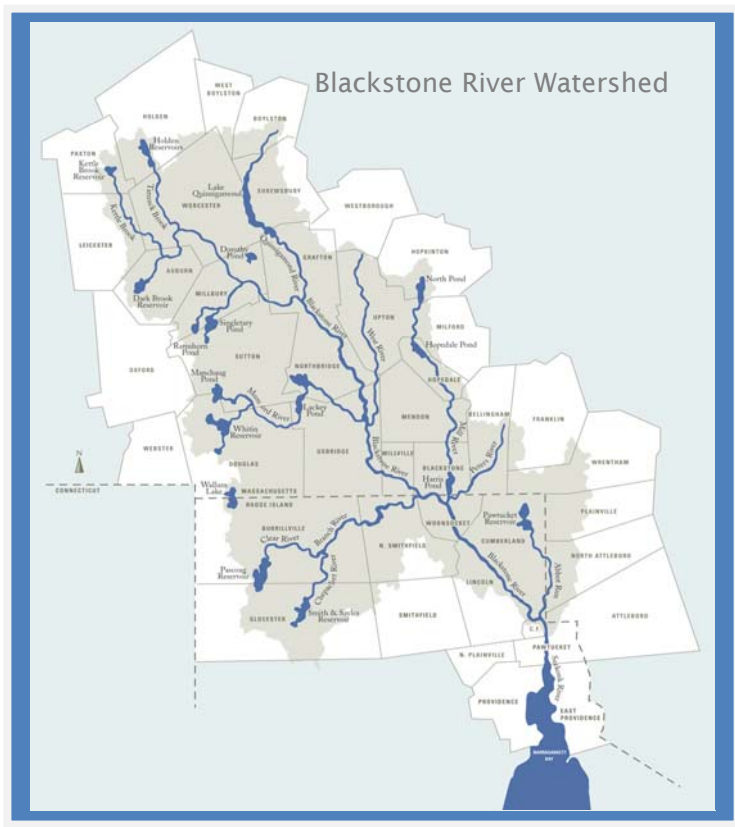


A Horse Owner's Guide to Protecting Water Quality in the Blackstone Valley



A Cleaner Blackstone River Begins in Your Own Pasture!



If you live within the shaded area, you live in the Blackstone watershed.

IF YOU OWN HORSES, this publication will show you how you can play a part in protecting and cleaning up the Blackstone Valley's waterways. Soil from eroding pastures and rainwater runoff from unmanaged animal wastes carry bacteria, nutrients, and sediment to our waterways. You will learn a few simple best management practices (BMPs) specifically designed for landowners with horses. Armed with this new information, you can join the thousands of citizens, businesses, and communities working together for a cleaner Blackstone River.

THE BLACKSTONE VALLEY is, in fact, a watershed, a drainage basin that includes all the land over which rain and snowmelt flow to the Blackstone River. Reducing polluted runoff, or nonpoint source pollution, in the watershed is the major goal of the Blackstone River Coalition. We're working with horse owners, small farm owners, homeowners, business owners, developers and local decision makers to all do their part in reducing stormwater impacts – it's called the "Tackling Stormwater in the Blackstone River Watershed" initiative. Together, we can all help reach the goal of a fishable and swimmable Blackstone River by 2015.

Best Management Practices for Stables and Pastures

Managing Waste and Protecting Water Quality: manure management is a big challenge for horse owners, especially if you have several animals on a small parcel of land and no way of spreading or utilizing the manure. Manure carries bacteria and acts as a nutrient for aquatic plants. When washed into waterbodies, it can cause algal blooms and depleted oxygen, which is deadly to most aquatic life.

Keeping Your Pasture Green: paddocks, riding rings, trails, and pastures are continuously disturbed areas, under constant physical stress from horses' hooves. Overgrazed pastures, in particular, expose patches of bare soil that can easily erode. Rainwater carries soil particles (sediment) and dumps them into nearby streams or lakes. Too much sediment can cloud the water, reducing the amount of sunlight that reaches aquatic plants, and raising water temperature thus reducing oxygen. It can also clog the gills of fish or smother fish larvae.

