Watershed Residents – How You Can Make a Difference

Everyone lives in a watershed. Watersheds are where we work and where we play. Everything we do on the land impacts the quality of water on which we rely for drinking, irrigation, and industry. From the disposal of household and yard wastes to the maintenance of healthy, native streamside buffers, as residents of the Black River watershed, you play a major role in improving and maintain water quality in the basin. There are several key actions that residents of the Black River watershed can take to improve water quality in the basin.

Get involved in your community and watershed

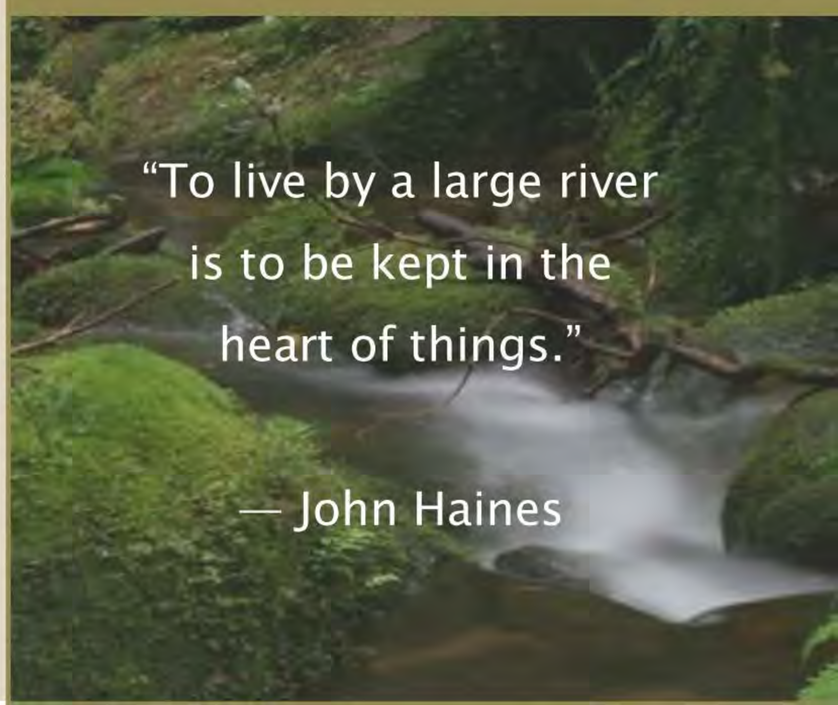
Community involvement is a vital component in developing and implementing a successful watershed management plan. Public meetings, hearings, and workshops are excellent opportunities for residents to learn about what is occurring in their watershed, ask questions, and express concerns about water quality. By becoming involved in local land use decisions, you can encourage local officials to consider how these activities affect the watershed. As a watershed resident, you are also encouraged to get involved by volunteering with local organizations and agencies that participate in watershed projects. Each individual has a different set of skills and interests, so there are a variety of ways that you can volunteer your time – participating in streamside clean-up activities, monitoring water quality in local streams, or educating children about watersheds and water quality.

Properly maintain on-site septic systems

Of the 56 municipalities in the Black River watershed, only 16 provide their residents with municipal wastewater treatment – the remaining watershed residents use private, on-site treatment systems. While on-site treatment can be a cost-effective solution, it requires regular inspection and maintenance to ensure it functions properly and does not fail. Failing to maintain these systems can result in untreated wastewater being introduced into streams. This negatively affects water quality by increasing the amount of pollutants, which leads to water that is unattractive and unsuitable for use. Watershed residents using on-site septic systems should ensure that these facilities are properly maintained.

PRIMARY RECOMMENDATIONS

- Get involved in your community and watershed
- Properly maintain on-site septic systems
- Minimize household impacts to water quality
- Maintain healthy, native streamside buffers



Minimize household impacts to water quality

There are a multitude of small changes that households can make that, collectively, can have a large impact on water quality. First, households should make sure that pesticides and chemicals, automotive wastes, grass clippings and yard waste, pet and animal manure, and winter salt and de-icers are stored in areas not accessible by stormwater and are disposed of properly when no longer needed (not down a drain or into streams, septics, or stormwater collection systems). Additionally, using alternatives such as "green" household products, or reusing and recycling hazardous fluids and other products can reduce the amount of waste produced in the first place. Watershed residents can also reduce their effective imperviousness by installing rain barrels or rain gardens on their property, which will reduce the amount of overland runoff and the pollutants it carries.

