

Enviva Northampton, LLC Environmental Justice Snapshot

1 EJ Snapshot

The EJ Snapshot is an initial look at the demographics and socioeconomics of a facility's surrounding community area. This includes information within a radius determined by the North Carolina Department of Environmental Quality (Department or DEQ), race and poverty (decennial census year), per capita income and Ability to speak English (most current American Community Survey (ACS) census range), the current North Carolina Department of Commerce county tier, and presence of Native American territory. The EJ Snapshot does not include a reconnaissance of the community.

An EJ snapshot will be conducted at the beginning of the application process when a full EJ Report is requested or to determine the need for a full EJ Report. This will be distributed to interested community members (if known) and posted to the DEQ website with the relevant permit application before the close of the public comment period. The primary goal is to encourage EJ Report comments and suggestions from the surrounding community, industry, and environmental groups throughout the comment period.

It is important to keep in mind, that based on the data available, the following limitations of this study: census data is from 2010 and may be outdated; the more recent census data through 2017 are estimates; the U.S. EPA's EJSCREEN does not provide all of the data categories that were used in this analysis so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 evaluating the facility boundary; census tracts can be large areas that do not identify exact locations of each population; some of the census tracts slightly overlap with the two-mile radius; and the Department cannot determine which populations are located within that small area of overlap.

The Department has assessed a snapshot of the demographic and socioeconomic data of the communities surrounding the Enviva Northampton, LLC facility to foster communication prior to the Division of Air Quality's Public Hearing for the permit modification for enhanced emission controls. Based on the results of this Snapshot and public comments received, a full EJ Report may be conducted prior to any final action taken by the Agency.

2 Environmental Justice Evaluation

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 Northampton County, as well as census tracts, and the two-mile radius around the property boundary of the Enviva Pellets Northampton, LLC 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 Department has assessed the permit application and the potential impact on communities surrounding the requested modified facility operation by reduced emission sources and implementation of control technology, and accordingly, the Environmental Justice Snapshot will include:

- Permit modification application submitted by Enviva Pellets Northampton, LLC.
- Modeled emissions rates
- Process overview (Diagram in Appendix A)
- Study of area demographics [determined by utilizing the US EPA Environmental Justice tool (EJSCREEN) <https://ejscreen.epa.gov/mapper/> and current, available census data. <http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- Comparison of local area demographics to both 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>).

3 Proposed Project

Enviva Pellets Northampton, LLC (Enviva) operates a wood pellets manufacturing plant in Northampton County, North Carolina under the authorization of North Carolina Division of Air Quality (NC DAQ) permit 10203R05 issued on March 3, 2017. Enviva has applied for a permit modification to install air pollution control devices and increase facility production.

The wood pellet manufacturing process description is detailed in the permit modification application and is summarized as follows:

- Trucks deliver pre-chipped wood, unchipped logs, or purchased chips and bark to the site, where they are sorted into “green” (i.e. wet) wood or bark fuel storage piles.
- Whole logs are sent through the electric-powered rotary drum de-barker and then the electric chipper.
- Chipped wood is processed in five green wood hammermills to further reduce the size. Hammermill exhaust is controlled by an existing wet electrostatic precipitator (WESP). Enviva proposes to vent the exhaust from the WESP to a new natural gas/propane-fired regenerative thermal oxidizer (RTO-1) to control Particulate Matter (PM), Volatile Organic Compounds (VOC), and Hazardous Air Pollutant (HAP) emissions.
- From the hammermills, the green wood material moves to an existing rotary dryer system to reduce wood moisture content. The dryer heat is provided by an existing 175.3 million BTU per hour furnace fueled with bark and wood chips. The existing dryer/furnace exhaust vent through the same WESP/proposed RTO-1 control system as the green hammermills.
- Enviva proposes adding an additional rotary dryer system with a proposed 180 million BTU per hour furnace. The proposed dryer/furnace will exhaust to a new, separate WESP/RTO (RTO-2) control system.
- Once dry, the wood material is handled, screened, and sent to the eight dry hammermills to further reduce the size. Emissions from the dry hammermills are currently controlled by existing cyclones in series with three existing bagfilters. After the bagfilters, the exhaust vents to a proposed wet scrubber in series with a proposed natural gas/propane-fired regenerative catalytic/thermal oxidizer (RCO-1).
- Trucks deliver dry shavings that are handled, conveyed, stored, and/or screened. The dry shavings are processed by the existing dry hammermills or by two proposed dry shavings hammermills. The proposed dry shavings hammermills emissions will exhaust to the same proposed wet scrubber in series with the RCO-1 as the dry hammermills.
- After the dry hammermills, the wood material is formed into pellets by pellet presses and moved by conveyor to be cooled in the six pellet coolers. Emissions from the pellet press system and pellet press conveyors are vented through the

existing cooler aspiration cyclones and to a new proposed wet scrubber in series with a regenerative catalytic/thermal oxidizer (RCO -2).

