +/- 0.2%) below the poverty level (Table 9). Across all subjects, Some Other Race had the highest percent living below the poverty level at 27.2% (MOE +/- 1.2%). The next three subjects with the highest poverty level were Hispanic or Latino at 26.4% (MOE +/- 0.6%), American Indian and Alaska Native at 24.9% (MOE +/- 1.3%), and Black or African-American at 22.5% (MOE +/- 0.4%). The age group with the highest population below poverty was under 18 (21.2%, MOE +/- 0.4%) followed by 18 to 64 years (13.8%, MOE +/- 0.2%).

Bladen County had an estimated population of 32,918 with 24.3% (MOE +/-3.2%) living below the poverty level. Across all subjects, Hispanic or Latino (of any race) had the highest percent living below the poverty level at 44.9% (MOE +/- 14.5%). The next subjects with the highest poverty level were Some other race at 41.9% (MOE +/- 22.5%) and Two or more races at 40.4% (MOE +/- 24.5%). Almost all subject groups had a greater than 5% difference when compared to the state.

Table 9. Regional Setting- Poverty

Subject	North Carolina						Bladen County					
	Total		Below poverty level		Percent below poverty level		Total		Below poverty level		Percent below poverty level	
	Estimate	Margin of Error +/-	Estimate	Margin of Error +/-	Estimate	Margin of Error +/-	Estimate	Margin of Error +/-	Estimate	Margin of Error +/-	Estimate	Margin of Error +/-
Population for whom poverty status is determined	9,984,891	1,988	1,467,591	17,844	14.7%	0.2	32,918	214	8,008	1,038	24.3%	3.2
AGE												
Under 18 years	2,261,398	2,191	478,877	9,118	21.2%	0.4	6,744	194	2,263	455	33.6%	6.8
18 to 64 years	6,135,778	1,127	853,693	9,607	13.8%	0.2	19,288	102	4,574	663	23.7%	3.4
65 years and over	1,587,715	1107	145,021	2,963	9.1%	0.2	6,886	136	1,171	221	17.0%	3.2
SEX												
Male	4,828,486	2,335	642,615	8,992	13.3%	0.2	15,792	152	3,554	589	22.5%	3.7
Female	5,156,405	2,230	824,976	10,797	16.0%	0.2	17,126	204	4,454	639	26.0%	3.8
RACE AND HISPANIC OR LATINO ORIGIN												
White alone (not Hispanic or Latino)	6,320,337	2,990	644,440	10,085	10.2%	0.2	18,065	157	2,718	627	15.0%	3.5
Black or African American	2,116,769	5,452	475,973	8,126	22.5%	0.4	11,378	197	4,176	854	36.7%	7.4
American Indian and Alaska Native	120,328	1,846	29,981	1,608	24.9%	1.3	836	49	54	43	6.5%	5.1
Asian	285,786	2,021	30,707	2,034	10.7%	0.7	48	51	0	26	0.0%	44.4
Native Hawaiian and Other Pacific Islander	6,630	675	1,360	332	20.5%	4.6	0	26	0	26	-	-
Some other race	311,206	7,397	84,699	4,639	27.2%	1.2	1,334	388	559	352	41.9%	22.5
Two or more races	262,580	6,121	54,627	2,414	20.8%	0.8	312	160	126	110	40.4%	24.5
Hispanic or Latino origin (of any race)	940,295	1,251	248,474	6,013	26.4%	0.6	2,465	26	1,108	354	44.9%	14.5
All Individuals Below												
50 percent of poverty level	644,054	10,566					3,050	714				
125 percent of poverty level	1,965,346	19,596					10,300	1,163				
150 percent of poverty level	2,447,468	21,928					11,876	1,144				
185 percent of poverty level	3,136,964	24,561					14,660	1,264				
200 percent of poverty level	3,420,476	24,183					15,765	1,238				

Source: American Community Survey 5-year Estimates, 2019
 All **bolded and orange** cells indicate a difference that is greater than 5% when compared to the State

Local Setting

According to the Census Table S1701, Poverty Status in the Past 12 Months, 2019 American Community Survey 5-Year Estimates, from the US Census Bureau, Census Tract 9502 had an estimated population of 3,099 with 28.3% (MOE +/-8.8%) living below the poverty level (Table 10). Across all subjects, Some other race (47.3%, MOE +/- 48.6%) had the highest percent living below the poverty level. The next subjects with the highest poverty rates were under 18 years (37.3%, MOE +/- 22.2%), followed by Black or African American at 35.1% (MOE +/- 18.5%), and Hispanic or Latino (of any race) at 34.8% (MOE +/- 29.0%). The majority of subject groups had a greater than 5% difference when compared to either the county and the state or just the state.

