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## Georgetown County Offices of Environmental Services: Tracking County-Wide Litter Clean-Ups

Hailey Corzine  
Coastal Carolina University, hrcorzine@coastal.edu

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Georgetown County Offices of Environmental Services

*Tracking County-Wide Litter Clean-Ups*

United Nations Youth Corps Internship

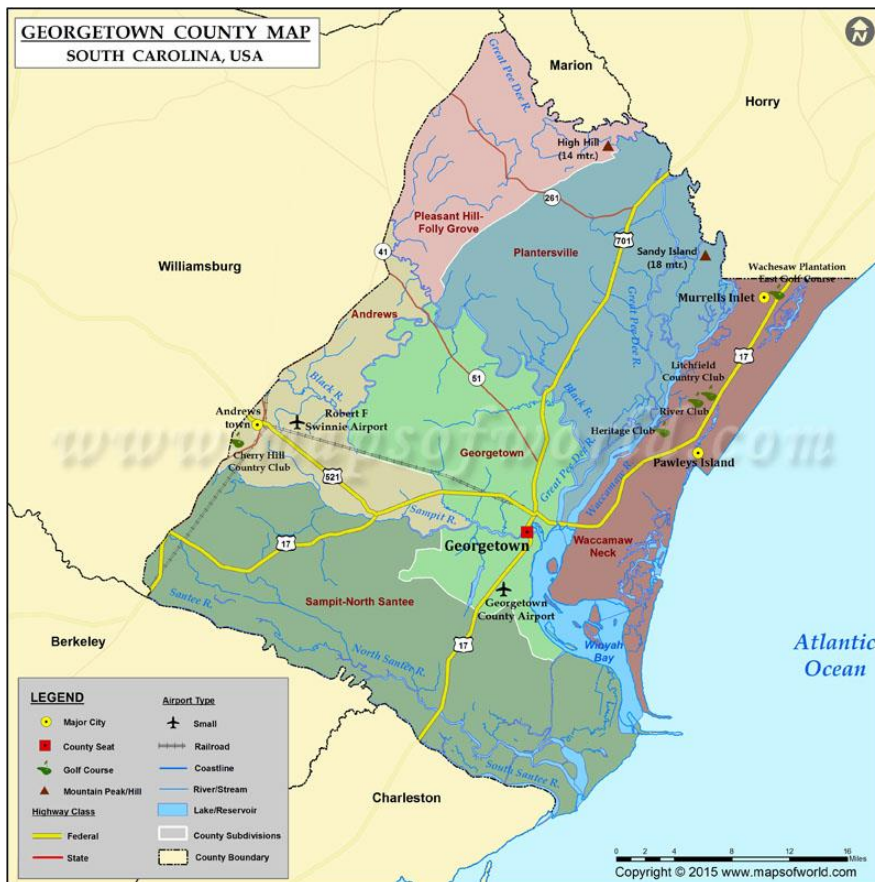
*Prepared by:*

Hallie Corzine

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## 1.1 Introduction

Holding geographical elegance and historical claim, Georgetown County gives hue to the ideology of southern charm. Georgetown County is also significant for being the 3<sup>rd</sup> largest water basin on the east coast. Being home to the great Winyah Bay, which is fed by five freshwater rivers, Georgetown County holds a special geographic exclusivity that offers both outstanding beauty and historical developmental value. As one of the largest freshwater input basins, Winyah Bay has brought and continues to bring much economic development to the Georgetown County area.



**Figure 1:** Figure 1 represents a map of Georgetown County showing the five neighboring counties as well as Winyah Bay and the five rivers that flow into it. Found from

<https://www.mapsofworld.com/usa/states/south-carolina/counties/georgetown-county-map.html>

As this current era continues to expedite in growth and development, the need for sustainable practices grows intensely. These sustainable practices pave the way to protect

national treasures such as Winyah Bay for current and future generations. A keyway of upholding this exclusivity is through the implementation of sustainable waste management. The United Nations Sustainability Goal number 12 expresses the importance of worldwide sustainable and responsible waste management and provides baseline goals to follow. By working with Georgetown County's Offices of Environmental Services during Summer 2021, I was able to work alongside waste management experts in order to demonstrate the direct correlation between everyday litter and a polluted planet. Numerous litter clean-ups were executed around the county to establish a basis for areal data analysis. A litter heat-map was created by previous interns Dean Wrobel and Shane Doone to assess the concentration of litter around the county. By using this heat map, litter clean-ups can be performed, and areas can be re-evaluated to keep hot spot areas clean.