Rain barrels collect and store water from your roof that would otherwise be lost to runoff and diverted to storm drains or streams

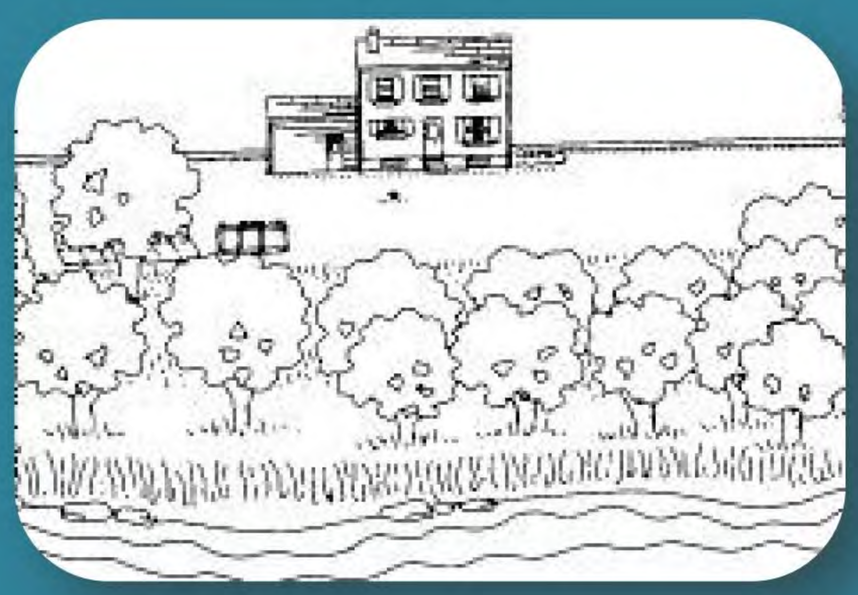
Maintain healthy, native streamside buffers

Streamside buffers play an important role in terms of water quality and other ecosystem services. By trapping soil and sediments, these areas can reduce the amount of soil and nutrients moving from upslope areas into streams, thus improving water quality, reducing streambank erosion, and decreasing the loss of in-stream habitat through siltation. Streamside buffers are also important in the lifecycle of many native plants and animals by providing food, cover, corridors for movement, and refuge during time of drought or fire.

Mowing up to the bank increases runoff into the stream and negatively impacts water quality

For those residents whose property abuts a stream, lake, or other waterbody, buffers should either be expanded, or created where they are currently lacking, to a minimum of 50 feet by planting native trees and shrubs. By leaving openings in your landscape design, you can still have access to the stream for enjoyment and recreation. Other ways in which residents can maintain healthy, native streamside buffers include:

- Create a "no-mow" zone, allowing the buffer strip to grow freely
- Gather grass clippings in a designated area in the corner of your yard as far from the streambank as possible,
- Remove large debris from the stream channel that are causing erosion, and
- Remove invasive and non-native plants.



A buffer strip of native trees and shrubs between your yard and the stream can improve water quality and reduce streambank erosion

Farmers – Good Stewards of the Land

In addition to playing an important role in the region's economy, agricultural lands within the Black River watershed also provide highly valued open space and scenic vistas and contribute to the support of a number of species of wildlife. With more than 172,000 acres of land under agricultural production, most of which occurs in the Black River valley, agricultural land uses can also be a significant contributor to nutrient and sediment loadings in streams. According to the 2006 Black River Basin Waterbody Inventory and Priority Waterbodies List, the following agricultural practices have negatively impacted water quality in 25 percent of all watershed waterbodies:

- Nutrient and silt/sediment inputs from agricultural runoff;
- Livestock access to streams, resulting in damage to riparian vegetation, bank erosion, and nutrient inputs;
- Improper manure application;
- Lack of silage leachate control;
- Inputs from manure or milkhouse wastewater treatment facilities;
- Intensive cropping near streams with inadequate riparian buffers;
- Fertilizer and pesticide application without approved pesticide/nutrient management plans.

Combined animal feeding operations (CAFOs) have also been identified as a source of water quality impacts in the watershed due to their presence in the Black River valley. To reduce the impact of farming activities on water quality, watershed farmers should implement the following voluntary recommendations where appropriate:

Participate in the Agricultural Environmental Management (AEM) program

Enroll in the AEM program as an initial review tool from which additional needs can be determined. The AEM program is an essential watershed management program that has been very effective at reducing nutrient inputs to waterbodies. This voluntary incentive-based program helps farmers operate environmentally sound and economically viable businesses by assessing environmental concerns associated with their farming operations, documenting current stewardship, developing management plans, and implementing environmentally sound practices to address identified concerns.