- The finished pellets are transferred from the coolers and handled into bins. From the bins, the pellets are sent to the loadout area and gravity fed into trucks or railcars.
- Appendix A provides an overview of the pellet manufacturing process at Enviva Northampton after the permit modification.

Proposed changes to the facility per this modification:

- Increase production rate from 535,260 ODT per year to 781,255 ODT per year by upgrading pellet dies with a new prototype;
- Increase the amount of softwood processed from 30% to a maximum of 80%;
- For the existing Dryer (ES-DRYER-1), add a regenerative thermal oxidizer (CD-RTO-1) after the existing wet electrostatic precipitator (CD-WESP-1) for volatile organic compound (VOC), HAP and particulate matter (PM) emissions control;
- Install a new direct-fired wood dryer (ES-DRYER-2) equipped with a new wet electrostatic precipitator (CD-WESP-2) in series with a regenerative thermal oxidizer (CD-RTO-2);
- Add a new dryer bypass stack (ES-DRYBYP-2) and furnace bypass stack (ES-FURNACEBYP-2) for malfunctions and low load startups, shutdowns, and idling operations;
- Remove two existing Green Wood Hammermills (previously referred to as wood re-chippers) and construct five new Green Hammermills (ES-GWH-1 through ES-GWH-5) and route the exhaust to the existing wet electrostatic precipitator (CD-WESP-1) in series with a new regenerative thermal oxidizer (CD-RTO-1). The Green Hammermills will have the capability to be exhausted to CD-WESP-2 and CD-RTO-2 when CD-WESP-1 and CD-RTO-1 are shut down;
- Existing Dry Wood Handling (ES-DWH-1 and ES-DWH-2) will exhaust to new bagfilters (CD-DWH-BF-1 and CD-DWH-BF-2);
- Install Dry Shaving Material Handling (ES-DRYSHAVE-1), Dry Shavings Reception (ES-DSR-1) with associated bagfilter (CD-DSR-BF), and a Dry Shavings Silo (ES-DSS) with associated bagfilter (CD-DSS-BF);
- Install two new Dry Shavings Hammermills (ES-DSHM-1 and ES-DSHM-2) for dry shavings and route the exhaust to a new wet scrubber (CD-WS-1) in series with a new regenerative catalytic oxidizer (CD-RCO-1) that can also operate as a regenerative thermal oxidizer;
- Existing Dry Hammermills (ES-HM-1 through 8) will exhaust from the existing bagfilters to a new wet scrubber (CD-WS-1) in series with a new regenerative catalytic oxidizer (CD-RCO-1);
- Route exhaust from the existing dust control system to a new wet scrubber (CD-WS-1) and regenerative catalytic oxidizer (CD-RCO-1) that can also operate as an RTO and
- Exhaust from the Pellet Presses and Pellet Coolers cyclones will be routed to a new wet scrubber (CD-WS-2) in series with a new regenerative catalytic oxidizer (CD-RCO-2) that can also operate as a regenerative thermal oxidizer.

