The Patterns of Pollution:

GreenLaw

A Report on Demographics and Pollution in Metro Atlanta

March 2012

This report was written and compiled by:

www.GreenLaw.org

GreenLaw is dedicated to preventing air and water pollution that endangers human health and degrades Georgia's natural resources. GreenLaw achieves these goals by providing free high quality legal and technical assistance to environmental organizations and community groups throughout Georgia. Through these services, GreenLaw compels government and industry to take the steps necessary to protect Georgia's citizens and the environment. GreenLaw champions the belief that every Georgian – young and old, rich and poor – has the right to breathe clean air, drink clean water, live in healthy communities, and enjoy our state's natural beauty.

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TABLE OF CONTENTS

Executive Summary ..... ES 1

Introduction 5

Response to Injustice 7
- The Origin of the Environmental Justice Movement 7
- Environmental Justice Today 8
- Environmental Justice in Georgia 8
- Environmental Justice in Metro Atlanta 9

Our Report 10
- Study Area 10
- Methodology 11

Results 17
- General Patterns of Pollution 17
- Patterns of High-Pollution and Low-Pollution Blocks 18
- Environmental Justice Hotspots in Metro Atlanta 20
- Violations of Environmental Laws 22

Understanding Five Environmental Justice Hotspots in Metro Atlanta 23
- Hotspot #1: Intersection of Cobb, Douglas, and Fulton Counties 25
- Hotspot #2: Central Cherokee County 27
- Hotspot #3: Intersection of Northeast DeKalb and West Gwinnett Counties 29
- Hotspot #4: Central Fulton County 31
- Hotspot #5: Central Douglas County 33

Recommendations in Response to Patterns of Pollution 35

Conclusion 41

Definitions 43

Appendix A: GIS Analysis Methodology 45

Endnotes 55

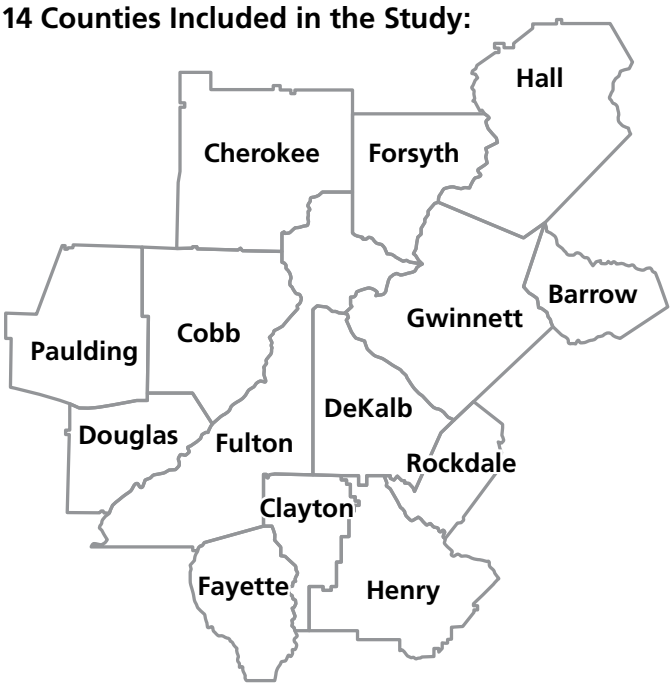
Executive Summary

Take a look at a map of the 14-county metro Atlanta region. Now place a pin on the map to represent the location of every polluting factory, toxic release, sewage overflow, and all other points where pollution may originate. When you finish, you will see thousands of pins on the map. You will also begin to see some clear patterns: pollution points are generally found in higher numbers in populous areas, close to railways, and in industrial centers. Now, overlay demographic characteristics, including race and income, onto the map and you will see which populations are living closest to these pollution points. With some study, you will see that populations of minorities and the poor are living in closer proximity to pollution points than are other populations. So too are those who are not fluent in English.

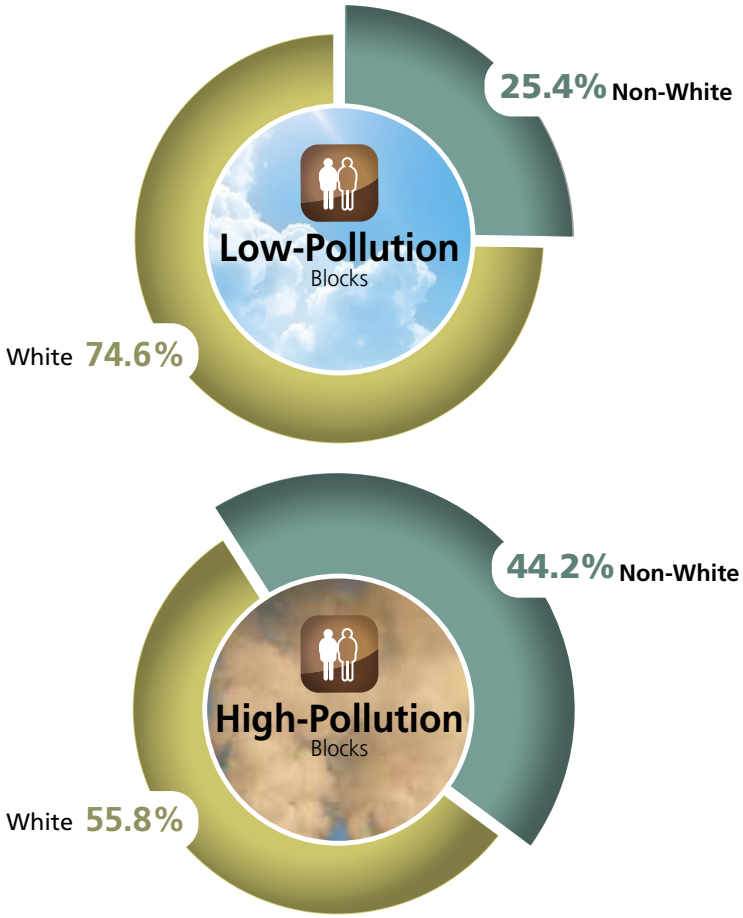
Placing pins on a map cannot show you all of the complexities of this information. For this reason, we created the *Patterns of Pollution* report. Here, we analyze publicly available data to identify eight types of air, water, and land pollution in the 14-county metro Atlanta region.[i] These points of pollution were then cross-referenced with seven demographic characteristics of the people living in the region.[ii] By inputting this data into mapping technology, an overall pattern reveals itself whereby a person's race, income, and language have a direct correlation to his distance from pollution points.[iii] Using this methodology, we: 1) analyze general patterns of pollution across the region; 2) compare the demographic traits[iv] of high-pollution and low-pollution blocks[v]; and 3) identify environmental justice hotspots where the correlation between race, poverty, and pollution is strongest.[vi]

Although we did not analyze pollutants emitted from car exhaust, illegal dumping activity, or the myriad other ways in which pollution enters our lives, the general patterns of pollution evidenced by the eight kinds of pollution points identified in this report show clearly that race is the characteristic with the strongest correlation to pollution. That is, the greater the pollution, the higher the minority population. For example, blocks with a minority population 50 percent or higher have more than double the number of pollution points than blocks where minorities make up less than 10 percent of the population. Pollution points are also more abundant near linguistically isolated households for whom English is not their first language. Blocks with linguistic isolation rates over 20 percent have more than three times as many pollution points in close proximity on average than blocks where less than 5 percent of households are linguistically isolated.

14 Counties Included in the Study:



Comparing Race and Prevalence of Pollution



***Regional Average of Non-White Population = 31.9%**

The contrasting traits of high-pollution and low-pollution blocks further elucidate the correlation of pollution points to demographic characteristics. For example, low-pollution blocks have an average minority population of 25.4 percent while the average minority population of high-pollution blocks is nearly double at 44.2 percent (Figure Comparing Race and Prevalence of Pollution).

Our investigation also revealed 52 "environmental justice hotspots" where the correlation between race, poverty, and pollution is strongest. For example, more pollution points are located near a 1.5 mile stretch of Fulton Industrial Boulevard than in any other single block in the 14-county area. Over 80 percent of people living on this stretch are minorities and 20 percent live below federal poverty levels. These demographic levels are far outside the norm in the region. The correlation between these factors is undeniable and raises concern about the mechanisms used to site polluting facilities in metro Atlanta.

Disparities in pollution, much like the ones shown to be prevalent in this report, sparked a national environmental justice movement 30 years ago that was built on the simple principle that minorities and low-income residents should not be subjected to disproportionate levels of pollution. Yet our results show that metro Atlanta is currently facing the same social-pollution disparities that existed three decades ago. This is troubling because these populations often lack the resources to participate fully in the processes that determine where polluting facilities with the potential to negatively affect their health and quality of life are located.[vii]

Today, environmental justice is defined by the United States Environmental Protection Agency (EPA) as "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."[viii] However, environmental justice viewed more broadly is aligned with the growing sustainability movement as proponents of both movements seek to create livable communities for all people, present and future. Environmental justice laws and policies are tools that can be utilized to reach this goal.

In part, the problems that exist today have arisen because Georgia's Environmental Protection Division (EPD) does not have these tools in place. Should a corporation seek to place a polluting facility in an environmental justice hotspot, like Fulton Industrial Boulevard, there is no policy or law requiring EPD to consider the demographics or overall social and economic burdens of the area's residents before issuing a permit. There are also no effective means for a resident to provide input in decision-making before a permit is issued nor to partner with EPD to participate in monitoring and compliance, a practice that would allow EPD to take advantage of residents' commitment to protecting their community and allow residents to draw support from the agency for assistance. Georgia now lingers in a shrinking minority of only five states that have not adopted a policy, program, or initiative to directly address environmental disparities. There is a pressing need, as evidenced by this report's results, for it to do so.

...low-pollution blocks have an average minority population of 25.4 percent while the average minority population of high-pollution blocks is nearly double at 44.2 percent.

EPD is not the only player that has a say in where pollution points are found on the map. Local governments generally make the initial decision about where industries generating pollution can be sited, often in the context of zoning laws. These local bodies have the power to require increased review when a corporation seeks to place a polluting facility in an already overburdened minority or economically depressed neighborhood. They can also use their permitting powers to reduce adverse impacts when industrial and residential areas are located near each other. However, most local governments in metro Atlanta have not altered their laws and policies to do so.

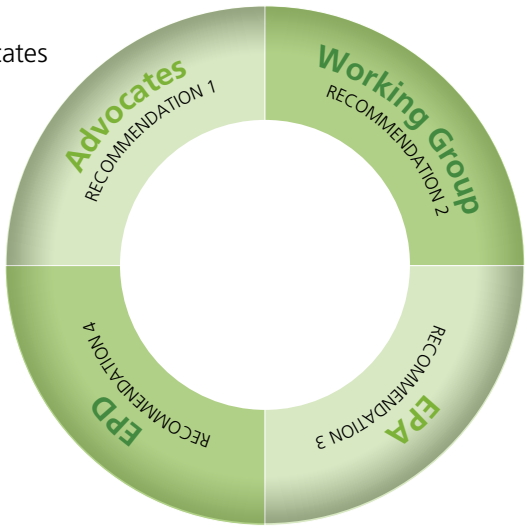
This report puts state and local leaders, as well as metro Atlanta's citizens, on notice that minority, linguistically isolated, and low-income communities are unduly burdened by pollution. More importantly, it provides four recommendations, aimed at state, regional, and local decision-makers, for the adoption of policies and laws integrating environmental justice concerns into the workings of Georgia's state and local governments. The recommendations call for:

#1 :: Advocates
The creation of an alliance of metro Atlanta environmental justice advocates

#2 :: Working Group
The formation of a working group of leaders in business and government to work collaboratively to address how environmental justice issues can be incorporated into decision-making

#3 :: EPA
Direct federal funding and guidance to Georgia's state and local governments for the implementation of environmental justice efforts

#4 :: EPD
State environmental decision-makers to adopt an environmental justice policy that promotes the health of all of Georgia's citizens and requires environmental equity in its practices.



We can all benefit from practices that protect the health of Georgia's citizens and promote environmental equity. We are hopeful that our results and recommendations will trigger conversations about the environmental burdens faced in metro Atlanta and that these conversations will lead to meaningful changes in the way that environmental justice is considered at multiple levels of government in Georgia.

Executive Summary Notes

[i] The eight types of pollution points are 1) permitted stationary air pollution facilities; 2) National Pollution Discharge Elimination System (NPDES) wastewater permitted facilities; 3) Hazardous Waste Inventory (HSI) sites; 4) Toxic Release Inventory (TRI) sites (2010); 5) Comprehensive Environmental Response Compensation and Liability Act (CERCLA or "Superfund") sites; 6) Resource Conservation and Recovery Act (RCRA) hazardous waste storage sites; 7) active solid waste landfills; and 8) permit violations and enforcement actions taken by the United States Environmental Protection Agency (EPA) or Georgia Environmental Protection Division (EPD).

[ii] The seven demographic characteristics drawn from U.S. Bureau of the Census data are 1) high school graduation rate; 2) poverty rate; 3) median family income; 4) median housing value; 5) linguistic isolation rate; 6) Non-white population rate; and 7) vacant housing.

[iii] The 14 counties are Barrow, Cherokee, Clayton, Cobb, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Hall, Henry, Paulding, and Rockdale. A grid of square blocks, each measuring 10 square kilometers (referred to as "blocks"), was superimposed over the region to create a neutral geography for analyzing various characteristics.

[iv] Blocks were assigned a score for each of the seven demographic characteristic and this number was summed to obtain a demographic score for each block.

[v] Of the 1,282 blocks in the region, 741 were identified as low-pollution blocks with no pollution points and 105 were identified as high-pollution blocks. High-pollution blocks have 9-55 pollution points, placing them in the top quantile (1/5th) in the region for the number of pollution points while low-pollution blocks are in the bottom quantile with 0 pollution points.

[vi] About four percent of all blocks in metro Atlanta have been identified as environmental justice hotspots. To qualify as a hotspot, a block must fall in the top quantile for both pollution points and demographic characteristics in the region.

[vii] We encourage residents in the 14-county metro Atlanta area to visit our website www.greenlaw.org/patternsofpollution and find out what points of pollution are located within a three mile radius of their homes or businesses. This unique tool, created in concert with experts at Newfields, shows us the environmental challenges we face individually and as a community.

[viii] Envtl. Prot. Agency, Environmental Justice, Compliance, and Enforcement, http://www.epa.gov/environmentaljustice/ (last visited Mar. 7, 2012).

Introduction

The metro Atlanta region has not fared well in recent comparisons to other areas in the United States in regard to pollution and its effect on the quality of life of its residents. In 2011, the region was ranked as the 23rd most ozone-polluted city in the country (of 277 metropolitan areas) by the American Lung Association[1] and was named an "Asthma Capital" by the Asthma and Allergy Foundation of America.[2] Metro Atlanta received national attention in 2009 when it was named by *Forbes Magazine* as the "most toxic city" in the United States.[3] It also tied for 7th among U.S. metro areas for its number of unhealthy air days in 2010[4] and struggles to meet federal Clean Air Act standards for dangerous air pollutants.

The pollution that exists in metro Atlanta does not touch all residents in the same way. In 1995, the City of Atlanta reported that more routine releases of toxics occur in neighborhoods that are poorer, and to a lesser extent, have larger percentages of African Americans.[5] These finding are important because toxic releases and other pollution can result in serious health ramifications.

Impacts on fetal and childhood health provide the most clearly defined link between pollution exposure and health effects. Birth weights can be negatively affected by air pollution,[6] which can also cause DNA damage[7] and slow childhood neurodevelopment.[8] Children of mothers who lived near a facility designated by the federal government as a Toxic Release Inventory (TRI) site while pregnant may be more likely to later develop brain cancer, especially if the site released carcinogens.[9] Studies also show an excess risk of birth anomalies in populations living near landfills.[10]

Considering these potential health effects, we should understand which populations are living closest to and potentially being most impacted by pollution in metro Atlanta. Our report does just this by identifying points where pollution originates in the region and the demographic characteristics, such as race, language, and income, of those living in close proximity to these pollution points.

Our *Patterns of Pollution* report provides:

1. A brief history of the national environmental justice movement and an assessment of the movement in Georgia and metro Atlanta;
2. The results of our analysis of the correlation between race, language, poverty, and pollution;
3. The identification of environmental justice hotspots where the correlation between race, poverty, and pollution points is strongest; and
4. Recommendations for meaningful action to be taken in response to the patterns of pollution.

Response to Injustice

The Origin of the Environmental Justice Movement

The environmental justice movement rose to national attention 30 years ago in North Carolina as a direct reaction by minorities to environmental inequities.[11] There, protestors marched and were arrested in non-violent protest against the planned siting of a poly-chlorinated biphenyl (PCB) landfill in Warren County, where African Americans composed 65 percent of the population. Though unsuccessful in thwarting plans for the landfill, their demonstrations prompted the U.S. General Accounting Office (GAO) to undertake a study examining the link between minorities and the siting of hazardous waste landfills.[13]

In that study, produced in 1983, researchers concluded that in the Southeast, African Americans comprised the majority of the population in three out of every four communities where off-site hazardous waste landfills were located.[14] In 1987, the United Church of Christ followed up the GAO report with its *Toxic Waste and Race* study.[15] By examining the racial and socio-economic characteristics of communities surrounding commercial hazardous waste facilities and toxic waste sites, researchers found "race to be the most potent variable in predicting where these facilities were located—more powerful than household income, the value of homes and the estimated amount of hazardous waste generated by industry."[16]

As evidence of environmental injustice mounted, citizen groups across the country organized to form defenses against facilities they suspected were contaminating their communities. In 1988, residents formed West Harlem Environmental Action (WEACT) to mobilize against water quality and air pollution violations occurring at their neighborhood's North Ridge Sewage Treatment Plant.[17] A year later, residents living in "Cancer Alley," Louisiana's infamously polluted corridor, organized "The Great Louisiana Toxic March" to bring attention to the living conditions of those living in close proximity to the area's numerous industrial plants.[18]

Growing attention brought with it efforts to pass groundbreaking federal environmental justice legislation, but these efforts were unsuccessful. However, in 1994 President Clinton issued Executive Order 12898 (E.O. 12898), compelling each federal agency to make environmental justice part of its mission by developing a strategy "that identifies and addresses disproportionately high and adverse human health or environmental effects of its programs, policies, or activities on minority populations and low-income populations."[19]

Legal challenges to environmental permitting decisions have also been an important part of the environmental justice movement. To make claims of discrimination in the siting of polluting facilities and the unequal enforcement of environmental laws, advocates initially tried to employ the Equal Protection Clause of the Fourteenth Amendment which imposes a general restraint on the governmental use of classifications, such as race and gender.[20] However, even when a pattern of permitting polluting facilities in minority and low-income communities shows a clearly disparate impact, advocates have been unable to make the legally required showing that a state made permitting decisions with a discriminatory intent.[21] As a result, these legal theories had little success.

In light of this difficult standard, lawyers honed in on Title VI, Section 602 of the Civil Rights Act of 1964, prohibiting funding receipts from action that has a discriminatory impact, regardless of intent.[22] This strategy proved successful in 2001 when a federal court held that a state agency receiving federal funding was obligated under Title VI to

consider disparate impacts based on race when determining whether to issue a permit.[23] This victory was short-lived however. The U.S. Supreme Court decided two years later that individuals do not have legal standing to bring Title VI cases, thereby reversing previous cases on section 602.[24]

Presently, only government agencies may bring disparate impact claims under Section 602. This foreclosure of legal claims sent lawyers seeking to make these claims back to the drawing board. They now rely, for the most part, on traditional federal environmental laws such as citizen suit provisions of the Clean Water Act and Clean Air Act, as well as increasingly available state environmental justice laws.

