

It's Just Dirt

May 2023

Contain Dirt
Protect Waterways

Photograph by Rob Ross

Prevent Erosion, Contain Dirt: Protect Waterways

As noted in Virginia's Erosion & Sediment Control Handbook (VESCH), "all lands erode, but not all land can be considered a source of sediment pollution. There has always been a certain amount of erosion that naturally occurs. However, major problems can occur when large amounts of sediment enter waterways. **This accelerated erosion is most often caused by surface mining, poorly managed croplands, construction sites, eroding urban/suburban stream banks, and logging roads.**"¹

Virginia's Erosion & Sediment Control Program and the coordinating VESCH focus on one specific source of sediment pollution: construction sites. Why? Because **the typical construction site erodes at a rate of up to 100,000 tons per square mile per year.** This rate is 200 times greater than erosion from cropland and 2000 times greater than erosion from woodland.¹ Of course, the next question is: Why is excess sediment a problem?



Properly entrenched silt fence serves as an excellent sediment control device around soil stockpiles and project perimeters, which protects downstream waterways.

SEDIMENT POLLUTION

Sediment clouds waters, clogs storm drain pipes, smothers fish eggs, and limits the ability of aquatic plants to use light as their energy source. Many of the County's area waterways, including the Roanoke River, are impaired due to excess sediment. The situation is not all gloom and doom, however. To prevent further degradation to local waterways, contractors can easily employ these effective strategies to prevent erosion and to minimize offsite sedimentation from their jobsites:

- (1) Keep existing vegetation in place to protect bare soils.
- (2) Install properly entrenched silt fence below bare areas.
- (3) Cover or stabilize soil stockpiles when not in use.
- (4) Install straw mulch or erosion control matting over newly seeded areas.
- (5) Apply dust control to bare areas.
- (6) Install inlet protection to protect drainage systems.

Stormwater Clean Award: And the Winner is...



Vintage Builders, LLC has earned the Stormwater Clean Award for their good work on the Burchett ESC Plan project at 7551 Nandina Drive. The group has kept a clean site with a proactive, compliance-focused construction team.

Roanoke County awarded Vintage Builders, LLC the prestigious Stormwater Clean Award under its Contractor Appreciation Program for exemplary work on their project entitled "Burchett ESC Plan," which is under construction at 7551 Nandina Drive.

Mr. Harry Cannady, Owner/President of Vintage Builders, and the rest of his team have kept a neat and tidy site, and they have been proactive in their efforts to remain in compliance and ensure that sediment stays on the site. This often proves difficult due to the area's steep terrain and highly erodible clay soils. In fact, it is because of such challenges that Roanoke County created the Contractor Appreciation Program; it's a way to recognize those land-disturbing contractors who "get it right." That is to say, the conscientious contractor successfully employs measures to prevent erosion and to contain dirt on the site. Because sediment is a pollutant, keeping it on the project and out of the area's waterways is the end goal.

For more information about this program, visit the County's Stormwater Management webpage:
<https://www.roanokecountyva.gov/1780/Stormwater-Contractor-Appreciation>



Doing Right for the Roanoke River

Pollution Prevention and Good Housekeeping BMPs

Did you know that it is illegal to allow anything into the storm drainage system except rain water? That is because materials that are swept, blown, or washed into the storm drainage system end up in local waterways where they foul water quality and harm aquatic life. Thus, to protect the area's streams, creeks, and the Roanoke River, it is imperative to prevent or minimize stormwater pollution.



Illicit discharge (concrete washout) entering an unprotected curb inlet. Be sure to provide and maintain proper inlet protection.



Portable toilets are subject to leaking and tipping. Be sure to provide secondary containment to ensure sanitary waste does not commingle with stormwater runoff or enter the drainage system.



This concrete washout is full and unusable. Make sure concrete washouts are accessible for use and replaced as needed.



These containers are full and therefore unable to accept additional trash. Ensure to contain all trash and litter, keep lids closed on all waste containers, and empty them when they become full.



Illicit discharge (sediment) onto street and into drainage inlet. Be sure to remove sediment when it reaches 1/2 the height of the inlet protection device. Ensure to sweep the street at the end of every work day.

