



1st Edition

IT'S JUST DIRT

A Newsletter for Contractors

APRIL 2017

What's This About Dirt?

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Of Special Interest:

- What are the 19 Minimum Standards?
- On-site Practices to Prevent Stormwater Runoff Pollution
- Earning Kudos for Protecting "The River"

Remember . . .



Dirt that leaves YOUR site ends up, UNTREATED, in the nearest creek or river . . .

Roanoke County is proud to present its first newsletter designed specifically for land-disturbing contractors who "work in the dirt" in and around the County. This targeted publication is not only meant to satisfy the Public Education and Outreach requirements of the County's Municipal Separate Storm Sewer System (MS4) permit, but it is also designed to bring contractors meaningful information for everyday use and application on the job.

You might ask: "Why are you focusing on dirt?"

The answer is easy: It all has to do with keeping the fish happy and healthy! You see, when vegetation and topsoil are stripped from a construction site, soil erosion soon follows. Exposed soil, or dirt, erodes when there is nothing to protect it from rain, wind, and stormwater runoff. This eroded dirt doesn't just disappear; unfortunately, it usually ends up in a nearby waterway, where it eventually settles to the bottom to become sediment. In fact, this sediment just might find its way to your favorite fishing hole. If so, it won't help your odds of landing "the big one" there, because it smothers the fish eggs and blocks needed sunlight!



But it's just dirt; why is "plain old dirt" considered a contaminant? There are a variety of reasons. For example, dirt pollutes by clouding waters, obstructing waterways, clogging storm drain pipes (which also leads to street flooding), damaging adjacent properties, and interfering with recreational use and navigation. Further, it smothers fish and shellfish spawning grounds. Ultimately, excessive sedimentation alters the diversity of fish populations in waterways and affects the organisms on which fish feed.

Excess sediment [and bacteria] in the Roanoke River and most of its tributaries have led the Virginia Department of Environmental Quality (DEQ) to classify these waters as impaired, meaning they no longer provide their full recreational and environmental benefits. As a result of this classification, the County has developed an Action Plan that identifies the strategies it will use to help reduce both pollutants. One such strategy aimed at sediment reduction is to focus the County's Public Education and Outreach efforts on certain target audiences that can help make a difference; hence, a **Dirt Newsletter for contractors!**

Why focus on land disturbance contractors? It turns out that the *rate of erosion* on most construction sites is 500 times greater than that which would naturally occur on a site that is undisturbed and vegetated. That's why land development is a major source of sediment pollution. In fact, by volume, sediment is currently the greatest pollutant of Virginia's rivers and streams, and land-disturbing construction activity has the highest erosion rate.

But do not despair! There are many easy and affordable ways to **keep your dirt on your project!** Here are a few: (1) Immediately stabilize disturbed areas after final grading; (2) use properly installed perimeter controls around your site; (3) slow down stormwater runoff before it leaves your site; and (4) clear the smallest area to complete your project. For more ways to prevent offsite sedimentation and stormwater runoff pollution, see page 9. ■

Roanoke County Proudly Unveils its Brand New . . .

CONTRACTOR APPRECIATION PROGRAM:

Excellence in Stormwater Management and Erosion and Sediment Control

PURPOSE:

Land development in Roanoke County presents difficult challenges in the minimization and control of erosion and sedimentation and in the management of stormwater runoff due to the steep slopes and *highly erodible soils* in the region.

Because of these challenges, Roanoke County has created the **“Contractor Appreciation Program”** to recognize land-disturbing contractors who conduct exemplary work within the County relative to the protection of its natural water resources through the proper use of onsite erosion and sediment controls, implementation of effective stormwater pollution prevention and good housekeeping measures, proper upkeep and use of the Stormwater Pollution Prevention Plan (SWPPP), if applicable, and the proper construction and use of stormwater management best practices.

WHICH PROJECTS ARE ELIGIBLE?

