

# **The impact of litter on urban communities and litter reduction strategies**

Includes specific ideas for the Kinnickinnic River watershed

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## **Introduction**

When people think of the factors that influence their health, contribute to crime, and impact their local economy, litter is probably not at the top of their list. Litter is normally considered an eyesore and for some also recognized as destructive to our environment. In reality it affects these as well as many other areas of the community.

This white paper will examine the litter problem, the impact it has on urban areas, and strategies for litter and waste reduction. These strategies are specifically tailored to an urban community like that of Lincoln Village along the Kinnickinnic River, taking into account the programs that are already available there and the best possible way to address this problem. In community meetings about the Kinnickinnic River residents identified litter as a serious problem in their neighborhood, and stated that this needs to be addressed before any other revitalization program can take place.

## **What makes up litter and who is littering?**

Everyone knows what litter is because they see it along roadways, sidewalks, parks, rivers etc., but what is more important is recognizing what makes up litter so that it can be dealt with properly. A study done in South Africa includes plastics, paper, metals, glass, vegetation, animals, construction material, and other miscellaneous items in their definition of litter (Armitage and Rooseboom 1999). A clean up done in Washington D.C. reported that 30% of all items picked up were plastics that could've been recycled like plastic soda bottles (Vernon 2004). According to an Australian paper on the litter issue, cigarette butts are the most commonly littered item, followed by plastics, and then paper (Petrie et al.). Identifying the types of items that are littered is the first step to finding ways to remediate the problem. In the Kinnickinnic River, there is a large variety of smaller items, everything from paper and plastic waste to clothing and chemical containers. There is also a significant amount of very large items like shopping carts, tires, and car parts.

It is also very important to identify who is littering so that group can be targeted in a campaign to reduce littering. Research from the group Keep America Beautiful found that males are twice as likely to litter as females. They also found that young people, under the age of 35, are twice as likely to litter as people between the ages of 35-49, and three times as likely to litter as people over 50. Another study by Gellar, though, found that littering behavior is nearly evenly distributed among all demographic groups (as in Florida Litter Study, 1998). While campaigns targeting young males have been successful in reducing litter, it is more important to create a campaign to target the group that will be using the area. In a more general sense, a relationship exists between littering and a lack of ownership or pride in a

community (Petrie et al.). Studies have also found that people are more likely to litter when litter is already present than in an area free of trash (Florida Litter Study, 1998).

### **The impact of litter on the community**

The presence of litter has a variety of impacts on communities ranging from health issues to economic impacts. Most commonly it is seen as an aesthetic issue, but what is less understood is how this aesthetic problem impacts other issues in a community.

**Residents' perception of neighborhood decline and disorder:** In a group of studies discussed in The Florida Litter Study, litter has been identified as a major indicator of neighborhood decline and disorder. Other indicators of neighborhood decline and disorder include vandalism, abandoned buildings, graffiti, and vacant lots. Of all of the indicators assessed in a study done by Perkins, Meeks, and Taylor in 1992, litter was found to have the strongest correlation with perceptions of neighborhood decline and disorder (as in Florida Litter Study, 1998). A study by Skogan in 1990, indicates that the effects of this perception of neighborhood decline range from a decrease in property values to an increase in crime, or at least an increase in criminals' perception that crime will be tolerated (as in Florida Litter Study, 1998).

**Increase in crime:** This study goes on to explain that as people's perceptions of neighborhood decline increase, it is more likely that crime will occur and that criminals will be drawn to the area because it appears more likely that criminal behavior will be tolerated or ignored. A study by DeFrances and Titus in 1994 found a statistically significant relationship between neighborhood disorder and burglary outcome indicating that burglaries are more likely to be completed in neighborhoods with higher levels of disorder (as in Florida Litter Study, 1998).

**Property values and business:** The study by Skogan indicates that the effect of this perception of neighborhood decline and increase in crime can also negatively impact property values and investment interest (as in Florida Litter Study, 1998).