ACTIVITIES	BEST MANAGEMENT PRACTICES ¹
Concrete Washing	<ul style="list-style-type: none"> Use a concrete washout; maintain it, and replace it when it is full. Prevent wash-out water from ground infiltration. Dispose/recycle remaining hardened concrete. Recycle remaining liquids (or dispose of them in leak-proof containers with construction waste).
Employee Training	<ul style="list-style-type: none"> Train employees regularly on good housekeeping practices. Assign someone to be responsible for effective BMP implementation.
Equipment and Vehicle Washing	<ul style="list-style-type: none"> Prevent wash water from ground infiltration. Prevent contact with stormwater or rain. Do not use soaps/solvents unless wash water is treated before release. Wash equipment/vehicles in a designated and/or covered area where the wash water is collected to be recycled or discharged to the sanitary sewer, OR use lidded 55-gallon drums with secondary containment.
Equipment Maintenance	<ul style="list-style-type: none"> Regularly maintain equipment and vehicles. Check for and fix leaks. Use drip pans to collect leaks or spills during maintenance activities. Keep and maintain a spill kit in the area.
Fueling - Vehicular and Equipment	<ul style="list-style-type: none"> Provide a berm around fueling area to prevent contact with stormwater. Do not "top-off" tanks when filling, as fuel is often spilled this way. Provide secondary containment, if feasible.
Litter Control	<ul style="list-style-type: none"> Provide trash cans with lids, and keep lids closed. Pick up litter and other wastes from the site on a daily basis. Provide adequate inlet protection to keep litter out of drainage inlets. Keep dumpsters covered when not in use.
Materials Storage	<ul style="list-style-type: none"> Store materials such as stucco, paint, detergents, oil, grease, etc. in sound, labeled containers. Ensure all outdoor storage containers have lids, which are kept closed. Use secondary containment wherever appropriate. Store stockpiled materials inside a building, under a roof, or covered with a tarp to prevent contact with rain/stormwater.
Pavement Cleaning	<ul style="list-style-type: none"> Install a temporary construction entrance using VDOT #1 stone, 6" thick, over geotextile subgrade fabric per VESCH Std. & Spec. 3.02.¹ Consider using a wash rack with a temporary construction entrance. Sweep the street at the end of every work day. Dispose of collected sediment & debris in the trash.
Portable Toilet Placement	<ul style="list-style-type: none"> Place portable toilets on level ground. Prevent spills/leaks from entering drainage systems & surface waters. Anchor portable toilets to prevent tipping.
Spill and Leak Prevention/Response	<ul style="list-style-type: none"> Elevate containers off of the ground for easy leak and spill detection. Prevent exposure of chemicals to stormwater runoff and rain. Make sure all employees/subcontractors know what to do when there is a leak or spill on the site. Keep a spill kit onsite; replace materials when used.
Waste Disposal	<ul style="list-style-type: none"> Do not bury trash onsite. Do not commingle trash with items that you wish to keep. Use designated, labeled, leak proof containers with secondary containment for waste. Periodically inspect & repair/replace leaky dumpsters & containers. Cover dumpsters and other waste containers. Recycle wastes or properly dispose of them. Maintain accessibility to dumpsters/trash containers for ease of use. ALWAYS separately store hazardous wastes from other materials. Never dispose of waste products into storm drainage inlets.

¹Alameda Countywide Clean Water Program (ACCWP) <https://www.epa.gov/sites/default/files/2015-11/documents/goodhousekeepingbusiness.pdf>

²Virginia Erosion & Sediment Control Handbook, Third Edition. 1992. <https://www.deq.virginia.gov/water/stormwater/stormwater-construction/handbooks>

Common Mistakes That Cost TIME AND MONEY

Site Plans Submission

Failure to:

- Become familiar with the County's ordinances and pertinent regulations.
- Submit complete and adequate information.
- Learn from previous submittals and comments.
- Take responsibility for design and quality control prior to submittal.
- Develop a relationship with and reach out to County staff for collaboration during all phases of the project.

