

## **Illegal Dumping at Bridge Sites in the Dog River Watershed**

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Illegal dumping has become a serious problem in the Dog River watershed in Mobile County Alabama. Because bridges that cross tributaries of the Dog River are accessible to everyone and many are in rural areas, they have become a popular place to illegally discard regular household garbage as well as furniture and appliances. This paper compares dumping at bridges in areas of the watershed that lie within the county to areas that lie within the city limits. This paper also compares the types of trash/household items that were found in each location and the effects they can have on the watershed and the people living near or in it. What I found in comparing all of these things was that illegal dumping is much more prevalent in the more rural county areas of the watershed. There was a greater amount of garbage, especially electronics and furniture found in illegal county dump sites. Some of the potential reasons for these differences are the lack of county garbage pickup, inconvenience of having to transport the trash to a dump, trouble finding a facility to take certain items, and the fact that county areas offer more privacy for dumping because they are rural.

Keywords: illegal dump, watershed, pollution

### **Introduction:**

This project focuses on the subject of illegal dumping from local bridges in the Dog River Watershed. While doing research for a class project, the problem with illegal dumping in the watershed was apparent. At many of the sites I visited, garbage and trash were strewn around near the river and its tributaries. Major problems occur when the trash enters the water because, “Reduced drainage of runoff due to blocked streams, culverts, and drainage basins can result in flooding and channel modification” (Storm Water Manager’s Resource Center 2005). Another reason for concern is the types of trash being dumped. “Illegal dumping of trash, garbage, discarded appliances, old barrels, used tires, furniture, yard debris, oil, antifreeze and pesticides can

threaten human health, wildlife and the environment” (DEQ 2007). Illegal dumping is a hazard to everyone who lives within the watershed.

Some of the biggest problems occur from trash such as large appliances, electronic equipment, and tires. Refrigerators and freezers built before 1979 may contain polychlorinated biphenyls (PCBs), which can “ cause cancer, reproductive failure and hormone imbalances in animals and humans” and tires can become the perfect place for mosquitoes to breed “ 100 times faster than normal in the warm stagnant water” (ILGARD 2005). Electronic equipment is the newest threat to public health and probably the greatest. Electronics may contain toxins and heavy metals like“lead, mercury, arsenic, cadmium, selenium, and hexavalent chromium” (Hilty 2005). These are just a few of the problems illegal dumping causes.

### **Research Question:**

How big of a problem is illegal dumping at bridge sites in the Dog River Watershed? Is it worse in the county or in the city? What types of trash are being dumped and what effects can they have on human health?

### **Methods:**

First I had to define what illegal dumping is. The Department of Environmental Quality defines illegal dumping as “a crime wherein violators deposit used tires, construction debris, old appliances, furniture, and general household, commercial and industrial wastes in places other than permitted facilities such as landfills and transfer stations” (DEQ 2007). I chose to focus on

dumping at bridge sites, areas where roads cross creeks, streams, or Dog River itself, because these sites are accessible to everyone. Because some of these sites lie in the city limits and some lie in the county, I decided to compare dumping in the two different areas by selecting five sites in each. In addition, because the city has many more bridge sites than the county, I chose the five viable sites that exist in the county and randomly chose the five city sites from a list of 15 that I compiled (Fig.1). For less confusion, I assigned city sites the letter A and county sites the letter B and numbered each site alphabetically based on the road names. Specific sites will be referred to by their letter and number, for example: B4. I included the city's newly annexed areas within the county area for this study because debris in these areas would probably have been dumped there before the recent annexation. Along with taking photos at each site, I examined the amount of debris, if any, and also the types of materials being dumped there. After examining the debris at the sites, I researched some of the hazards associated with the types of items that were found and looked into some of the reasons people dump illegally. Several reasons I have already found are, "to avoid having to pay for trash collection services or to reduce the burden in time and money in having to transport trash to a collection center" (O'Connell 2006).