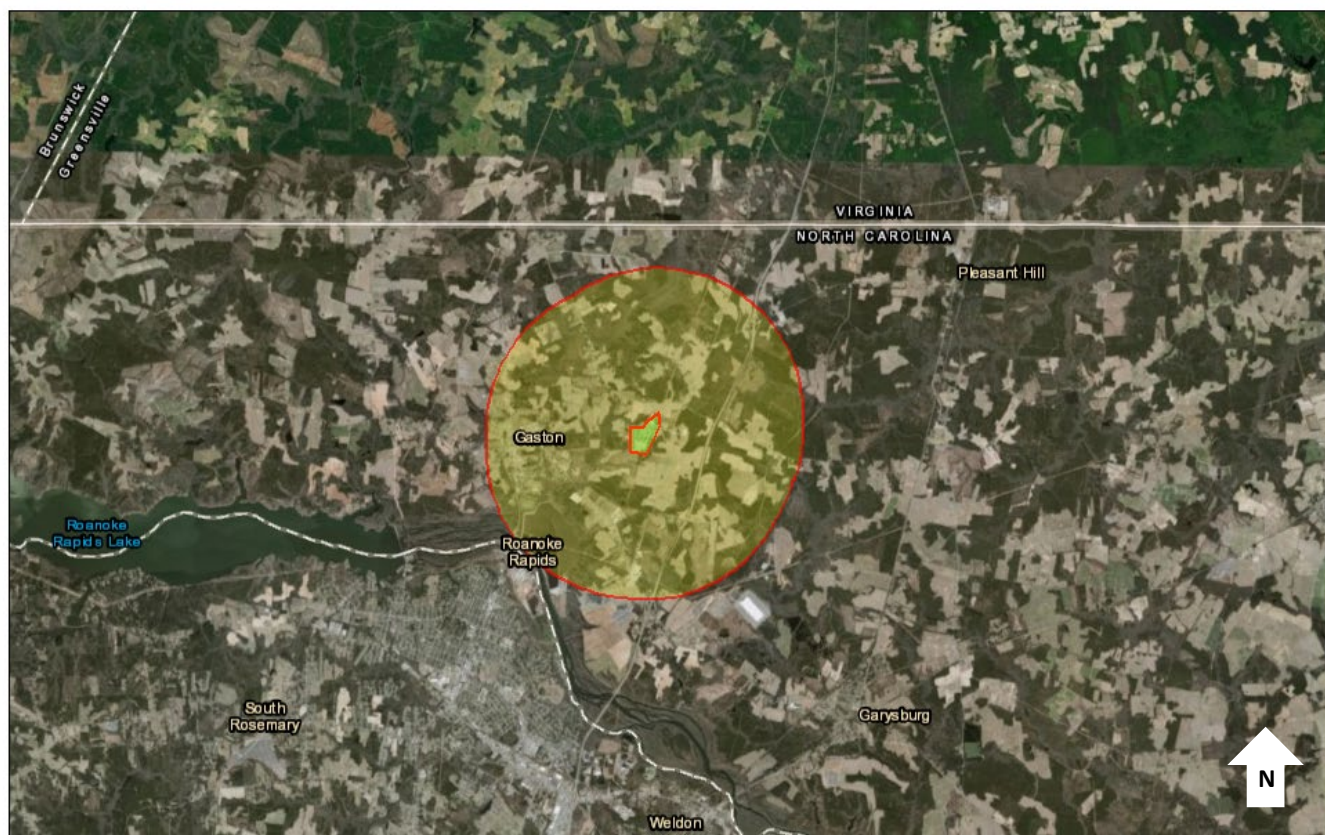
Table 1. Changes in Potential to Emit

Emissions Scenario	CO (tpy)	NO_x (tpy)	PM (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)	SO₂ (tpy)	VOC (tpy)	CO₂e (tpy)	Total HAPs (tpy)
Proposed PTE ¹	182.73	242.21	148.97	118.75	83.75	39.52	129.68	399,490.52	21.71
Previous PTE	61.88	126.57	128.84	121.79	93.79	19.20	456.40	162,292.20	37.82
Change in PTE	+120.85	+115.64	+20.13	-3.04	-10.04	+20.32	-326.72	+237,198.3	-16.11

¹. Proposed PTE (excluding fugitive emission sources)

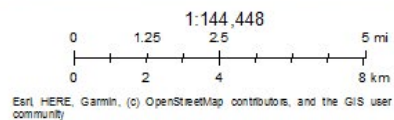
4 Geographic Area

The facility is located at 830 Lebanon Church Rd, Garysburg, NC 27831 (Northampton County). The highest off-site ambient air impacts from the Enviva Northampton dispersion modeling occur at the plant fence line. Enviva’s contribution to the total impact is over 99%. Based on these air modeling results, a two-mile radius was used for analyzing the local demographics and socioeconomics (Figure 1).



May 12, 2019

- 2-Mile radius
- Facility



EJSCREEN 2016

Figure 1. Facility location with two-mile radius.

Regional Setting

Northampton County is designated as Tier 1 county by NC Department of Commerce. Tier 1 counties either have less than 12,000 people or have a population with less than 50,000 people and a poverty rate of 19% or greater. Northampton County has been designated as Tier 1 for at least the last four consecutive years. The two-mile radius used in this analysis stays within Northampton County and is encompassed by census tracts 9204.01 and 9203 (Figure 2). Census tracts are small, relatively permanent statistical subdivisions of a county with a unique numeric code (US Census Bureau). The two census tracts do not encompass any Federal or State American Indian Reservation, Off-Reservation Trust Land, Statistical Area, Designated Tribal Area, or Native Regional Corporation. However, this does not mean that Native American or Alaska Native persons don't live within census tracts 9204.01 and 9203.