All land-disturbing projects that comply with the selection criteria will be eligible to receive recognition.

HOW WILL PROJECTS BE SELECTED?

Roanoke County inspectors will submit candidate projects to the County Selection Committee, which will meet monthly to evaluate candidate projects for recognition and to review previously-selected projects to ensure continued compliance with the selection criteria.

RECOGNITION METHOD:

- Permanent Sign posted at selected Project Site (*see page 3*)
- “Certificate of Appreciation” presented at a formal County meeting
- Recognition in *It's Just Dirt* newsletter
- Recognition on County’s Stormwater website
- Recognition at County-sponsored ESC Training events
- Press Release

Stormwater Clean Award

Selected projects for the County's new Contractor Appreciation Program will sport a sizeable, colorful sign, placed in a prominent location on the project site for easy viewing by the traveling public. The sign will be entitled: "Stormwater Clean Award," and it will remain in place for the duration of the construction project, provided the project remains in compliance with the selection criteria. A conceptual design is shown below. ■



For more information about this exciting new program, visit the County's stormwater website at:

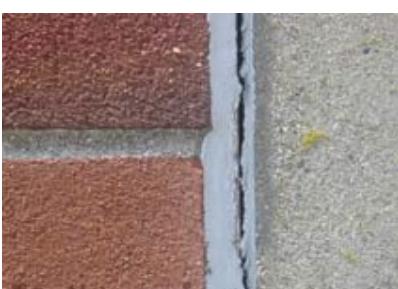
<http://www.roanokecountyva.gov/ContractorAppreciation>



Older Fluorescent light ballasts (FLBs) can contain PCBs. Because of this, FLBs should be removed and disposed of by trained professionals.



Transformers containing PCBs, which contain more than 50 ppm of PCBs, are subject to specific EPA regulations. Proper PCBs identification labels must be visible near the access and on the transformer itself.



Old paint and caulk and nearby substrate (brick, masonry, cinder block, wood, etc.) may contain PCBs. Care must be taken during removal of these materials to avoid the creation of dust and to contain contaminated waste.

What About PCBs?

PCBs are a group of man-made compounds that were widely used in the past, mainly in electrical equipment, because of their non-flammability and chemical stability. PCBs have no taste or smell and range in consistency from oil-like to a waxy solid. Their manufacturing was banned in the U.S. in 1979 because of growing health and environmental concerns.

PCBs and the Environment

PCBs currently exist in the air, soil, and water from previous releases. PCBs do not break down well in the environment due to their chemical stability. They often attach to sediment that is washed into local waterways, accumulating in living organisms, such as fish. In fact, the Roanoke River (within the Roanoke Valley area) is under a health advisory issued by the Virginia Department of Health; this advisory cautions to eat no more than two meals per month from many fish species caught in the Roanoke River.

Products that may contain PCBs

Although no longer commercially produced, PCBs may be present in products and materials made before the 1979 PCBs ban, including the following:

- ◆ Transformers and capacitors
- ◆ Electrical equipment (voltage regulators, switches, re-closers, bushings, etc.)
- ◆ Oil used in motors and hydraulic systems
- ◆ Old electrical devices or appliances containing capacitors having PCBs
- ◆ Fluorescent light ballasts
- ◆ Cable insulation
- ◆ Thermal insulation material including fiberglass, felt, foam, and cork
- ◆ Adhesives and tapes
- ◆ Oil-based paint
- ◆ Caulking
- ◆ Plastics
- ◆ Floor finish

Preventing the Release of PCBs

Caution must be taken to prevent PCBs from being released through:

- ◆ Spills and leaks from electrical and other equipment
- ◆ Improper disposal and storage
- ◆ Illegal or improper dumping of wastes containing PCBs
- ◆ Burning wastes containing PCBs

It is important to minimize the amount of PCBs in the environment by:

- ◆ Properly replacing all fluorescent light ballasts containing PCBs
- ◆ Properly disposing of caulk, paint, and other building materials with PCBs during planned renovations and repairs
- ◆ Taking precautions during renovations so that building materials with PCBs do not contaminate surrounding surfaces
- ◆ Using properly trained contractors to remove, clean-up, and dispose of materials containing PCBs
- ◆ Consulting with regulatory officials when questions arise regarding PCBs

For More Information on PCBs, contact:

- ◆ Virginia Department of Environmental Quality <https://www.deq.state.va.us>
- ◆ Environmental Protection Agency <https://www.epa.gov/pcbs>
- ◆ Virginia Department of Health <http://www.vdh.virginia.gov>

The Minimum Standards for Compliance

Most land-disturbing activities undertaken on private and public lands in the Commonwealth of Virginia must meet the 19 "Minimum Standards" (MS 1-19) for Erosion and Sediment Control (ESC) in accordance with Section 9VAC25-840-40 of the Virginia Erosion and Sediment Control Regulations. (In Roanoke County, both commercial and residential land-disturbing activities of 2,500 square feet or more must adhere to the requirements.) Compliance starts with an approved ESC plan (or an agreement-in-lieu of a plan) that incorporates the applicable minimum standards.

Compliance continues with the on-site implementation of the minimum standards by the permitted land-disturbing contractor throughout the duration of the project.

An excerpted version of these nineteen minimum standards follows. For an official version, see 9VAC25-840-40 of the Virginia Erosion and Sediment Control Regulations.

MS-1: Soil Stabilization.

- Permanent or temporary soil stabilization shall be applied to denuded areas within 7 days after final grade is reached on any portion of the site.
- Temporary soil stabilization shall be applied within 7 days to denuded areas that may not be at final grade but will remain dormant for longer than 14 days.
- Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.



MS-1: Soil stabilization with straw/ seed



MS-2: Stabilized/protected soil stockpile

MS-3: Permanent Stabilization. A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is: (1) **Uniform**; (2) **Mature enough to survive**; and (3) **Will inhibit erosion**.



MS-3: Permanent vegetative cover



MS-4: Stabilized perimeter dike

MS-4: Sediment Trapping Measures. Sediment basins, sediment traps, perimeter dikes, sediment barriers, and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place.

The Minimum Standards for Compliance (con't.)

MS-5: Stabilization of Earthen Structures. Stabilization measures shall be applied to earthen structures such as dams, dikes, and diversions immediately after installation.



MS-5: Stabilized diversion

MS-6: Sediment Traps & Sediment Basins. Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin, as follows:

Sediment Traps

- Shall only control drainage areas less than 3 acres
- Minimum storage capacity of 134 cubic yards per acre of drainage area

Sediment Basins

- Shall control drainage areas greater than or equal to 3 acres
- Minimum storage capacity of 134 cubic yards per acre of drainage area
- The outfall system shall, at a minimum, maintain the structural integrity of the basin during a 25-year storm of 24-hour duration; runoff coefficients shall be for bare earth conditions or those expected to exist during the basin's use.



MS-6: Stabilized sediment trap



MS-7: Minimizing erosion of slope face using fabric

MS-7: Cut and Fill Slopes. Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes found to be excessively eroding within 1 year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.

MS-8: Concentrated Runoff Down Slopes. Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume, or slope drain structure.

MS-9: Slope Maintenance. Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.



MS-10: Proper inlet protection for a curb inlet



MS-12: Working in a live watercourse; once complete, temporary or permanent channel lining will be applied per MS-11

MS-11: Stormwater Conveyance Protection. Before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the **conveyance channel** and the **receiving channel**.

MS-12: Work in Live Watercourse. When work in a live watercourse is performed precautions shall be taken to minimize encroachment, control sediment transport, and stabilize the work area to the greatest extent possible during construction. Non-erodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by non-erodible cover materials.

MS-13: Crossing Live Watercourse. When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing constructed of non-erodible material shall be provided.