Environmental Justice Today

Environmental inequalities today are, in many ways, as pervasive as they were decades ago. In fact, a 2007 follow-up study by the United Church of Christ revealed that racial disparities in the distribution of commercial hazardous wastes across the nation were actually greater in 2007 than they were 20 years earlier.[25]

Since President Clinton's E.O. 12898, federal agencies have struggled to create tangible improvements in how federal agencies evaluate the siting of facilities in minority and low-income communities.[26] In 2004, ten years after E.O. 12898 was first signed, an audit by the EPA Office of Inspector General 2004 revealed a number of failures by EPA, including no identification of a clear definition of environmental justice, no guidance to allow for consistent implementation of environmental justice programs across regions, and a failure to identify the minority and low-income populations addressed in E.O. 12898.[27]

However, under the Obama administration, the EPA recently renewed its environmental justice efforts by making environmental justice an agency priority[28] and launching Plan EJ 2014, which provides a roadmap for EPA to integrate environmental justice considerations into its programs at various levels.[29]

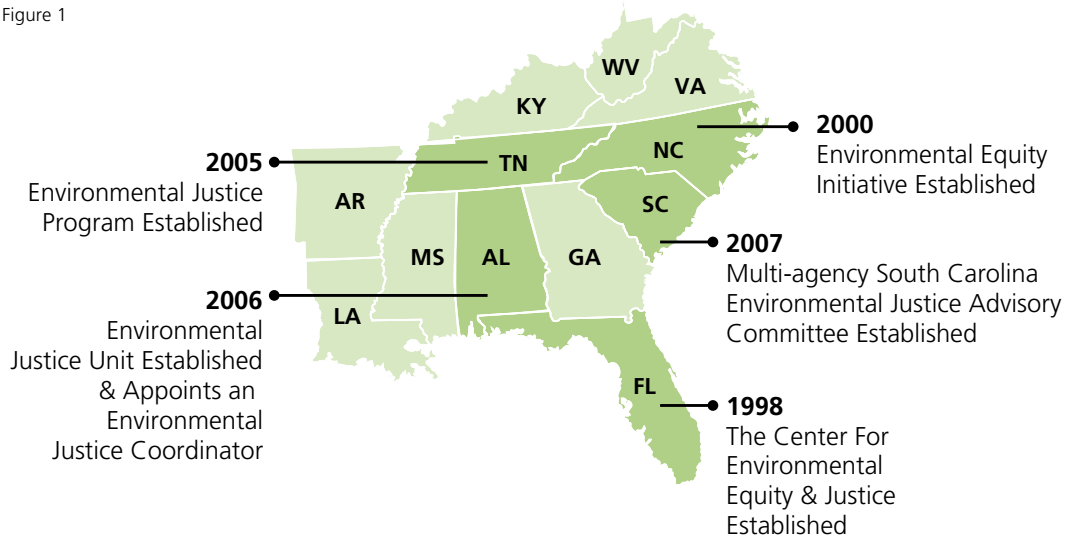
Beyond the federal realm, most states have adopted environmental justice policies aimed at ensuring that procedures are in place to consider the racial and economic make-up of communities when permitting. Illinois, for example, adopted an Environmental Justice Policy that increases public participation in potential environmental justice communities and creates an "EJ Grievance Procedure."[30] At the local level, Cincinnati passed the first-in-the-nation Environmental Justice Ordinance in 2009, requiring new or expanding industrial facilities to receive an "Environmental Justice Permit" prior to beginning operation.[31]

Environmental Justice in Georgia

All of Georgia's neighboring states have state environmental justice initiatives, programs, or employees conducting environmental justice work at the state level. Georgia does not (Figure 1).[32]

Georgia's Environmental Protection Division (EPD), which issues state and federal permits for the operation of facilities related to air emissions, water quality, hazardous waste, solid waste, and water supply, does not have a system to consider environmental justice when

Figure 1



reviewing permit applications or when taking any other actions related to permitting. For example, the agency did not consider the disparate burden on African Americans when it approved a permit for the siting of the Longleaf Energy Station in 2007,[33] a coal-fired power plant proposed in Early County, Georgia, which would have emitted nine million tons of carbon dioxide and tens of thousands of tons of other pollutants that cause respiratory problems, heart attacks, asthma attacks and premature death.[34] Early County's population is 49.6 percent African American and close to 30 percent of the population lives below federal poverty levels.[35]

A review of the 2010 publication, *Environmental Justice for All: A Fifty State Survey of Legislation, Policies and Cases*, by the American Bar Association and the University of California, Hastings College of Law reveals that many states consider site demographics in environmental decision-making and are seeking new ways to ensure equal protection from environmental harm.[36] Currently, 27 states have an employee, working group or taskforce dedicated to environmental justice. Also, 18 states have a policy or law in effect that directly addresses environmental justice. This leaves Georgia in a small minority of states not directly addressing environmental justice (Figure 2).

Georgia's "anti-concentration" law is the only state law requiring some consideration of environmental justice principles.[37] The law, passed in 2004, restricts the number of solid waste facilities that may be sited within a two-mile radius of three or more other solid waste facilities. Though the law serves the important purpose of effectively preventing the clustering of landfills in Georgia, it does not address the demographics of the area where these facilities may be sited. Otherwise, legislative efforts addressing environmental justice have been unsuccessful.

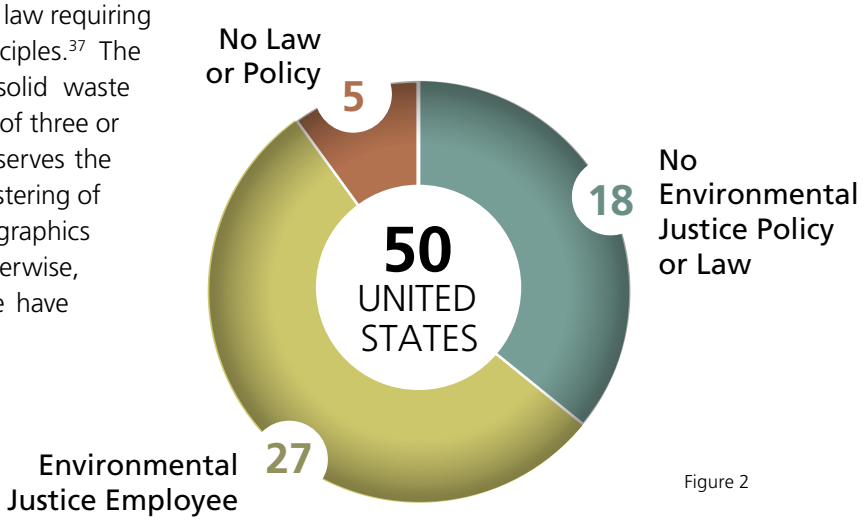


Figure 2

The Georgia Environmental Justice Act of 1995 is the only law proposed in Georgia's legislature that would have required EPD to directly address the demographics of an area prior to permitting. The bill would have created a 22-member Environmental Justice Commission charged with issuing reports on facilities permitted by EPA or EPD "which pose a threat to human health to be concentrated in low-income neighborhoods and neighborhoods populated largely by African Americans."[38] The bill also would have required specific pollution prevention goals and baseline studies prior to the approval of any permit for the construction of a facility in an area with a majority low-income or minority population. The bill did not pass.

Presented two years later, the Environmental Justice Act of 1997 was also unsuccessful. The legislation would have mandated that EPD perform risk assessments on reported toxic releases which the agency deemed to have a high potential to affect the public health or environment of nearby communities and to reduce any release deemed by a risk assessment to be "unacceptable."[39]

Introduced nearly a decade later in 2006, the Georgia Brownfields Rescue, Redevelopment, Community Revitalization and Environmental Justice Act would have promoted the revitalization of brownfields, including the "unacceptably high percentage" of brownfields occurring in low-income and minority communities.[40] It also did not pass.

Environmental Justice in Metro Atlanta

Much can be done in the metro Atlanta region to incorporate environmental justice into decision-making. Local governments across the country, including Fulton County in metro Atlanta, have adopted environmental justice policies or laws at the municipal level that encourage consideration of environmental justice before permitting a source of pollution. Fulton County is an anomaly in the region in this regard as most local governments in the region, including the City of Atlanta, currently have no enforceable policy or law regarding environmental justice.

In 1996, Fulton County's comprehensive plan was amended to ensure that "the placement of both private and public uses which may be considered environmentally adverse are not concentrated in low-income communities or areas where a high percentage of the population belongs to racial and ethnic minorities."[41] Shortly thereafter, commissioners rejected a proposed Olympic Games waste site in an African American community.[42] In 2010, Fulton County adopted an Environmental Justice Program to increase consideration of environmental justice and health impacts in project planning and implementation and to create an environmental planner position to implement the program.[43]

Other efforts have been and continue to be made to incorporate environmental justice in metro Atlanta. The Atlanta Regional Commission, a 10-county regional planning agency, incorporates environmental justice into the regional planning process.[44] Also, the City of Atlanta is making efforts to promote environmental justice in the development of the Beltline, a redevelopment plan centered on a 22 mile loop encircling the City's urban core.[45]

Still, most local governments have no mechanisms in place to consider environmental justice when making crucial zoning decisions to improve or deny the locations of polluting facilities. Their decisions, as well as those as the state level, can do much to lessen the burden on minority and low-income communities living in the shadow of pollution.

Our Report

Study Area

To determine the counties for inclusion in the report's study area, we began with the U.S. Census's Atlanta-Sandy Springs-Gainesville, GA-AL Combined Statistical Area (CSA) which includes 32 Georgia counties and one county in Alabama.[46] With the aim of studying only those counties with urban or suburban populations, we eliminated counties with a population density of less than 400 people per square mile. This filter eliminated 18 of the counties in the CSA. The 14 remaining counties are Barrow, Cherokee, Clayton, Cobb, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Hall, Henry, Paulding and Rockdale (Figure 3).

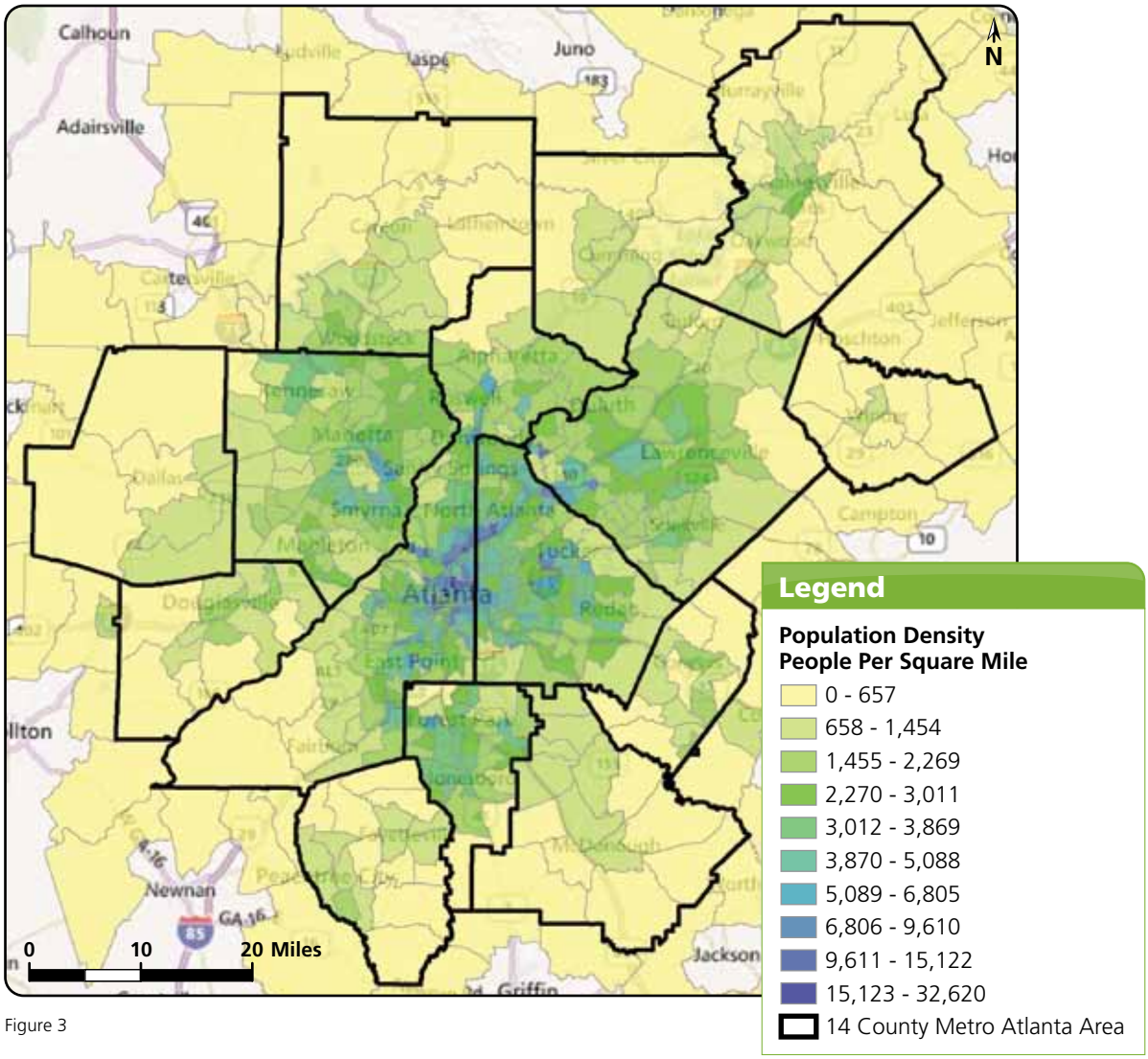


Figure 3

Methodology

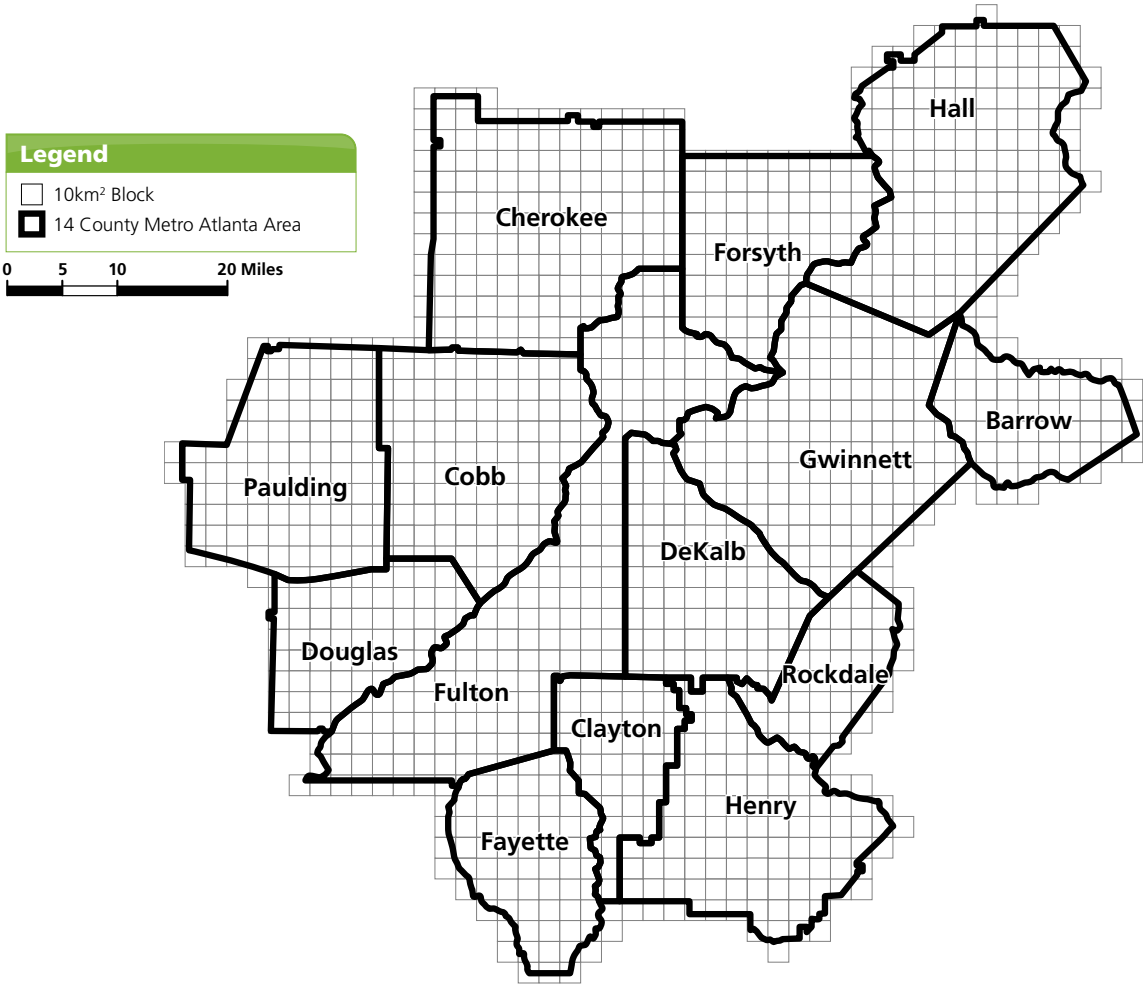
We collected and analyzed publically available demographic and pollution data from federal and state sources. Extensive mapping was created to identify and overlay eight types of air, water, and land pollution points in the 14-county metro Atlanta region. We then cross-referenced these locations with seven demographic characteristics of people living in close proximity to them.

With this data compiled within a Geographical Information System (GIS), we performed the following three analysis steps:

1. spatially analyzed general patterns of pollution across the region;
2. compared the demographic traits of high-pollution and low-pollution blocks; and
3. identified environmental justice hotspots where the correlation between race, poverty and pollution is strongest.

A more detailed and technical discussion of the GIS spatial analysis and quantile calculations can be found in Appendix A.

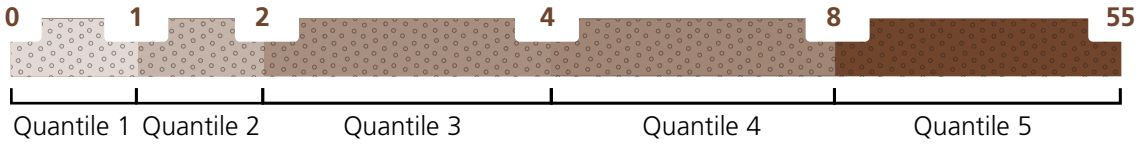
Figure 4



Step 1 – Spatial Analysis of Pollution Data

The first step involved the creation of a systematic grid of square "blocks" measuring 10 square kilometers. This grid was then superimposed over the region to create a neutral and un-biased geography for analysis (Figure 4). Next, all pollution points in each block were located and each pollution point was given a value of one. All pollution point values were in turn summed, resulting in a total "pollution score" for each block. Pollution scores ranged from 0 to 55. The pollution score in each of the blocks was then divided and mapped into five generally equal categories or "quantiles" representing 20 percent segments:

Pollution Score Range



Pollution Points

1. Permitted air pollution facilities
2. National Pollution Discharge Elimination System (NPDES) permitted facilities
3. Hazardous waste inventory (HSI) sites
4. Toxic Release Inventory (TRI) sites
5. Comprehensive Environmental Response Compensation and Liability Act (CERCLA or "Superfund") sites
6. Resource Conservation and Recovery Act (RCRA) hazardous waste storage sites
7. Active solid waste landfills
8. Permit violations and enforcement actions taken by EPA or EPD for the violation of environmental laws

The pollution points identified are permitted at the state or federal level to emit or store pollutants. The information regarding pollution points is publicly available either online or by request to a state or federal agency.