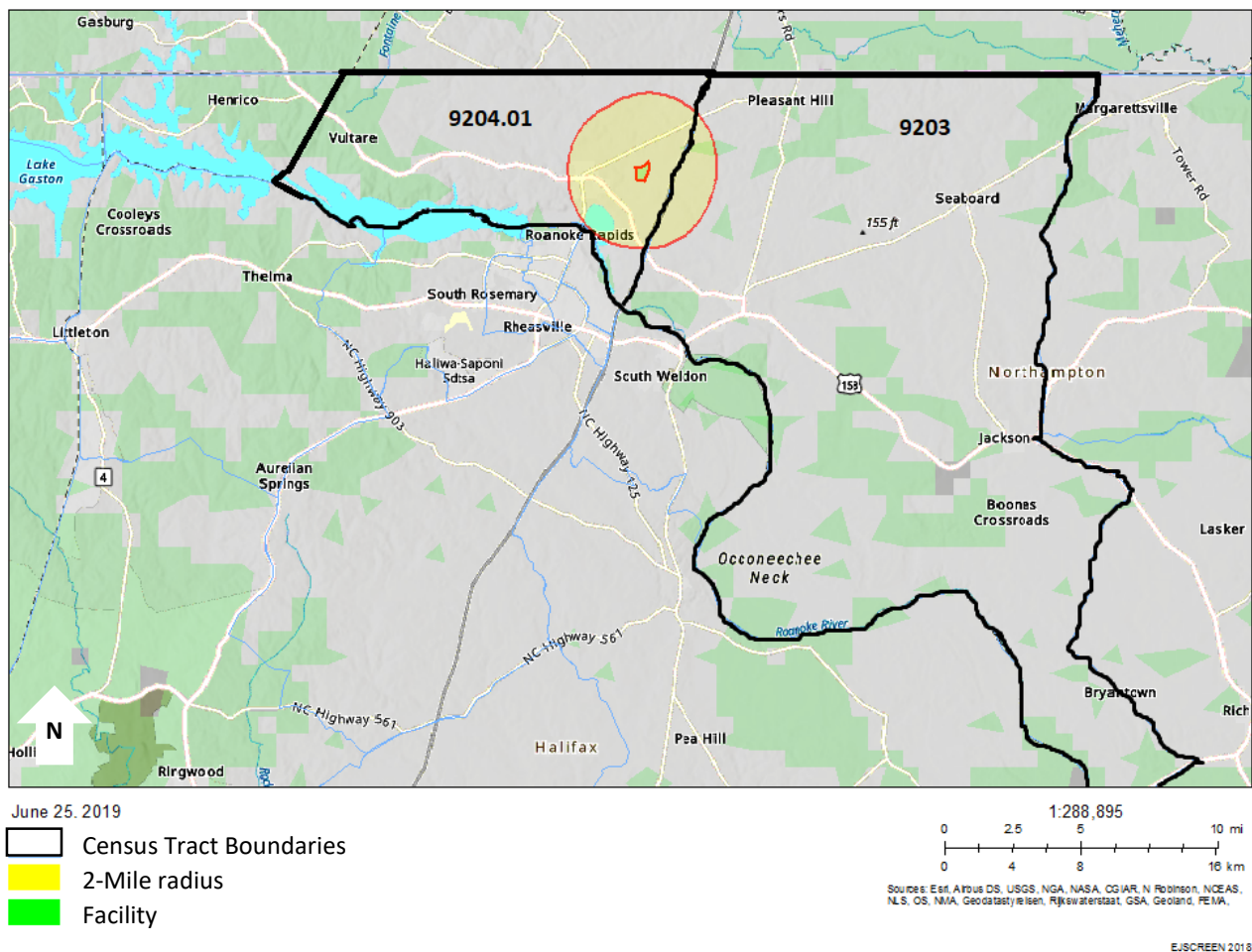


Figure 2. Census tracts surrounding facility location.

Table 2. Regional Setting - Race and Ethnicity

Race and Ethnicity	North Carolina		Northampton County	
	Number	Percent	Number	Percent
Total Population	9,535,483	100	20,426	100
White	6,528,950	68.5	8,396	41.1
Black or African American	2,048,628	21.5	11,935	58.4
American Indian or Alaska Native	122,110	1.3	242	1.2
Asian	208,962	2.2	71	0.3
Native Hawaiian and Other Pacific Islander	6,604	0.1	3	0.0
Some other Race	414,030	4.3	124	0.6
Two or More Races	206,199	2.2	336	1.6
HISPANIC OR LATINO (of any race)				
	800,120	8.4	433	2.1
Mexican	486,960	5.1	367	1.8
Puerto Rican	71,800	0.8	36	0.2
Cuban	18,079	2.3	5	0.0
Other Hispanic or Latino	223,281	2.3	25	0.1

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

Table 3. Local Setting – Race and Ethnicity

Race and Ethnicity	Project Area-2 Miles		Census Tract 9203		Census Tract 9204.01	
	Number	Percent	Number	Percent	Number	Percent
Total Population	2,246	100.0	6,055	100	4,370	100.0
White	708	32.0	1,526	25.2	1,401	32.1
Black or African American	1,486	66.0	4,448	73.5	2,846	65.1
American Indian or Alaska Native	12	1.0	28	0.5	23	0.5
Asian	0	0.0	3	0	14	0.3
Native Hawaiian and Other Pacific Islander	0	0.0	2	0	0	0.0
Some other Race	16	1.0	10	0.2	47	1.1
Two or More Races	24	1.0	38	0.6	39	0.9
HISPANIC OR LATINO (of any race)						
	88	0.04	36	0.6	65	1.5
Mexican			24	0.4	45	1.0
Puerto Rican			6	0.1	6	0.1
Cuban			0	0	0	0.0
Other Hispanic or Latino			6	0.1	14	0.3

Source: US Census Bureau, 2010 Census
 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 the County and State.

