

# Preserving and Protecting Our Natural Resources

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## Our Vision

The health of our natural environment is a key foundation for the physical, mental, and spiritual well-being of our citizens. A healthy environment supports native ecosystems and enhances our quality of life through its natural beauty and wellness opportunities. A degraded or contaminated environment is harmful to living creatures and presents threats to human health and well-being. We measure the health of our natural environment through our natural resources of air, water, land, and native plants and animals. Our vision is that the community will work together to preserve and protect our natural resources.



## How Are We Doing?

Natural resources measurements range from ozone levels to household recycling. Harrisonburg, Rockingham County, and the surrounding areas show a decrease in days exceeding ozone levels. Harrisonburg and Rockingham County residents are applying fewer chemicals to their lawns. Twenty percent of area residents improperly dispose of prescription medicine by flushing it down the toilet. More people are picking up pet waste (36% in 2006 to 49% in 2011). Area residents are less concerned about the quality of their tap water. Thirty-six percent of residents in Harrisonburg and Rockingham County find it very easy to get around their neighborhoods. Recycling rates are slightly improved compared to 2006. In 2010 Rockingham Memorial Hospital opened its doors as the largest Leadership in Energy and Environmental Design (LEED) Gold hospital in the country.

# Air Quality

What is essential to human life? Clean air. The Federal Clean Air Act established standards for air quality and identified six pollutants that are regulated and monitored, also known as criteria pollutants. These pollutants have a negative effect on human health and can damage or destroy the environment. The most widely monitored pollutant is ground-level ozone, which forms when nitrogen oxide (NOx) and volatile organic compounds (VOCs) combine in the presence of sunlight and heat. Sources of emissions include industries, agriculture, and automobiles. Industry sources are monitored and regulated to determine the quantity of pollutants being released. The ambient air is also monitored to determine the general quality of air in a given place.

## What does this measure?

Ambient monitors are stationed throughout the state of Virginia. In the Shenandoah Valley, there are a number of monitors at work. Ozone, being the most highly monitored pollutant, is measured at five locations within the Shenandoah Valley: Frederick County, Page County, Rockingham County, Rockbridge County, and Shenandoah National Park. The chart below shows the number of days that the ozone standard has been exceeded over the past several years. The number of days shown reflects the current standard for ozone of 75 parts per billion (ppb). Exceedence refers to the number of days target counties exceed the Federal eight-hour standard for ground-level ozone.

## How are we doing?

Rockingham County currently has monitors for nitrogen oxides (NOx), sulfur dioxide (SO<sub>2</sub>), ozone (O<sub>3</sub>), and particulate matter (PM<sub>2.5</sub>). The Rockingham County ozone monitor was installed in 2007. Since that time, there have been two exceedences of the current ozone standard. Overall, the number of days exceeding the standard has dropped considerably at other monitoring stations since 2002. This decrease can be attributed to better technology and controls at industry sources, more fuel-efficient vehicles, and better decisions by individuals.

Days Exceeding Standard Ozone Levels

	2002	2003	2004	2005	2006	2007	2008	2009	2010
<b>Frederick County</b>	21	5	1	3	2	1	2	0	1
<b>Page Co.</b>	9	6	1	4	2	0	0	0	0
<b>Rockingham County</b>						1	0	0	1
<b>Rockbridge Co.</b>	8	2	0	1	0	0	1	0	0
<b>Albemarle County</b>							3	0	3
<b>Shenandoah National Park</b>	22	9	3	8	5	0	5	0	3

Source: Virginia Department of Environmental Quality

# Water Quality

In the Central Shenandoah Valley, the streams that drain our local watersheds drain into the Chesapeake Bay, which is the world's largest, most diverse estuary. Impairments in the Shenandoah watershed include high sediment loads, low counts of aquatic life, high nutrient loads, and high bacterial counts.