PRIMARY RECOMMENDATIONS

- Participate in the Agricultural Environmental Management (AEM) program
- Maintain healthy, native streamside buffers
- Minimize nutrient-laden runoff from agriculture
- Reduce livestock impacts to streams, rivers, lake, and other waterbodies

AEM Agricultural Environmental Management

"Riparian buffers have been shown to be effective in controlling non-point source pollution by removing nutrients, especially nitrogen, and sediments."

— U.S. Department of Agriculture

Maintain healthy, native streamside buffers

Streamside buffers play an important role in terms of water quality, particularly on agricultural lands. By trapping soil and sediments, these areas can reduce the amount of soil and nutrients moving from upslope areas into streams, resulting in improved water quality, reductions in streambank erosion and minimizing the loss of valuable agricultural land. Depending on the width, streambank buffers have been shown to remove up to 90 percent of the nutrient loads from adjoining croplands and pastures.

Farmers should try to maintain as much natural vegetation near streams as possible

Minimize nutrient-laden runoff from agriculture

In addition to streamside buffers, there are several other Best Management Practices (BMPs) designed to reduce runoff and nutrient and sediment loads from agriculture. These can include, but are not limited to:

- Develop nutrient management plans
- Implement no-till crop production
- Install vegetative filter strips
- Use cover crops during off-season
- Implement contour farming
- Use terracing on cultivated steep slopes

Farmers should work with their county Soil & Water Conservation District to identify the most suitable BMPs for their land.

An example of no-till crop production

Reduce livestock impacts to streams, rivers, lake, and other waterbodies

Allowing livestock access to streams often results in the deposition of manure and urine directly into or near surface waters. This can accelerate erosion and sedimentation, change stream flow, and destroy aquatic habitats. Additionally, grazing in riparian areas can reduce their capacity to filter nutrients and stabilize stream banks. Reducing livestock access to streams involves two separate activities – off-stream watering tanks and controlled stream crossings and exclusionary fencing. More information is available from the county Soil & Water Conservation Districts.

Recreational Users – Enjoy the Watershed Responsibly

Given the beauty of the natural environment in the Black River watershed, combined with the relatively undeveloped, rural character of the region, it should come as no surprise that outdoor recreation opportunities add to the watershed's quality of life and plays an important role in the region's economy.

While more traditional pastimes are still popular in the watershed (e.g., boating, fishing, hunting, and hiking), the region's expansive network of trails has made ATV and snowmobile use increasingly popular. To ensure that recreation in the Black River watershed occurs in a responsible manner, recommendations have been arranged by user groups.

Use the water wisely

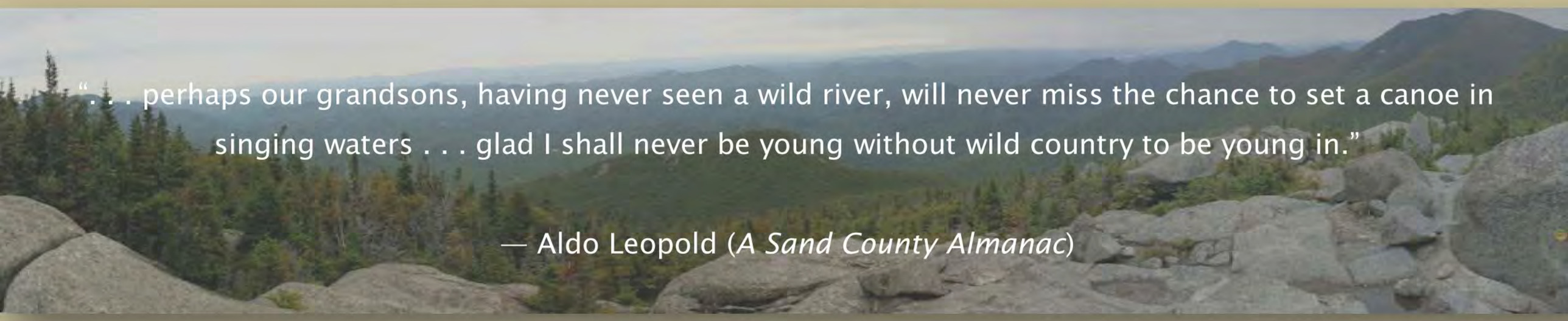
Recreational opportunities are one of the primary reasons people choose to live in the Black River watershed, including water-based activities such as boating and fishing. The following best management practices will help minimize potential impacts from water-based recreation:

- Inspect boats and trailers to avoid the transportation of invasive species to and from other waterbodies;
- Conduct fueling and maintenance of motorized watercraft on the trailer;
- Site fuel storage tanks should be as far from the waterfront as possible;
- Reduce your wake to prevent shoreline damage and erosion; and
- Fish responsibly – follow take limits and do not deposit fish entrails or parts into waterbodies or onto shorelines.