Table 4. Poverty Status -North Carolina

Subject	Total		Below poverty level		Percent below poverty level	
	Estimate	Margin of Error +/-	Estimate	Margin of Error +/-	Estimate	Margin of Error +/-
Population for whom poverty status is determined	9,685,511	1,782	1,631,704	17,281	16.8	0.2
AGE						
Under 18	2,254,721	2,050	539,417	8,484	23.9	0.4
18 to 64	6,012,888	1,258	955,430	9,789	15.9	0.2
65 years and over	1,417,902	1,068	136,857	2,562	9.7	0.2
SEX						
Male	4,684,761	2,068	719,985	8,902	15.4	0.2
Female	5,000,750	1,846	911,719	9,880	18.2	0.2
RACE AND HISPANIC OR LATINO ORIGIN						
White	6,220,770	2,615	718,254	11,602	11.5	0.2
Black or African American	2,056,688	4,872	537,538	7,834	26.1	0.4
American Indian and Alaska Native	114,277	1,759	32,101	1,831	28.1	1.5
Asian	248,665	1,763	32,044	1,973	12.9	0.8
Native Hawaiian and Other Pacific Islander	6,227	910	1,229	363	19.7	5.3
Some other Race	293,512	8,038	98,899	5,189	33.7	1.5
Two or more races	233,951	5,773	57,525	2,970	24.6	1.1
Hispanic or Latino	867,229	835	273,081	2,970	24.6	0.8
All individuals below:						
50 percent of poverty level	709,029	10,824				
125 percent of poverty level	2,156,665	18,666				
150 percent of poverty level	2,675,626	22,058				
185 percent of poverty level	3,374,865	23,762				
200 percent of poverty level	3,649,420	24,199				
Source: US Census, 2012-2016 ACS 5-Year Estimates						

Table 5. Poverty Status - Northampton County

Subject	Northampton County					
	Total		Below poverty level		Percent below poverty level	
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error
Population for whom poverty status is determined	19,507	169	4,955	552	25.4	2.8
AGE						
Under 18 years	3,639	92	1,472	261	40.5	7.1
18 to 64 years	11,270	122	2,748	356	24.4	3.2
65 years and over	4,598	83	735	176	16	3.7
SEX						
Male	9,262	133	2,162	305	23.3	3.2
Female	10,245	114	2,793	335	27.3	3.3
RACE AND HISPANIC OR LATINO ORIGIN						
White alone	7,772	141	1,068	275	13.7	3.6
Black or African American alone	11,151	223	3,690	492	33.1	4.3
American Indian and Alaska Native alone	126	65	78	55	61.9	29.9
Asian alone	44	36	20	28	45.5	47.2
Native Hawaiian and Other Pacific Islander alone	0	22	0	22	-	
Some other race alone	109	90	26	45	23.9	39.1
Two or more races	305	182	73	75	23.9	22.6
Hispanic or Latino origin (of any race)	402	38	148	106	36.8	27.1
All individuals below:						
50 percent of poverty level	2,094	449				
125 percent of poverty level	6,202	535				
150 percent of poverty level	7,386	645				
185 percent of poverty level	9,048	684				
200 percent of poverty level	9,714	645				
Source: US Census, 2013-2017 ACS 5-Year Estimates						
All bolded and orange highlighted cells indicate a difference that is greater than 10% when compared to the State.						

Table 6. Poverty Status – Census Tracts 9203 and 9204.01 (Northampton County)

Subject	Census Tract 9203						Census Tract 9204.01					
	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	5,063	404	1,486	420	29.4	7.9	4,093	390	1,073	337	26.2	7.4
AGE												
Under 18 years	837	196	364	179	43.5	16.3	869	203	321	149	36.9	12.9
18 to 64 years	2,860	279	835	227	29.2	8	2,318	280	542	196	23.4	7.7
65 years and over	1,366	129	287	114	21.0	8.4	906	135	210	94	23.2	9.4
SEX												
Male	2,416	243	749	254	31.0	9.5	1,794	219	442	177	24.6	8.9
Female	2,647	244	737	219	27.8	8.1	2,299	253	631	204	27.4	8.4
RACE AND HISPANIC OR LATINO ORIGIN												
White alone	1,097	319	103	81	9.4	8.1	1,315	229	217	111	16.5	7.4
Black or African American alone	3,934	382	1,383	403	35.2	9.6	2,663	372	783	299	29.4	9.9
American Indian and Alaska Native alone	0	17	0	17	-	-	64	63	32	49	50.0	47.6
Asian alone	0	17	0	17	-	-	0	12	0	12	-	**
Native Hawaiian and Other Pacific Islander alone	0	17	0	17	-	-	0	12	0	12	-	**
Some other race alone	0	17	0	17	-	-	10	16	10	16	100.0	93.8
Two or more races	32	45	0	17	0.0	52.4	41	54	31	49	75.6	47.3
Hispanic or Latino origin (of any race)	8	9	0	17	0.0	100	134	105	97	79	72.4	20.8
All individuals below:												
50 percent of poverty level	534	249					426	270				
125 percent of poverty level	1,839	398					1,412	364				
150 percent of poverty level	2,263	438					1,674	372				
185 percent of poverty level	2,647	419					1,982	362				
200 percent of poverty level	2,966	381					2,114	352				
Source: US Census, ACS 5 year estimates 2012-2016; All orange highlighted cells indicate a difference that is greater than 10% when compared to the county, All bolded and green 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 State.												