Demographic Data Characteristics

1. Percent of population that is non-white
2. Percent of vacant housing units
3. Median housing value
4. Median family income
5. Percent of population in poverty
6. Percent of households that are linguistically isolated
7. Percent of population with a high school degree

Demographic Score Range

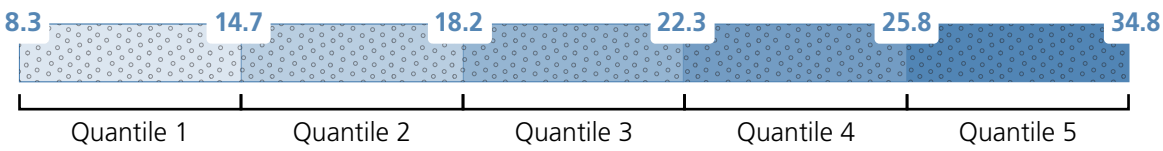


Figure 5

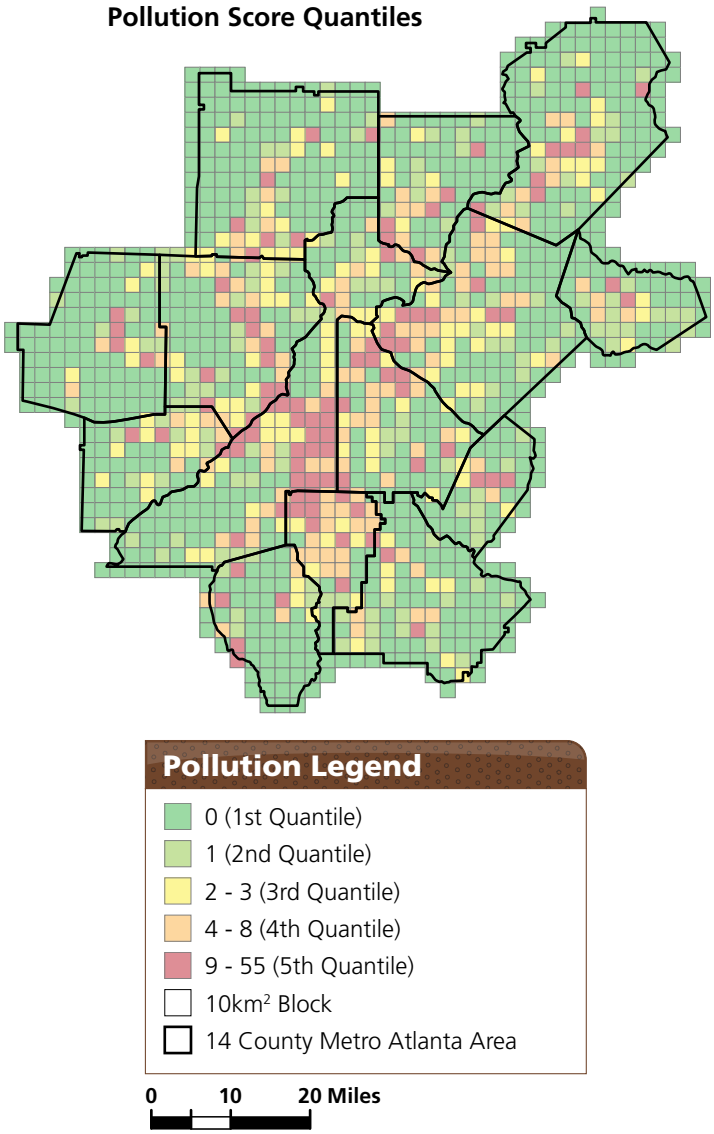
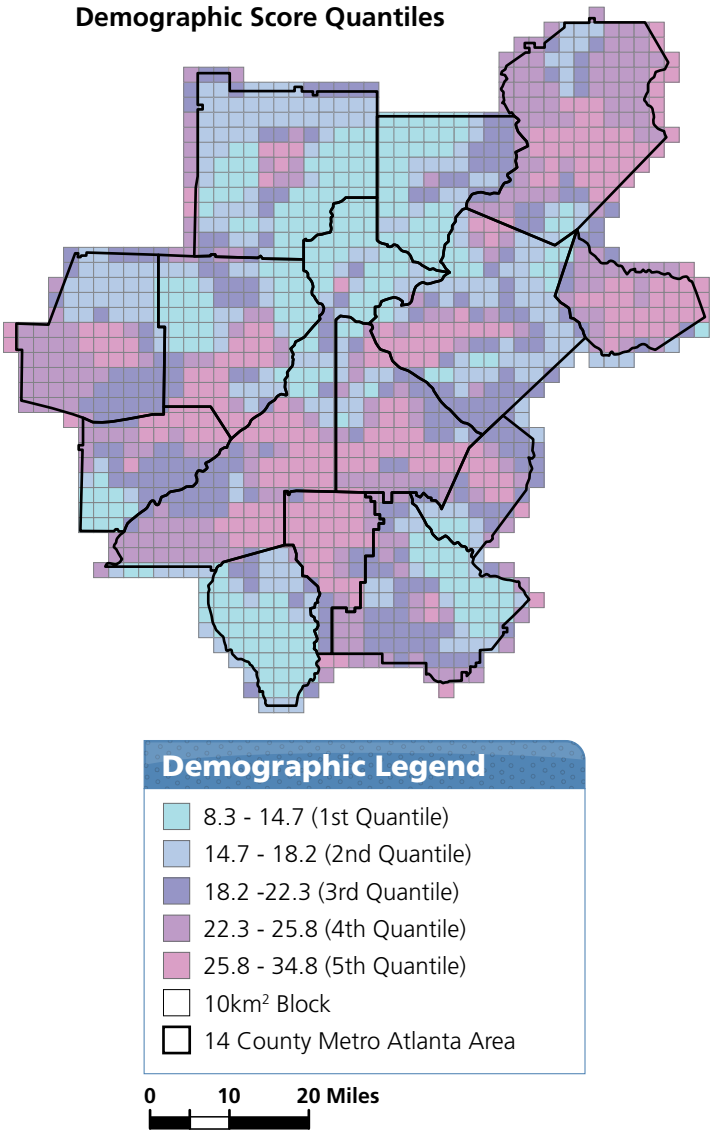


Figure 6



This quantile mapping minimizes bias and/or skewing of the data (Figure 5). Pollution scores with higher summed values were grouped into the higher quantiles and conversely scores with lower relative values were grouped into the lower quantiles.

The same spatial block analysis described above was repeated for each of the seven demographics characteristics and grouped into the five unbiased quantile scores. Next, the seven individual demographic block counts were summed into a total "demographic score" (Figure 6). Demographic scores ranged from 8.3-34.8. Similar to the pollution scores, blocks with highest demographic scores, meaning blocks associated with the most at-risk population (e.g., dominated by non-white population, low property value, or low-income characteristics), were scored in the highest quantile of five and blocks with the lowest demographic scores were scored in the lowest quantile of one (e.g., dominated by white population, high property values, or high income).

Step 2 – Comparison of High-Pollution and Low-Pollution Blocks

The previously generated pollution and demographic score quantiles provide a unified system for comparing demographic to pollution data. While the datasets represent different value types – i.e., demographic values (income, race) do not relate to pollution values (count of RCRA or TRI sites) – it is possible to compare the demographic and pollution values that fall within each quantile.

To see specific patterns across the region, we compared the demographic characteristics of high-pollution and low-pollution blocks. For example, we found that high-pollution blocks contain minority populations that are on average 20 percent higher (44.2 percent) than those of low-pollution blocks (25.4 percent).

Step 3 – Identification of Environmental Justice Hotspots

Finally, environmental justice hotspots were identified as blocks with both pollution and demographic scores in the upper quantiles. Of the 1,282 blocks studied, 52 were determined to be environmental justice hotspots. By summing each block's pollution and demographic scores, a total "environmental justice score" was calculated. Using these scores, we have ranked each of these blocks by their environmental justice scores. Our report takes an in-depth look into the top five ranked environmental justice hotspots in metro Atlanta.

Results

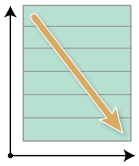
General Patterns of Pollution

Of the seven demographic characteristics analyzed across the region, four have demonstrated a direct correlation to pollution points: 1) race (percent non-white); 2) linguistic isolation; 3) poverty; and 4) vacant housing levels. Median housing values, high school graduation rates, and median family incomes did not demonstrate a discernible correlation to pollution points (see Maps 3 and 4).

Race is the demographic characteristic with the most direct correlation to pollution. As Figure 7 illustrates, blocks with a minority rate over 75 percent on average contain more than twice the number of pollution points as a block in which minorities make up less than 25 percent of the population. Linguistic isolation also correlates strongly to pollution. A block in which more than 20 percent of households are linguistically isolated contains on average more than three times the pollution points as those with a rate at 5 percent and lower (Figure 8).

Poverty rates also rise with the average number of pollution points. Blocks with poverty levels above 20 percent contain on average almost six pollution points, compared to blocks with poverty rates under 5 percent that have only two pollution points (Figure 9). The same is true for vacant housing rates, where blocks with rates above 15 percent contain significantly more pollution points than those with lower vacancy levels (Figure 10).

Direct correlation: As one number increases, so does the other.
Example: as height increases so does weight (both numbers going up).



Indirect correlation: As one number increases, the other number decreases.
Example: as the days become longer we use less indoor lighting.

Direct Correlation

Figure 7

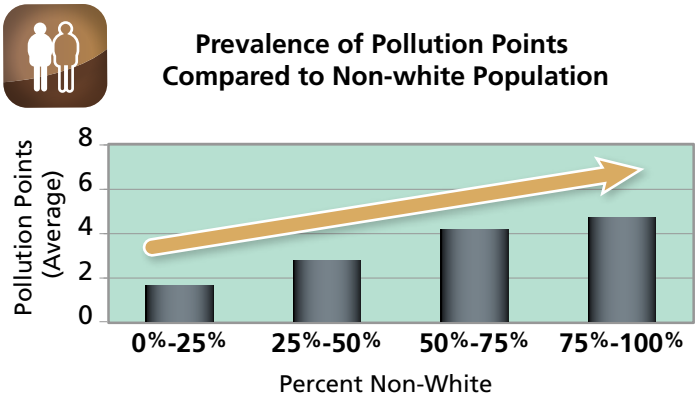


Figure 8

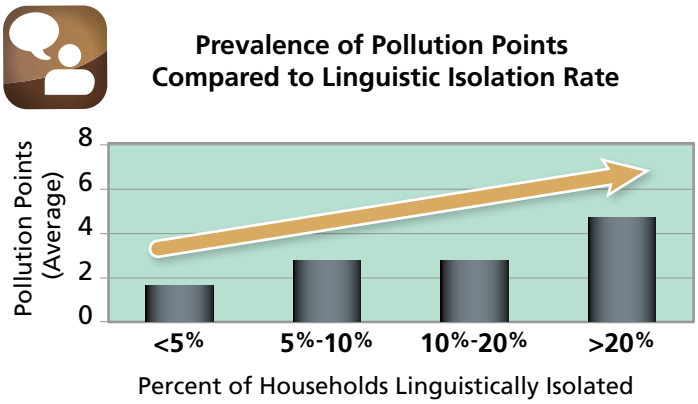


Figure 9

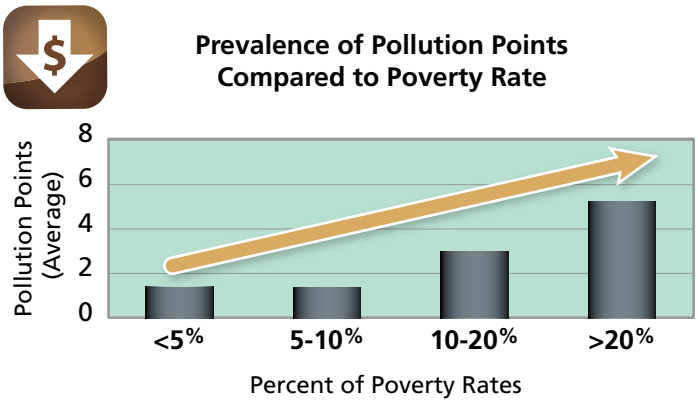
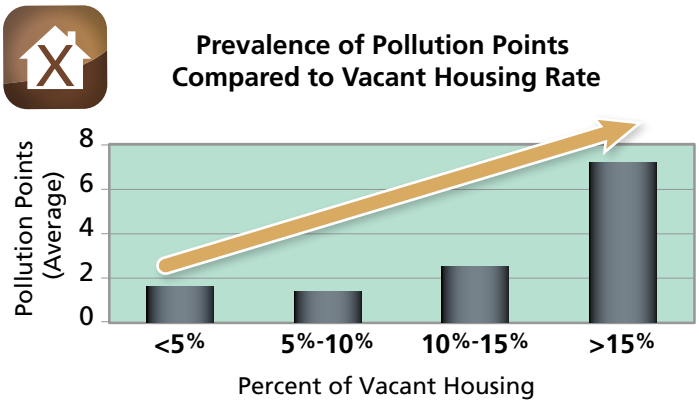


Figure 10



Indirect Correlation

Figure 11

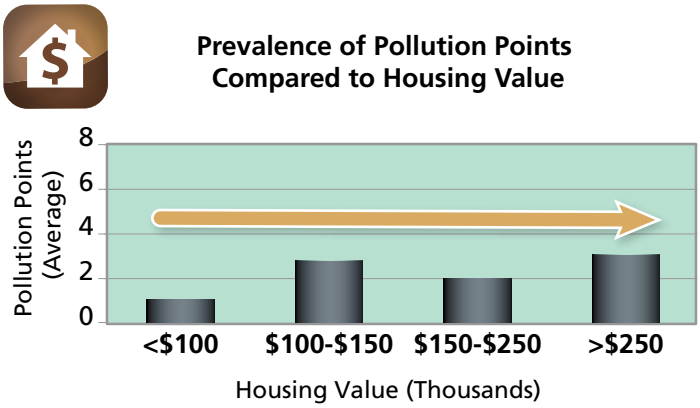


Figure 12

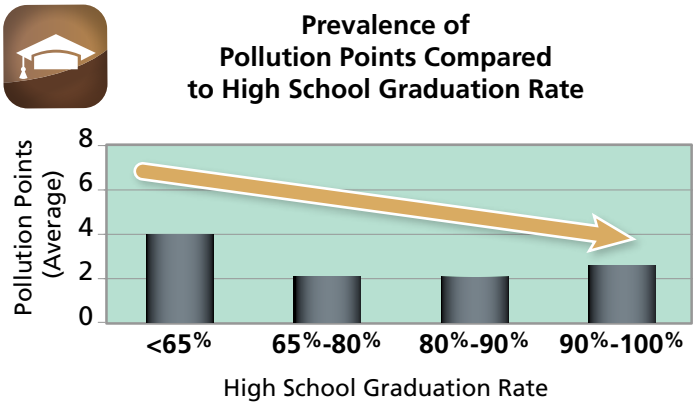
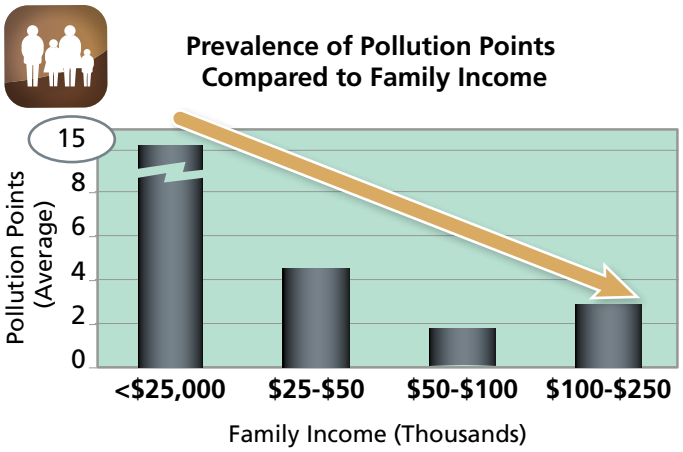


Figure 13



Although not directly correlated across all income levels, there is a clear correlation between people with incomes at $25,000 and lower and their proximity to points of pollution. At that income level, people live near a remarkable 15 pollution points on average (Figure 13). High school graduation rates do not vary greatly in relation to pollution generally, but blocks with graduation rates below 65 percent contain almost twice the number of pollution points compared with blocks with rates above 80 percent (Figure 12).

Housing values were the only characteristic with an inverse relationship to pollution. Homes valued above $250,000 have, on average, slightly more pollution points than those valued at $100,000 to $150,000 and almost three times more than homes valued below $100,000 (Figure 11).

Patterns of High-Pollution and Low-Pollution Blocks

Of the 1,282 blocks in the region, 741 were identified as low-pollution blocks (Figure 16) with no pollution points and 105 were identified as high-pollution blocks with nine or more pollution points (Figure 15). High-pollution blocks are in the upper quantile (1/5th) in the region for the number of pollution points while low-pollution blocks are in the lower quantile.

An examination of our results beyond overall patterns of pollution reveals that the demographic traits of a low-pollution block vary greatly from those in a high-pollution block. Low-pollution blocks have an average minority population of 25.4 percent, while the average minority population of the high-pollution blocks is nearly double at 44.2 percent (Figure 14).

On average, 8.6 percent of the population in high-pollution blocks is linguistically isolated, compared with 3.9 percent in the low-pollution blocks, a 56 percent gap. Poverty rates in high-pollution blocks are almost 33 percent higher than in low-pollution blocks. Vacant housing rates are also 22 percent higher in high-pollution blocks.

Although not statistically significant, median housing values in low-pollution blocks are almost $15,000 higher than in high-pollution blocks while median family incomes in these blocks are close to $2,000 higher. The population with a high school degree is only slightly higher in low-pollution blocks than in high-pollution blocks.

Figure 14

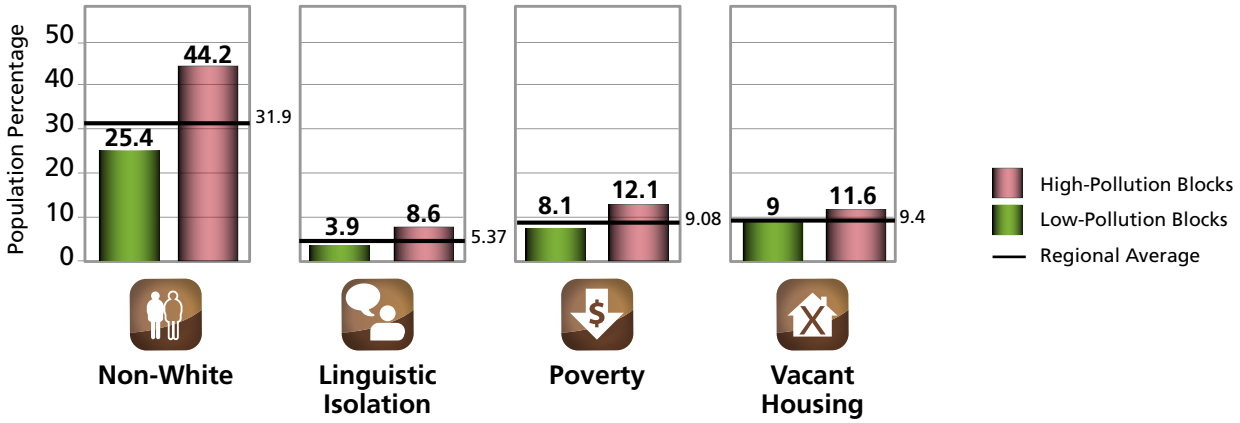


Figure 15 **High-Pollution Blocks**

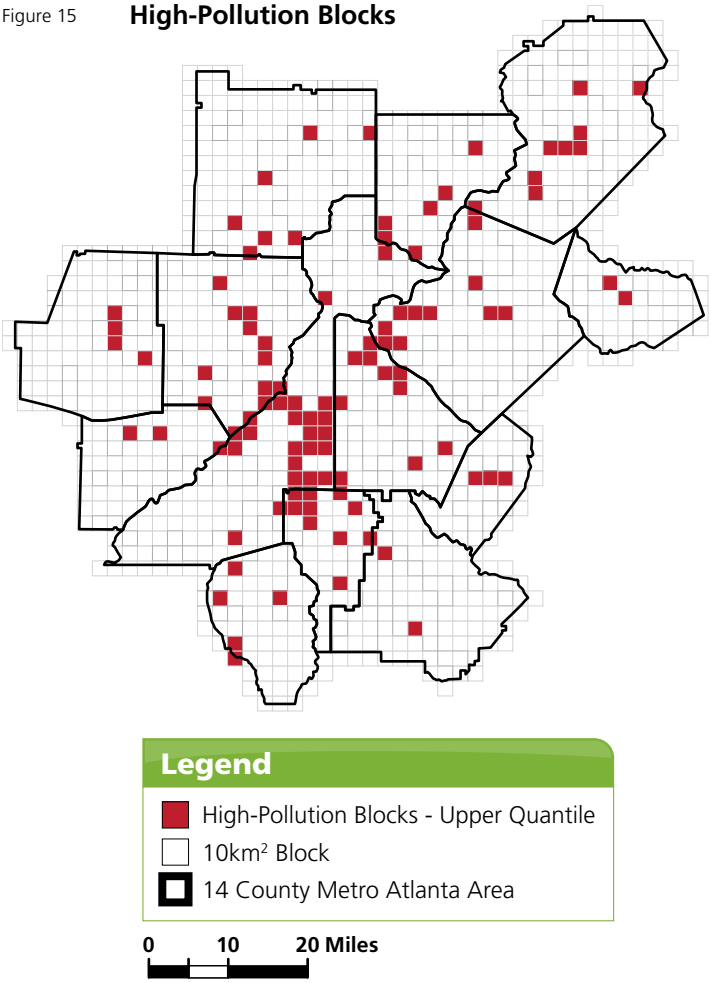
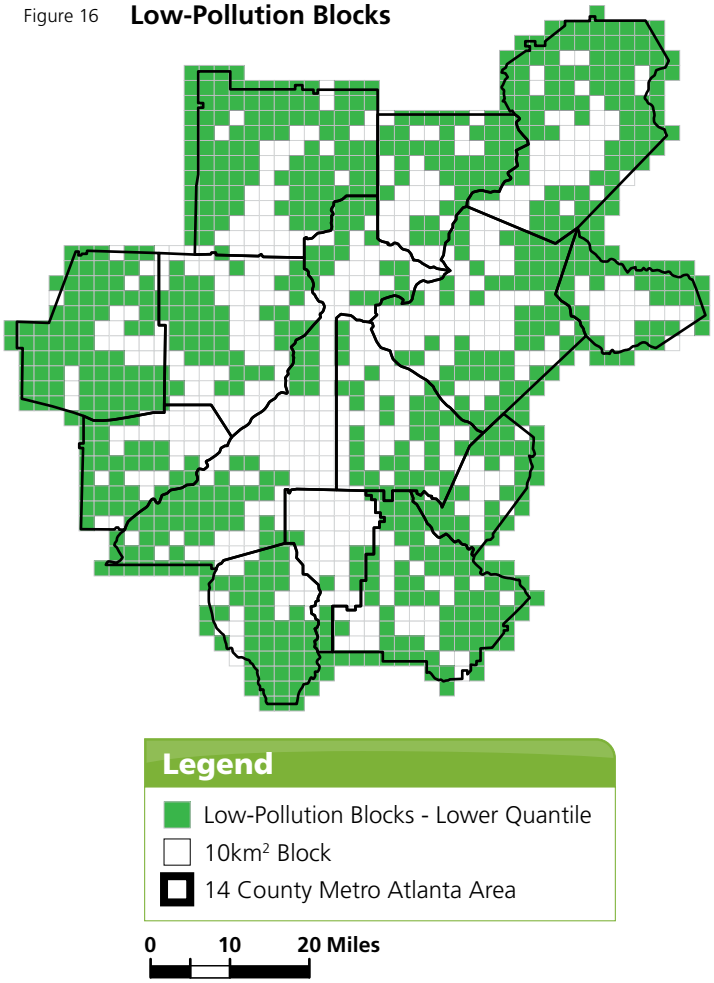


Figure 16 **Low-Pollution Blocks**



Environmental Justice Hotspots in Metro Atlanta

Environmental justice hotspots are the blocks that contain the most pollution points, poorest economic conditions, highest linguistic isolation rates, and/or the largest minority populations in the metro Atlanta region. To qualify as a hotspot, the block must fall in the top quantile (1/5th) for both pollution points and overall demographic characteristics in the region. We identified 52, or about 4 percent, of all of the blocks in metro Atlanta as environmental justice hotspots. The hotspots are ranked by their total environmental justice score from 1 to 52 (Figure 17).