**Cost of litter to the community and local government:** Aside from lowering property values, the cost of cleaning up litter has an added impact of the economy. In 1993, the US spent \$131 million on roadside litter clean up (Florida Litter Study, 1998). This does not include the cost of beach clean ups, street sweeping, localized flood damage from litter clogged storm drains, or any other clean up or litter prevention program funded by the government. From a study done by Baud and Ludicello in 1990 in Texas, local governments there spend over \$14 million annually to clean up their beaches (as in Armitage and Rooseboom, 1999). A more recent estimate of the total annual cost of litter prevention, cleanup and disposal in the state of California was \$375.5 million (Earth Resource Foundation). These figures should present a basic idea of the kind of money that is spent cleaning up litter that could be used for other programs.

**Harmful to humans and wildlife:** Excessive litter can have damaging effects on wildlife and be harmful to human health. Litter on streets or sidewalks, if not cleaned up, will most likely

end up in a river, lake, or ocean. That trash can have a serious impact on the aquatic life in the receiving body of water (Marais and Armitage, 2004). For instance, a fish or bird might mistake a piece of plastic for food and choke on it. Certain types of litter contain nutrients that may build up in excess in the water and cause algal blooms which deplete oxygen levels (Petrie et al.). This in turn creates a lower quality aquatic habitat where fewer delicate species can survive. Litter can also degrade water quality if there are other harmful chemicals associated with it, which can be harmful to humans if, for example, they eat fish from that body of water. Another way that litter can cause health problems is if it builds up and attracts rats or other pests that may carry disease (Petrie et al.).

### **Sources of litter**

Some explanations of why people litter is that it is an anti-social behavior, the result of negligence, habit, or lack of education about the impact of littering (Armitage and Rooseboom, 1999; Litter Management, 2002). While this deals with one aspect of the litter problem, the act of people improperly disposing of waste, there are other factors that contribute to this issue. The creation of excess waste is one factor that contributes greatly to the accumulation of litter. This includes excess packaging of products, and unwanted advertising material placed on windshields or handed out (Armitage and Rooseboom, 1999; Litter Management, 2002). Another issue that affects the amount of litter is the lack of enforcement of anti-litter laws. This is most likely due to the amount of more serious offences that the authorities have to deal with, especially in urban areas. The measures set up for disposal and control of waste may also be part of the problem. Trash receptacles along sidewalks and other heavily trafficked areas can create more of a litter problem if they are not designed or maintained properly. In many cases there are not enough trash bins or they are too far apart and this can lead to overflowing or people littering because there is not a bin close by. Also, trash may blow out of bins that are left uncovered or susceptible to vandalism (Armitage and Rooseboom, 1999).

### **Waste and litter reduction strategies**

The problem of litter is very complex and needs to be confronted in a variety of ways depending on the type of area that is being addressed and what measures are already in place. The following figure provides a concise outline of the type of multifaceted approach that is necessary for a successful litter reduction program.

