

Do you have a resource concern? erosion, poor vegetative cover, or excess runoff



Virginia Conservation
Assistance Program

Presented by Virginia Association of Soil & Water Conservation Districts

Impervious Surface Removal



Impervious Surface Removal is the demolition and disposal of impervious surfaces and includes remediation of the subsoil, adding topsoil, and vegetation establishment or other best management practice. Impervious surfaces include hardscape and pavement materials such as asphalt, concrete, brick, and densely graded stone aggregate.



Contact your local
SWCD to learn more!

Could ISR benefit your property?

Improved Water Quality: stormwater runoff from impervious surfaces often carries pollutants like oil, fertilizers, and pesticides into waterways. When rainwater is allowed to infiltrate the soil, it undergoes natural filtration, removing these pollutants and improving water quality.

Improved Soil Health: Allowing rainwater to infiltrate the soil helps to improve its structure and fertility, benefiting your plants and lawn.

Increased Biodiversity: Creating a pervious, vegetated landscape can attract beneficial insects and wildlife to your yard.

ISR can be standalone practice where the area beneath the removed surface is stabilized with grass or landscaping, or combined with another VCAP practice except for permeable pavement.

No minimum size or drainage limitations, ISR can be utilized on steep slopes and in floodplains.

\$5 per square foot removed up to \$20,000

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Conservation Landscaping



Conservation Landscaping is the establishment of native plantings to provide ground cover and understory protection from rainfall and runoff. This practice uses exclusively native plants, as native plants are best adapted to local soil and climate conditions and therefore require the least amount of nutrient addition or cultivation to maintain the amount of ground cover best suited to minimize runoff.



Contact your local
SWCD to learn more!

5 varieties to best fit your site:

Meadows (CL-1) - open habitat or fields vegetated by perennial grasses and other herbaceous ground covers, usually established by seed.

Tree Plantings (CL-2) - reforestation practice, planting bare root seedlings at a rate of 300 per acre or 12-foot centers.

Mixed Planting Beds (CL-3) are landscaped beds that combine woody and herbaceous species with a layer of mulch.

Filter Strips (CL-4) - vegetated areas that treat sheet flow delivered from adjacent managed turf and impervious areas by slowing runoff velocities and allowing sediment and attached pollutants to settle and/or be filtered by the vegetation. Filter Strips may be made of meadows or mixed planting beds with berms.

Riparian Buffers (CL-5) - vegetated areas (tree plantings, meadows, or mixed planting beds) along a stream bank or other body of water comprised of trees and shrubs.

80% reimbursement of total eligible cost up to \$7,000

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Rain Garden



A Rain Garden is a shallow landscaped depression that temporarily ponds stormwater runoff and encourages it to infiltrate into the underlying soil. Rain Gardens are vegetative infiltration practices providing runoff reduction and pollutant removal.



Contact your local SWCD to learn more!

Could a RG benefit your property?

Rain Gardens are intended to treat runoff from small areas such as individual rooftops, driveways and small parking areas. Inflow is typically from a downspout or can be sheet flow from a driveway/patio or lawn.

Typical design allows RG to serve almost as a bowl that collects water from downspouts or overland flow across a property. This BMP is intended to absorb runoff from impervious surfaces before it flows into storm sewers, swales, or channels within 48 hours.

RGs can come in all different shapes and sizes but are best when planted with native Virginia plants. These plants require less maintenance once established, have deep roots that soak up lots of water, and provide food and habitat to wildlife.

While both Conservation Landscaping and RGs incorporate similar elements to promote cleaner air and water, RG are more focused on water drainage while conservation landscaping typically focuses more on vegetative cover and wildlife elements.

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Dry Well



A dry well is a subsurface storage facility that temporarily stores stormwater runoff until it can seep into the surrounding soil. Runoff is stored in a reservoir of gravel, an open-bottomed chamber, or both.



Contact your local SWCD to learn more!

Could a DW benefit your property?

This practice is intended to treat concentrated flow or piped runoff from small impervious areas such as individual rooftops and driveways.

Reduces Stormwater Runoff: Dry wells capture and slowly release stormwater into the ground, reducing the volume of water that flows over the surface. This helps prevent flooding and erosion.

Alleviates Pressure on Storm Drains: By reducing the amount of water entering storm drains, dry wells help prevent overflows during heavy rainfall events.

Reduces Pollution in Waterways: By reducing the amount of polluted runoff entering streams and rivers, dry wells help protect aquatic ecosystems and improve water quality overall.