Census Tract 9503 had an estimated population of 6,377 with 29.0% (MOE +/-7.2%) living below the poverty level (Table 10). Across all subjects, Two or more races 98.9% (MOE +/- 4.4%) had the highest percent living below the poverty level. The next subjects with the highest poverty rates were Hispanic or Latino (of any race) at 55.9% (MOE +/- 22.7%) and Some other race at 52.2% (MOE +/- 38.5%). All subject groups with an estimate above 0% had a greater than 5% difference when compared to either the county and the state or just the state.

Table 10. Local Setting- Poverty

Subject	Census Tract 9502						Census Tract 9503					
	Total		Below poverty level		Percent below poverty level		Total		Below poverty level		Percent below poverty level	
	Estimate	Margin of Error +/-	Estimate	Margin of Error +/-	Estimate	Margin of Error +/-	Estimate	Margin of Error +/-	Estimate	Margin of Error +/-	Estimate	Margin of Error +/-
Population for whom poverty status is determined	3,099	379	877	315	28.3%	8.8	6,377	640	1,849	510	29.0%	7.2
AGE												
Under 18 years	628	227	234	181	37.3%	22.2	1,415	284	526	230	37.2%	13.9
18 to 64 years	1,798	279	494	178	27.5%	9.2	3,682	417	1,079	305	29.3%	7.6
65 years and over	673	145	149	107	22.1%	14.7	1,280	210	244	131	19.1%	9.3
SEX												
Male	1,455	213	394	169	27.1%	10.1	2,835	310	651	215	23.0%	6.7
Female	1,644	295	483	228	29.4%	11.5	3,542	463	1,198	365	33.8%	8.9
RACE AND HISPANIC OR LATINO ORIGIN												
White alone (not Hispanic or Latino)	1,823	346	439	222	24.1%	10.5	3,379	438	670	333	19.8%	8.9
Black or African American	881	271	309	206	35.1%	18.5	1,840	440	576	304	31.3%	15.1
American Indian and Alaska Native	0	12	0	12	-	-	60	50	0	17	0.0%	39.7
Asian	0	12	0	12	-	-	33	42	0	17	0.0%	53.6
Native Hawaiian and Other Pacific Islander	0	12	0	12	-	-	0	17	0	17	-	-
Some other race	207	163	98	129	47.3%	48.6	519	357	271	266	52.2%	38.5
Two or more races	17	31	0	12	0.0%	74.6	87	96	86	96	98.9%	4.4
Hispanic or Latino origin (of any race)	371	199	129	139	34.8%	29.0	1,045	347	584	293	55.9%	22.7
All Individuals Below												
50 percent of poverty level	224	215					710	345				
125 percent of poverty level	995	315					2,171	540				
150 percent of poverty level	1,182	350					2,635	564				
185 percent of poverty level	1,388	359					3,196	648				
200 percent of poverty level	1,427	366					3,360	661				

Source: American Community Survey 5-year Estimates, 2018
 All **bolded and orange** cells indicate a difference that is greater than 5% when compared to the State
 All **bolded and blue** cells indicate a difference that is greater than 5% when compared to the county and the State

5.5 Household Income

Regional Setting

The following table (Table 11) was compiled using data from the Census Table S1901, Income in the Past 12 Months (in 2019 Inflation-Adjusted Dollars) 2019 American Community Survey 5-Year Estimates for North Carolina. The North Carolina household income range with the highest percent was for \$50,000 to \$74,999, at 18.0% (MOE +/- 0.1). The state median household income was \$54,602 and the mean income was \$76,940.

The household income range for Bladen County with the highest percent was \$50,000 to \$74,999 at 17.5% (MOE +/- 2.2%). The median income was \$36,173 and the mean income was \$55,229. All income ranges less than \$35,000 had percentages that were more than 10% greater than the state ranges.