## *What does this measure?*

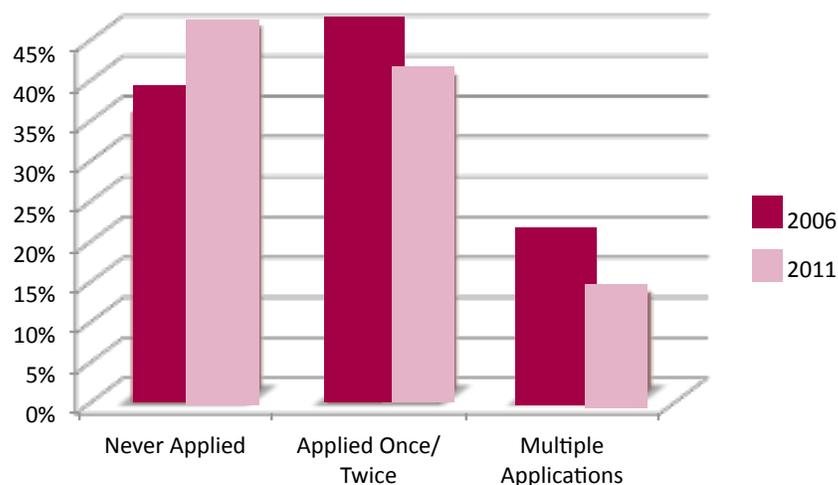
Survey participants were asked how frequently they applied chemicals (pesticides and/or fertilizer) to their lawns over a one-year period.

## *How are we doing?*

Nearly half (46%) of area residents reported that they never apply chemicals to their lawns, compared to one third (36%) in 2006. Improper application of chemicals on lawns can run off the land and into streams, rivers, and lakes potentially contaminating our reservoir systems, wells, and other sources of freshwater we use for drinking. Prior to using any pesticides, homeowners should always read the labels to prevent damage to other plants, contamination of our waterways, and harm to wildlife.

Homeowners should conduct a soil test prior to fertilizing their lawns and should contact their local Virginia Cooperative Extension office for a soil test kit and instructions on how to test their soil. A soil test will indicate if fertilizer is needed and how much fertilizer should be applied to keep plants healthy. Over-application of fertilizer that runs off into local water bodies can cause eutrophication, an overgrowth of algae in water bodies, which can result in negative environmental effects, including depletion of oxygen in the water, which induces reduction in specific fish and other animal populations. Over-application of fertilizer also wastes money; however, proper application of fertilizers to keep plants healthy can have positive impacts on water quality because plants help reduce soil erosion and pollution in water bodies.

**Frequency of Lawn Chemical Application**  
Harrisonburg & Rockingham Combined



# Pet Waste

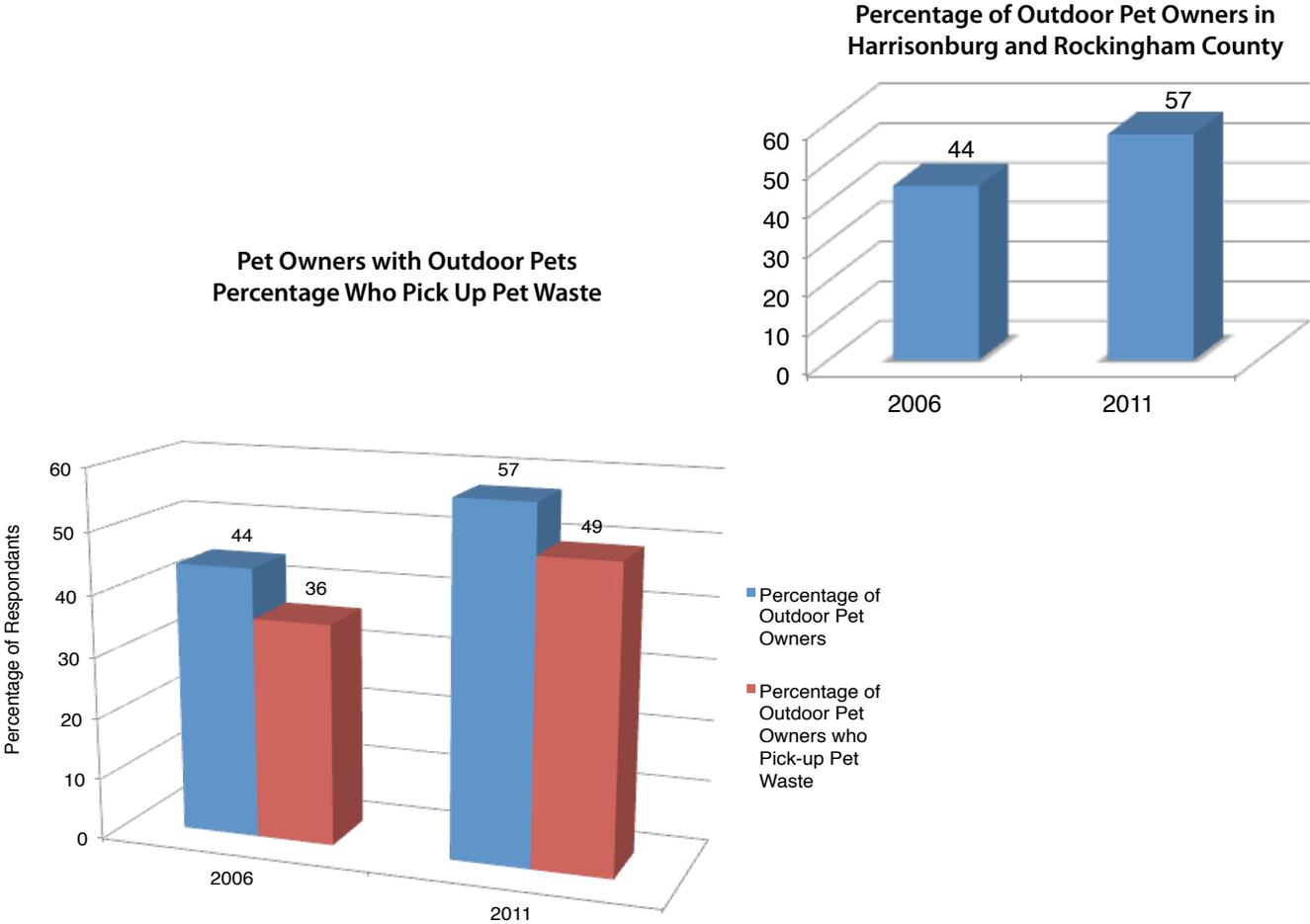
Pet waste is a major source of microorganisms, including *Cryptosporidium*, *Giardia*, *Shigella*, and *E. coli* O157:H7, that can cause illness in people. When these microorganisms enter creeks, rivers, and lakes they can cause illness in people who are swimming or recreating in these bodies of water through accidental ingestion of contaminated water.