As Figure 18 indicates, Fulton with 13, Clayton with 9, and Cobb with 7 are the top three counties where hotspots are located. Fayette, Forsyth, and Henry counties do not contain any environmental justice hotspots.

Hotspot Ranking

1) Fulton/Cobb
2) Cherokee
3) DeKalb
4) Fulton
5) Douglas
6) Fulton
7) Fulton
8) Clayton
9) Fulton
10) Clayton
11) DeKalb/Gwinnett
12) Hall
13) Fulton
14) Fulton
15) DeKalb/Fulton
16) Rockdale
17) Clayton
18) Fulton
19) Clayton
20) Rockdale
21) Hall
22) Fulton
23) Cobb
24) Cobb
25) Fulton
26) Hall
27) Clayton
28) Cobb/Douglas
29) Gwinnett
30) Gwinnett
31) Clayton/Henry
32) DeKalb/Clayton
33) Rockdale
34) Fulton/Clayton
35) Paulding
36) DeKalb
37) Gwinnett
38) Barrow
39) Cobb
40) Hall
41) Clayton
42) Fulton
43) DeKalb
44) Fulton/Cobb
45) Fulton
46) Fulton
47) Cobb
48) Hall
49) Paulding
50) DeKalb
51) Fulton/DeKalb
52) Barrow

Figure 17

Environmental Justice Hotspots

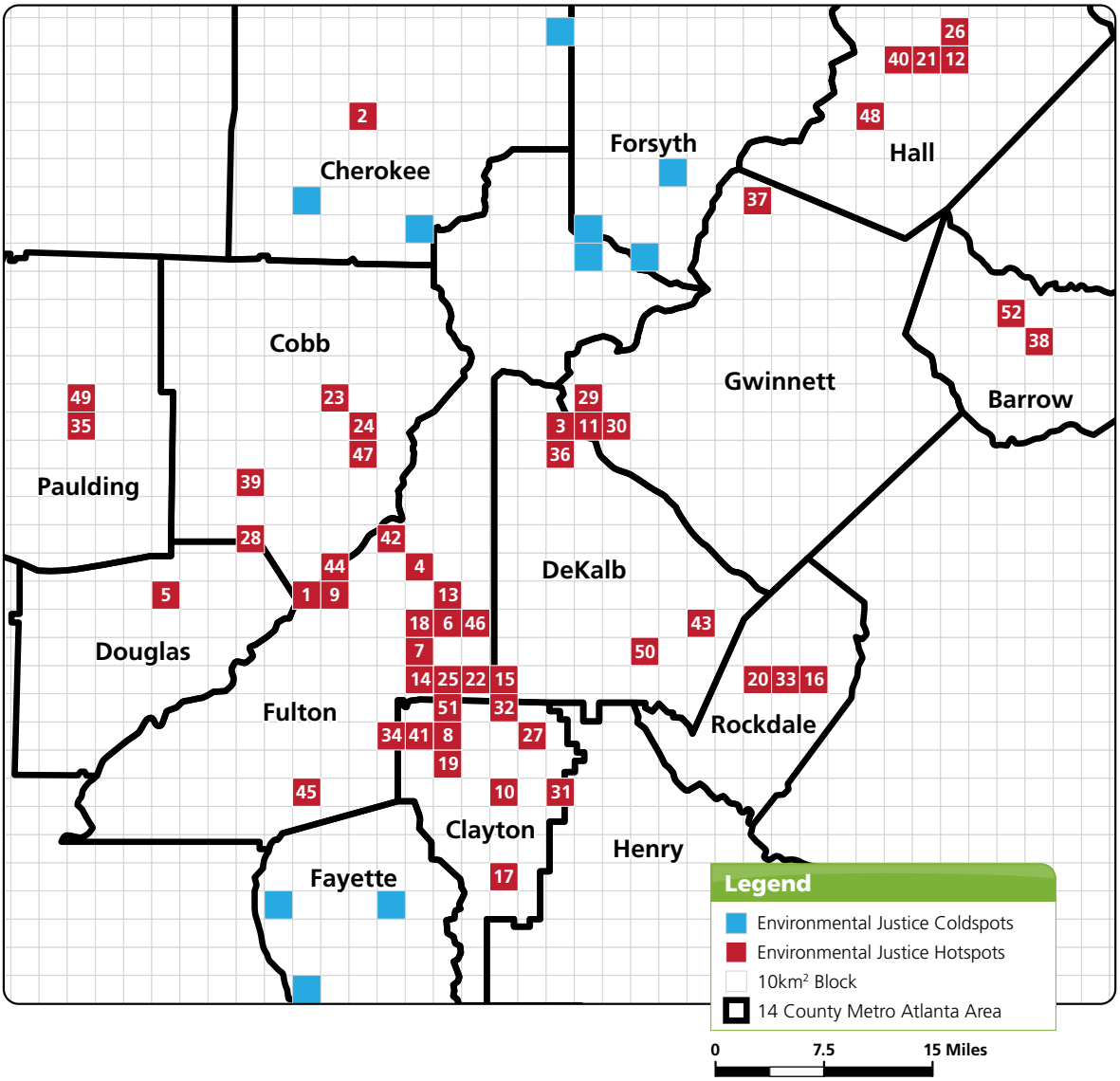
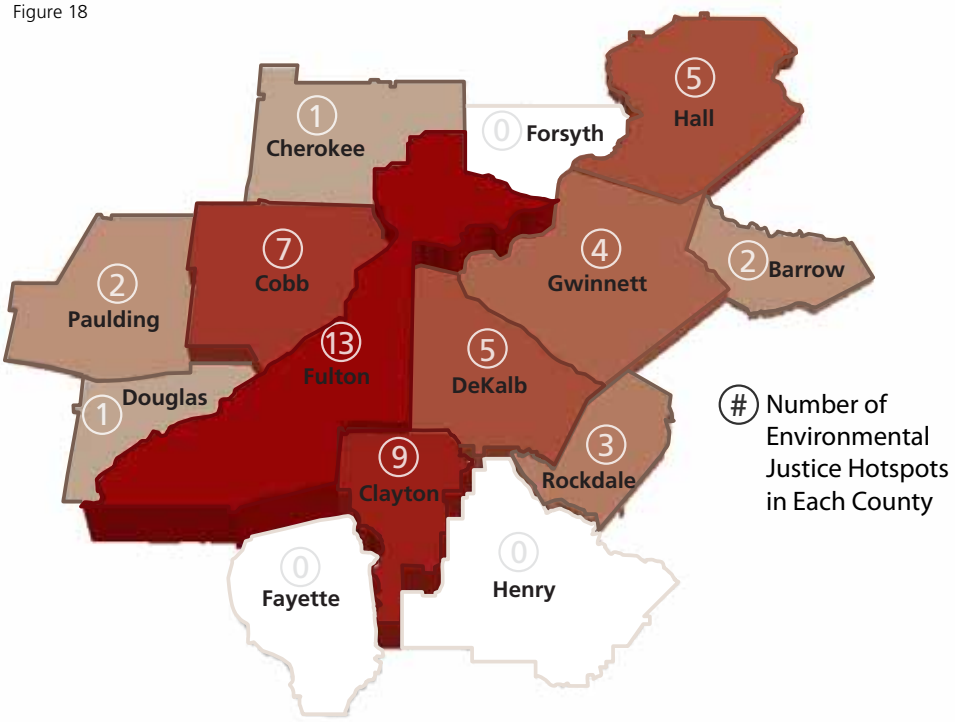


Figure 18



Theoretically, if all residents were impacted by pollution equally, hotspots and coldspots would exist in the same frequency. However, they do not and there are five times more hotspots than coldspots.

Environmental Justice Coldspots

Environmental justice coldspots are blocks in the lower quantile for demographic scores but also in the upper quantile for pollution point scores (Figure 17). These are largely areas where white populations with positive economic characteristics are living in close proximity to a high number of pollution points.

Ten blocks in metro Atlanta have been identified as environmental justice coldspots. In contrast, there are 52 environmental justice hotspot blocks in the highest quantile for both demographics and pollution points. Theoretically, if all residents were impacted by pollution equally, hotspots and coldspots would exist in the same frequency. However, they do not and there are five times more hotspots than coldspots. Thus, blocks which contain the most points of pollution in metro Atlanta are much more likely to be populated by minorities, the linguistically isolated, and the economically disadvantaged than whites and the economically advantaged.

Seven of the ten blocks are located in northern metro Atlanta in Cherokee, Forsyth and northern Fulton counties. Most of these blocks contain a significant number of pollution points due to multiple environmental violations.

Three other coldspot blocks are located in Fayette County. All have a high number of air pollution sites and violations.

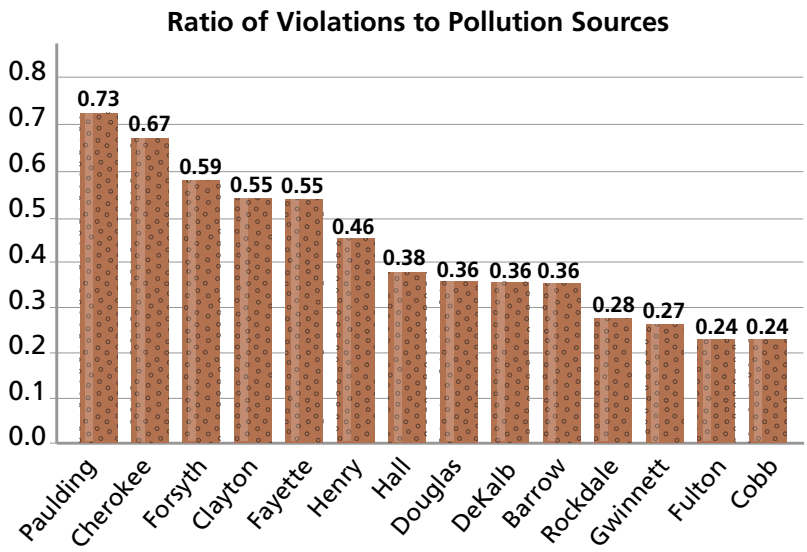


Figure 19

Violations of Environmental Laws

Violations of environmental laws are one of the eight types of pollution points calculated in this report. The EPA and EPD jointly enforce environmental laws in Georgia. Data regarding violations and enforcement actions is available for public review by these agencies. These violations include, among other things, sanitary sewer overflows, hazardous waste permit violations, and air permit exceedances.

For this report, permit violations and formal enforcement actions taken by either EPA or EPD for the three year period of 2008-2011 were included as pollution points (Figure 20). In an effort to exclude any clerical violations, such as a failure to file proper paperwork, only violations or enforcement actions determined to be of a substantive nature were included as pollution points.

Paulding and Cherokee County have the highest ratios of violations to pollution points due largely to Clean Water Act violations. Cobb, Fulton and Gwinnett counties have the fewest reported violations relative to the number of pollution points (Figure 19).

Importantly, we excluded from the report all Clean Water Act violations that were part of an EPA and EPD joint enforcement action against DeKalb County during this time period. This action was brought against DeKalb County for more than 800 sanitary sewage overflows (SSOs) (Figure 20). The inclusion of this high number of Clean Water Act violations would have skewed our results and therefore were not included as pollution points. However, all of other violations reported in DeKalb County were included in our analysis.

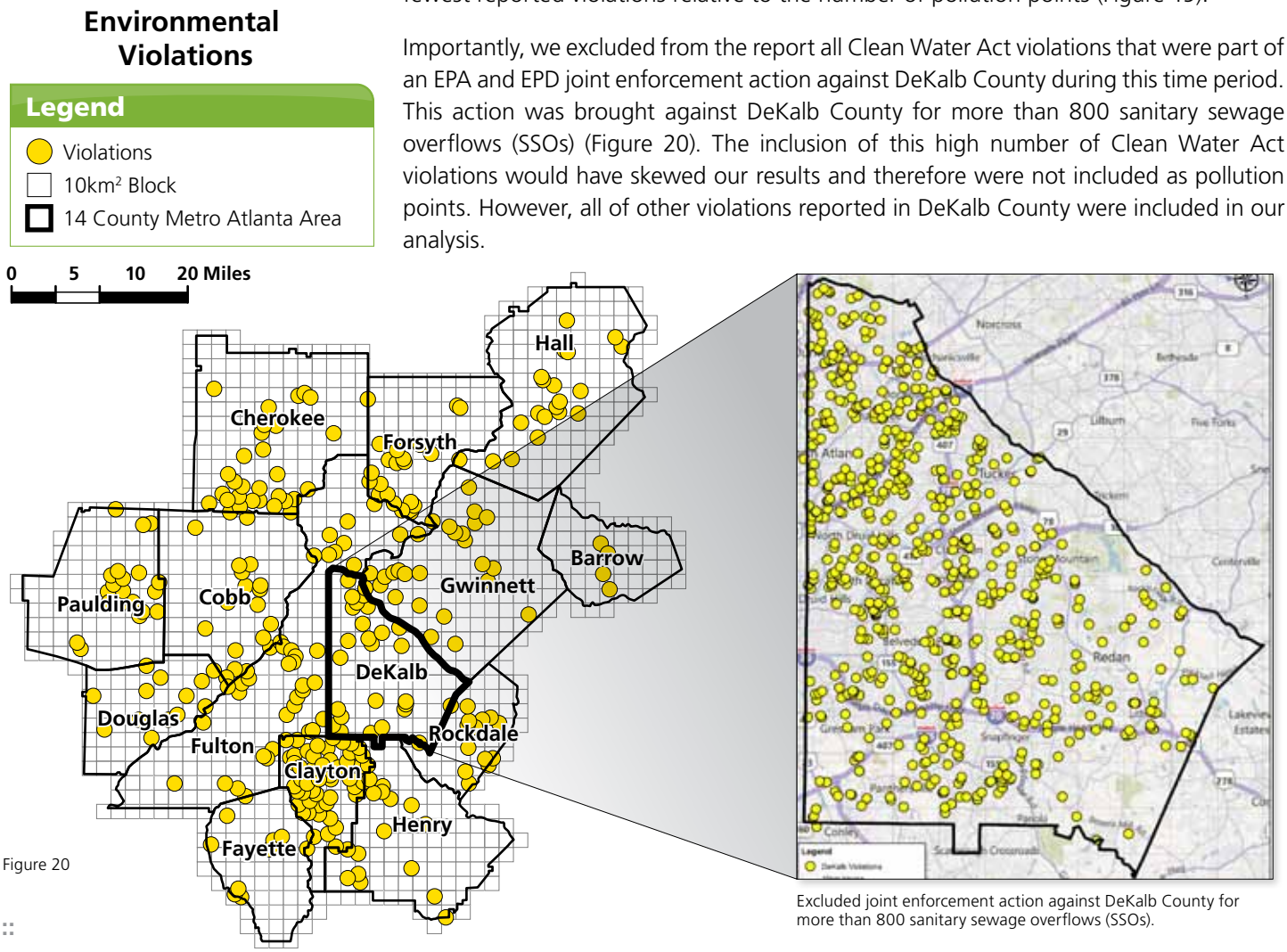


Figure 20

Excluded joint enforcement action against DeKalb County for more than 800 sanitary sewage overflows (SSOs).

Understanding the Top Five Environmental Justice Hotspots

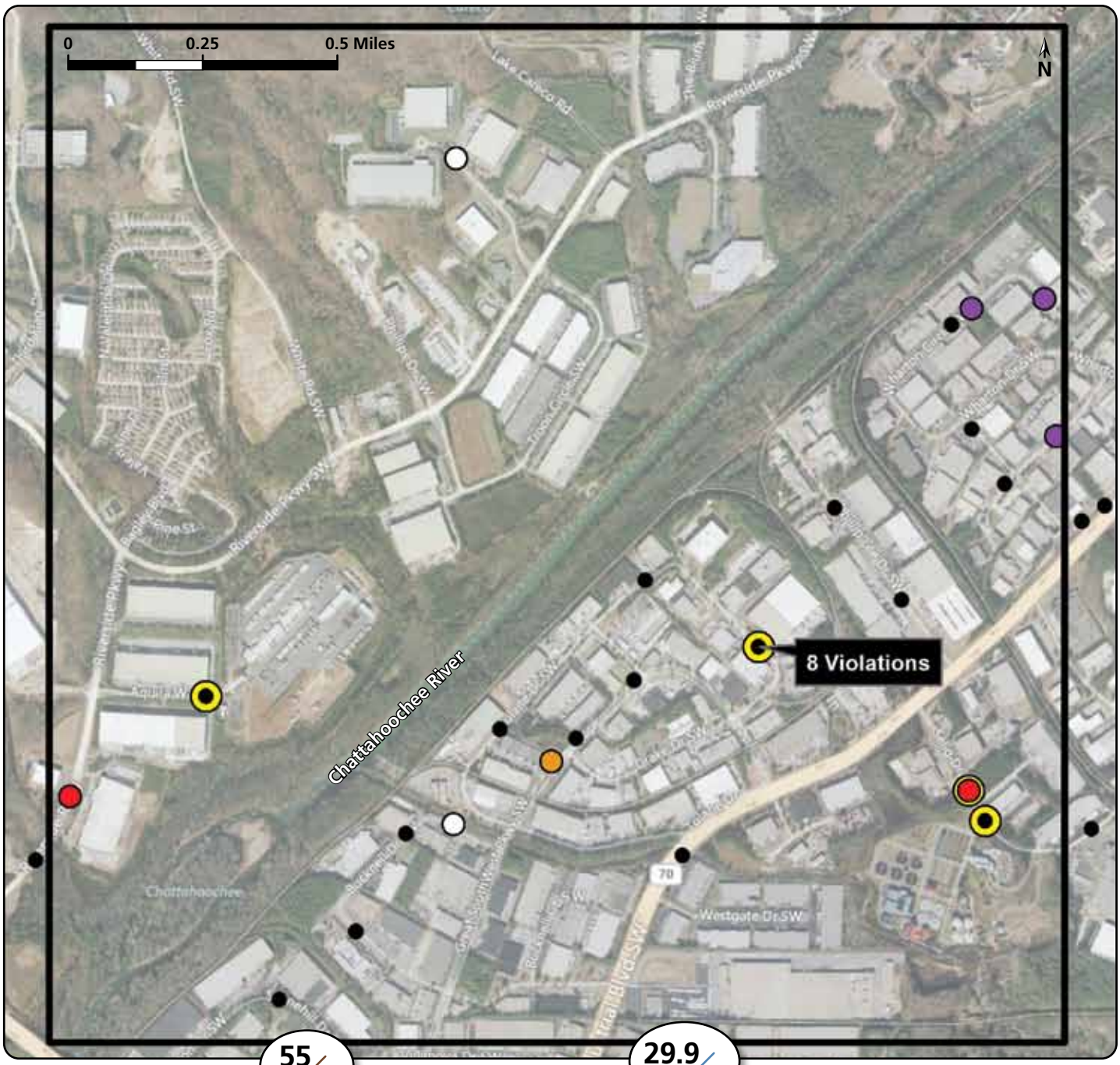
There are no benefits to living in close proximity to pollution. Breathing air from a factory that releases cancer-causing chemicals or living near the site of a toxic release can greatly increase a person's health risks and reduce his quality of life. It should not be an accepted cost of doing business that minorities, those who are linguistically isolated, or those living in poverty will live closer to polluting facilities than others. Recognizing that these areas exist is the first step toward understanding the dynamics and politics of permitting and zoning that allow polluting industries to be located disproportionately in areas where populations are overburdened by social and economic disadvantage.