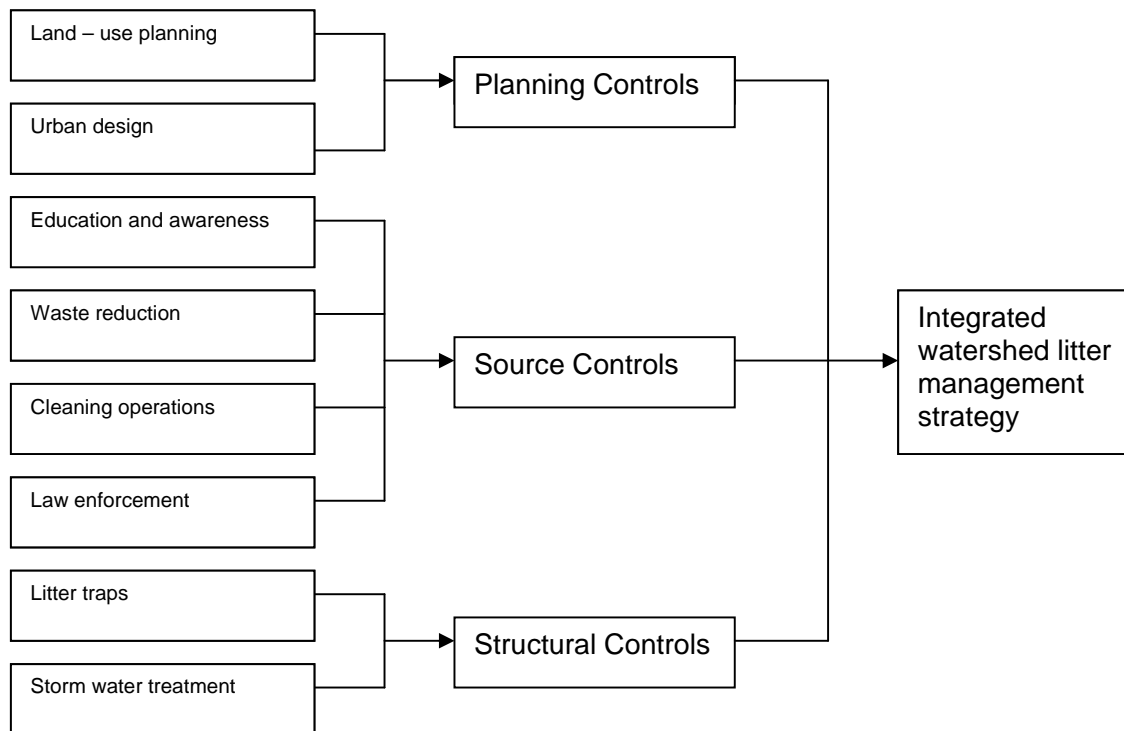


Figure from:

Marais, Mark., and Neil Armitage. "The measurement and reduction of urban litter entering stormwater drainage systems: Paper 2 – Strategies for reducing the litter in the stormwater drainage systems". *Water SA*. 30. 4 (2004) 19 Apr. 2005 <[www.wrc.org.za/downloads/watersa/2004/Oct-04/6b.pdf](http://www.wrc.org.za/downloads/watersa/2004/Oct-04/6b.pdf)>

Planning controls are the type of litter management strategy that are the broadest in scope. They include land-use policies that preserve the natural riparian vegetation and shape of river channels to reduce that amount of litter that flows into the river (Marais and Armitage, 2004). The basic idea of planning controls is that any development project that goes on takes into the account the impact that it will have on the surrounding environment, and puts measures in place to reduce its impact. Planning controls are an effective way for developing communities to make sure that the amount of litter and waste will be controlled, but in an urban community that is already fully developed; other measures are more effective and would likely be put into use first.

Structural controls deal with litter after it enters the waterway or drainage system by installing litter traps, diversion systems, silt traps, etc., to remove it. This is one way to keep litter from entering a larger body of water and affecting wildlife, or clogging storm drains and causing localized flooding. The problem with this is that these filtering structures range from 250,000 to 900,000 dollars and are much more expensive than other source controls (Environmental Protection Agency, 2002).

Source controls are the most cost effective way to reduce litter, but need to be implemented in conjunction with one another to be most effective. A specific plan should be laid out,

probably favoring one type of source control, depending on the litter reduction strategies already in place, the type of community, and the resources available to address the problem.

**Educational campaigns:** This is by far the most crucial element of any litter reduction plan. It is “a better investment to educate litterers out of their habit than to go around just picking up after them” (Florida Litter Study, 1998). The idea is, to teach people that casual littering can have a serious impact on the many issues that were discussed earlier such as human health, wildlife, and the economy. Educating the public on these issues can be done in a variety of ways (Marais and Armitage, 2004):

- Integration into school curriculum or after school activities
- Anti-littering messages on buses, billboards, etc.
- Mass media campaigns on the radio, and/or television
- Cleanup campaigns that also provide information about how litter, or chemicals from litter, can be harmful to human and wildlife health

An example of a very successful waste management educational tool for children is a series of children’s books from the UK by Elisabeth Beresford, with characters that clean up litter and turn it into useful things. These books became very popular during the 1960’s and 1970’s and helped shape a generation that was more aware of recycling and litter reduction issues (Read, 1999). The key to any successful education program is to understand the group that should be targeted, and the best way to get the message across to them. As mentioned earlier, studies have shown that the group that litters the most is young males under 35 (Florida Litter Study, 1998). It would be wise for an educational campaign targeting a large area, like a nationwide media campaign for example, to address this group. For a smaller campaign designed for a specific community, it is more important to create a program targeting the dominant group of people that make up that community.