Building Plans Submission

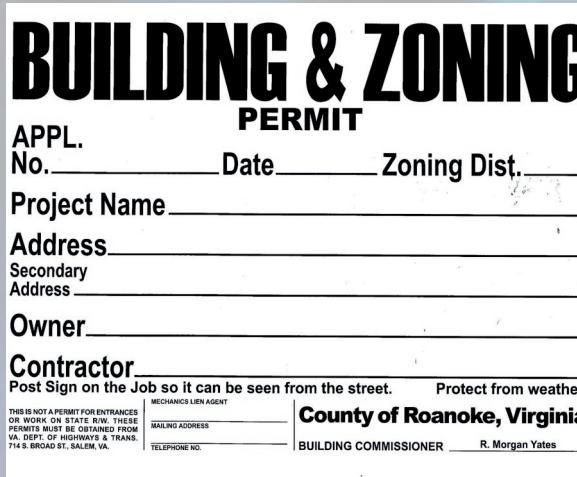
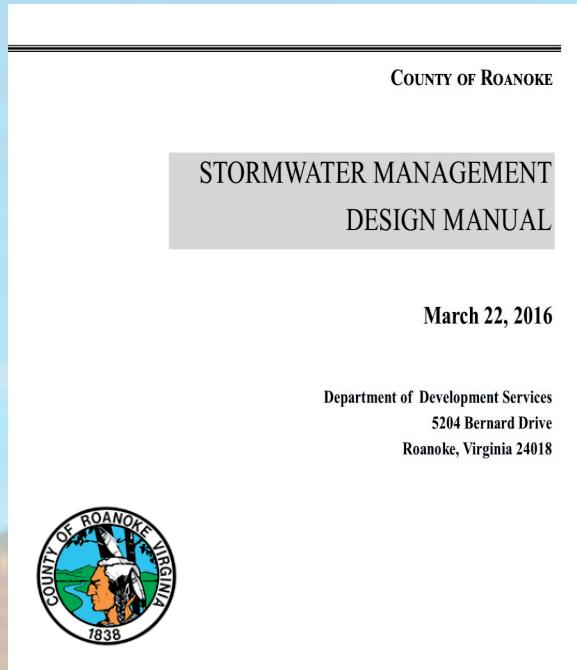
Failure to:

- Provide the Building Code year on the plans.
- Provide architect's/engineer's seal on commercial plans.
- Submit a complete set of plans (i.e., failure to submit electrical, mechanical, and/or plumbing plans).
- Address wall bracing on the plans.
- Provide correct insulation values.

Building Inspections

Failure to:

- Post the building permit on the site.
- Provide approved plans on the site.
- Obtain prerequisite inspections.
- Have the work ready before requesting an inspection; instead of "requesting the inspection for tomorrow knowing the work won't start until tomorrow."
- Obtain a permit for retaining walls.



ESC/VSMP Site Inspections

Failure to:

- Obtain an approved plan and/or permit prior to construction.
- Obtain an initial ESC inspection prior to construction.
- Build the project in accordance with the approved plan.
- Comply with the required corrective actions listed in the County's ESC/VSMP inspection reports.
- Comply with the Stormwater Pollution Prevention Plan (SWPPP).

General Process

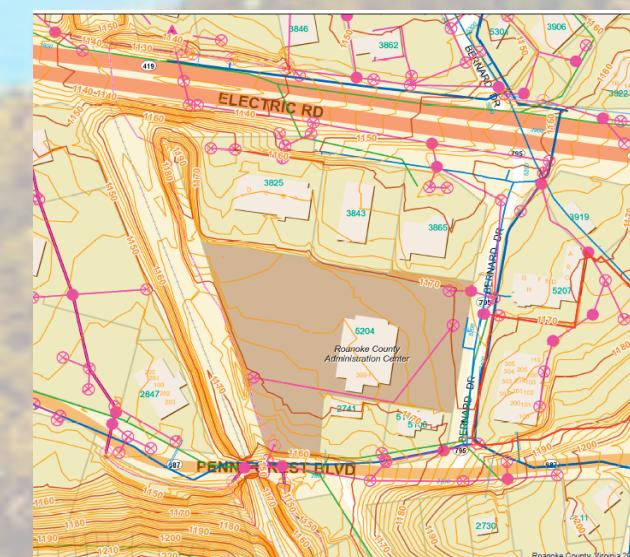
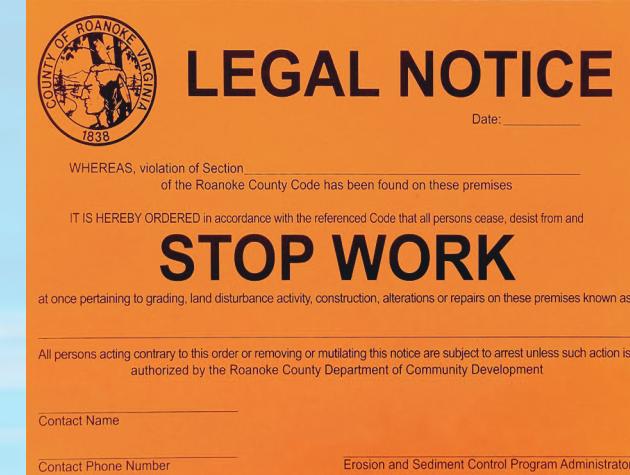
Failure to:

- Gather existing topographic data upon which proposed design must be based.
- Address County plan review comments in a timely fashion.
- Establish positive drainage around homes and other structures.
- Establish adequate permanent vegetation before project close-out.
- Pay requisite fees and post sureties.