Material Storage Safety Tips: many of the chemicals found in barns – formaldehyde, paints, hoof oils, and pesticides to name a few – require careful handling and proper disposal. They can be deadly to aquatic life.

Best Management Practices for Stables and Pastures

Managing Waste and Protecting Water Quality:

The following best management practices are designed to minimize nonpoint source pollution and keep manure, nutrients and soil out of waterways.

Store your manure properly

- ◆ Do not store unprotected piles of manure in places where runoff may enter streams or ponds, or flood waters may wash the manure away. Place a cover or tarp over the pile to keep rainwater out.
- ◆ Assistance is available through local conservation districts to design manure storage facilities to protect water quality. These structures usually consist of a concrete pad to protect ground water and a short wall on one or two sides to make manure handling easier.

Try Composting

- ◆ There are many benefits to setting up a small composting facility for your horse wastes. Composted manure makes an excellent pasture and garden fertilizer as long as it is not spread too heavily. What's more, it can be combined with yard waste and non-meat kitchen scraps. Horse owners should have no trouble giving away or selling properly composted horse manure.

Establish vegetative covers

- ◆ A vegetative cover placed around buildings or on steeper slopes can help minimize erosion and absorb nutrients while improving the appearance of your property.
- ◆ In addition to avoiding costlier erosion controls, vegetative covers will provide animals with better traction during wet or icy conditions. Examples of commonly used covers include a combination of grasses, vinca and shrubbery.

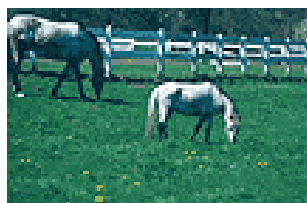
Keep animals out of streams

- ◆ Designed stream crossings provide a safe, easy way for horses to ford streams. Fencing encourages horses to use the crossing instead of the streambed to navigate streams. This will allow vegetation to stabilize stream banks and reduce sediment pollution.

Manage water carefully

- ◆ Manage water within your pasture to control potential nutrient runoff. This may require diverting surface and roof drainage runoff water away from pastures or paddocks.
- ◆ Take care to conserve water. Turn the hose off when shampooing horses instead of letting it run, and turn the water on low when rinsing a horse down.

For more information about all of these protection measures, contact your local Natural Resources Conservation Service (NRCS) district office:
Rhode Island: <http://www.nricd.org>, 401-949-1480
Massachusetts: <http://www.ma.nrcs.usda.gov>, 508-829-4477.



What Is Nonpoint Source Pollution?

- Nonpoint source (NPS) pollution, unlike pollution from point sources such as industrial and sewage treatment plants, comes from many diffuse sources.
- Polluted runoff is caused by rainfall or snowmelt moving over and through the ground.
- As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them in rivers, streams, lakes, ponds, wetlands, coastal waters, and even our underground sources of drinking water.

Best Management Practices for Stables and Pastures

Keeping Your Pasture Green

Here are several management practices that can help minimize overgrazing in your pasture and help control erosion.



Select pasture sites carefully

- ◆ If you are establishing a new pasture, select a site that is well drained and located on high ground. Avoid flood plains, drainage areas, and tracts with long, steep slopes. Remember, it is illegal to alter wetlands in any way without proper authorization.
- ◆ Contact your local soil conservation district for assistance in selecting an appropriate site.

Inspect pastures for problems

- ◆ There are many ways to improve the performance of established pastures. For starters, conduct a visual inspection to pinpoint any existing or potential problems. Correcting erosion problems can sometimes be as simple as stabilizing a hill with railroad ties or moving a gate to high ground.
- ◆ Here are some common problems to look for:
 - Patches of bare ground on slopes
 - Small hills and gullies
 - Sediment accumulations downslope

Test your soil

- ◆ Establishing and maintaining a dense, vigorous sod that will withstand the constant trampling of horses is no easy chore. An inexpensive soil test from the Cooperative Extension Service can help you determine the type and amount of fertilizer needed for good pasture growth. This will also help prevent nutrient runoff from over-fertilized pastures and can improve your horse's nutrition. Pasture soil should be tested every two or three years to determine fertilizer and lime needs. A comprehensive fertilizer program can then be developed.
- ◆ Call the UMass Extension's Soil Testing Lab at (413) 545-2311 (<http://www.umass.edu/plsoils/soiltest/>) or URI's Cooperative Extension at (401) 874-2900 (<http://www.uri.edu/ce/publications/soiltest.pdf>) to obtain sampling and ordering instructions.