**Waste reduction:** Reducing the amount of waste that is created also plays a vital role. This includes getting businesses to reduce packaging, eliminate the use of unwanted advertisements passed out, recycle, and use products or packaging that are recyclable or biodegradable. Besides just getting businesses involved, it also means encouraging the public to recycle and reuse the products they use by (Marais and Armitage, 2004):

- Recycling in their own homes
- Utilizing recycling facilities elsewhere
- Reusing plastic grocery bags or using reusable shopping bags instead
- Reducing the amount of non-biodegradable products they use

Educating the public on what should be recycled and other ways they can help reduce waste should be considered as part of an educational campaign.

**Cleaning operations:** These include street sweeping, trash and recycling bins in public areas, and large, organized, volunteer cleaning operations like adopt – a – river or block. Street sweeping is very effective at removing trash from the streets, but fairly expensive and only effective if done in areas with a high volume of litter and frequently enough to remove most of the litter before it washes away (Marais and Armitage, 2004). In order to help people not litter it is also important to have enough trash and recycling bins in public areas, and make sure they are properly designed so that litter does not blow or fall out. Adopt-a-river or

block programs have proven to be very effective in keeping areas clean, but in some urban areas it is hard to get the community and businesses involved in these programs.

**Law enforcement:** While there are litter laws in place all across the country that make it illegal for anyone to litter, they are very difficult to enforce unless it is large scale illegal dumping (Florida Litter Study, 1998). Also, the authorities have many other serious crimes to deal with, especially in urban areas, making it difficult to enforce the litter laws.

### **Waste and litter reduction strategies for the Kinnickinnic River watershed**

As stated earlier, the residents of the Lincoln Village community next to the Kinnickinnic River identified litter as a serious problem in their neighborhood.

The Kinnickinnic River is filled with debris that is seriously affecting the water quality and health of the river. Addressing this issue would improve the quality of life for the residents in these communities by giving them a cleaner environment and a greater sense of pride in their community. The first and most important litter reduction strategy that should take place is an educational campaign. This campaign should, in part, be a program to address the children that go to school in this area, by teaching them the negative effects of littering. Teaching the children about the impacts of littering will not only raise a new generation that is more aware of environmental issues, but also will help in reaching their parents by hearing about what their children learned in school. Another part of the campaign should be anti-littering messages aimed at young people. In this area a lot of people walk and use public transportation so billboards, commercials on buses, or ads on the side of buses would be an effective way to reach a large number of people. Due to the significant amount of Spanish speaking residents in the community, these messages should also be put out in Spanish. The message of this campaign should focus not only on educating people about the impact that litter has, but also the benefits of recycling and what can and cannot be recycled.

Cleanup events should be considered along with, or after, an educational campaign takes place. These events would not only help to reduce the large amount of litter already in the river and throughout the community, but would also help show residents where their litter ends up. Cleaning up the neighborhood would also give residents a greater sense of ownership in their community. There have been successful efforts in the past to involve residents in urban areas in cleanups. In 1993 in Los Angeles, there was a very successful cleanup campaign, organized by a group called Operation Clean Sweep, in which over 17,000 volunteers took part in 243 cleanups in one year alone (Crook, 1993). The director, Delphia Jones, stated, "...what we're doing is empowering the people...people are aware that if they live, work, and play in a neighborhood, they are responsible for its upkeep" (Crook, 1993).

Another idea for reducing the amount of litter in this community is increasing the number of trash and recycling bins. This neighborhood has a very high density of residents, and as mentioned earlier, many of them walk and use public transportation. Making sure there is an adequate amount of bins for proper trash disposal will make it easier for people to stop littering. Also, putting messages on these bins in Spanish, like garbage, bottles, cans, paper, should also be considered.

While the amount of litter in many urban areas is discouraging, such as the area around the Kinnickinnic River, many of the methods discussed in this paper have proven effective in areas like these. It is important to identify the group that should be addressed in any educational campaign based on the makeup of the community. Also, any litter management strategy that is developed should take into account the programs and services that are already in place, what more needs to be done, and what strategies would be cost effective in that area. With the proper planning and forethought, a successful litter reduction strategy can be developed and implemented in almost any community.

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