Time IS Money

The old saying that "Time is Money" still holds true. The best way to streamline your project and steer it to success is to AVOID these common mistakes.

Follow the tips on Roanoke County's poster "From Concept to Finished Product: Pathway for a Successful Project" provided on pages 8 - 9 of this publication.



**ROANOKE
COUNTY VA
DEVELOPMENT
SERVICES**



From Concept to Finished Product

PATHWAY FOR A SUCCESSFUL PROJECT

Gather Data / Survey Site

- Conduct a topographic survey of the property to be developed.
- Set a temporary benchmark on-site to use during construction.
- Develop a base map from collected field data.
- Locate all existing utilities: water, sewer, electric, etc.

Design Project

- Determine existing on-site drainage patterns.
- Establish building configuration on the lot.
- Lay out grades to assure positive drainage away from structures.
- Conduct all necessary calculations to assure conformance with pertinent requirements of the following:
 - * Virginia Uniform Statewide Building (USBC) Code
 - * Virginia Erosion & Sediment Control (ESC) Program
 - * Virginia Stormwater Management Program (VSMP)
 - * Virginia Statewide Fire Prevention Code (SFPC)
 - * Virginia Department of Transportation (VDOT)
 - * Virginia Department of Health (VDOH)
 - * Western Virginia Water Authority (WVWA)

Prepare Plans

- Develop a Building Plan; refer to Building Permit Guides on the County's website.
<https://www.roanokecountyva.gov/2598/Building-Permit-Guides>
- Develop an Erosion and Sediment Control Plan, if the project's land disturbance is 10,000 sq. ft. or more.
- Develop a Stormwater Management Plan, if the project's land disturbance is 1 acre or more.
- Prepare a Stormwater Pollution Prevention Plan (SWPPP), if the project's land disturbance is 1 acre or more.
- Ensure that all pertinent construction details are on the plans.
- Review all plans against the County's "Plan Review Checklist" to ensure all items have been addressed.



Submit Plans for County Review and Approval

- Submit plans to Roanoke County's Department of Development Services for review and ultimate approval.
- Address County review comments in a timely fashion.
- Resubmit revised plans for County approval, as necessary.

Following Plan Approval:

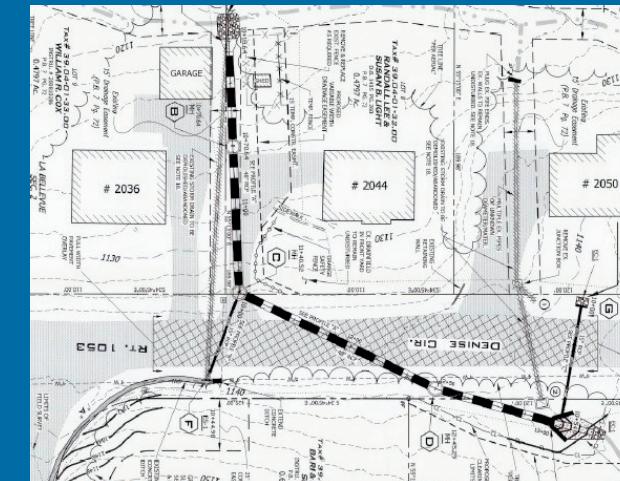
- ⇒ Pay fees, and submit sureties.
- ⇒ Schedule a Pre-construction Meeting.
- ⇒ Obtain Permits: Building, Erosion Control (ESC), and Stormwater (VSMP).
- ⇒ Schedule an Initial Erosion & Sediment Control (ESC) Inspection.

Construct Project

- Schedule all building and trade inspections at the appropriate time/sequence.
- Carefully review the County's ESC and VSMP inspection reports for your project. Quickly address required corrective actions.
- Be proactive to correct issues to avoid enforcement measures.
- Ensure that the project is built in accordance with the various approved plans. This applies to all aspects of the project.
- If the project has a Stormwater Pollution Prevention Plan, make sure that required inspections are being done and documented.
- Convert temporary sediment basins to permanent stormwater basins per the approved site plan.

Close Project

- Provide an As-Built survey of all permanent stormwater basins for County review and ultimate approval.
- Transfer pond ownership/maintenance responsibilities to the Homeowners Association (HOA), if applicable.
- Post a seed bond or submit an Early Termination Agreement, if the lawn areas are not fully vegetated.
- Request a final Erosion & Sediment Control (ESC) Inspection.
- Request a final Building Inspection.
- Submit a VSMP Termination Agreement, if applicable.
- Obtain a Certificate of Occupancy.



Concrete Washout: What's The Big Deal?