Out of nearly 1,300 blocks in the metro Atlanta area, only 52 are in the highest quantile for both pollution and demographic characteristics. Here, we take an in-depth look at the five highest ranked environmental justice hotspots. Of the 52 hotspots, these 5 ranked highest because of extraordinarily high numbers of pollution points and demographic characteristics that reveal high minority rates, language isolation, and/or depressed economic conditions.

Metro Atlanta Regional Demographic Averages

High School Grad Rate	86.4%
In Poverty	9.1%
Median Family Income	$74,145
Median Housing Value	$187,038
No English Proficiency	5.4%
Non-white	31.9%
Vacant Housing	9.4%

Figure 21



Pollution Points

55/55

Air Pollution Sites	**19**
Hazardous Waste Inventory Sites	3
Landfills	0
RCRA Haz Waste Storage Sites	0
Superfund Sites	2
Toxic Release Inventory Sites	2
Violations	**27**
Water (NPDES) Sites	2

Demographics

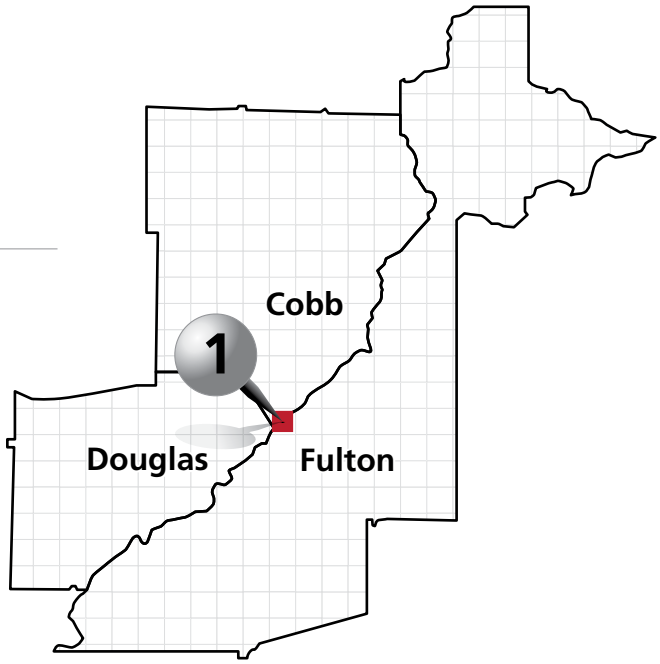
29.9/35

High School Grad Rate	84%
In Poverty	12.6%
Linguistically Isolated	6.1%
Median Family Income	**$50,164**
Median Housing Value	$144,000
Non-white	**86.6%**
Vacant Housing	**20.4%**

Legend

- Air Pollution Sites
- Hazardous Waste Inventory Sites
- Landfills
- RCRA Haz Waste Storage Sites
- Superfund Sites
- Toxic Release Inventory Sites
- Violations
- Water (NPDES) Sites
- EJ Hotspot

Hotspot #1



Intersection of Cobb, Douglas, and Fulton Counties

The land around a single 1.5 mile stretch of Fulton Industrial Boulevard ranked highest for its combined pollution and demographic scores. Once the largest and most prestigious warehousing and transportation building concentration east of the Mississippi, it is now home to a striking intersection of the region's highest pollution point rates, highest minority rates, and most depressed economic conditions.[47] This area, approximately between Cascade Road and its intersection with Bakers Ferry Road, contains 55 pollution points, more than any other block in metro Atlanta (Figure 21). Our analysis reveals that close to 9 out of 10 residents are minorities, average income levels are approximately $25,000 below the regional average, and vacant housing rates are double the average across the metro Atlanta region.

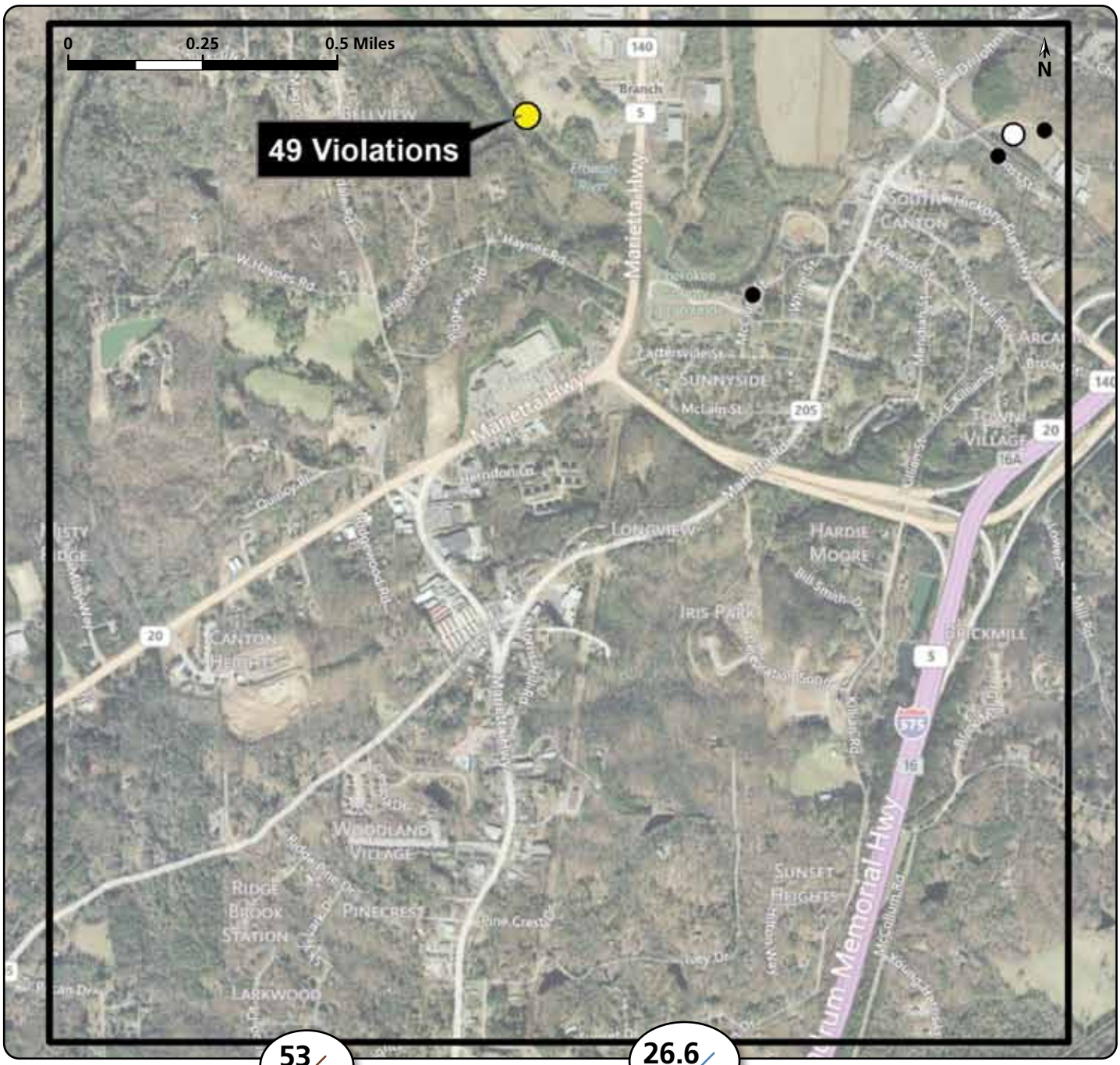
This block is also home to a three mile stretch of the Chattahoochee River, one of metro Atlanta's greatest natural resources and its primary source for drinking water. Known as the "lifeblood" of the metro Atlanta region, the Chattahoochee River runs less than a mile from most of these pollution points.

In this block, 19 air pollution sources are permitted, as are three Hazardous Site Inventory (HSI) locations and two TRI sites. One example of these sites is the Unitog Company. Placed on the HSI in 2001, it was the site of a release into groundwater of vinyl chloride, a known cancer causing agent.[48] According to EPD, this site is not up to compliance standards but investigations are being conducted to determine how much cleanup is necessary for soil and groundwater.

A remarkable 27 environmental violations have occurred between 2008 and 2011 in this hotspot. Heritage-Crystal Clean racked up 8 violations here by repeatedly violating the RCRA, a law dictating how hazardous wastes should be handled. Records show violations for improper general standards and emergency procedures, as well as mishandling materials. EPD has taken multiple informal and formal enforcement actions against the company for these violations but, according to public records, no financial penalties were imposed.

Multiple Clean Water Act and Clean Air Act violations have been reported in the same block at the Utoy Creek Water Reclamation Center, a wastewater treatment facility. Data shows violations at this City of Atlanta-owned facility for emissions requirements and discharges of ammonia and nitrogen at amounts in excess of its Clean Water Act permit. In 2011, the facility was fined $2,500 by EPD for Clean Air Act violations.

Figure 22



53/55

Pollution Points

Air Pollution Sites	3
Hazardous Waste Inventory Sites	0
Landfills	0
RCRA Haz Waste Storage Sites	0
Superfund Sites	0
Toxic Release Inventory Sites	1
Violations	**49**
Water (NPDES) Sites	0

26.6/35

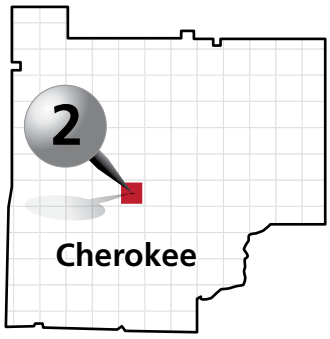
Demographics

High School Grad Rate	**63.4%**
In Poverty	**25.4%**
Linguistically Isolated	**21.9%**
Median Family Income	**$38,731**
Median Housing Value	$163,200
Non-white	21.8%
Vacant Housing	**14.8%**

Legend

- Air Pollution Sites
- Hazardous Waste Inventory Sites
- Landfills
- RCRA Haz Waste Storage Sites
- Superfund Sites
- Toxic Release Inventory Sites
- Violations
- Water (NPDES) Sites
- EJ Hotspot

Hotspot #2



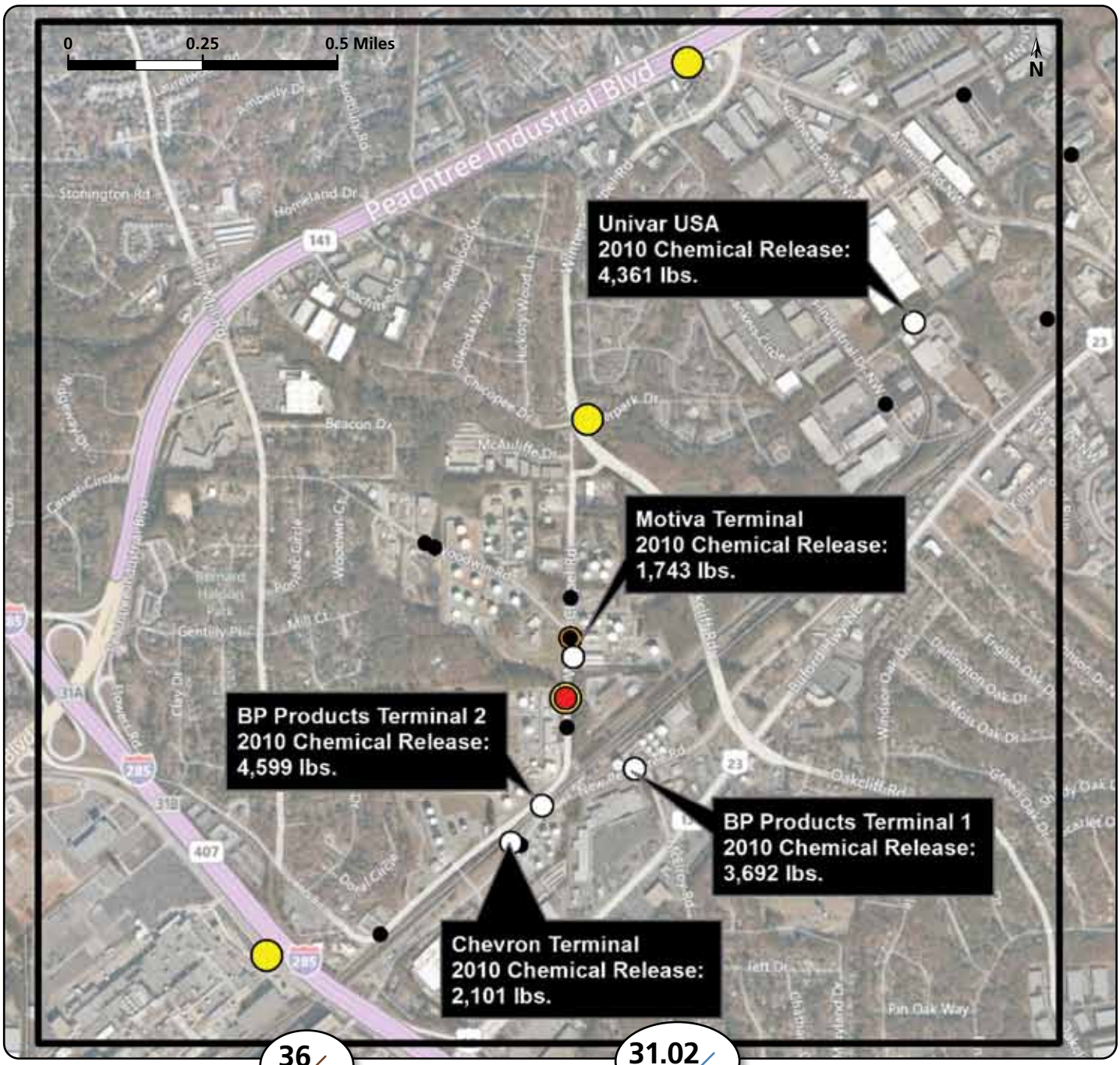
Central Cherokee County

Cherokee County experienced unprecedented growth in recent years. Canton, the county seat, saw an almost 200 percent population surge between 2000 and 2010.[49] With this growth comes an additional demand on the area's wastewater treatment systems. Fifty-three pollution points were identified in this hotspot and 49 of these points represent violations of the City of Canton Water Pollution Control Plant's Clean Water Act permit (Figure 22).

The City of Canton reported continuous Clean Water Act violations at its plant between 2008-2011. These include violations for fecal coliform, phosphorus, and nitrogen in levels exceeding permit limits, all of which negatively impact water quality. The city was fined $3,000 by Georgia's EPD on July 26, 2011 for its Clean Water Act permit exceedances.

Little more than 20 percent of this block's residents are minorities, but its demographic score is in the upper quantile because high school graduation rates are 20 percent lower than the regional average, a quarter of all residents are living in poverty, and more than 20 percent of households are linguistically isolated.

Figure 23



36/55

Pollution Points

Air Pollution Sites	**11**
Hazardous Waste Inventory Sites	0
Landfills	0
RCRA Haz Waste Storage Sites	0
Superfund Sites	1
Toxic Release Inventory Sites	5
Violations	**18**
Water (NPDES) Sites	1

31.02/35

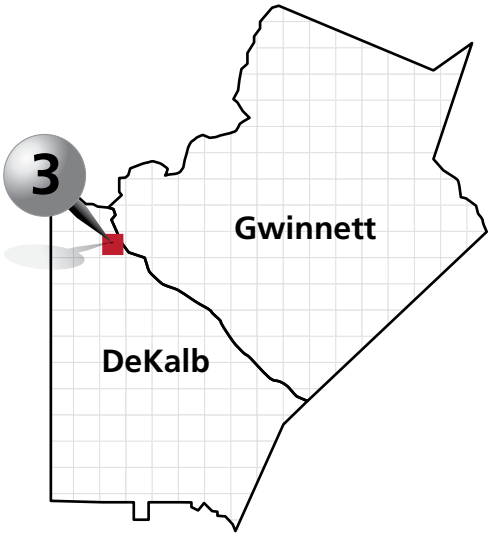
Demographics

High School Grad Rate	**68.2%**
In Poverty	**26.5%**
Linguistically Isolated	**45%**
Median Family Income	**$36,250**
Median Housing Value	$139,300
Non-white	60.3%
Vacant Housing	**16.3%**

Legend

- Air Pollution Sites
- Hazardous Waste Inventory Sites
- Landfills
- RCRA Haz Waste Storage Sites
- Superfund Sites
- Toxic Release Inventory Sites
- Violations
- Water (NPDES) Sites
- EJ Hotspot

Hotspot #3



Intersection of Northeastern DeKalb and Western Gwinnett Counties

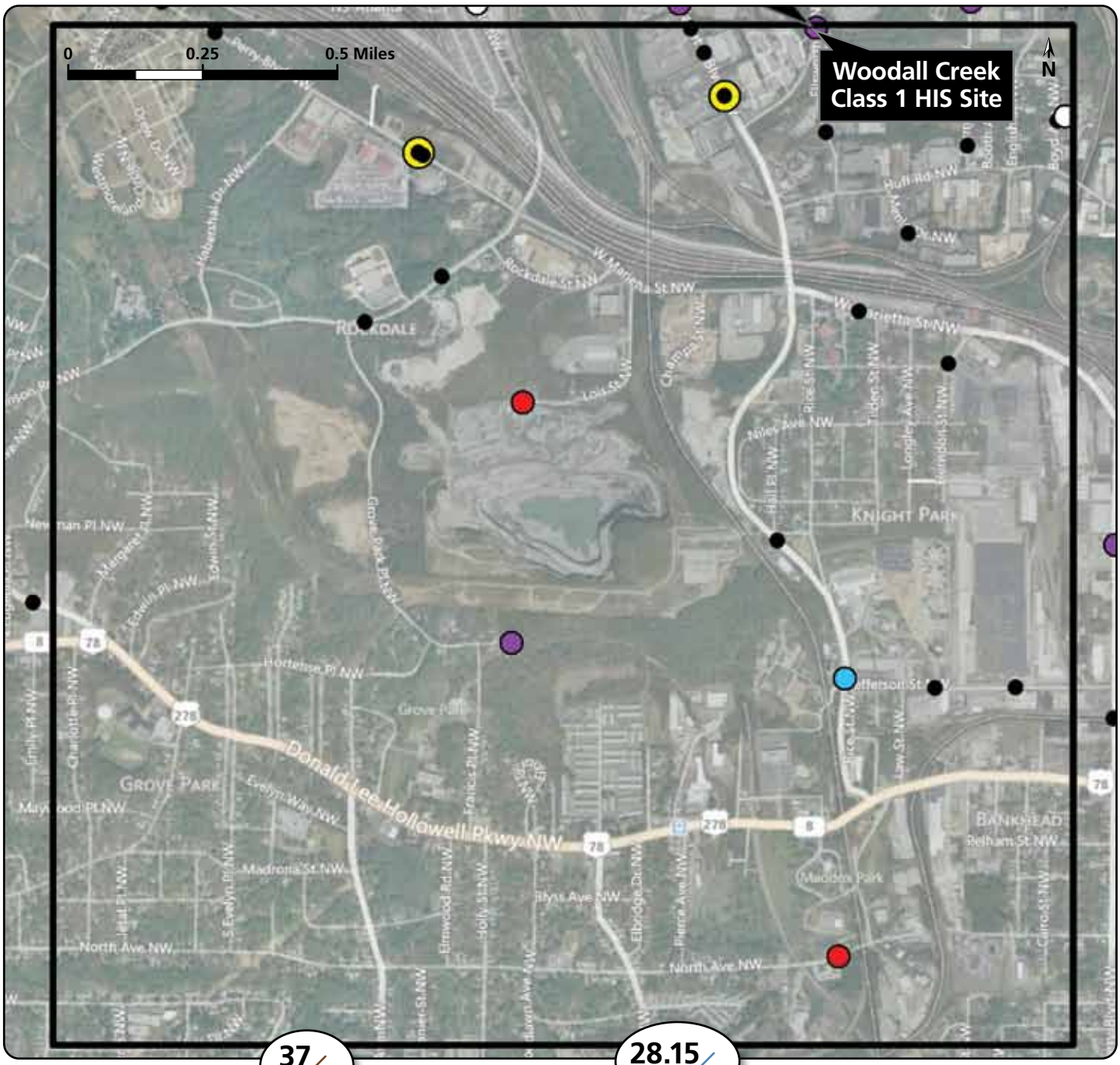
The area near a two-mile stretch of Buford Highway at the intersection of DeKalb and Gwinnett counties came in as the third ranked hotspot. Buford Highway is a bustling retail area, reflecting remarkable ethnic intermingling and has the greatest number of ethnic-owned businesses in the Southeast.[50] The area is also an industrial center where numerous air pollution and toxic release sites can be found (Figure 23).