"Leave No Trace" Camping and Hiking

Leave No Trace (LNT) is an internationally recognized program developed to assist outdoor enthusiasts in reducing the environmental impacts of their activities (www.lnt.org). The goal of the program is to educate people about the nature of their recreational impacts, as well as to provide practices and techniques that can minimize those impacts. Campers and hikers should incorporate the following recommendations into their activities to reduce their impact on water quality:

- Be aware of the regulations and any special concerns for the area,
- Avoid times of peak use and visit in small groups,
- Travel and camping should be on established trails and campsites, rock, gravel, dry grasses or snow,
- Camp sites, dishwashing, and latrines should be at least 200 feet from the nearest waterbody
- When you leave, pack out what you packed in, including all trash, leftover food, and litter, and
- Be considerate of other visitors and respect their desire for a quality experience.



Best management practices for off-road vehicles

Snowmobiling is one of the largest generators of tourism dollars in the Black River watershed, with traffic in recent years increasing significantly. ATV use is also widely popular in the watershed, although much of the ridership is locally generated and does not draw as many out-of-state tourists. Both have considerable implications on water quality, as off-road vehicles have a disproportionate impact on the environment compared to many traditional forms of recreation. To reduce their environmental impacts, the following best management practices should be used by off-road vehicle users:

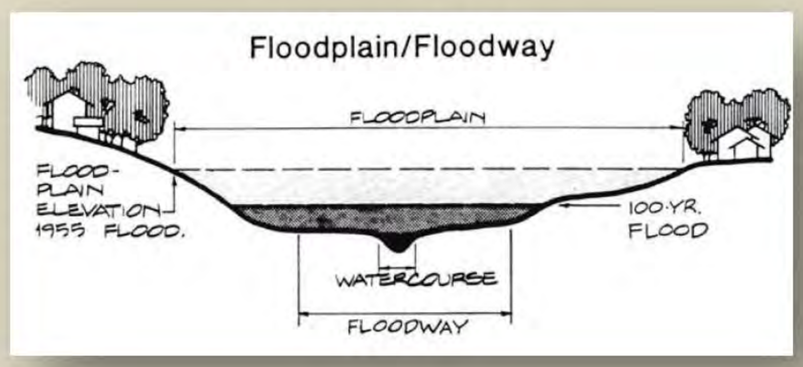
- Travel responsibly on roads, trails, and permitted areas. Always stay on existing roads and trails and do not make new trails.
- Avoid sensitive areas like meadows, lakeshores, steep slopes, gullies, wetlands, and streams unless on a designated route.
- Do your part to leave the area better than you found it. Pack out what you pack in.
- Avoid "spooking" livestock and wildlife and keep your distance, particularly during winter months and breeding seasons.
- Minimize harmful emissions and prevent unnecessary noise by keeping your engine in tune and minimizing the revving of engines.

Building in the Watershed

The Tryon Farms (IN) cluster subdivision preserves approximately 130 acres as rolling pasture, meadows, woods and ponds

As precipitation falls over naturally vegetated areas, most of it infiltrates slowly into the ground, with only a small percentage flowing overland as runoff. The infiltrating water is cleansed as it moves through the soil, while runoff is slowed by vegetation resulting in the settling of particles and sediment. These natural processes remove pollutants and sediments from the water before it makes its way to nearby waterbodies. Development often results in a significant change to these natural conditions, resulting in increased rates and volumes of runoff and erosion. This increased runoff takes up pollutants from roads, parking areas, roofs, lawns, and other developed surfaces and deposits them into downstream waterbodies, significantly decreasing water quality. To reduce the negative impacts from construction activities, the following recommendations should be incorporated into new construction within the watershed:

Stay out of floodplains



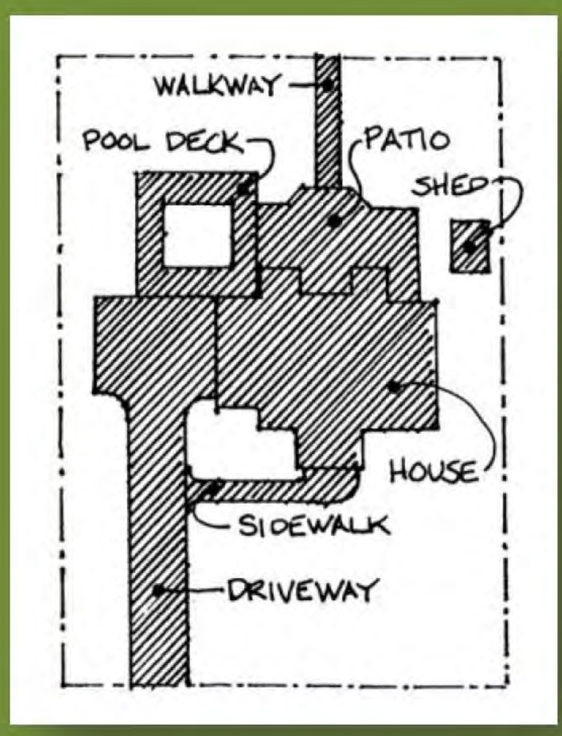
Floodplains are low-lying areas adjacent to streams that are most subject to recurring inundation. In terms of water quality and watershed management, floodplains provide a number of communal benefits and can be far more effective than many man-made structures in reducing downstream flood peaks. When floodplains are developed, flood elevations are increased resulting in serious consequences for existing development and water quality. As such, new development should be minimized within existing floodplain areas. Additionally, as many of the flood maps for the watershed are outdated, local governments should work with FEMA to update their flood maps.

Minimize the amount of newly created impervious surfaces

Impervious surfaces, by their very name, are surfaces covered by an impenetrable material (e.g., asphalt, concrete) and are predominately characterized by artificial structures such as parking lots, sidewalks, and roofs. Increases in impervious surfaces are a direct result of increased development, which can be directly correlated to reduced water quality. New construction in the watershed should implement measures such as rain gardens, rain barrels, and other Low Impact Development (LID) practices to reduce the amount of newly created impervious surfaces in the Black River watershed.

PRIMARY RECOMMENDATIONS

- Stay out of floodplains
- Minimize the amount of newly created impervious surfaces
- Incorporate effective stormwater and erosion control practices
- Maintain healthy, native streamside buffers
- Implement Smart Growth/Low Impact Development approach