Table 7. Per Capita Income

	Subject		Per Capita Income in Last 12 Months (Dollars)
North Carolina	Per Capita Income	Estimate	26,779
		Margin of Error +/-	127
Northampton County	Per Capita Income	Estimate	19,126
		Margin of Error +/-	977
Census Tract 9203	Per Capita Income	Estimate	16,184
		Margin of Error +/-	1,738
Census Tract 9204.01	Per Capita Income	Estimate	18,641
		Margin of Error +/-	2,381
One Mile	Per Capita Income	Estimate	18,257
		Margin of Error +/-	-
Two Miles	Per Capita Income	Estimate	17,434
		Margin of Error +/-	-
Source: US Census, 2013-2017 ACS 5-Year Estimates			

5 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 five percent 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 five percent 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 per the EPA guidance for LEP persons, and implemented by DEQ when deemed appropriate. No LEP groups were identified during this initial screening of demographic data. However, if LEP groups are identified during the site visit, then DEQ will revisit Safe Harbor Guidelines.

6. County Health

The University of Wisconsin Population Health Institute, in collaboration with the Robert Wood Johnson Foundation, calculated a County Health Rankings system 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 2019 report, out of all 100 counties in North Carolina

(with 1 indicating the healthiest), Northampton County ranks 92nd in health factors and 96th in health outcomes (Figure 3).

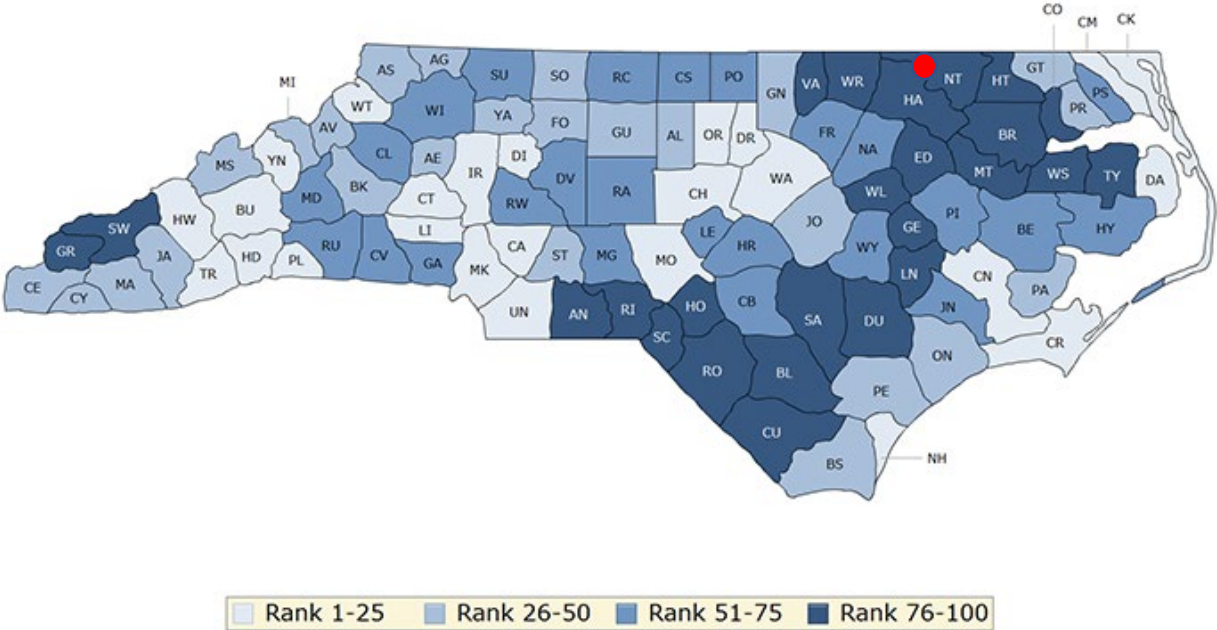


Figure 3. County Health Rankings for Health Factors in North Carolina provided by University of Wisconsin Public Health Institute.