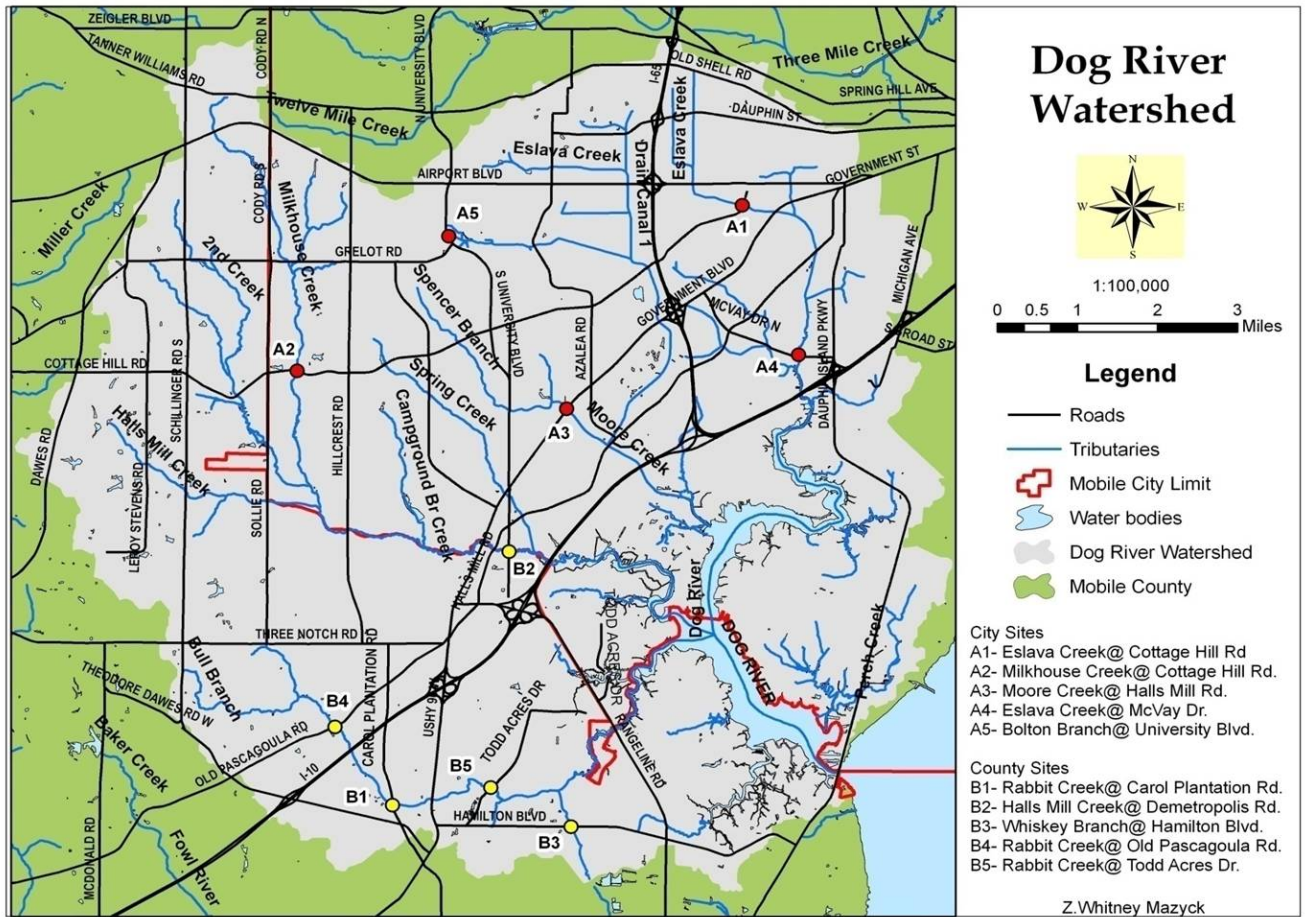


Figure 1- Dog River Watershed and Sites

**Results:**

The results from the locations within the city limits were mixed. Although there was trash at all 5 city sites, only two of the locations showed evidence of it having been dumped there intentionally (Table 1).

Table 1- Results

Site	Trash-amount/type	Electronics/ Appliances	Furniture	Other	Natural/Channelized	Finding	Illegal Dump Site
A1	Moderate-plastic bags	no	no	2 shopping carts	Channelized	Debris from nearby parking lot	no
A2	Moderate	yes	yes	cell phone	Natural	Mild illegal dumping	yes
A3	Little-some roadside debris	no	no	many beer cans	Channelized	Debris from roadside littering	no
A4	Little-some roadside debris	no	no	many beer cans	Channelized	Debris from roadside littering	no
A5	None	no	yes	2 couch cushions	Channelized	Some furniture dumping	yes
B1	Moderate-household trash	yes	no	Animal carcasses/plastic jugs	Natural	Moderate illegal dumping	yes
B2	Severe- many types	yes	yes	animal carcass/tires	Natural	Severe illegal dumping	yes
B3	Moderate-household trash	yes	no	plastic jugs	Natural	Mild/Moderate dumping	yes
B4	Moderate-household trash	yes	yes	television	Natural	Moderate illegal dumping	yes
B5	Severe- many types	yes	yes	mattresses/animal carcasses	Natural	Severe illegal dumping	yes

Sites A1, A3, and A4 all showed signs of trash but not as a result of true dumping. Site A1 is right next to Bel Air Mall and had both shopping carts and many plastic bags present which made it clear the debris found there was from the nearby parking lot. Sites A3 and A4 had light scattered garbage typical of the kind people throw out of passing cars, and although this is littering, it cannot be considered true dumping. Sites A2 and A5 did show evidence of intentional dumping. A2 had a lot of household garbage. Tattered black plastic bags were present, empty plastic jugs, and several larger items such as chair and large piece of plywood were found at this location. A5 was clean of household trash but the presence of two couch cushions leads me to believe that furniture had recently been dumped at the site.