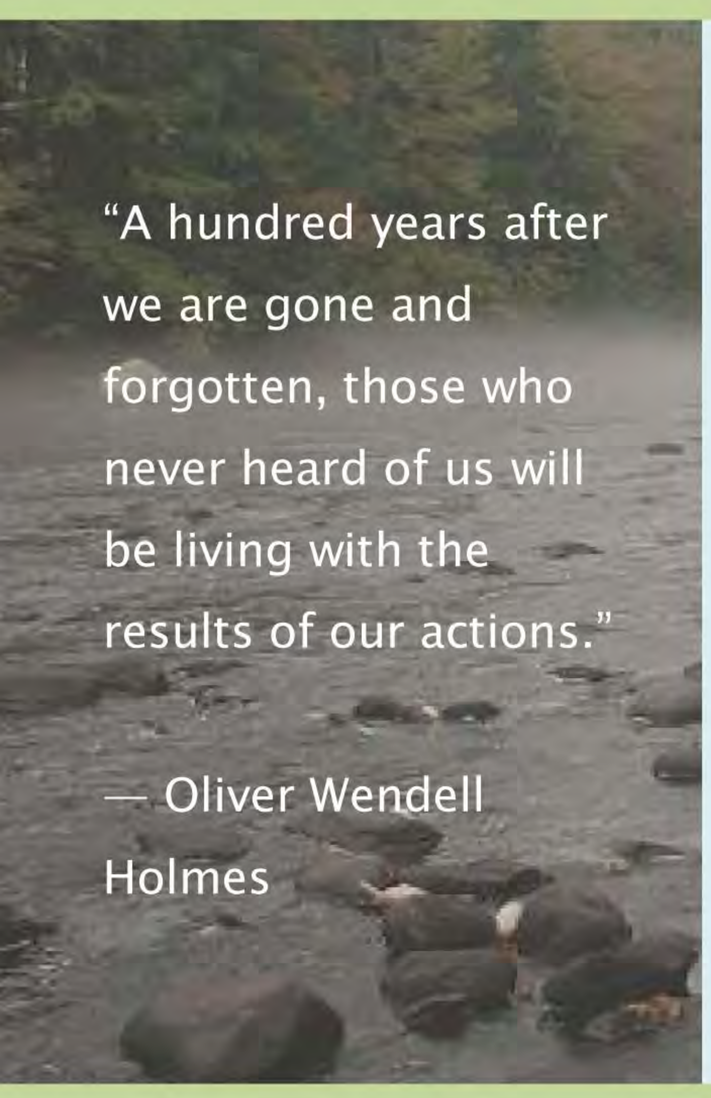


All of these features are considered impervious surfaces and result in increased runoff volumes

Incorporate effective stormwater and erosion control practices

The stormwater pollution issue has two primary components – the increased volume and rate of runoff from impervious surfaces, and the concentration of pollutants in that runoff. Both are directly related to development in urban and urbanizing areas. The effective management of stormwater runoff offers many benefits, including improved water quality, reduced flooding/improved flood control, and the protection of wetlands and other aquatic ecosystems. New construction in the Black River watershed should enact the appropriate set of BMPs to reduce the impacts to water quality that can result from increased stormwater flows and erosion. Stormwater BMPs are generally broken out into structural (e.g., bioswales) and non-structural (e.g., minimizing soil compaction) strategies. See the *New York Standards and Specifications for Erosion and Sediment Controls* for additional information (www.dec.ny.gov/chemical/29066.html).

WRONG! An example of an ineffective erosion control practice – silt fencing should be buried to a depth of about 8 inches

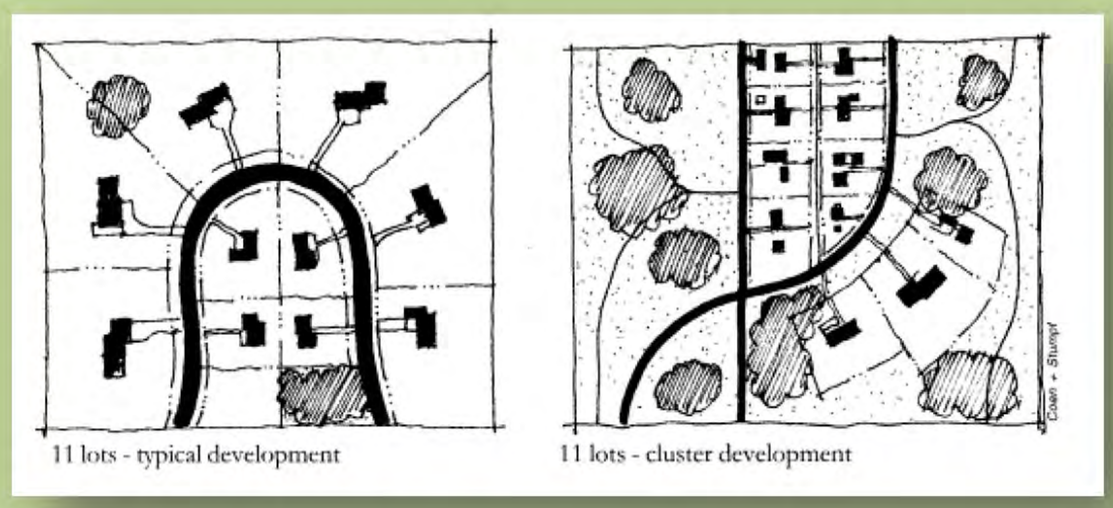


Maintain healthy, native streamside buffers

Streamside buffers play an important role in terms of water quality and other ecosystem services. By trapping soil and sediments, these areas can reduce the amount of soil and nutrients moving from upslope areas into streams, thus improving water quality, reducing streambank erosion, and decreasing the loss of in-stream habitat through siltation. Streamside buffers are also important in the lifecycle of many native plants and animals by providing food, cover, corridors for movement, and refuge during time of drought or fire. Ideal buffer conditions are rarely encountered in urban watersheds; however, it is in these areas where buffers are exceedingly important due to the large amount of impervious surfaces associated with urbanization. New development in the Black River watershed should strive to preserve at least 50 feet of streamside buffers during the construction process.