### *What does this measure?*

Survey participants were asked if they owned pets. For those who own pets, they were asked if those pets were allowed outside to urinate and defecate. Finally, pet owners were asked if they pick up after their pets, if pets are allowed outside access.

### *How are we doing?*

Between 2006 and 2011, the percentage of people who pick up after pets allowed outside has increased from 36 percent to 49 percent. This is a good trend in that if the number of people continues to increase in the future, we should have fewer disease-causing microorganisms coming from pet waste. Other sources of bacteria could still come from agricultural livestock, untreated human waste, and wildlife.



# Prescription Drugs

Prescription Drugs should be properly disposed of to decrease the chance they will find their way into our water supply and to decrease the risk of abuse by both teens and seniors. Regularly cleaning out your medicine cabinet and properly disposing of drugs will help to protect our environment, our youth and our grandparents.

## *What does this measure?*

Survey participants were asked how they dispose of unused/unnecessary prescription and over-the-counter medicines.

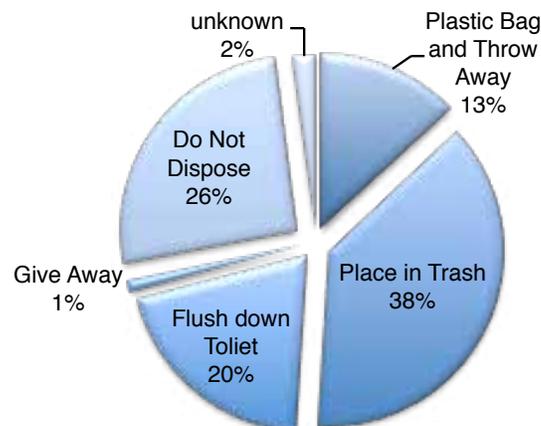
## *How are we doing?*

Improperly disposing of unused/unnecessary prescription and over-the-counter drugs pollutes local waters and increases the chance for illicit drug use and abuse. Below are some guidelines for the proper disposal of medicine.

How to Properly Dispose of Drugs:

- Remove drugs from plastic container.
- Place in a sealable container or bag.
- Mix in an undesired substance such as coffee grounds or kitty litter.
- Place in the trash, not in the drain or toilet.