MS-14: Regulation of Watercourse Crossing. All applicable federal, state, and local regulations pertaining to working in or crossing live watercourses shall be met.

MS-15: Stabilization of Watercourse. The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.

MS-16: Underground Utility Line Installation. Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:

- No more than 500 linear feet of trench may be opened at one time.
- Excavated material shall be placed on the uphill side of trenches.
- Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.
- Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.
- Re-stabilization shall be accomplished in accordance with Section 9VAC25-840-40 of the ESC Regulations.
- Applicable safety requirements shall be complied with.

MS-17: Vehicular Sediment Tracking. Where construction vehicle access routes intersect paved or public roads:

- Provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface.
- Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day.
- Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area.
- Street washing shall be allowed only after sediment is removed in this manner.



MS-17 Violations: Sediment tracking onto paved surfaces; sweeping is required at the end of each day, at a minimum.

MS-18: Removal of Temporary Measures. All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the program authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

The Minimum Standards for Compliance (con't.)

MS-19: Stormwater Management. Properties and waterways downstream from development sites shall be protected from **sediment deposition, erosion, and damage due to increases in volume, velocity, and peak flow rate of stormwater runoff** for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria (along with others not included here due to space limitations):

- Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe, or storm sewer system.
- Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipaters shall be placed at the outfall of all detention facilities, as necessary, to provide a stabilized transition from the facility to the receiving channel.
- All on-site channels must be verified to be adequate.
- Increased volumes of sheet flow that may cause erosion or sedimentation on an adjacent property shall be diverted to a stable outlet, adequate channel, pipe or pipe system, or to a detention facility.
- All measures used to protect properties and waterways shall be employed in a manner which minimizes impacts on the physical, chemical, and biological integrity of rivers, streams, and other waters of the state. ■

*For an official, unedited version of the 19 Minimum Standards, see
9VAC25-840-40 of the Virginia Erosion and Sediment Control Regulations*



MS-19 Violation: Inadequate channel at point of discharge; bed and banks will erode; banks will overtop.

Reducing Stormwater Pollution on Your Project

In recent years, the water quality in the Roanoke River and its tributaries has remained in poor condition because of high levels of bacteria, PCBs, and sediment pollution delivered through stormwater runoff. As a contractor, you can employ some simple techniques to help keep such pollutants out of stormwater runoff. Here are several to consider using on your next project:

1. **Install a Concrete Washout:** Line pits with plastic to capture concrete washout. Let water evaporate, then dispose of or recycle the remaining hardened concrete. Also, recycle any remaining liquids or place in leak proof containers for disposal with other construction waste.
2. **Place Sanitary Waste Facilities on Level Ground AWAY from Storm Drains.** Anchor to prevent tipping and to prevent spills or leaks from entering storm drains.
3. **Keep Dumpster Lids Closed and Plug Leaks.** Dumpster 'juice' is a potential pollutant.
4. **Provide and Use Trash Cans.** Ensure all onsite personnel are informed to place trash in trash cans and keep the lids closed.
5. **Entrench Silt Fence into the Soil.** This is the **single most important** installation practice to ensure that sediment does not leave the construction project.
6. **Use Silt Fence to Contain Wastes, Construction Debris, and to Protect Soil Stockpiles.** Also, be sure to label hazardous wastes and store them separately from other wastes.
7. **Keep a Spill Kit Onsite, Especially Near Hazardous Material Storage and Fueling Areas.** Use it to clean up spilled fuel and other liquids. Properly dispose of the used materials and be sure to replenish the kit with fresh materials.
8. **Use a Drip Pan When Changing the Oil in Vehicle or Equipment.** Also, clean up spilled oil by pouring absorbent material (like cat litter) on it; then sweep it up, bag it, and trash it.
9. **Prevent Exposure of Chemicals to Stormwater Runoff and Rain.** Elevate containers off of the ground for easy leak detection, and cover products or store them inside a building or a shed to prevent exposure to runoff and rain.
10. **Provide Secondary Containment for Liquid Products and Sanitary Wastes.** Plastic wading pools can be effectively used for this purpose, depending on the amount and type of material to be contained.
11. **Stabilize Denuded Areas as Soon as Possible.** This is one of the most effective ways to prevent erosion and offsite sedimentation. Vegetation establishment is the **#1 best way** to prevent erosion.
12. **Maintain Erosion Controls.** Devices that are in disrepair or inundated with sediment will be ineffective in capturing additional sediment during the next storm. ■