Companies reporting toxic chemical releases include British Petroleum's (BP) two Doraville facilities. They reported releasing a combined total of 8,921 pounds of toxic chemicals on-site in 2010. Records show that BP also repeatedly violated the Clean Air Act and Clean Water Act throughout 2008 and 2009. Nearby, the Motiva Terminal facility, a TRI site, reported 1,743 pounds of toxics released in 2010 and is also listed by EPA as a Superfund site.

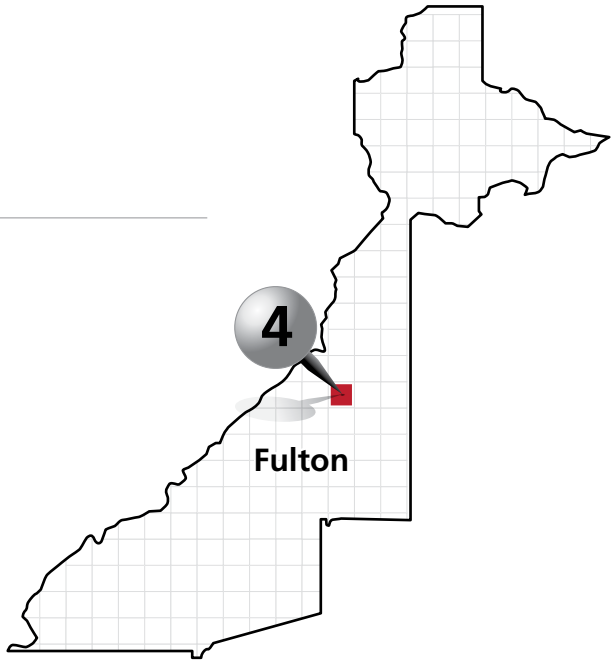
A middle school is located less than one mile from this cluster of pollution points.

Many of the people living near these toxic releases are minorities with difficulty speaking English. In comparison to most of metro Atlanta, this hotspot has extremely high minority and linguistic isolation rates, as well as low high school graduation rates. In fact, almost half of the block's residents are linguistically isolated. Also, family incomes are less than half those for the average family living in metro Atlanta.

Figure 24


0
0.25
0.5 Miles
Woodall Creek
Class 1 HIS Site
N
ROCKDALE
KNIGHT PARK
GROVE PARK
BANKHEAD
Donald Lee Hollowell Pkwy NW
W Marietta St NW
Hortense Pl NW
North Ave NW
Madonna St NW
Elmwood Rd NW
Holly St NW
Elbridge Dr NW
Pierce Ave NW
Bishop Ave NW
Maddox Park
Grove Park
Belham St NW
Cairo St NW
Law St NW
Jefferson St NW
Hill Pl NW
Niles Ave NW
Rice St NW
Fraser St NW
Longley Ave NW
Evelyn Way NW
Evelyn Pl NW
Emily Pl NW
Charlotte Pl NW
Maywood Pl NW
Newman Pl NW
Margaret Pl NW
Echelin Pl NW
Grove Park Pl NW
Louis St NW
Rockdale St NW
Hull Rd NW
Boyd
Boothe
English
Perry Blvd NW
Holowchak Dr NW
Drake Dr NW
Woodcock Dr NW
Sowin St NW
Hall Pl NW
Franklin Pl NW
Ellsworth
Blake
Champion St NW
Fraser St NW
Fraser St NW
Law St NW
Cairo St NW
Blake NW
Boyd NW
Hull Rd NW
Boothe
English
Boyd
Elsworth
Blake

Hotspot #4



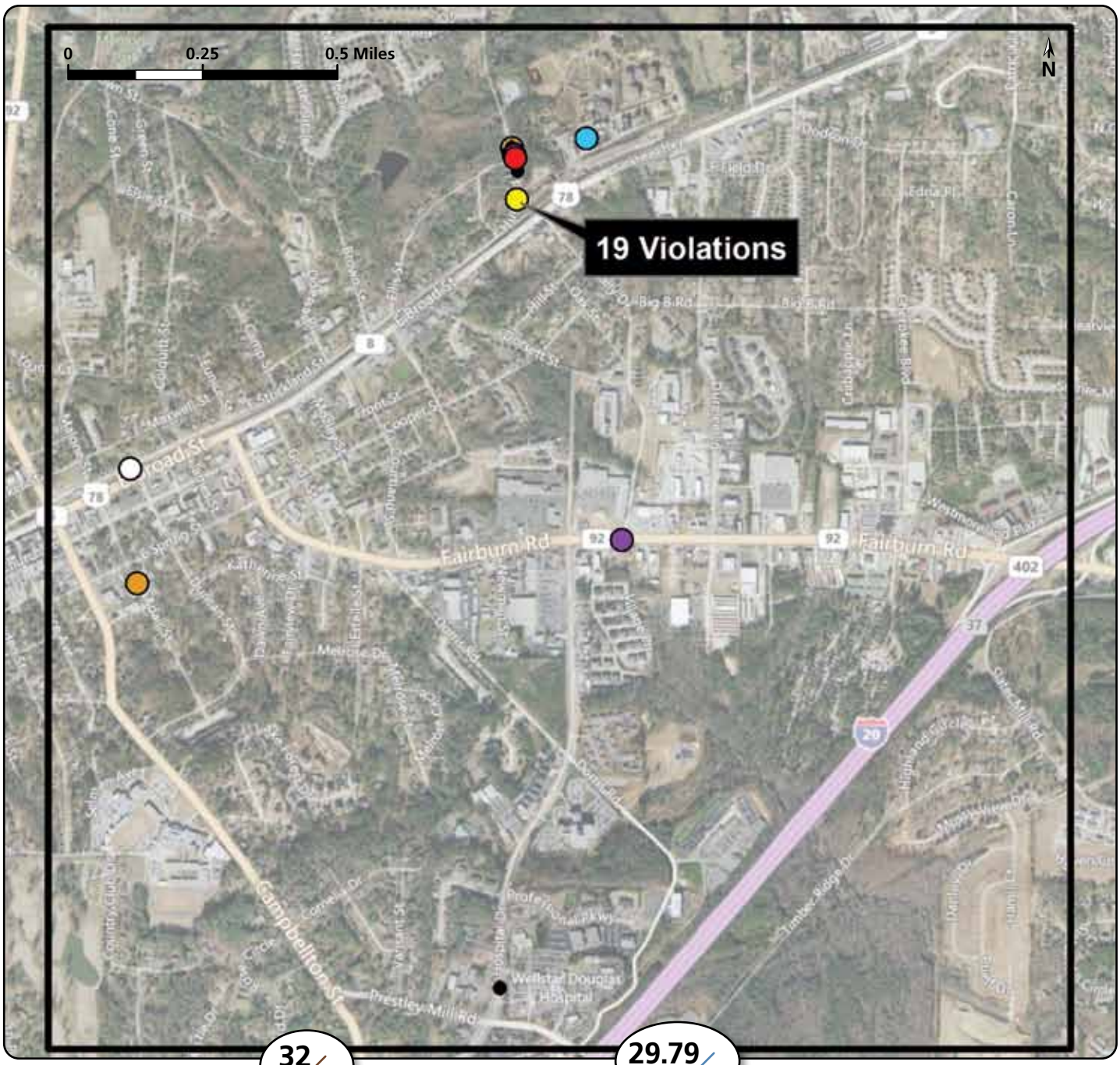
Central Fulton County

According to Atlanta's Beltline plan, the 138 acre Bellwood Quarry, a central feature of the Grove Park neighborhood in northwest Atlanta, will be transformed into a park space twice the size of Piedmont Park. Today, however, Grove Park and its nearby environs contain 37 pollution points (Figure 24).

Vulcan Materials Company has a water pollution permit for its operations at the Bellwood Quarry and more than a dozen air pollution points are located nearby. One of these points, the Perry Boulevard compressed natural gas (CNG) MARTA station, is the top violator in the block. This CNG site repeatedly violated its Clean Air Act permit in recent years. Nearby, the Woodall Creek Site is designated by EPD as a Class I HSI site because four different toxics were released into groundwater. Class I sites are highly prioritized by EPD because of the potential magnitude of the hazardous release.[51]

This block has a large African American population and has both high housing values and high school graduation rates. At the same time, the area's linguistic isolation rate and vacant housing rate are well above regional averages.

Figure 25



Pollution Points

32/55

Air Pollution Sites	4
Hazardous Waste Inventory Sites	3
Landfills	0
RCRA Haz Waste Storage Sites	1
Superfund Sites	3
Toxic Release Inventory Sites	1
Violations	**19**
Water (NPDES) Sites	1

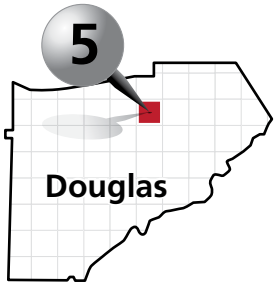
Demographics

29.79/35

High School Grad Rate	88.6%
In Poverty	8.3%
Linguistically Isolated	2.3%
Median Family Income	$69,239
Median Housing Value	$165,700
Non-white	46.1%
Vacant Housing	7.7%

Legend

- Air Pollution Sites
- Hazardous Waste Inventory Sites
- Landfills
- RCRA Haz Waste Storage Sites
- Superfund Sites
- Toxic Release Inventory Sites
- Violations
- Water (NPDES) Sites
- EJ Hotspot



Hotspot #5

Central Douglas County

Thirty-two pollution points are located in central Douglas County, 20 miles west of the city of Atlanta. The majority of these points, including two Superfund sites, three air pollution sites, two hazardous waste sites, one water pollution site, and numerous environmental violation points are located in a small area on Huey Road near its intersection with East Broad Street (Figure 25).

All 19 violations in the block can be attributed to Signal Energy Holdings Corporation, a Pennsylvania-based company. It reportedly violated RCRA repeatedly for its failure to properly handle hazardous waste at its Douglasville facility. The corporation has been in violation of RCRA for the last several years, but has not been penalized for these violations since receiving a $25,000 fine in 2007. The same facility is also listed as a hazardous waste site by EPD because of unsafe releases of benzene and lead.[52]

Three Douglas County schools, two elementary schools and one middle school, are located approximately one mile from this cluster of pollution points.

Also on Huey Road, the Arivec Chemicals facility is designated by EPD as a Class I HSI site because of lead releases with the capacity to contaminate groundwater.[53] Nearby, Custom Bath Products, a Georgia company, reported the release of approximately 3,500 pounds of the toxic chemical styrene in 2010.

Demographically, the block has a large minority population and housing values approximately $20,000 below the regional average of $187,038.

Recommendations in Response to Patterns of Pollution

Our recommendations below address the patterns of pollution revealed in this study. They are four separate but overlapping paths to a single destination: the adoption of policies and laws integrating environmental justice concerns into the workings of Georgia's state and local governments. Integration can happen if the four parties identified here work collaboratively: 1) advocates; 2) business and government leaders; 3) EPA; and 4) EPD. Integrating environmental justice into government workings is possible in many ways, including enhancing public participation measures, revising local planning and zoning activities, and requiring Georgia's EPD to consider whether a proposed facility will result in a disproportionate environmental impact when issuing permits to pollute. Our recommendations provide a starting point and framework for this process.

When reading these recommendations it is important to consider that environmental justice measures are valuable tools in planning for Georgia's economic growth. In fact, environmental justice should be seen as aligned with the growing sustainability movement. Proponents of both movements seek to create livable communities for all people, present and future. The adoption of laws and policies in furtherance of environmental justice are essential to the well-being of a community and its citizens and hold the promise of promoting a society that is both sustainable and just, a society in which people are protected equally from environmental harm.

Recommendation 1:
The creation of an alliance of metro Atlanta environmental justice advocates

The essential foundation for ensuring that environmental justice issues are integrated effectively into governmental decision-making begins with the creation of an alliance of metro Atlanta environmental justice advocates.

Environmental justice organizations in metro Atlanta have successfully organized through various coalitions in the past to advocate for shared goals and they continue to do so. Still, there are many advocates and experts in metro Atlanta diligently pursuing environmental law and justice issues at non-profit law firms and organizations, academic institutions, and other venues that are not participating in these coalitions. Instead, their efforts are often conducted in isolation. This is particularly true in regard to the divide between mainstream environmental and environmental justice organizations. This divide creates an inherent weakness whereby advocates are working independently to solve only small pieces of the larger problem of environmental injustice. Bringing these groups together under a renewed focus on the creation of environmental justice laws and policies at the local and state levels is the most effective way to harness leadership and support.

An alliance of advocates should focus on local policies that can be adopted by city and county governments. This is a critical move because local governments can apply land use planning and zoning authority to mitigate environmental impacts like noise, odor, and traffic and to consider the make-up of an area before allowing a polluting facility to be located nearby. If successful, the group's efforts at the local level can serve as a model for the establishment of a state environmental justice program.

An alliance of advocates should focus on local policies that can be adopted by city and county governments.

First, the group should research and analyze environmental justice laws and policies nationally to determine how best to craft environmental justice measures in metro Atlanta. Many resources are available to the alliance including the National Academy of Public Administration's guidance on the incorporation of environmental justice into local land use planning and zoning.[54]

Second, the alliance should develop guidance for metro Atlanta's local governments on how they can use existing laws and government systems to prevent disparate pollution impacts on minority and low-income communities. This guidance should include model policies and ordinances that can be easily adopted by local governments and integrated into their operations.

Third, the group should look at ways in which local government sustainability and efficiency programs can integrate environmental justice into their missions. This could include a recommendation that local governments integrate environmental justice into their sustainability programs or initiatives.

Fourth, alliance members should develop a targeted plan for the presentation of their guidance and present it to local leaders.

Even with these efforts in place, lawmakers are unlikely to adopt environmental justice laws and policies without support of them by constituents. Alliance members should seek support from residents and grassroots organizations by developing campaigns that support their implementation, such as campaigns for the inclusion of environmental justice in decision-making that can be targeted at targeted localities. Alliance members should also seek support from business owners, highlighting the positive economic effects that can arise from just and sustainable planning, permitting, and enforcement.

In addition to policy and planning work, members of an alliance can work together to provide direct support to residents. This could include public education efforts regarding the ways in which grassroots organizations can participate in the environmental permitting process or a group effort to review and comment on new environmental permits or those up for proposed renewal in hotspot communities. Particular attention should be placed on reaching out to linguistically isolated communities that have greater barriers to public participation than others. The members should also participate in collaborative problem-solving between lawyers, academics, and organizers to create alternative solutions (i.e., public meetings, legal strategies, etc.) when corporations seek to site new pollution sources in vulnerable communities.

Finally, an alliance will surely need outside support to be effective. This can come from visionary funders like non-profit and corporate foundations that are concerned with the health and economic growth of the communities that exist in metro Atlanta. They can successfully encourage the alliance's efforts and those of grassroots organizations by including environmental justice in their funding plans.

Recommendation 2:
The formation of a working group of leaders in business and government to work collaboratively to address how environmental justice issues can be incorporated into decision-making

Change will only happen when committed leaders champion environmental justice policies that lay the groundwork for healthy and economically strong communities. In addition to the creation of an alliance of environmental justice advocates, there is also a vital need for a diverse group of government and business leaders to be assembled at the regional level to begin to work collaboratively to address how environmental justice issues can be incorporated into decision-making.

Opening up a dialogue between businesses and regulators with a focus on environmental justice could produce significant and long-lasting effects in metro Atlanta's communities most burdened by environmental problems and social pressures. Alliance members (Recommendation 1) should solicit members to join this working group with the objective of identifying strategies in the public and private sectors that can ameliorate the patterns of pollution that exist in metro Atlanta today. Working group participants should include business leaders in the region, members of the regulatory and planning community including Georgia's EPD and the Atlanta Regional Commission (ARC), as well as local government representatives.

Once formed, the working group should meet to discuss and investigate the relationship between environmental justice, economic development, and revitalization. The group's goal should be to produce detailed recommendations aimed at businesses and governments for the promotion of sustainable and just practices.[55] For example, the working group may develop a model environmental justice policy that can be adopted by businesses in the region. Such a policy should include commitments to working collaboratively with all stakeholders, including nearby community members, and to minimizing environmental impacts from operations.[56] The group may also coordinate with state regulators, like EPD, to determine how businesses can communicate most effectively with residents when seeking to create or modify polluting facilities. Local governments should also identify measures in furtherance of environmental justice, as it is the responsibility of government to protect its citizens.

The group's goal should be to produce detailed recommendations aimed at businesses and governments for the promotion of sustainable and just practices.

The working group should also collaborate with the alliance to participate in the creation of and advocacy for model environmental justice policies and laws that benefit both environmental justice communities and those invested in the overall success of the region.

As there is no regional body with the power to form such a working group, its creation will require support from local governments and businesses with a desire to address environmental justice. A single entity, such as EPA's Region IV, EPD or the Atlanta Regional Commission (ARC) could take the helm of the working group to ensure that it meets consistently and produces meaningful recommendations that can be practically applied.

EPA should provide direct guidance to EPD regarding the state's authority to properly address environmental justice issues under law, including its authority to conduct a disparate impact review when permitting.

Recommendation 3:
Direct federal funding and guidance to Georgia's state and local governments for the implementation of environmental justice efforts

In recent years the federal government has renewed its support for environmental justice in its own practices and in those of governments and non-profit groups pursuing environmental justice. Still, most states, including Georgia, are delegated authority to implement environmental programs. In fact, delegated states like Georgia are responsible for 90 percent of all environmental permitting and enforcement.[57] Considering this framework, EPA should focus on Georgia as one of a small minority of states without an environmental justice program and directly encourage it to adopt environmental justice laws and policies. It can begin to do so through a three-pronged approach: 1) providing direct guidance to EPD, addressing its authority to consider environmental justice in permitting; 2) inserting meaningful environmental justice goals into federal grant funding; and 3) providing support to local governments to implement environmental justice measures.

In 2011, EPA released "EJ Legal Tools," a guidance document identifying legal authorities under federal environmental statutes that EPA can consider to address environmental justice considerations.[58] These documents are certainly useful for EPA's use when conducting activities such as setting federal pollution standards but they do not directly address a state's ability to utilize environmental laws in permitting. Specifically, they do not address whether a state can deny or modify a permit on environmental justice grounds. In light of EPD's reluctance to acknowledge its authority to address environmental justice in permitting, EPA should provide direct guidance to EPD regarding the state's authority to properly address environmental justice issues under law, including its authority to conduct a disparate impact review when permitting.

EPA should also insert meaningful environmental justice goals into federal grant funds provided to EPD for its operations. EPA certainly has the authority to insert measurable environmental justice goals into its grants and Georgia is subject to accountability and evaluation for the work that it does with these funds.[59] In fact, EPA endorses the use of these funds for "multi-media high priority strategies," including environmental justice.[60] In addition, EPA should encourage Georgia to apply for its State Environmental Justice Cooperative Agreements, which provide funding for states to produce strategies, programs and activities to reduce disproportionate pollution impacts.[61]

Finally, EPA should provide support and guidance to Georgia's state and local governments for the implementation of environmental justice measures. Federal agencies can provide technical assistance, training, and information to help local officials develop and implement policies and laws that enhance public participation and prevent disparate impacts. EPA should also provide more avenues to local governments seeking funds to conduct activities in furtherance of environmental justice.

Recommendation 4:
State environmental decision-makers to adopt an environmental justice policy that promotes the health of all of Georgia's citizens and requires environmental equity in its practices

Georgia remains in a shrinking minority of states that has not adopted a policy or program to directly address environmental disparities. There is a pressing need, as evidenced in this report's results, for it to reevaluate its current practices to render them effective in low-income and minority communities. This will require EPD to: 1) enact an environmental justice policy that promotes the health of all of Georgia's citizens and requires environmental equity in its practices; 2) inform the public of its actions through a meaningful public participation strategy that strengthens the involvement of minority and low-income Georgians in decision-making, including those that are linguistically isolated; and 3) identify and acquire the tools that it needs to incorporate environmental justice in its permitting and enforcement activities.