7 Local Sensitive Receptors

The 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 the two-mile project radius, the following potential sensitive receptors were identified (Figure 4):

- Gaston College Preparatory School
- Lebanon Church
- First Evangelical Methodist Church

Outside of the two-mile radius, the following sensitive receptors were identified:

- Gaston Elementary and Middle School
- Northampton County High School
- Shilo United Methodist Church
- Cool Spring Missionary Baptist Church
- Oak Grove Baptist Church

Additional sensitive receptors may be identified during the permit application process, such as during the field reconnaissance visit or through public comment.

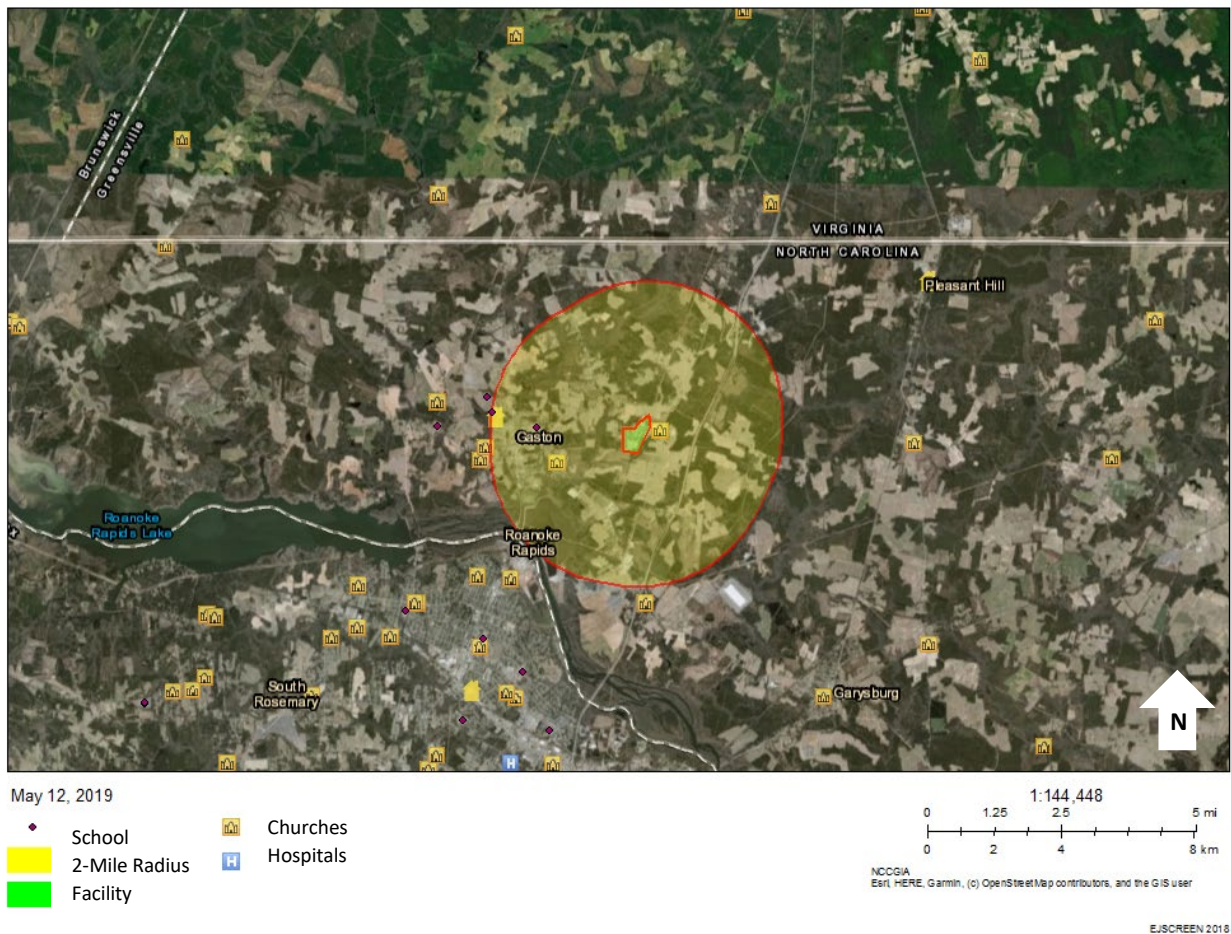


Figure 4. Sensitive receptors surrounding Enviva facility.

8. Local Industrial Sites

Within the 2-mile radius, there are a total of 34 facility permits or incident reports (as of June 5, 2019), not including the existing permits for the Enviva Northampton facility (Figure 5). Among those 34 are 4 NPDES stormwater permits and 3 air quality permitted facilities. The 3 air quality permits are for Gaston Cooperative Inc., Rightmyer Machine Rentals, Inc., and the Rose Brothers Paving Co Inc- Gaston Asphalt Plant. There were 16 underground storage tank incidents, 5 above ground storage tank incidents, 4 land use restrictions or notices, and 2 active underground storage tanks within the two-mile radius of the Enviva facility.