Reminder...
Stormwater is not treated
before it
discharges directly into receiving
waters.





County Accomplishments: Look What We Did . . .

Roanoke County's Department of Community Development is tasked with a variety of functions, including implementation of the Virginia Erosion and Sediment Control Program, implementation of the Virginia Stormwater Management Program, and oversight of the county-wide activities required by its MS4 Permit.

As part of the MS4 permit requirements and in accordance with its Total Maximum Daily Load (TMDL) Action Plan, which was developed to help reduce sediment loading to the area's receiving waters, the County opted to undertake two stream restoration projects: The [Restoration of Glade Creek in Vinyard Park, Phase 1](#), and the [Restoration of Murray Run at Ogden Road](#).

Both projects were designed to help reduce sediment from their highly eroding stream banks and both will also help to reduce bacteria (E.coli) that enters the two streams via stormwater runoff. With both projects now complete, approximately 4,000 linear feet of eroding stream was restored in a natural fashion. More specific information about these two projects is provided below:

#1. Restoration of Glade Creek, Vinyard Park - Phase 1

- Project completed December 31, 2016
- 2,500 linear feet of stream restored
- 831 tons/year of sediment load reduction*
- Total Cost \$888,000
 - ◊ Local Contribution \$448,000
 - ◊ SLAF Grant \$440,000

Glade Creek was experiencing excessive erosion where it passes through Vinyard Park. In some areas, there were near vertical banks almost 10 feet in height. The County obtained a Stormwater Local Assistance Fund (SLAF) grant from the Virginia Department of Environmental Quality (DEQ) and procured a Design-Build Contractor. Permitting for the project was complicated by the need to obtain a U.S. Fish and Wildlife biological opinion, as Glade Creek is habitat for an endangered freshwater fish, known as the Roanoke Logperch, shown below:

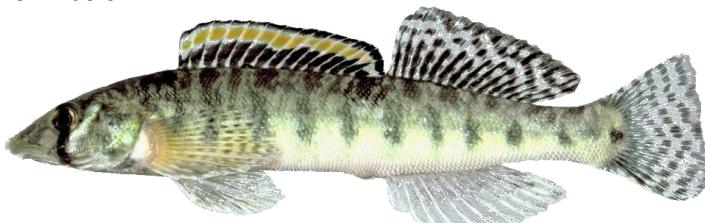


Photo Credit: USGS - Noel Burkhead

The restoration of 2,500 feet of stream in the upper part of Vinyard Park is expected to decrease sediment discharge by 831 tons/year. This project lowers both sediment and bacteria (E-coli) discharges. (*con't. on page 11*)



Prior to Construction: Steep & eroding banks at Glade Creek



Post-Construction: Naturally-restored banks at Glade Creek

*Note that the pollutant load reduction value for each project was estimated using the Chesapeake Bay Program Interim Rate, as reported in the respective grant application package that was submitted to DEQ.

#2. Restoration of Murray Run at Ogden Road

- Project completed July 2016
- 1,460 linear feet of stream restored
- 226.3 tons/year of sediment load reduction*
- Total Cost \$558,000
 - ◊ HHunt Local Match \$279,000
 - ◊ SLAF Grant \$279,000

Murray Run was experiencing excessive erosion where it passes through Pebble Creek Apartment complex. In some areas there were near vertical banks approximately 8 feet in height. The erosion was threatening to wash out an adjacent sanitary sewer, and it was beginning to threaten one of the nearby apartment buildings.