Table 11. Regional Setting- Household Income

Subject	North Carolina		Bladen County	
	Households		Households	
	Estimate	Margin of Error (+/-)	Estimate	Margin of Error (+/-)
Total	3,965,482	10,327	13,636	433
Less than \$10,000	6.4%	0.1	10.4%	1.9
\$10,000 to \$14,999	5.0%	0.1	9.3%	2.1
\$15,000 to \$24,999	10.3%	0.1	16.9%	2.6
\$25,000 to \$34,999	10.3%	0.1	12.3%	2.1
\$35,000 to \$49,999	13.9%	0.1	13.4%	2.0
\$50,000 to \$74,999	18.0%	0.1	17.5%	2.2
\$75,000 to \$99,999	12.4%	0.1	9.5%	1.8
\$100,000 to \$149,999	13.1%	0.1	7.1%	1.5
\$150,000 to \$199,999	5.1%	0.1	1.8%	1.0
\$200,000 or more	5.4%	0.1	1.7%	0.6
Per Capita Income	30,783	154	23,440	1,930
Median income (dollars)	54,602	231	36,173	3,441
Mean income (dollars)	76,940	352	55,229	47,000
Source: US Census, 2019 ACS 5-Year Estimates.				
All orange and bolded highlighted cells indicate a difference that is greater than 10% when compared to the state				

Local Setting

The household income range for Census Tract 9502 with the highest percent was \$35,000 to \$49,999 at 19.1% (MOE +/- 7.6%). The median income was \$36,004 and the mean income was \$43,513 (Table 12). All income ranges less than \$49,999 had percentages that were more than 10% greater than the state or the state and county.

The household income range for Census Tract 9503 with the highest percent was \$25,000 to \$34,999 at 16.0% (MOE +/- 5.6%). The median income was \$32,292 and the mean income was \$51,128 (Table 12). All income ranges less than \$34,999 had percentages that were more than 10% greater than either the state or county.

The household income range for the one-mile radius with the highest percent was less than \$15,000 at 33.0%. EJSCREEN data provides different income ranges that cannot be compared in the same manner. This is based off of the 173 households within the one-mile radius.

Table 12. Local Setting- Household Income

Subject	Census Tract 9502		Census Tract 9503		1-mile buffer	
	Households		Households		Households	
	Estimate	Margin of Error (+/-)	Estimate	Margin of Error (+/-)	Estimate	Percent
Total	1,323	132	2,476	212	173	100%
Less than \$10,000	12.4%	6.8	10.5%	4.8	57	33%
\$10,000 to \$14,999	9.9%	5.1	13.9%	5.6		
\$15,000 to \$24,999	13.0%	6	14.4%	5.2	17	10%
\$25,000 to \$34,999	12.8%	6.5	16.0%	5.6	42	24%
\$35,000 to \$49,999	19.1%	7.6	12.6%	4.7		
\$50,000 to \$74,999	14.3%	5	15.3%	5.3	20	11%
\$75,000 to \$99,999	12.3%	6.2	7.6%	4.4	38	22%
\$100,000 to \$149,999	4.7%	3.7	8.3%	3.3		
\$150,000 to \$199,999	1.4%	1.7	0.3%	0.5		
\$200,000 or more	0.0%	2.6	1.1%	1.2		
Per Capita Income	19,252	2,558	20,479	5,707	25,203	
Median income (dollars)	36,004	4,882	32,292	4,446		
Mean income (dollars)	43,513	5,121	51,128	14,431		
Source (Census Tract): US Census, 2018 ACS 5-Year Estimates Source (radius): EJSCREEN, US Census, 2013-2017 ACS 5-Year Estimates. All orange and bolded highlighted cells indicate a difference that is greater than 10% when compared to the state. All bolded and blue highlighted cells indicate a difference that is greater than 10% when compared to the county and the state.						

Per Capita Income

Per Capita Income data was obtained through the Census Table B19301, Per Capita Income in the Past 12 Months (In 2019 Inflation-Adjusted Dollars), 2019 American Community Survey 5-Year Estimates. The North Carolina per capita income estimate was \$30,783. The estimate for Bladen County was lower, at \$23,440. The estimate for Census Tract 9502 was \$19,252. The estimate for Census Tract 9503 was \$20,479. Bladen County and both census tracts had a lower Per Capita Income than that of the state. The EJSCREEN analysis also provided the Per Capita Income estimate of \$25,203 for the one-mile buffer surrounding proposed site, which was higher than the county and both census tracts.