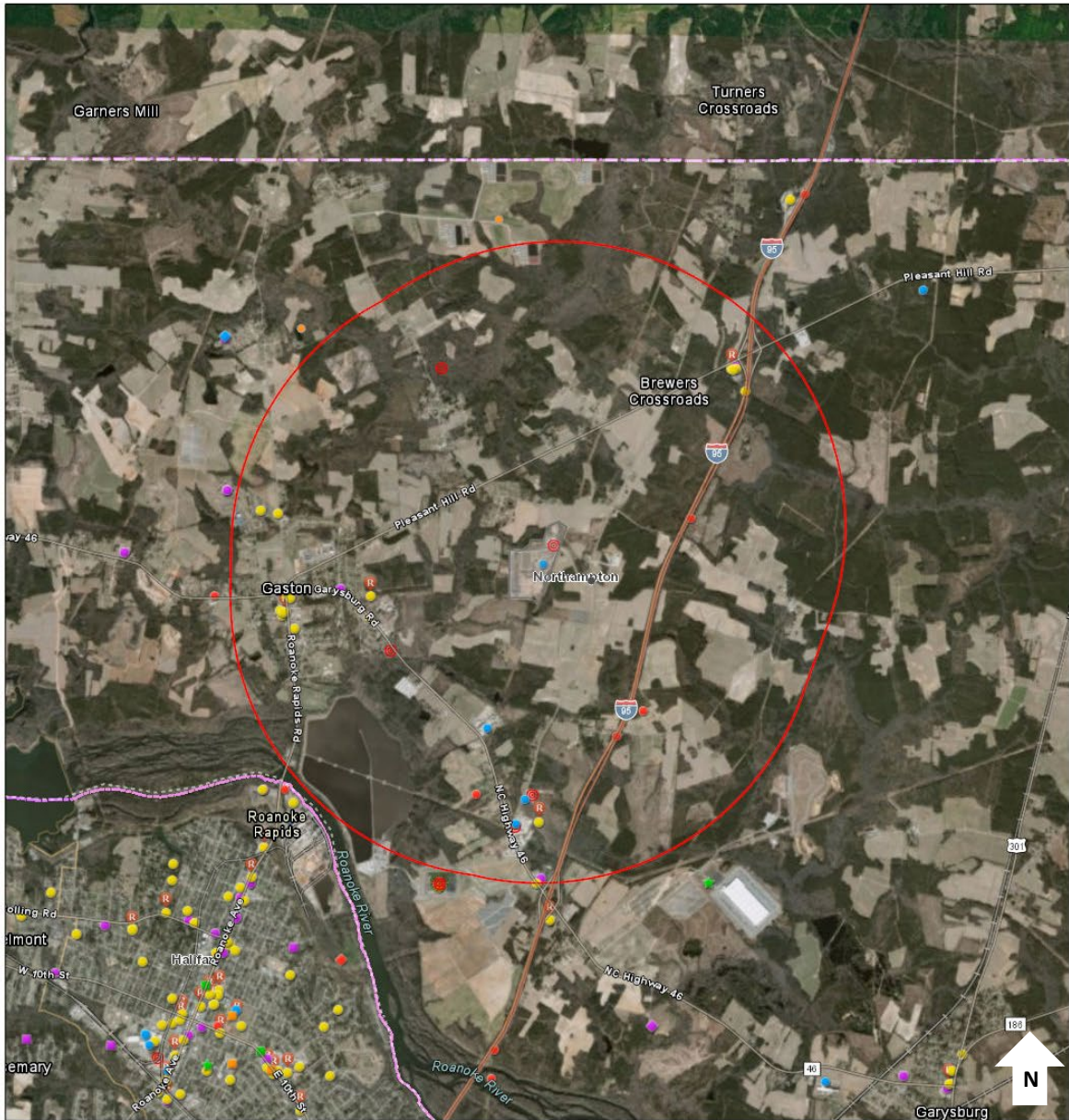


Figure 5. Permitted facilities and incidents with the 2-mile radius surrounding the Enviva facility.

9. Conclusion

The EJ Snapshot is an initial look at the demographics and socioeconomics of the community area surrounding a proposed facility or permit modification. This includes information within a determined radius by the Department (2 miles for this project) on race and poverty (decennial census year), per capita income and ability to speak English (most current ACS census range), current NC Commerce county tier, and yes/no – native American territory. The EJ Snapshot does not include a reconnaissance of the community. The Enviva Northampton facility is in an area designated with low health factors and outcomes in comparison to other areas of the State (Section 6).

Northampton County, census tracts, and 2-mile radius show a higher percent for Black or African American when compared to the State average of 21.5%. Poverty levels are also elevated for the County when compared to the State average. Northampton County ranks in the lower half of the statewide county health rankings.

Appendix A. Process Flow Diagram

Enviva Pellets Northampton, LLC – Northampton County, NC