Under a unique agreement, as allowed by the Public Private Education Act (PPEA), the County and the private property owner, HHunt Corporation, partnered to restore approximately 1,460 feet of stream using natural stream concepts.

The County agreed to obtain and administer a SLAF grant from DEQ to pay for 50% of the project cost and to be responsible for long term maintenance of the stream. HHunt agreed to pay for the 50% local grant match to design and construct the restoration project and to perform routine maintenance activities.

HHunt benefited from this project by transforming an eroding stream that was a liability into an amenity for its tenants. The County benefited by eliminating a source of excessive erosion and decreasing sediment and E. coli discharge to Murray Run. It is anticipated that this project will decrease sediment discharge by 226.3 tons/year. ■



Post-Construction: Naturally-restored shoreline, Murray Run at Ogden Road

Drainage System Maintenance and Improvements

In addition to the two stream restoration projects mentioned above, the County's Stormwater Operations Division of the Community Development Department was quite busy this past year, completing 63 drainage system maintenance and improvement projects. This work resulted in:

- Feet of pipe installed = 1,686
- Total properties improved = 95
- Total feet of open/riprap channel improved = 864
- Total square feet of restoration area = 121,059
- Cubic yards of sediment removed = 400
- Number of Board-approved projects = 4
- Number of small projects = 12
- Number of routine/repetitive projects = 17
- Number of emergency / high priority projects = 22
- Inter-departmental projects = 8

A total of **16,562 labor** hours were committed towards maintenance and improvements to the municipal storm sewer (drainage) system. The value of the improvements that were performed in-house was estimated to be

\$929,500; further, the County contracted out for **\$297,929** in additional drainage improvements, bringing the total investment in storm sewer (drainage) system maintenance and improvements to **\$1,227,429**. ■



Striking channel improvements in The Orchards subdivision, constructed by Stormwater Operations Division, Dept. of Community Development



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This publication is a public service message brought to you by Roanoke County, Department of Community Development. As regulated by federal and state laws, the County's Stormwater Management Program must include public information strategies to encourage the prevention of stormwater pollution. For more brochures or information on ways to prevent stormwater pollution, please contact the County's Department of Community Development, Division of Stormwater Management, at 540-772-2080.

Erosion and Sediment Control Permits for Residential Projects

Roanoke County implements an Erosion and Sediment Control Program for land disturbing projects, pursuant to its Erosion and Sediment Control Ordinance (Chapter 8.1 of the County Code) and as required by the Virginia Erosion and Sediment Control Law (Code of Virginia, Title 62.1, Chapter 3.1, Article 2.4) and attendant regulations.

The County's ordinance defines "land-disturbing activity" as: *any man-made change to the land surface that may result in soil erosion from water or wind and the movement of sediments into state waters or onto lands in the Commonwealth, including, but not limited to, clearing, grading, excavating, transporting, and filling of land.*

Thus, certain projects undertaken around the home could be regulated and require a Soil Erosion and Sediment Control (ESC) Permit from the County's Department of Community Development. However, there are some exceptions for which NO PERMIT is needed. Here are a few of them:

- **Minor land-disturbing activities** such as home gardens and individual home landscaping, repairs, and maintenance work;
- **Disturbed areas of less than 2,500 square feet in size**
- **Septic tank lines or drainage fields** unless included in an overall plan for land-disturbing activity relating to construction of the building to be served by the septic tank system ■

Projects That May Need an ESC Permit

- Detached Garages
- In-ground Swimming Pools
- Barns or Large Sheds



If you are uncertain as to whether or not a residential project needs an Erosion and Sediment Control Permit, please call Roanoke County's Department of Community Development at: 540-772-2080. One of the County's ESC inspectors will be happy to assist you with an evaluation of the project. ■