Implement Smart Growth/Low Impact Development approach

By focusing development in already built-up areas or where adequate infrastructure exists, Smart Growth preserves open space and prime agricultural lands that might otherwise be lost to development. The purpose of Low Impact Development (LID) is to work with nature to manage stormwater as close to its source as possible. By preserving/restoring natural landscape features and minimizing a site's effective imperviousness, LID creates a functional and appealing site drainage that treats stormwater as a resource rather than a waste product. As such, LID results in reduced runoff and erosion, thus helping to improve water quality.



The cluster development (right) is used by both the Smart Growth and Low Impact Development approaches and results in the same number of lots and an increase in the amount of open space

Forest Owners – Using Your Lands to Improve Water Quality

The Black River watershed comprises a substantial forestry base that spans from the Tug Hill Plateau in the west to the Adirondack Mountains in the east. The region's abundant timber resources have seen increases in both annual growth and annual harvest. Lands devoted to the forestry industry are generally owned and managed by logging firms, sawmills, paper mills, wood products processors, the wood energy industry, and individual property owners.

In terms of water quality, forests produce some of the highest quality water in the nation. Deep-rooted trees and their complex root systems stabilize the soil, decrease erosion, and absorb nutrients, particularly along streams. Trees also reduce runoff through the interception of rainfall and enhancement of the evaporative process and recharge aquifers by allowing more precipitation to infiltrate the soil. Additionally, drinking water treatment costs are minimized when watershed forest cover is greater than 70 percent.

The recommendations provided below are meant to provide for the long-term sustainability of the Black River watershed's forestlands both in terms of water quality and timber harvesting.

PRIMARY RECOMMENDATIONS

- Use best management practices to protect water quality during timber harvesting
- Encourage landowners to conserve lands that allow for managed forest easements.
- Minimize forest fragmentation

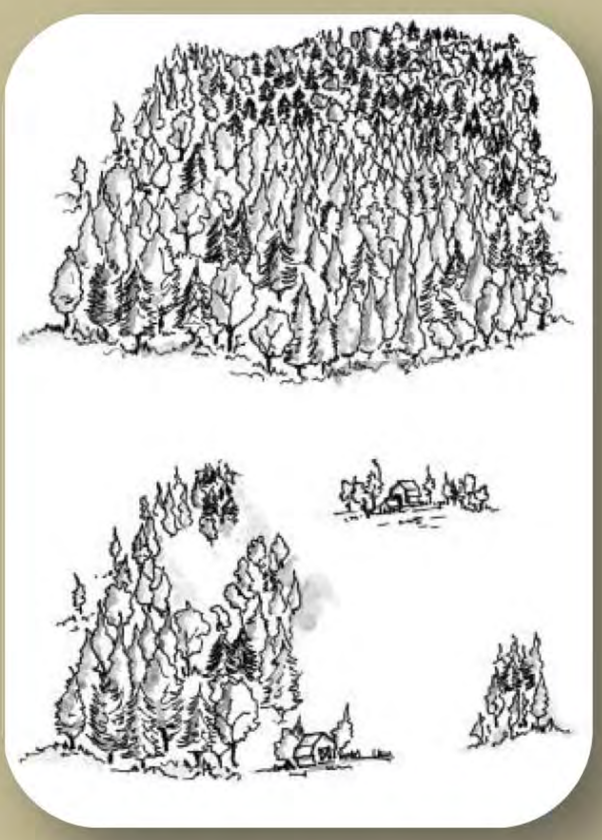
Use best management practices to protect water quality during timber harvesting

One of the most important aspects of an environmentally-sustainable timber harvest is protecting water quality. While timber harvesting is not a significant contributor to water quality problems in the watershed, skid trails, haul roads, and landings are all potential sources of sedimentation, erosion, and siltation. Incorporating simple, low-cost best management practices (BMPs) into your timber harvest allows for these lands to be managed for multiple uses and will assist in keeping water clean. BMPs also help to maintain forest productivity, which is essential for sustainable forest management. Examples of forestry BMPs include constructing new landings at least 200 feet from water bodies and wetlands or minimizing the number of road/stream crossings.