Reseed bare ground, rills and gullies

- ◆ Bare areas should be leveled and smoothed as best as possible before seeding. The best time to reseed is either late winter/early spring or late summer. Tall fescue is a good seed choice.

Minimize spotty growth

- ◆ Manure clumps are a major cause of spotty pasture growth and reduced grazing. On small parcels, manure should be picked up and removed regularly. Placing a piece of chain-link fence or other drag behind a tractor or truck can also break up manure. In addition to helping your pasture, breaking up manure piles on a regular basis can reduce parasite infestations.

Mow pastures to the proper height

- ◆ It is well known that horses graze selectively, consuming nutritious, young pasture grasses while leaving mature grasses and weeds to seed and spread. Proper mowing is the best way to control weeds and minimize spotty growth. Bear in mind that pasture grasses do best at about six inches.

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Best Management Practices for Stables and Pastures

Keeping Your Pasture Green *continued*

Switch to rotational grazing

- ◆ Heavily overgrazed pastures offer little feed for horses and may cause colic if soil is ingested while grazing.
- ◆ Moving livestock from one pasture to another during the growing season can minimize overgrazing. In small pastures, horses should be rotated to a fresh area about every two weeks. As a rule, one or two acres of well-managed pasture can support one mature horse during the grazing season with rotation, while four or five acres without rotation will support only one mature horse for the entire grazing season.



Set up a paddock system

- ◆ A paddock system works especially well for landowners with limited pasture land (two acres or less). Paddocks or riding rings can be used for turnout when the pasture is excessively wet or dry, or when you want to reseed, fertilize, or rest the pasture.
- ◆ The paddock should be set up on high ground, using stone dust for the foundation. It should be surrounded with a hardy grass and, if possible, a trench to capture runoff. Riding rings, especially those being used as turnout areas, should be lined with a mixture of sand and sawdust to help protect the soil from erosion.
- ◆ If you are unable to set up a paddock system, limit pasture grazing to a few hours each day during the hot, dry summer months.

Material Storage Safety Tips

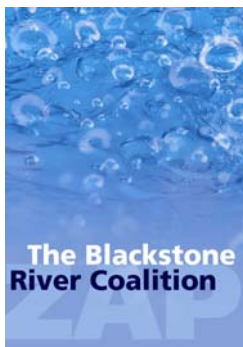
Many of the chemicals found in barns – formaldehyde, paints, hoof oils, and pesticides to name a few – require careful handling and proper disposal. When using these chemicals, be certain to follow these common-sense guidelines:

- ◆ Buy only what you need, and use what you buy.
- ◆ Treat spills of hoof oils like a fuel spill. Use kitty litter to soak up the oil and dispose in a tightly sealed plastic bag.
- ◆ Store pesticides in a locked, dry, well-ventilated area.
- ◆ Whenever possible, select less toxic chemicals.
- ◆ Protect stored fertilizer, lime, and pesticides from rain and surface water.

The Blackstone River Watershed

The Blackstone and its tributaries define our landscapes, yet their beauty hides the fact that beneath the surface, those streams and rivers are not entirely well. Runoff from pastures, farms, lawns, roads, and parking lots, can carry soil, bacteria, nutrients, pesticides, oil, and metals into streams, making them unhealthy places for critters like fish and aquatic insects to live. High bacterial levels can make it unsafe for humans to swim.

But there is good news...we know the prescription for the Blackstone's health, and it starts with us. By each of us developing simple, water-friendly lifestyle practices right at home we can make a huge difference!



This publication is adapted from the Massachusetts Department of Environmental Protection's (Mass DEP) brochure entitled "**A Horse Owner's Guide to Protecting Massachusetts Natural Resources**".

The Blackstone River Coalition is a partnership of numerous organizations working to restore the Blackstone River and improve the health of its watershed. For more information contact BRC Coordinator Peter Coffin at 508-753-6087 or peter.coffin@zaptheblackstone.org.

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