6 Limited English Proficiency (LEP)

Per the Safe Harbor Guidelines, should an LEP Group be identified during the permit application process, written translations of vital documents for each eligible LEP language group that constitutes 5% or includes 1,000 members (whichever is less) of the population of persons eligible to be served or likely to be affected or encountered. If there are fewer than 50 persons in a language group that reaches the 5% trigger, then DEQ will not translate vital written materials, but instead will provide written notice in the primary language of the LEP language group of the right to receive competent oral interpretation of those written materials, free of cost. The safe harbor provisions apply to the translation of written documents only. Safe harbor guidelines are based on EPA guidance for LEP persons, and implemented by DEQ when deemed appropriate.

One potential LEP language group, Spanish or Spanish Creole, was identified as having an estimate for individuals who speak English less than “very well” greater than zero (Table 13). Both census tracts 9502 and 9503 had a greater than 5% estimate for individuals who speak English less than “very well.” As a result, the Department will review the need for potential translation services for this project.

Table 13. Limited English Proficiency

LANGUAGE SPOKEN AT HOME	Census Tract 9502		Census Tract 9503	
	Estimate	Margin of Error	Estimate	Margin of Error
Total (population 5 years and over):	2,944	457	6,102	522
Speak only English	2,687	452	5,113	468
Spanish or Spanish Creole:	242	168	984	375
Speak English "very well"	35	52	453	247
Speak English less than "very well"	207	156	531	199
Source: US Census, ACS 5-Year estimates 2011-2015				

7 County Health

The University of Wisconsin Population Health Institute, in collaboration with the Robert Wood Johnson Foundation, calculated County Health Rankings for all the States in the United States (www.countyhealthrankings.org). This ranking is based on health outcomes (such as lifespan and self-reported health status) and health factors (such as environmental, social and economic conditions). According to this 2020 report, out of all 100 counties in North Carolina (with 1 indicating the healthiest), Bladen County ranks 94th in health factors and 88th in health outcomes.