Due to the vast majority of river systems flowing into the Atlantic in Georgetown County, litter collection and sustainable waste management is extremely dire to ensuring these systems remain as clean as possible. The importance of healthy waterways is economically crucial to many businesses in Georgetown County including commercial fishing companies, restaurants, grocery stores, beach development companies, and many more. Because of a large attraction to Georgetown County beaches, the cleanliness and lack of litter is crucial to upholding the economic attraction. Keeping stormwater runoff and drainage areas free of debris prevents the transport of litter into the river systems and therefore our corner of the Atlantic Ocean. This is why community litter collection is so important and vital for Georgetown's economy and environmental health. The litter

clean-ups also allow for the connection between community members, allowing them to bond over a common service for the county.

Preventing the transport of litter to waterways in Georgetown County allows for the prevention of litter adding to the already growing pollution in the Atlantic Ocean. Litter entering the oceans has had numerous negative effects on sea life (Katsanevakis et al., 2010). Hundreds of marine animals have washed up on beaches all over the world found with bellies full of plastic (Picture 1). This pollution quickly affects all levels of the trophic system and leads directly back to the human population. For example, degraded litter has been found in the bellies of commercial fish, leading right back to the human plate. A lot of the litter that makes its way into the ocean can leach harmful chemicals into the water column causing large ecological issues (Chen et al., 2019). These chemicals can lead to things such as harmful algal blooms, shellfish poisoning, and mass fish kills. Globally speaking, there are 5.25 trillion pieces of plastic debris in our oceans as of January 11<sup>th</sup>, 2015. Much of this plastic debris has found its way into the North Atlantic Garbage Patch, a vast spread of trash that has coagulated together due to the North Atlantic gyre current. All the litter cast into our oceans comes full circle and has a direct correlation to irresponsible waste management (De Wolff, 2014).

**Picture 1:** Picture 1 shows a dead seabird with a belly full of plastic. Photo found from [http://www.oceanhea](http://www.oceanhealthindex.org/news/Death_By_Plastic)

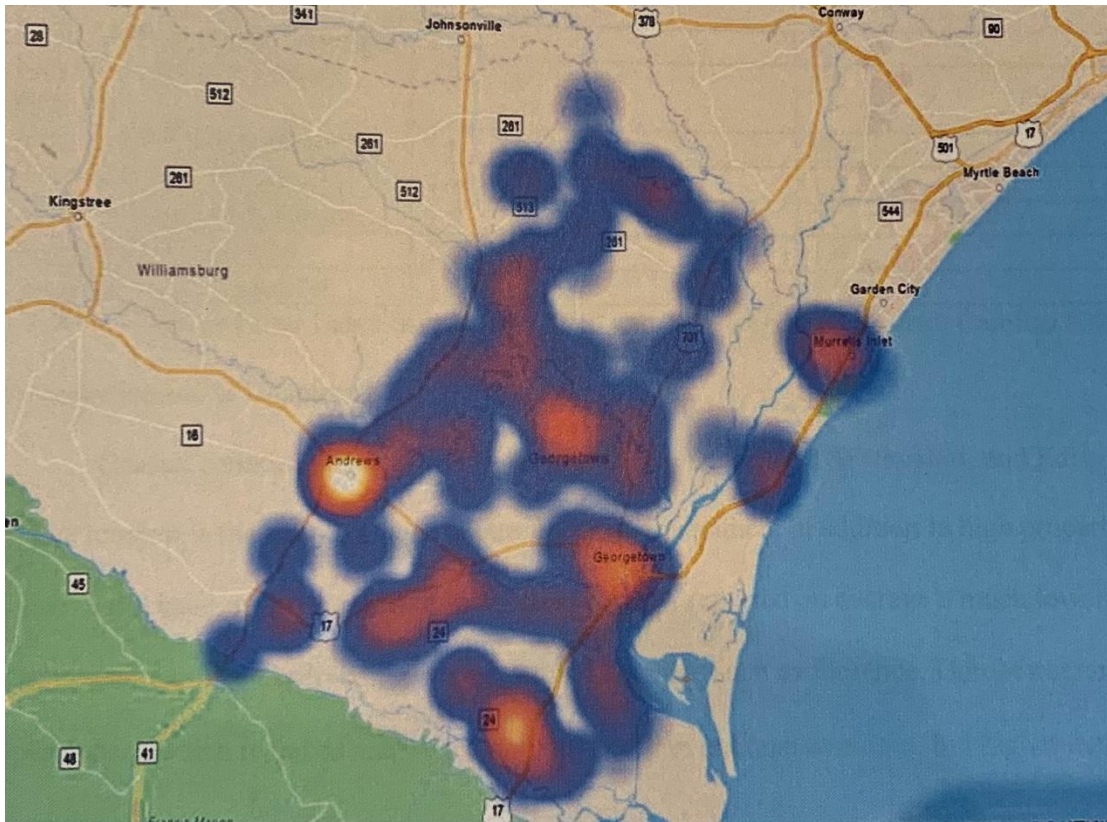
[lthindex.org/news/Death\\_By\\_Plastic](http://www.oceanhealthindex.org/news/Death_By_Plastic)



## ***1.2 Thesis Introduction***

By working with county council men and women as well as many members of the community, litter clean-ups were executed to clean parks and certain sections of roads

across the county. A total of eight recorded litter clean-ups were performed beginning in March of 2021. The clean-ups were able to provide a basis of electronic data collection in order to keep track of heavily littered areas. This data was then compared to the heatmap in Figure 2 to determine necessary re-occurring litter clean-ups.