The results from the county sites were a bit more dramatic as all 5 sites showed clear evidence of illegal dumping. B3 had the least amount of debris of any county site. There was evidence of some dumping of household trash and a microwave oven was also found. B4 had a large amount of household garbage scattered around the bridge and a piece of a television. There were also numerous plastic jugs for things like oil and bleach scattered nearby. B1, B5, and B2 contained the greatest amounts of debris as well as the most variety. Some of the things found at all three sites include animal carcasses, electronic equipment, tires, household trash, furniture, plastic chemical jugs, plastic bags, styrofoam, and wood.



Figure 2- Todd Acres Dr. at Rabbit Creek

## **Discussion and Conclusions:**

First I wanted to discuss some of the hazards the specific types of debris that were found can have on the environment and on people and animals living in or even near the watershed. As mentioned before, debris dumped near or in streams can cause blockages that can lead to flooding. Also this debris can get washed away and end up in other places downstream. This debris can kill wildlife such as birds, fish, and animals “after ingesting or becoming entangled” (ILGARD 2005). Tires attract mosquitoes and rodents and both are known to carry dangerous diseases. The most disturbing threats come from electronic waste or e-waste as many experts call it. E-waste is defined as “a product or apparatus that has its primary functions provided by electronic circuitry and components” (International Association of Electronics Recyclers 2008). Just a few items included in this list are microwaves, cell phones, televisions, computers and computer accessories, stereos, children’s toys, calculators, or anything with an LED screen. As mentioned earlier e-waste can contain many toxic substances and a study completed in 2004 by the University of Florida found “Every type of electronic device leached lead above the hazardous waste level in at least some cases” (Greenbiz 2004). Televisions and computer monitors are a special threat because of their CRT’s or cathode ray tubes and their high lead content. “The impacts of pollutants such as these can be devastating to humans as “the poisons inside of them can leach into soil and groundwater” and can “damage human and animal nervous systems, and some are known to cause cancer” (Martin 2007). Alabama State Law Section 22-30-3 defines hazardous waste as “ a solid waste, or combination of solid wastes, which, because of its quantity, concentration, or physical, chemical or infectious characteristics may : a. Cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness: or b. Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported

or disposed of, or otherwise managed” (State of Alabama 1975). The EPA has not yet declared e-waste hazardous material although I think it qualifies.



**Figure 3- Microwave dumped in Rabbit Creek**

It was clear from my research that illegal dumping, while still a problem in the city limits is much more severe within the county. So why do people in the county dump illegally? There are many reasons why. Many people are ignorant to the problems dumping causes and some I'm sure just don't care. The lack of traffic on some roads and seclusion creates the perfect environment for late night dumping, but the most compelling factor, the county does not have trash pickup. To people living in the city, this wouldn't seem like a major inconvenience but it can be. We in the city take for granted that when we put something out on the street, someone comes and takes it away. So what are people supposed to do with all of their trash in the county? If they chose to



dispose of it illegally, fines for illegal dumping and littering are the same in the city as they are in the county- \$250 for first offense and \$500 for a second offense. If they chose to do so legally, the City of Mobile's website offers a list of five county landfills where people can dispose of their items. Prices range from \$38 per ton to \$225 per cubic ton to \$ 11 for a pickup truck full. Refrigerators and freezers cost as little as \$15 a piece, and washer and dryers \$ 5 a piece to dispose of at one site. One thing all of the landfills have in common- they all refuse to accept e-waste. I was told by H and S Land Inc. that no electronics are allowed to go into landfills period. Upon hearing this I contacted the Mobile County Environmental Services Department, formerly the Litter Patrol Department to find out who does accept e-waste. I spoke briefly to a supervisor named Debra Howard and she told me of a landfill in the county that will accept one or two items at a time. It happened to be one of the same landfills I contacted earlier who denied accepting e-waste. I contacted Mobile's recycling center and they also do not accept e-waste. I have yet to find anywhere people can dispose of electronic waste. My conclusion is that illegal dumping is worse in the county because of a lack of awareness and also a lack of options. People looking to dispose of items properly will have a very hard time finding out how to do so. I believe that if people were educated on the risks of dumping and places were made available for people to properly dispose of such items, they would. This is absolutely a problem that the Dog River Clearwater Revival could explore further.

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