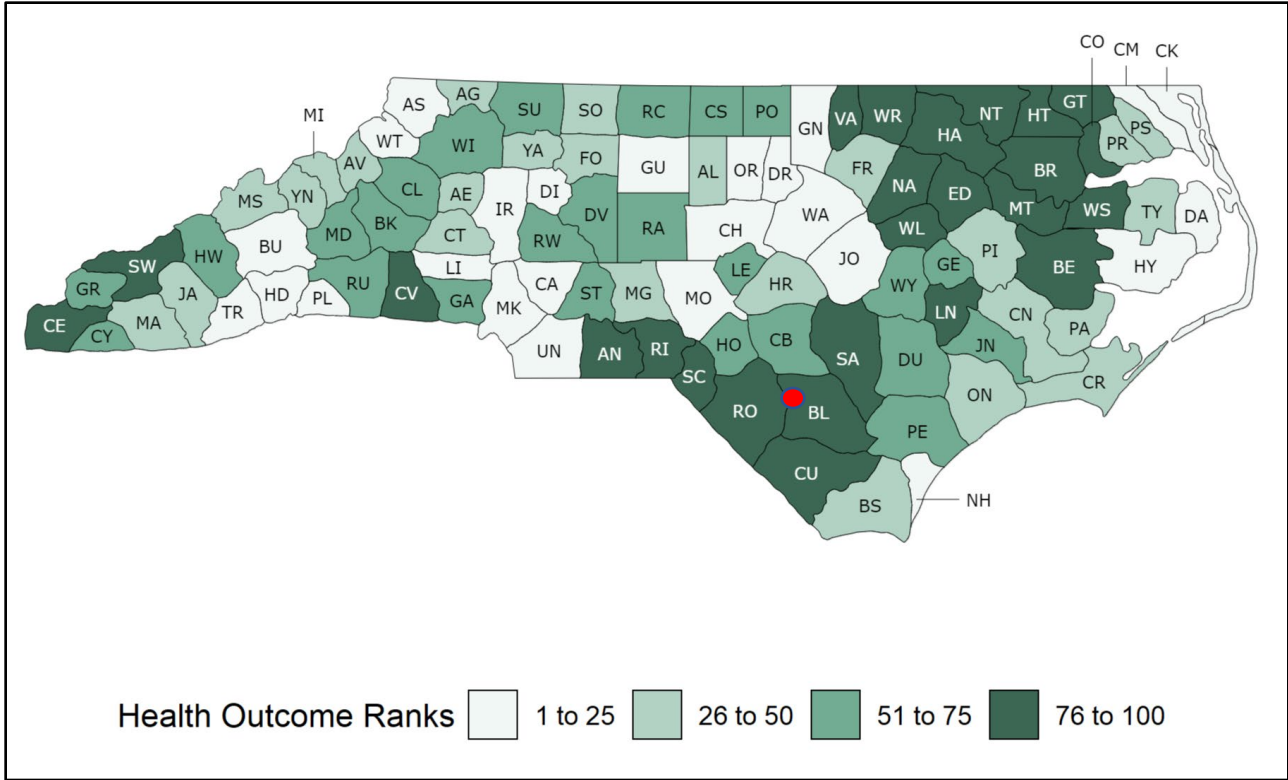


Figure 3. County Health Rankings for Health Factors in North Carolina provided by University of Wisconsin Public Health Institute.

According to the NC DEQ Community Mapping System Environmental Justice Tool, the health outcome causes of death in Bladen County overall are similar or higher than the state averages, with the exception of cancer. Additionally, the hospitalizations due to asthma in Bladen County is 28 (per 100,000 individuals), as compared to the state at 90 (per 100,000 individuals). The number of primary care physicians in Bladen County (5.411 per 10,000 residents) is slightly higher than the state average (4.812 per 10,000 residents).

Table 14. Health Outcomes

Cause of Death	Bladen County	North Carolina
Cancer	155.8	169.1
Heart Disease	247.1	163.7
Stroke	43.2	43.1
Cardiovascular Disease	308.7	221.9
Diabetes	38.6	22.8

Source: NCDEQ 2020 EJ Tool. Death rates are per 100,000 individuals

8 Local Sensitive Receptors

The U.S. Environmental Protection Agency suggests that sensitive receptors include, but are not limited to, hospitals, schools, daycare facilities, elderly housing, and convalescent facilities. These are areas where the occupants are more susceptible to the adverse effects of exposure to toxic chemicals, pesticides, and other pollutants. Extra care must be taken when dealing with contaminants and pollutants in close proximity to areas recognized as sensitive receptors. For instance, children and the elderly may have a higher risk of developing asthma from elevated levels of certain air pollutants than a healthy individual aged between 18 and 64.

Within or located slightly beyond the one-mile project radius from the Optima Tar Heel facility, the following potential sensitive receptors were identified (Figure 4):

- Tar Heel Baptist Church
- Tar Heel Middle School
- Beth Car Church
- Tar Heel Fire Station 57

Additional sensitive receptors may be identified during the remainder of the permit application process.