**Figure 2:** Figure 2 shows a litter heat map created by Dean Wrobel and Shayne Doone in 2021. The heat map was created using their 2021 litter index of Georgetown County.

By being able to participate in litter clean-ups, tons of trash was able to be properly disposed at the landfill and therefore allowing sustainable waste management. This directly correlates to the United Nations Sustainable Development Goal number 12 which focuses on responsible consumption and production. The litter clean-ups in Georgetown County specifically correlate with subsection 12.7 and 12.8.B. Goal 12.7 encourages promoting sustainable public practices and the litter clean-ups directly did this by allowing community members to participate in sustainable waste management. Goal 12.8.B. hopes to implement tools and practices that can help monitor sustainable development in terms of production and consumption. By beginning a data collection

sheet for current and future clean-ups, this goal is achieved. Removing litter that otherwise could have ended up in our waterways and ocean also relates to United Nations Sustainable Development Goal number 14. Goal 14 focuses on conserving and sustainably using world oceans as resources. This project specifically relates to target 14.1, where the goal by 2030 is to substantially decrease debris entering the oceans due to land-based activities.

## ***2.0 Methods***

In order to organize a county clean-up a member of the county must inquire to the environmental services office; office employees are not prohibited to go out to recruit volunteers for clean-ups. A date, time, location and estimate of volunteers is determined allowing for the clean-up to be scheduled. Once a rough number of volunteers was determined, supplies including gloves, vests, trash bags, and trash grabbers were provided by the office. Litter clean-ups were arranged around the county at various locations, dates, and times determined by the clean-up contact leader. Once the supplies were collected, volunteers were given the option to separate the litter for landfill and recyclables. Before the clean-up can begin, each volunteer must sign in with their name and date agreeing to the one-time SCDOT's safety guidelines and instructions. The contact or group leader must then review the safety and guidelines to ensure necessary precautions are in place. An excel spreadsheet was created to hold the data for all the clean-ups. All past collection data was added to the file as well as the newly scheduled ones and represented in Table 1.



**Table 1:** Table 1 represents all the clean-up data including mass of trash, data, location, and number of volunteers.

The yellow highlight shows which clean-ups were done in hot-spot areas.

<b>Group Name</b>	<b>Date</b>	<b>Location</b>	<b>Number of People</b>	<b>Pounds Collected (lbs)</b>
Village Group	4/17/21	Plantersville, SC	40	680
PI Welcome Center Cleanup	5/8/21	PI HWY 17 welcome center		200
Civic Club	5/3/21	PI Civic Club	15	660
	4/10/21	Oatland Rd to Fuzzy Rd	12	1320
	3/20/21	S. Morgan to Gandy Dr.	17	2760
The Village Group	3/22/21	Exodus Rd		2040
Lane's Creek	5/22/21	Lane's Creek/Johnson Rd	24	800
Chopee	6/26/21	Chopee Road		1,200

After the clean-ups took place the Georgetown County Sheriff's Office collected the bags and transported them to the landfill for a recorded tonnage. This tonnage was then added to the excel file and compared to different locations in terms of litter density. The collected tonnage data was also compared to a heat map distribution (Figure 2) (Doone and Wrobel, 2021). Post clean-up, a short video is typically created to give credit to the volunteers and their organizations.

### **3.0 Results**

Thus far, a total of eight clean-ups have occurred over the last four months, averaging almost two clean-ups a month. Found using Table 1, the average number of people present at a clean-up is approximately 22. A combined total from all eight clean-ups equaled to 9,660 pounds of trash removed from roadways and parks. After the litter

was bagged and weighed, the data compiled into a spreadsheet was made available in Table 1. Table 1 shows the locations where the most litter was collected. As of current data, the clean-up held by County Councilman Raymond Newton on Morgan Street had the most collected, equaling to 2,760 pounds of litter. The data found in Table 1 was compared to the hot spots in Figure 2 and shows correlation between hot spot areas and the tonnage collected from each of the sites. Of the eight recorded clean-ups, five clean-up areas were in hot-spot zones when compared to Figure 2. Meaning that 84% of the total 9,660 pounds of litter comes from hot-spot areas. After the initial clean-up, locations were revisited after a couple weeks to a month to determine if the area had been re-polluted. Once areas were revisited, all of the locations had at least some litter present. Many of them, such as Exodus Road, had already been partially re-polluted, see Picture 2.