Disposal of Unused/Unneeded Medicines 2011



# Water Supply

Clean, safe drinking water is more than a desirable goal. Water sustains life. Less than 2 percent of the world's water is readily available for drinking purposes. Drinking water comes from public sources (municipal sources, where water is filtered, chemically treated, and tested) or private sources (wells and cisterns, where water may or may not be filtered, treated, or tested).

## *What does this measure?*

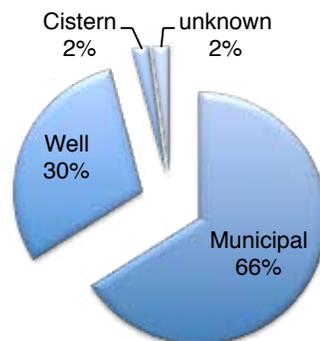
Survey participants were asked the source of their tap water (municipal source or well) and whether they were concerned about the quality of their tap water.

## *How are we doing?*

Thirty-one percent of City and County residents reported being concerned about drinking water; however, it is uncertain about what, specifically, concerns them. This is an improvement over 2006 when 42 percent of Harrisonburg residents and 36 percent of Rockingham County residents were concerned about the quality of their tap water. All City residents are on municipal water sources and County residents are on a mixture of municipal water sources, private wells, and cisterns.

The City's water sources consist of surface and impoundment withdrawals from the North River and from Rawley Springs. A major project is now underway to construct a new raw water supply line from the South Fork of the Shenandoah River to the City's Water Treatment Plant. The City's water supply is of good quality; treated water meets or exceeds State regulatory drinking water standards. The City municipal water plant serves some areas of the County. It is the County's policy to direct new development areas in or near existing towns and communities served by public water; however, rural areas of the County still rely on private well sources. Owners of private wells are solely responsible for the safety of that supply and should test their well water for contaminants. Local health departments and Cooperative Extension offices can provide owners with information about available water testing labs. (For additional information go to <http://pubs.ext.vt.edu/356/356-485/356-485.html>)

**Water Supply Source 2011**



# Livable Neighborhoods

Livable neighborhoods are generally defined as being compact so they conserve land and are of sufficient density to support a variety of transportation options such as walking, bicycling, and public transit; have a mix of housing, workplaces, and neighborhood-serving shops and services; are diverse in housing choices and provide a range of jobs; and are served by parks, playgrounds, plazas, and other community spaces.

## *What does this measure?*

Survey participants were asked about the ease of getting around the neighborhood on foot or bicycle.

## *How are we doing?*

About one-third (36%) of survey participants in the city and county reported that getting around in their neighborhoods, by bicycle or on foot, is very easy. It should be noted that no objective gauges were used to help check accuracy of responses, e.g. "how often do you walk or bike in your neighborhood?" or "how far from your home do you typically walk or bike?"

With assistance from Safe Routes to School (SRTS) grant funding from the Virginia Department of Transportation, both the city and county have been working to improve walkability in neighborhoods surrounding schools. Since 2008, four SRTS grants have been awarded to the City and County to construct new sidewalks, and for one of those grants in the City new bike lanes will be added near a school. The City also updated its Bicycle & Pedestrian Plan in 2010, which provides a framework for developing and implementing bicycle and pedestrian facilities in the City. In 2011 the city was awarded a Bronze Bicycle Friendly Community designation by the League of American Bicyclists.

**Getting Around in the Neighborhood**

**Harrisonburg City &  
Rockingham County  
Combined**



# Waste Management

More than 50 percent of the municipal solid waste generated in the area (City of Harrisonburg and Rockingham County) is incinerated at the City-owned Resource Recovery Facility, located on Driver Drive. The kinds of wastes incinerated determine the kinds of emissions that go into the air. For this reason, the City of Harrisonburg works diligently to promote the benefits of recycling and removal of household hazardous wastes from their trash. Generally speaking, recycling removes reusable/renewable items from the waste stream, which normally ends up in a landfill. Recycling percentages data have been collected from annual reporting, which include all area households and businesses/industries in the City of Harrisonburg and Rockingham County.

## *What does this measure?*

Participants were asked if they recycle and what types of materials they recycle.

## *How are we doing?*

Participation is fairly uniform throughout the area with higher participation in the urban areas. This is most likely due to the urban areas having the easiest accessibility to recycling services (i.e. Harrisonburg operates a curbside recycling program). Rockingham County hosts recycling containers at five waste drop-off sites.

### Who Recycles?

78% of City and County residents reported in 2011 that they recycle.

Recycled Materials