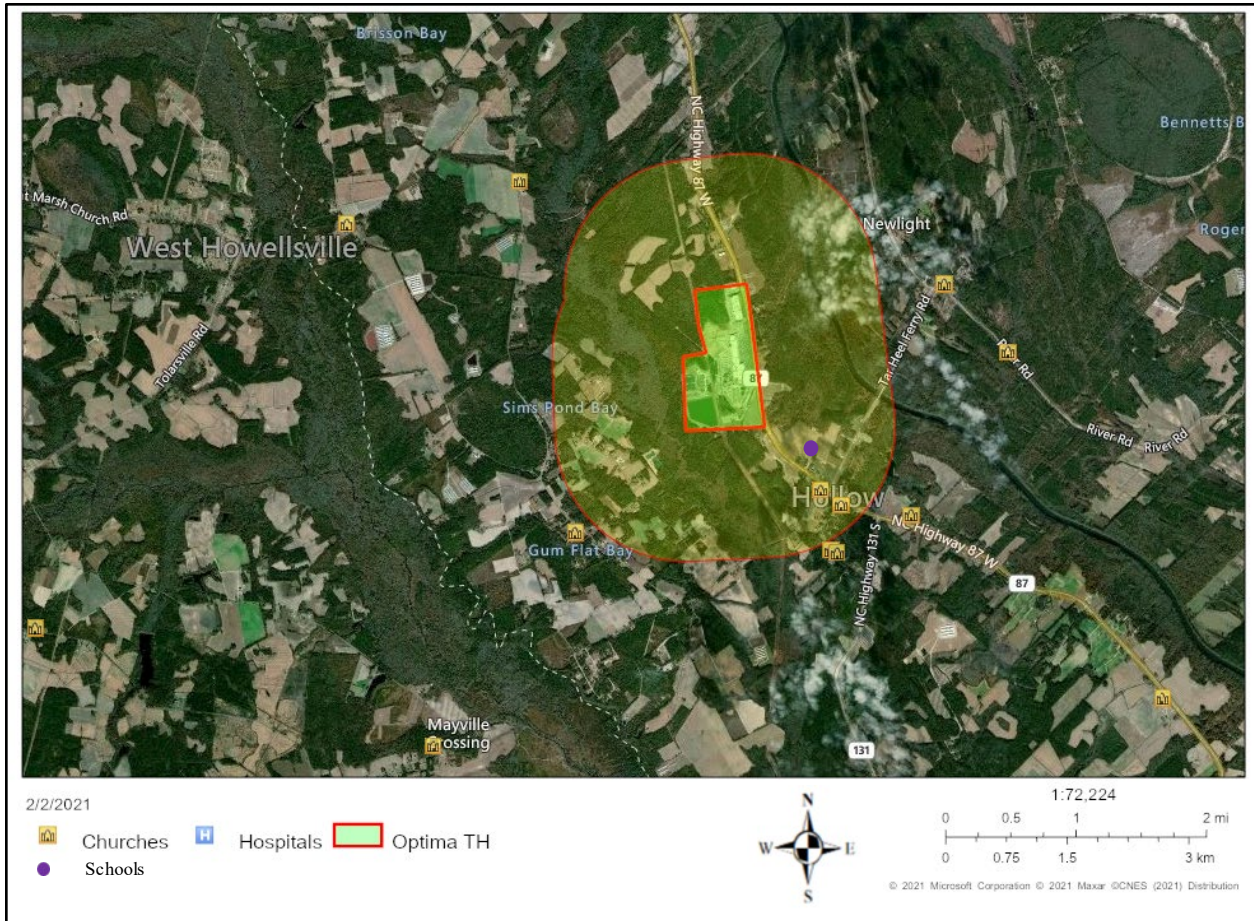


Figure 4. Sensitive receptors surrounding Optima TH.

9 Local Industrial Sites

Within the one-mile radius, there are 13 permits or incidents (as of February 2, 2021). Those include 3 air quality permits, 2 NPDES stormwater permits, 2 Animal Feeding Operations, 1 mining permit and 5 storage tanks and incidents (above and below ground) (Figure 5).