Advocates outside of state government can be a driving force by creating support for environmental justice measures among residents, businesses, and local governments (Recommendations 1 and 2) and the federal government can guide state efforts (Recommendation 3), but creating a culture that values and implements environmental justice must happen from the top-down. This must start with Georgia's governor, who appoints both EPD's director and members of the Board of Natural Resources, as well as key staff in state agencies.

With their support, EPD can transform its current culture to one in which thoughtful consideration of the environmental impacts on low-income and minority communities is encouraged. This process should include the enactment of an environmental justice policy in which EPD commits to protecting all residents in Georgia from disparate environmental harm. Illinois EPA, another delegated state environmental agency, has done this with its environmental justice policy. Its key goals are:

- to ensure that communities are not disproportionately impacted by degradation of the environment or receive a less than equitable share of environmental protection and benefits;
- to strengthen the public's involvement in environmental decision-making, including permitting and regulation, and where practicable, enforcement matters;
- to ensure that Illinois EPA personnel use a common approach to addressing EJ issues; and
- to ensure that the Illinois EPA continues to refine its environmental justice strategy to ensure that it continues to protect the health of the citizens of Illinois and its environment, promotes environmental equity in the administration of its programs, and is responsive to the communities it serves.[62]

...policy should make a clear statement and ensure that minorities, linguistically isolated, and low-income residents are involved in all levels of environmental decision-making.

EPD's environmental justice policy should make a clear statement that it will actively consider environmental justice in its operations and ensure that minorities, linguistically isolated, and low-income residents are involved in all levels of environmental decision-making.

Maintaining effective communication and public participation will require EPD to go beyond its current legal notice requirements. Over a decade ago, EPD made some efforts to improve those procedures by adopting a policy to enhance public participation. However, those procedures were never incorporated into EPD's rules and regulations, nor have they been adequately evaluated to ensure that they are working in low-income and minority communities. Indeed, the efforts that were undertaken long ago to enhance public participation have been rolled back making it even more difficult for members of the public to understand environmental decisions that impact their daily lives. Rather than rolling back public participation measures, EPD should be working directly with community groups and residents to develop relationships with them and to ensure that they are informed of permitting actions and engaged in monitoring and enforcement. Particular efforts should also be made to develop the most effective measures to involve minority, low-income, and linguistically isolated residents in decision-making.

While efforts have been made, many times unsuccessfully, to inform the public, it is in considering public opinion that EPD falls short. In order to respond effectively to public concern about disparate and cumulative impacts, EPD must determine what tools it needs to address these concerns and start using them. For example, if citizens raise public concern about the siting of a coal-fired power plant in an environmental justice community, EPD should have the tools to respond effectively through an environmental justice grievance procedure or review process. Currently, it does not.

As part of those efforts, EPD should conduct robust research and data gathering including the mapping of environmental justice communities in Georgia. This identification allows data to be used in targeting public education campaigns, analyzing environmental disparities, and triggering increased scrutiny. It has also been found to be helpful in order to encourage permitting staff to pay closer attention to potential environmental justice issues in low-income and minority communities.[63] Agencies and organizations in Georgia have already done this kind of mapping. The Georgia Department of Transportation (GDOT) analyzes all 589 census tracts in the state to identify areas with "EJ populations" to analyze how these populations can be involved in the transportation planning process.[64] ARC has also used mapping technology to identify environmental justice communities in the 10-county metropolitan Atlanta region.[65] These methodologies or the one utilized in this report could be used by EPD to identify and reach out to environmental justice communities.

Conclusion

The findings in this report are a call to action for residents and public officials. Minorities, the poor, and the linguistically isolated in metro Atlanta are being unequally exposed to pollution. Yet few policies at the state, regional or local levels prevent this trend from continuing. It is now time to work collaboratively to address and fix the mechanisms that allow polluting facilities to be sited disproportionately in vulnerable communities, and to ensure that structural and even-handed methods are used for environmental compliance and public participation.

Bold moves must be taken to generate meaningful changes in the ways in which polluting facilities are sited and in how citizens participate in environmental permitting and compliance processes. This report should stir residents, advocates, and government representatives to take the first steps toward the creation of policies and laws that allow environmental justice considerations to be integrated into environmental permitting and decision-making.

RECOMMENDATIONS:

#1 :: Advocates
The creation of an alliance of metro Atlanta environmental justice advocates

#2 :: Working Group
The formation of a working group of leaders in business and government to work collaboratively to address how environmental justice issues can be incorporated into decision-making

#3 :: EPA
Direct federal funding and guidance to Georgia's state and local governments for the implementation of environmental justice efforts

#4 :: EPD
State environmental decision-makers to adopt an environmental justice policy that promotes the health of all of Georgia's citizens and requires environmental equity in its practices.

Definitions

BLOCK. A 10 square kilometer area of land.

CENSUS TRACT. A small, relatively permanent statistical subdivision of a county.

COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA) OR "SUPERFUND" SITE. A site with a known or threatened release of a hazardous substance that may endanger public health or the environment.

DEMOGRAPHIC CHARACTERISTIC. A trait, such as high school graduation rate, attributed to a census tract based on data provided by the United States Census Bureau.

DEMOGRAPHIC SCORE. The normalized sum of a block's demographic characteristics.

ENVIRONMENTAL JUSTICE COLDSPOT. A block with a demographic score in the lower quantile and a pollution score in the upper quantile for the region.

ENVIRONMENTAL JUSTICE HOTSPOT. A block with a demographic and pollution score in the upper quantiles for the region.

ENVIRONMENTAL PROTECTION AGENCY (EPA). An agency of the federal government of the United States charged with protecting human health and the environment by writing and enforcing regulations based on laws passed by Congress.

ENVIRONMENTAL PROTECTION DIVISION (EPD). Georgia state agency charged with protecting Georgia's air, land, and water resources through the authority of state and federal environmental statutes.

HAZARDOUS WASTE INVENTORY SITE (HSI). A site designated by the Georgia Environmental Protection Division as a site in Georgia where there has been a known or suspected release of a regulated substance above a reportable quantity and which have yet to show they meet state required clean-up standards.

HIGH-POLLUTION BLOCKS. Blocks with pollution scores in the upper quantile.

LINGUISTICALLY ISOLATED HOUSEHOLD. A household in which no one 14 years old and over speaks only English or speaks a non-English language and speaks English very well.

LOW-POLLUTION BLOCKS. Blocks with pollution scores in the lower quantile.

METRO ATLANTA REGION. A 14-county region consisting of Barrow, Clayton, Cobb, Cherokee, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Hall, Henry, Paulding, and Rockdale counties.

NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITTED FACILITY. A facility permitted to discharge wastewater from a point source, such as a drain pipe, into waters. This does not include facilities with an NPDES storm water permit.

PERMITTED AIR POLLUTION FACILITY. A stationary source of air pollution contained in EPA's Air Facility System (AFS).

POLLUTION POINT. The location of an air pollution source, CERCLA site, HSI site, NPDES site, landfill, RCRA site, solid waste landfill, TRI site, or reported violation.

POLLUTION SCORE. The sum of a block's pollution points.

QUANTILE. A data classification system in which the range of possible values is divided into equal-sized intervals.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) HAZARDOUS WASTE STORAGE SITE. A facility under federal regulation for the storage of hazardous waste.

TOXIC RELEASE INVENTORY (TRI) SITE. A facility that reported an on-site release or disposal of a toxic chemical in 2010.

VIOLATION. A substantive breach of an environmental permit or an enforcement action taken by EPA or EPD.

Appendix A: GIS Analysis Methodology

The objective of this GIS -based analysis was to quantitatively identify geographical areas within the 14-county Metro Atlanta area (study area) that possess environmental justice characteristics. The results of this quantitative analysis can in turn be used to determine if areas of disproportionate negative environmental characteristics exist within the study area. To achieve this objective, a numerical model was developed using the Model Builder™ tool within ESRI's ArcGIS software package. This model both compiled and normalized the data and calculated an overall score for each of the three data categories listed below:

- Pollution Point Source Data: US Environmental Protection Agency (USEPA) and Georgia Department of Environmental Protection (GAEPD) air pollution emitters, National Pollutant Discharge Elimination System (NPDES) facilities, US EPA Toxic Release Inventory (TRI) facilities, solid waste landfills, GAEPD Hazardous Sites Inventory (HSI) waste sites, USEPA Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites, USEPA/GAEPD facilities with recent violations and/ or enforcement order actions, and USEPA Resource Conservation and Reclamation Act (RCRA) sites.

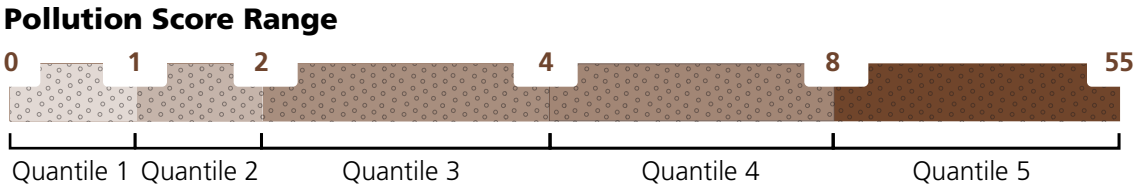
- Demographic Population Data: minority population statistics (percent minority), housing type/status statistics (percent of vacant units), housing value statistics (median housing value), income/poverty statistics (median family income, percent living below poverty line), linguistic statistics (percent who primarily speak a language other than English), level of education statistics (percent with high school degree)

Because the data inputs consisted of various types of geographical representations such as points (e.g. landfill sites and polygons (e.g. census-tracts). It was necessary to transform or convert the data into a uniform spatial extent for comparative purposes. For this transformation, a 10 square kilometer focal block grid was overlain on the study area (Figure 1). This focal grid was chosen subjectively with the intent of identifying neighborhoods and communities at a spatial resolution conducive to the analyses objective. This block grid size can easily be increased or decreased to meet the spatial resolution needs of the investigator. Each of the above sources was spatially summarized across each focal grid to generate a unified weighted or "score" of environmental justice characteristics. This scoring process is described on the following page.

Pollution Points Data

The eight pollution source data layers were joined to the focal grid using a series of 'spatial joins' (Figure 2). In each 'spatial join', the total count of each type of facility was summed for individual focal blocks, resulting in a final source data layer containing the total numbers and types of source facilities found within each focal block. The source counts were then summed across all facility types using the 'field calculator', resulting in a total source score for each focal block. The source score ranged from 0 to 55 across the study area (i.e. the higher the value the more concentrated the pollution source count was in each focal block). The upper quantile ranged from 9 to 55 (Table 1).

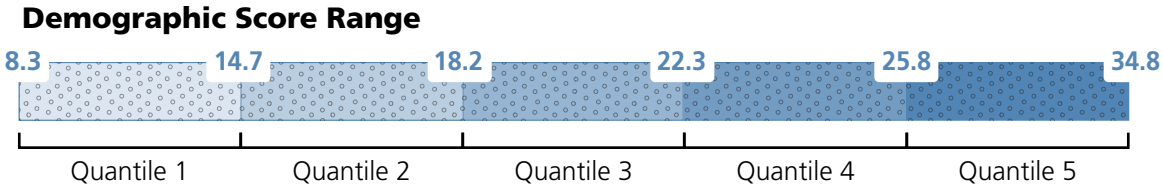
Table 1. Quantiles and ranges for the pollution source score



Demographic Data

Prior to comparative spatial analysis of the demographic data, the data was normalized to allow for eventual direct aggregation with other data sets. To normalize the data, each data layer was classified into five quantiles. These quantiles were then reclassified and assigned scores ranging from 1 to 5, with 1 representing the least at-risk population and 5 representing the most at-risk population. For example, areas with the highest minority population and lowest median family income were assigned a value of 5, whereas areas with a predominately non-minority population and high median family income were assigned a value of 1. The seven demographic data sources were then summed using the 'raster calculator' tool to obtain a demographic score for the study area. The demographic score ranged from 0 to 34.8, with a possible range of 0 to 35. The upper quantile ranged from 25.8 to 34.8 (Table 2).

Table 2. Quantiles and ranges for the demographic score



After normalizing the data, the 'zonal statistics' tool was used to convert the data from the census tract level to the focal block level. This tool assigned a demographic score value to each focal block, and averaged the scores for blocks that overlapped more than one census tract (Figure 3).

Final Model Output

The demographic score layer was combined with the pollution source score layer using a 'spatial join' (Figure 4). This summation of all normalized data was performed to determine which focal blocks have the greatest relative risk with respect to environmental justice issues and may warrant further investigation. Using the 'definition query' tool, the focal blocks that ranked in the top quantile for both pollution source and demographic scores were selected as areas that may warrant further investigation as potential areas within the metro Atlanta study area that have a disproportionate amount of environmental justice characteristics.