**Picture 2:** Picture 2 shows litter from Exodus Road shortly after a litter clean-up was performed.

#### ***4.0 Analysis and Empirical Data***

There are five counties surrounding Georgetown County: Horry, Charleston, Berkeley, Williamsburg, and Marion. Of the five surrounding counties, Georgetown is the fourth smallest in terms of population (census.gov) as shown in Table 2. In terms of

poverty rates, Georgetown has the third highest percentage; falling behind Williamsburg with the highest and Marion with the second highest. This data shows that many members of the community might not have the same time and opportunity to practice sustainable waste management.

**Table 2:** Table 2 shows the poverty rate and population for Georgetown County and its five neighboring counties as of July 1<sup>st</sup>, 2019.

<b>County</b>	<b>Poverty</b>	<b>Population</b>
Georgetown	17.5%	62,680
Horry	12.7%	354,081
Charleston	11.7%	411,406
Berkeley	10.7%	227,907
Williamsburg	27.8%	30,368
Marion	24.9%	30,657

When observing Figure 2, it is important to note that areas in the county such as Litchfield and Pawleys Island are able to pay clean-up crews to pick up litter in their area of the county while other areas such as Andrews and Plantersville do not. Therefore, areas with clean-up crews are seen as cleaner than areas without.

According to Palmetto Pride, over 73 million pounds of litter has been removed through community clean-ups. They approach their clean-ups by stating that we need the assistance of political figures to assist in the push for sustainable waste management. Along with the 73 million pounds of litter removed, they also state that 37 million dollars has been saved for local governments through this litter collection. Georgetown County is included in this because they are an affiliate of Palmetto Pride.

Through this project and the litter clean-ups, we were able to connect with the community and show the importance of the clean-ups and their relation to clean water systems.

### ***5.0 Conclusion***

So far, almost 8,500 pounds of trash has been collected from a total of eight litter clean-ups put-on all-over Georgetown County. The clean-ups have allowed for members of many districts within the county to make the direct connection to the everyday waste they may be tossing into the trash. This connection allows for significant educational ties to be made about the importance for responsible and sustainable waste management in Georgetown County. Though most of the waste is not being separated for recyclables, the prevention of this waste from making it into Georgetown's archival waterways is of great significance. By enabling an electronic format of data collection for litter collections, the county can now reflect on heavily littered areas and return to these areas as needed. This is directly working towards the UN Sustainability Goal 12.7 and 12.8B. We are able to begin to implement regular clean-ups around the county and spread word and knowledge about the importance of this work.

### ***6.0 Recommendations***

Several implementations towards sustainable waste management are in place at the Office of Environmental service alongside the litter collection events. Currently the office has 14 total recycling centers around Georgetown County allowing for members of the county to bring in recyclable items such as plastics, cardboard, cooking and motor oils,

appliances, latex paint, most paper, scrap metal, and many others. Because the county does not allow commercial disposal at the recycling centers, they do offer a free program to local, small businesses for cardboard and some plastic collection. They also offer drop bins for businesses with a large mass or large-scale recyclables, where the county drops off and picks up the bin for free. These programs are actively displayed on social media and marketed by office employees who are pushing for sustainable and responsible consumption of waste.

With heavy county budget restrictions, the question of what can be done is a tough one to ask. The biggest thing we can do is spread awareness to the community about the programs set in place to limit waste within the county. Furthermore, continuing to educate about the negative affects litter can have on a community. To do this, using the environmental education centers on the landfill and the knowledge of staff and volunteers. Following this directly showing the community impacts of irresponsible consumption through litter clean-ups. Holding more litter cleanups and pushing for separation of recyclables can aid in waste management and also continuous data collection. Keep America Beautiful pushes for education in communities by using workshops, service projects, and special events. As an affiliate of KAB, this would be a fantastic reference for Georgetown to use for community education.

Referencing palmettopride.org, fines for littering range from \$25 to \$1,000 plus community service. I recommend increasing this fine exponentially. Many people are not fazed by a small \$25 fine, and would see that as a small nuisance. Increasing this fine would lessen the likelihood of people littering. Because Georgetown County has a higher

poverty rate in terms of population many would be less likely to litter in fear of a fine because money is not of abundance.

### ***7.0 Acknowledgements***

A big thank you to all the organizations, county councilmen and women, and volunteers for participating in clean-ups around the county. Another thank you to the Georgetown County Sheriff's Office for collecting and weighing the litter bags post clean-up. And of course, thank you so much to my employers and co-workers at the Office of Environmental Services for the opportunity and experiences provided to me.

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Keep America Beautiful: <https://kab.org/programs/great-american-cleanup/>