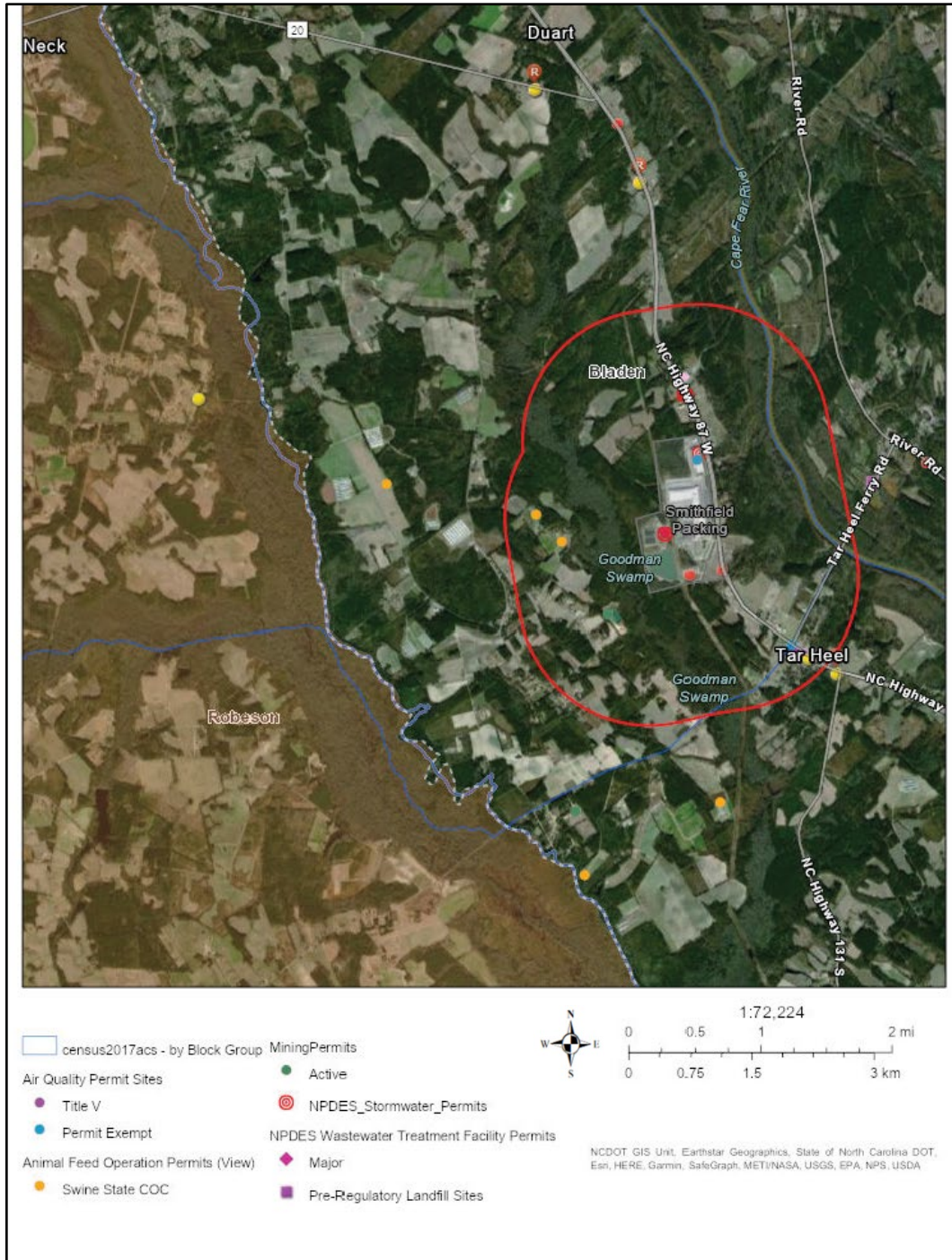


Figure 5. Permitted facilities and incidents with the one-mile radius surrounding Optima TH.

10 Conclusion

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (US EPA). This report examined the demographic and environmental conditions in North Carolina, Bladen County, census tracts 9502 and 9503, and the one-mile radius around the Optima Tar Heel facility. Potential emissions rates outlined in the permit application and county level health data are included, as well as data from the NCDEQ Community Mapping System.

It is important to keep in mind that based on the available data, the following limitations of this report: census data is from 2010 and may be outdated; the more recent census data through 2019 are estimates; EJSCREEN does not provide all of the data categories that were used in this analysis so the census tract and county data cannot be compared to the radius used surrounding the facility boundary for all criteria; census tracts can still be large areas and do not allow for exact locations of each population; and the Department cannot determine which populations are in that small amount of overlap around the facility.

The Department assessed the available demographic and socioeconomic data of the community surrounding the Optima TH Facility regarding its permit application. Bladen County, the project area data from the radius used, and the census tract generally exceed the state estimates for race and ethnicity. The area also showed higher percentages for the lowest income ranges, as well as elevated poverty and disability rates [as compared to the state and County]. One LEP group was identified (Spanish or Spanish Creole).

Bladen County ranks 94th in health factors and 88th in health outcomes, and performed worse than the state averages for most death rates included in the DEQ EJ Tool. There were 13 permits or incidents recorded within one-mile of the facility.

Based on this Draft EJ Report, the following outreach is recommended:

- Translation services will be considered in accordance with the Department LEP-Language Access Plan.
- The list of sensitive receptors should be consulted while considering additional outreach options that may best fit this community's needs.
- Project information should be provided to officials in the Lumbee Tribe and the Town of Tar Heel.
- Known community leaders should be consulted for additional outreach options.