You know the drill: The concrete driver pulls up, empties their load on the construction site, then moves to another area to wash out the concrete residue from the truck. What you may not know, however, is that cement-based products, including mortars and concrete, can cause harm to people, plants, soil, and wildlife.

The pH level is used to determine if a substance or solution is an acid or a base. Using a scale of 0-14, values less than 7 indicate a substance is more acidic, values higher than 7 indicate a substance is more basic, and a pH value of 7 means the substance is neutral (i.e., neither acidic or basic.) Water is neutral, having a pH value of 7. In contrast, battery acid has a pH of 0, and bleach has a pH of 13. Common sense suggests that these latter two materials should be handled with a bit of caution.

Concrete wash water can have a pH of about 12.5, and it can cause chemical burns to skin and eyes. This toxic washout is also detrimental to fish and other wildlife, including insects. Once this washout enters local waterways, it cannot be recovered. Every little bit slowly increases the pH of the affected waterway.

You might assume that since you don't dump the wash water directly into the storm drain, but instead onto the ground, that you are "in the clear." Not true! Dumping concrete washout onto the ground has the same effect as if you poured bleach directly onto the ground: It kills all of the microorganisms needed by the plants to use soil nutrients. Just as you would not pour bleach in your garden or on your newly seeded lawn, you should never pour concrete washout on the ground. Simply put, it is toxic.



Toxic concrete washout from an overflowing roll-off container. Photo: courtesy of Michelle Donohoe, Roanoke County.



Concrete wash water residue from improper washout onto ground. Photo: courtesy of Michelle Donohoe, Roanoke County.

PROPER DISPOSAL

Virginia's Construction General Permit (VAR10) requires drivers to "direct concrete wash water into a leak-proof container or leak-proof settling basin." Concrete washouts can be purchased or constructed onsite. With either option, the washout must be adequately contained. Additional measures may be required for concrete pump trucks or concretes with additives for curing or color staining. Remember that there are significant federal, state, and local penalties for failure to properly contain concrete washout, whether such failure is a result of careless practices or intentional dumping.



A well-maintained vinyl container for concrete washout. Once these devices become full, they must be replaced, if still needed. Photo: courtesy of US EPA.

These same effects can be seen from the improper disposal of all cement products, including brick mortar and stucco. Proper procedures for such products include the washing of all tools associated with their use, including the containers in which they were stored.

Local municipalities, including Roanoke County, are required by State and Federal regulations, to reduce the amount of pollutants entering the storm drainage system. As a result, the County reminds you that all stormwater runoff that enters the storm drainage system is untreated; it dumps directly into the area's local waterways. Please be vigilant with your on-site best management and good housekeeping practices. Ensure there is an available concrete washout on your site during the period where it is needed, and replace it when it is full. Also, ensure that it is accessible for the concrete truck driver. An inaccessible concrete washout is the same as not having one at all.



A prefabricated cardboard concrete washout, by Outpak. Photo: courtesy of Construction Washout. <https://www.constructionwashout.com/>



FOR MORE INFORMATION

There are a host of resources available regarding proper concrete washout practices and procedures. Here are a few for your perusal:

Construction Materials Recycling Association
www.concreterecycling.org

National Ready Mixed Concrete Association
www.nrmca.org

National Ready Mixed Concrete Research and Education Foundation
www.rmc-foundation.org

U. S. Environmental Protection Agency
<https://www3.epa.gov/npdes/pubs/concretewashout.pdf>

¹National Ready Mixed Concrete Association. <https://www.nrmca.org/association-resources/sustainability/>



Toxic concrete washout impacts fish and other wildlife. Photo: courtesy of Michelle Donohoe, Roanoke County.



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This publication is a public service message brought to you by Roanoke County, Department of Development Services. 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 other publications or information on ways to prevent stormwater pollution, please call Cynthia S. Linkenhoker, Stormwater Program Manager, at 540-772-2036.



SCAN ME

Portable Mud Stoppers

For a new spin on the traditional temporary stone construction entrance, consider using a reusable mat instead. Sediment track-out control mats can be quite effective at keeping the dirt on your project, and the best part is that you can use them over and over again, as they are lightweight, durable, and portable. Such reusable mats can be installed in 30 minutes or less, and they can even be used on pavement.

Here are a few products for your consideration:

FODS

<https://getfods.com/>

RubberForm Trackout Control Mats

<https://rubberform.com/product/trackout-control-mat/>

OUTRAK™ Mats

<https://www.yakmat.com/access-mats/outrاك-mat/>



Photo: courtesy of FODS, <https://getfods.com/>