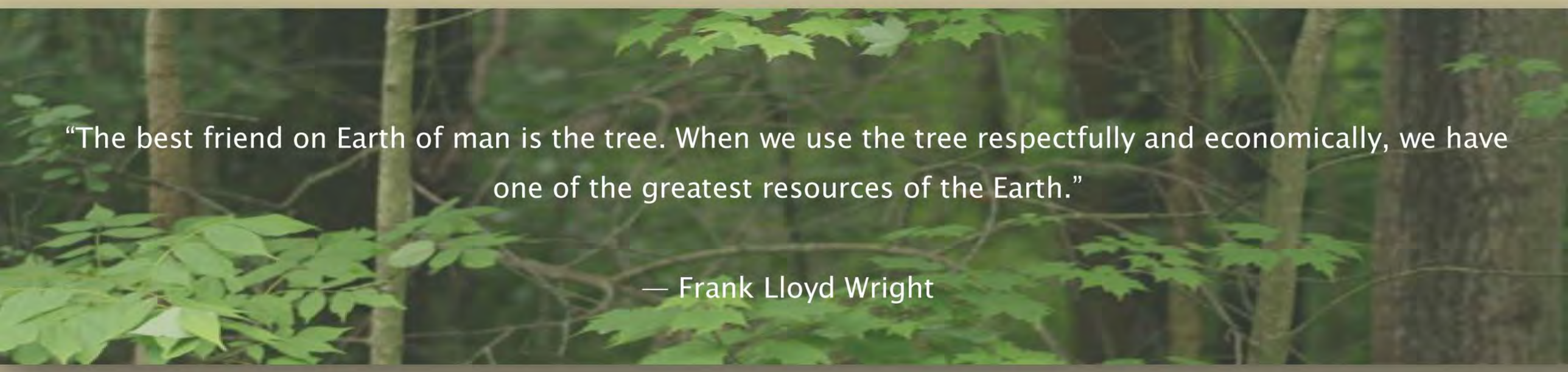
The NYS Forestry BMP Field guide is a practical tool for timber harvesters, forest managers and landowners in helping to protect water quality

Encourage landowners to conserve lands that allow for managed forest easements

Of the more than 700,000 acres of Wild, Conservation, Forest, & Park lands in the Black River watershed, more than 400,000 acres are classified as *Forever Wild* and ""shall be forever kept as wild forest lands". For those forest lands not classified as *Forever Wild*, the goal should be to maintain them as working forests. Responsibly managed working forests encompass treed lands that provide many benefits to communities, including a sustainable supply of wood products, jobs for rural communities, wildlife habitat, as well as clean air and water. To encourage the conservation of lands that allow for managed forest easements, landowners should participate in the NYS Conservation Easement Tax Credit program, which provides landowners a 25 percent property tax refund annually up to $5,000 with no impact to local property tax revenues. For more information on this program, contact the NYSDEC Division of Lands and Forests.



An example of an unfragmented (top) and fragmented (bottom) forest



Species such as the spotted salamander and American martin require large tracts of unbroken forests – these species are negatively impacted by forest fragmentation

Minimize forest fragmentation

Forest fragmentation is the splitting of large tracts of forest into ever smaller patches. In addition to the impacts that overall forest loss has on water quality, fragmented forests often lack the natural pit-and-mound topography of older, core forest patches, which is important for trapping precipitation and promoting groundwater recharge. Fragmentation also impacts water quality by altering stream conditions, increasing the prevalence of invasive species, and by replacing native woodland plants with residential lawns, parking lots, or, as is the case with timber harvesting, logging roads and compacted soils. Forest fragmentation can also have serious implications for a region's biodiversity, particularly on those plant and animal species that originally occupied large contiguous areas of forest habitat. To reduce forest fragmentation during timber harvest:

- Do not remove trees within 200 feet of a stream,
- Minimize new road construction or road widening when harvesting,
- Sufficiently space canopy openings to prevent fragmentation, and
- Do not "open up" more than 10 percent of the total forest area during any one harvest.

Image Credits:

- City of Watertown image on Page 2 provided by Northern New York Genealogy (nnygenealogy.com)
- Image on Page 8 provided by grahamowen.com
- Buffer images on Page 12 provided by University of Missouri Extension
- Streamside buffer image on page 14 provided by the USDA
- Snowmobile/ATV images on pages 15 and 16 provided by Bob Deihl
- Floodplain image on page 17 provided by the Town of Avon (CT)
- Cluster development image on page 18 provided by the St. Croix Valley Community Foundation
- Forest fragmentation image on page 20 provided by the Cornell Lab of Ornithology
- American martin image on page 20 provided by the NYSDEC

Bergmann associates
architects // engineers // planners

THE ACADEMY OF NATURAL SCIENCES

This document was prepared for the New York State Department of State Division of Coastal Resources with funds provided under Title 11 of the Environmental Protection Fund.