Figure 1. The study area and 10 sq km focal grid overlay

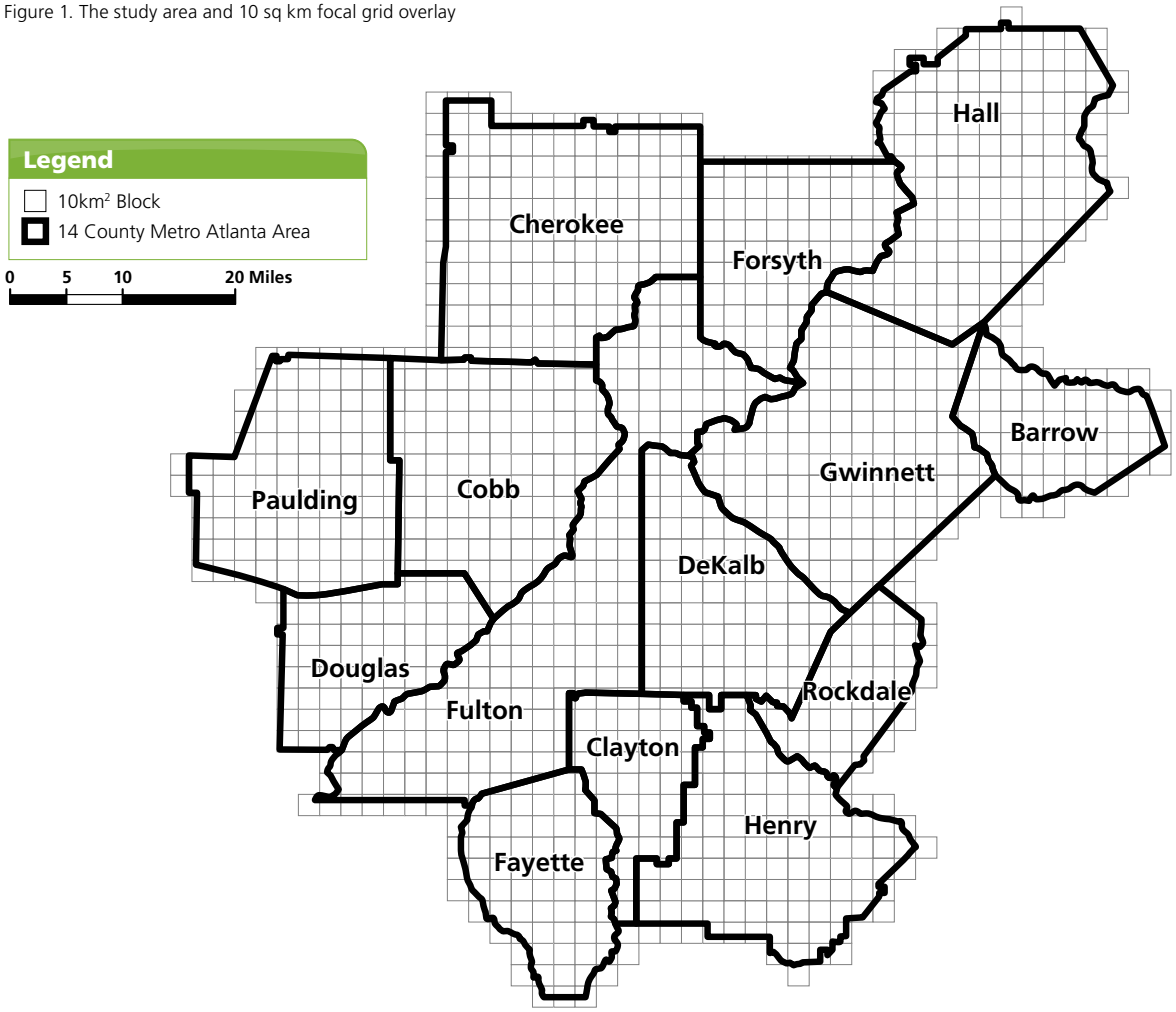


Figure 2. The Series of Pollution Source Joins

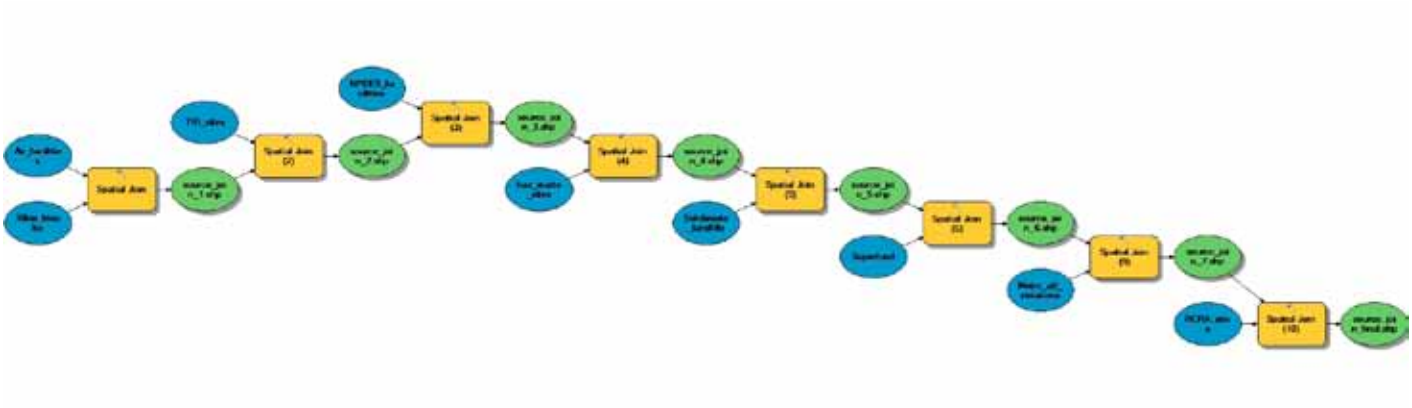


Figure 3. The Normalization of the Demographic Data

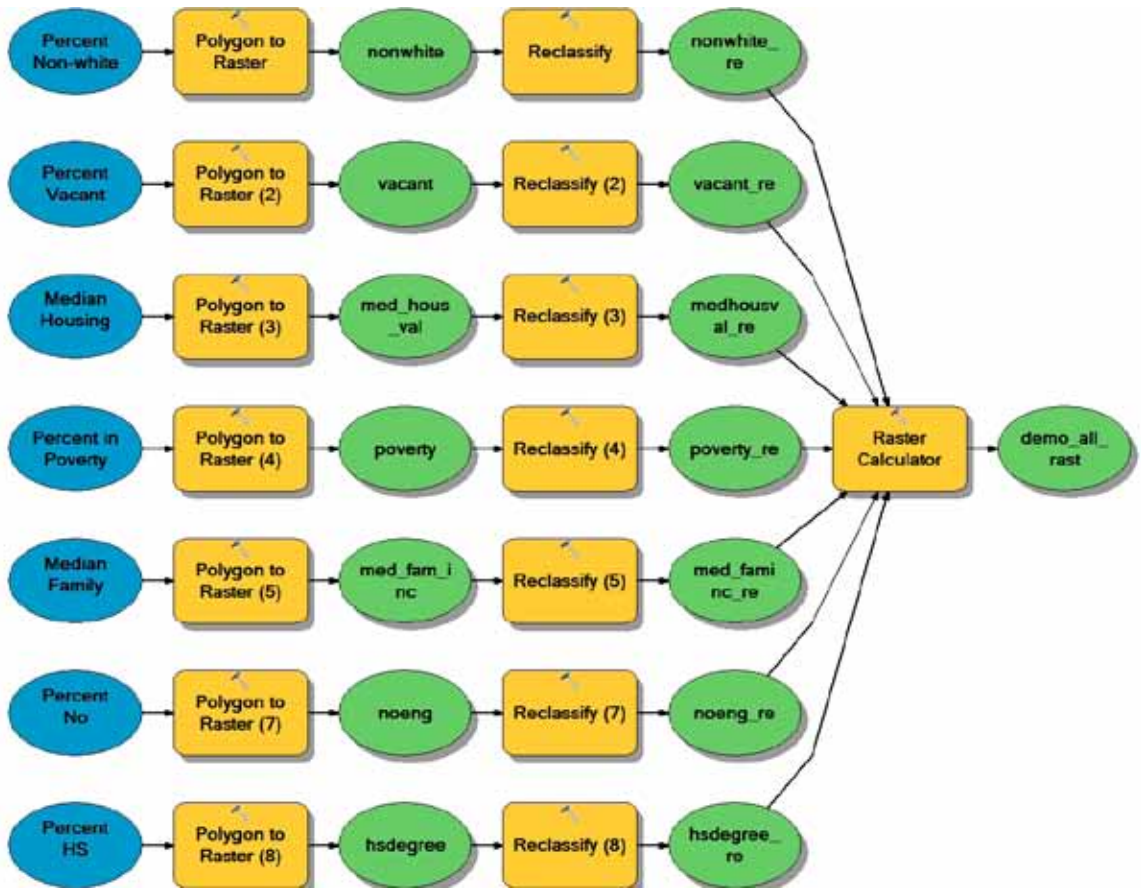
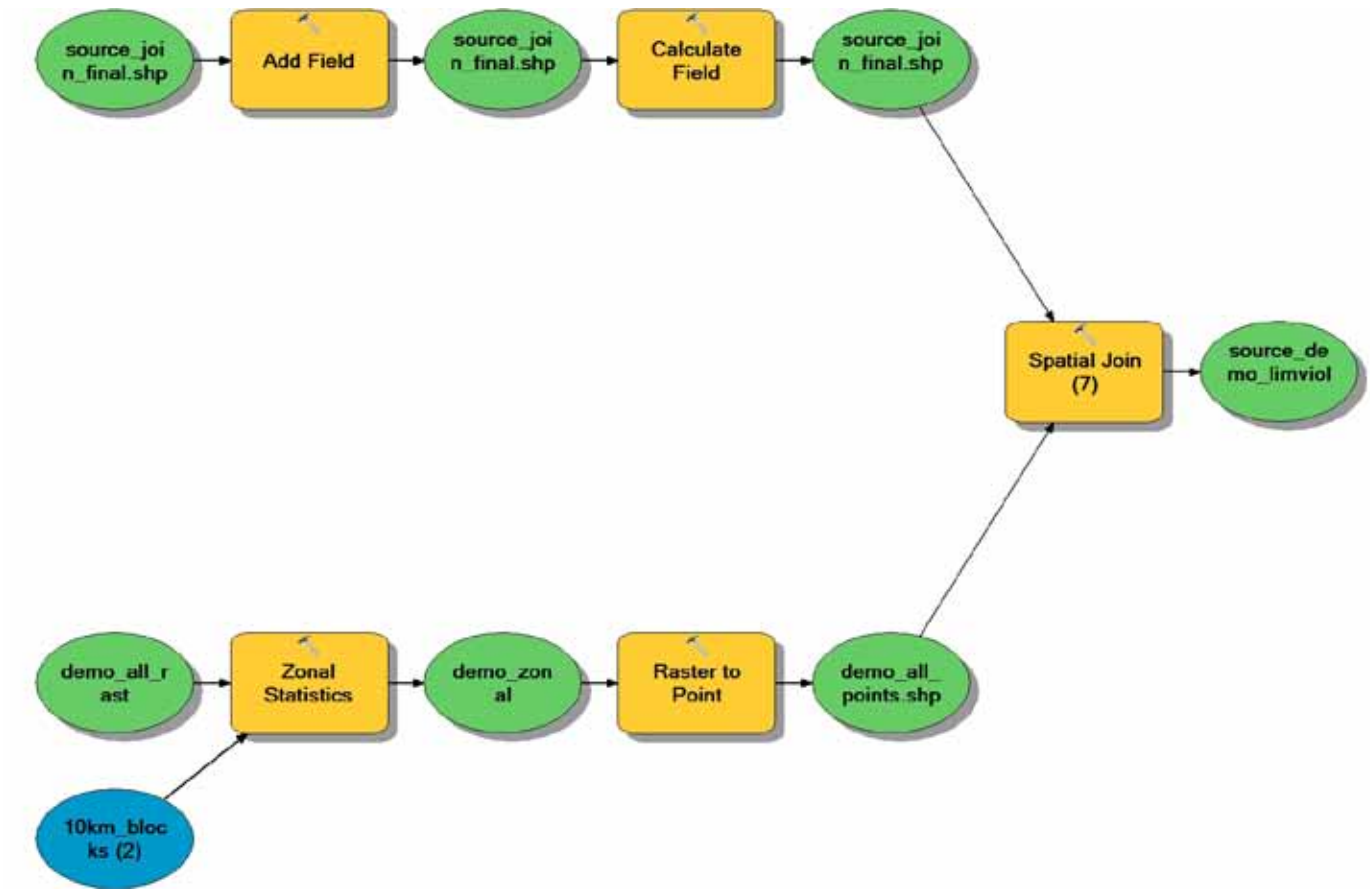


Figure 4. The Normalization of the Community/Infrastructure Data

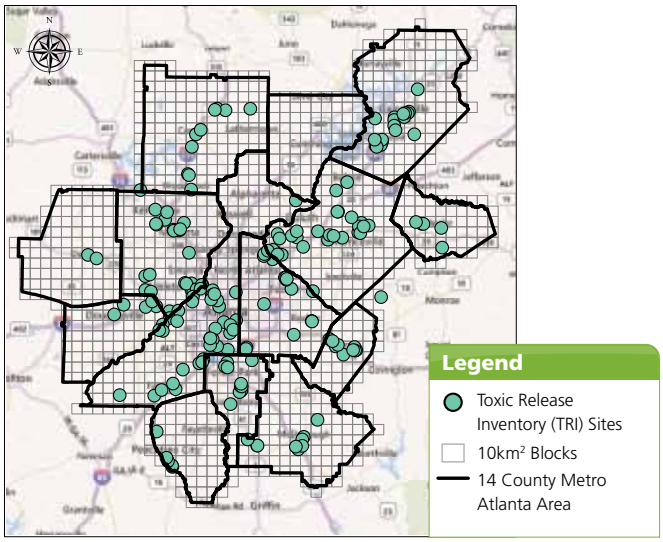


Pollution Score Generation Process

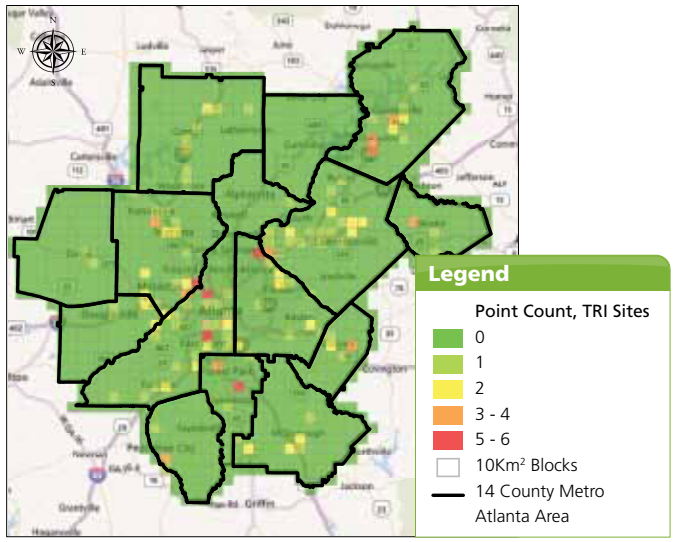
TRI Sites within the study area, with the focal grid overlay

Each cell of the focal grid is assigned a value based on the number of TRI sites contained within that cell. This process is repeated for all pollution source inputs.

STEP 1



STEP 2

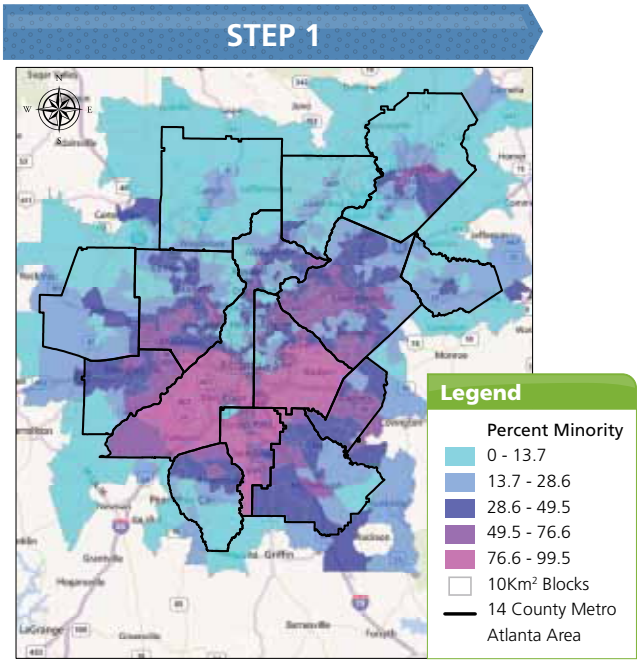


Demographic Score Generation Process

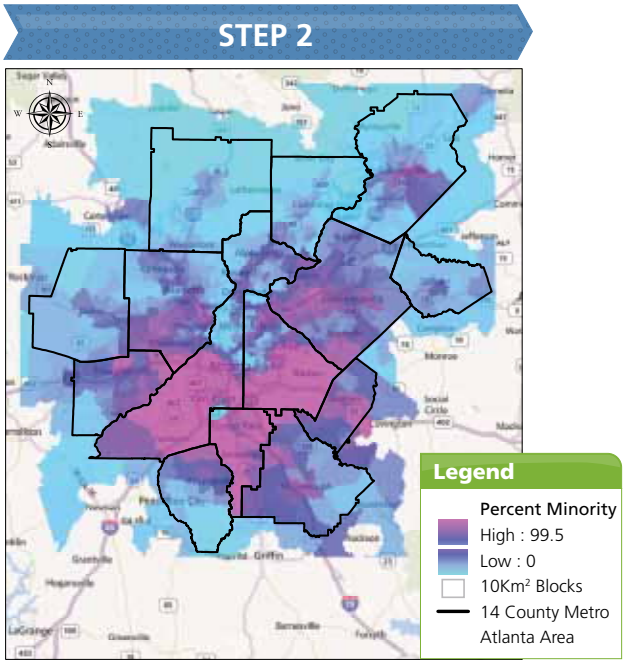
Minority population demographic data - polygon format.

Minority population demographic data - coverted to raster format.

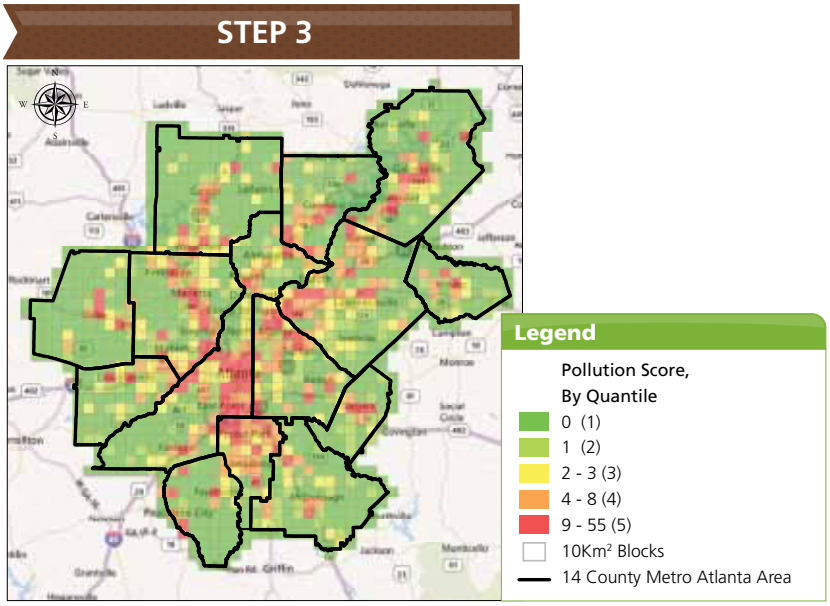
STEP 1



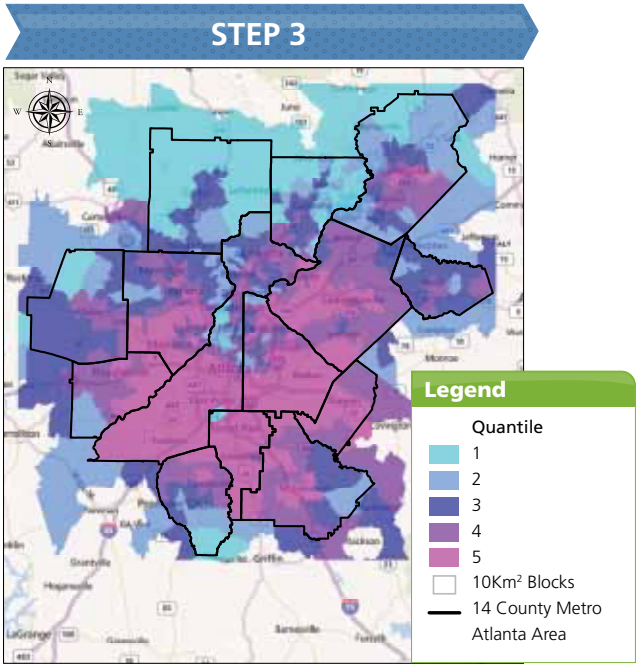
STEP 2



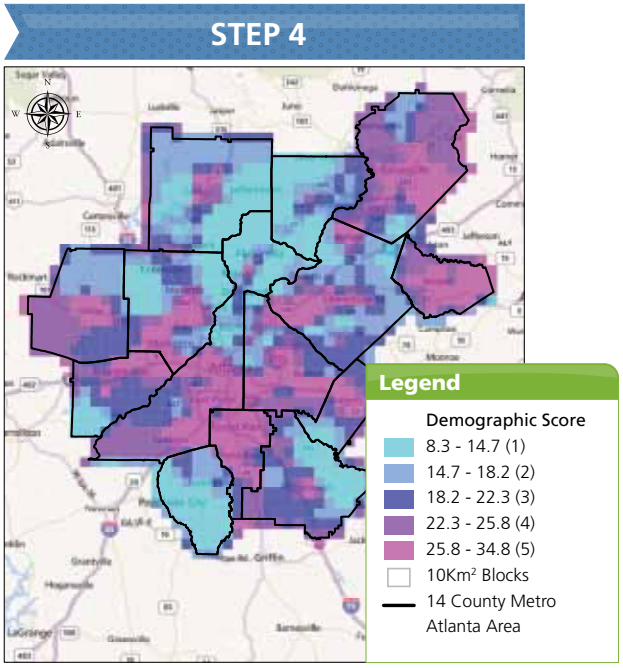
After all spatial joins are completed, the counts of each type of source are summed, resulting in a pollution source score for each cell of the focal grid.



Minority population demographic data - normalized on a 1-5 quantile scale (each quantile represents 20%).



Minority population demographic data - summation of all raster quantiles per grid cell.

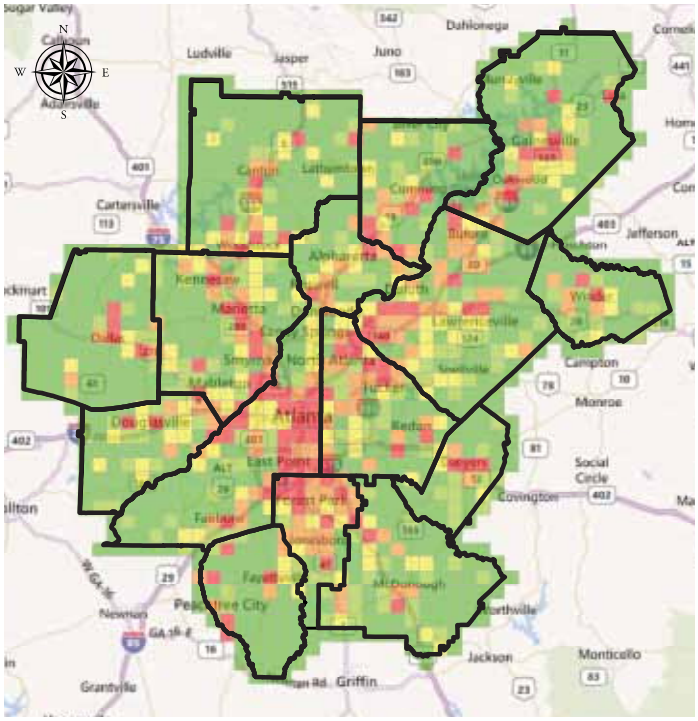


Final Model Output

Pollution Source Score, displayed in quantiles

Demographic score, displayed in quantiles

STEP 1

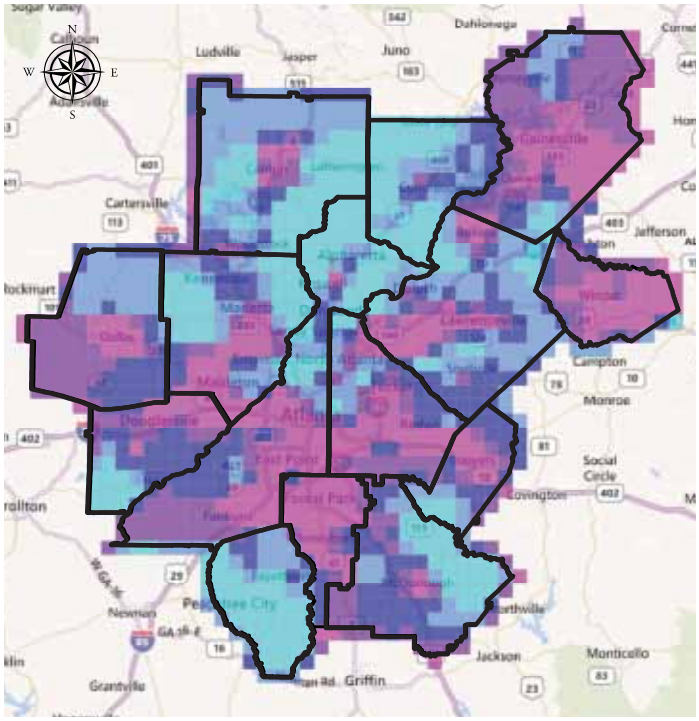


Legend

Pollution Score,
Number of Sources

- 0 (1)
- 1 (2)
- 2 - 3 (3)
- 4 - 8 (4)
- 9 - 55 (5)
- 10Km² Blocks
- 14 County Metro Atlanta Area

STEP 2



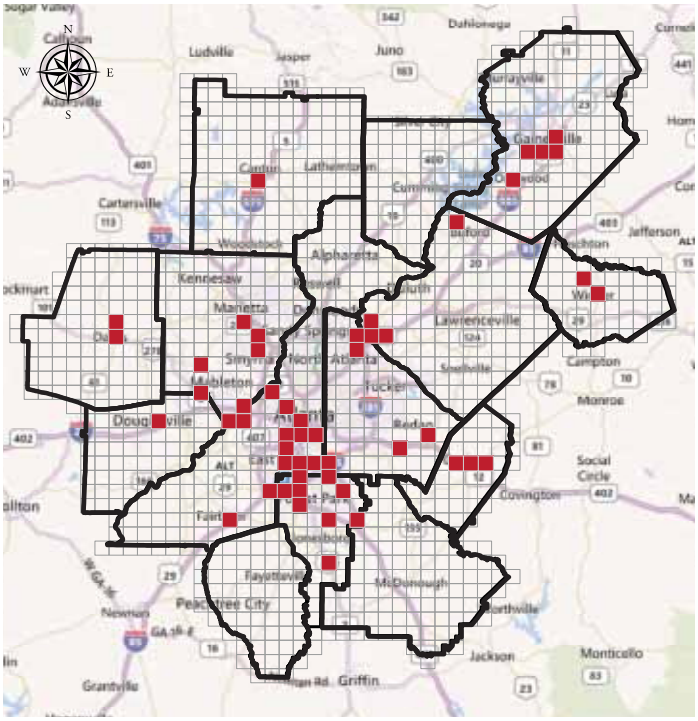
Legend

Demographic Score

- 8.3 - 14.7 (1)
- 14.7 - 18.2 (2)
- 18.2 - 22.3 (3)
- 22.3 - 25.8 (4)
- 25.8 - 34.8 (5)
- 10Km² Blocks
- 14 County Metro Atlanta Area

Final selected blocks warranting further investigation. These blocks are in the top quantile for both pollution sources and demographic score.

STEP 3



Legend

- Final Selected Areas
- 10Km² Blocks
- 14 County Metro Atlanta Area

Endnotes

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