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Constructed Wetlands



Fernhill Wetlands, located in Forest Grove (Photo Credit: Clean Water Services)

Constructed Wetlands can temporarily store, filter, and clean runoff from driveways, roofs and lawns and thereby improve water quality. To properly function in this regard, the wetland should be designed and constructed to retain water or remain saturated for at least two to three weeks.



Contact your local SWCD to learn more!

Could a CW benefit your property?

This practice is intended to treat concentrated flow or piped runoff from small impervious areas such as individual rooftops and driveways.

Artificial wetlands temporarily store, filter, and clean runoff from driveways, roofs and lawns. CW are engineered systems that use natural functions of vegetation, soil, and organisms to treat different water streams. Can be designed to emulate the features of natural wetlands, such as acting as a biofilter or removing sediments and pollutants such as heavy metals from the water.

Wetlands provide an ideal environment for gravitational settling, biological uptake, and microbial activity. CW are the final element in a roof-to-stream runoff reduction sequence. They should only be considered for use after all other upland runoff reduction opportunities have been exhausted and there is still a remaining water quality or channel protection volume to manage.

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Vegetated Stormwater Conveyance



Vegetated Stormwater Conveyances serve to prevent scour and erosion in an existing channelized area and provide water quality treatment while conveying stormwater. They are constructed channels lined with vegetation that inhibits erosion. From a water quality perspective, they are preferable to pipes because they allow more soil/water contact and more opportunity for infiltration.



Contact your local
SWCD to learn more!

Could a VSC benefit your property?

Dry Swales are shallow channels with check dams for temporary stormwater storage and infiltration. Utilize engineered soil media as the channel bed or permeable existing soil. Often include an underdrain system to convey treated runoff to downstream systems. Can be planted with turf grass or other suitable ground cover.

Wet Swales are shallow channels with check dams creating permanent pools for groundwater interception and enhanced pollutant removal. Saturated soil and wetland vegetation promote gravitational settling, biological uptake, and microbial activity. On-line or off-line cells within the channel create saturated soil or shallow standing water conditions.

Step Pool Conveyance Swales are defined channels converting surface runoff to shallow groundwater through attenuation pools and sand seepage filters. Safely convey, attenuate, and treat stormwater using a series of constructed pools and riffles with engineered soil media.

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Rainwater Harvesting



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Rainwater Harvesting systems intercept, store, and release rainfall for future use. For purposes of this specification, Rainwater Harvesting includes the collection and conveyance of roof runoff into an above- or below-ground storage tank where it can be reused or safely diverted to a receiving area for infiltration.



Contact your local SWCD to learn more!

Could RWH benefit your property?

Collects and treats runoff from roofs including homes, businesses, farm buildings, and accessory structures such as garages and sheds. Capture runoff is primarily used for non-potable uses such as irrigation, livestock watering and exterior washing.

Reduced Stormwater Runoff: By capturing rainwater, rainwater harvesting systems significantly reduce the volume of stormwater that flows into storm drains and eventually into local waterways. This helps prevent flooding and erosion.

Reduced Peak Flow Rates: Rainwater harvesting systems release stored water gradually, reducing the peak flow rates during heavy rainfall events. This helps alleviate pressure on stormwater infrastructure and minimize the risk of overflows.

Improved Water Quality: Rainwater is generally cleaner than stormwater runoff, which often carries pollutants like fertilizers, pesticides, and oil. By reducing the amount of polluted runoff entering waterways, rainwater harvesting helps protect water quality.

\$4 per gallon collected up to \$20,000

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Bioretention



Bioretention is a shallow landscaped depression that temporarily allows runoff to pond and then filter through an engineered soil media prior to being discharged to an underdrain or absorbing into the underlying soil. Bioretention provides both runoff reduction and pollutant removal.



Contact your local SWCD to learn more!

Could a BR benefit your property?

This practice is intended to treat runoff from single lots, multiple lots and/or commercial rooftops. Should be located in common areas or within drainage easements, to treat a combination of roadway and lot runoff.

Removal of Pollutants: The various layers of the bioretention system, including the sand bed, organic layer, and planting soil, work together to filter out pollutants such as sediment, nutrients, and heavy metals from stormwater runoff.

Improved Water Quality: By removing pollutants, bioretention systems help improve the quality of water entering local waterways, protecting aquatic ecosystems and human health.

Enhanced Biological Activity: The plants in the bioretention system promote biological activity, which further helps to remove pollutants and improve water quality.

80% reimbursement of total eligible cost up to \$30,000

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Infiltration



Infiltration practices provide temporary surface and/or subsurface storage of stormwater runoff until it seeps into the ground. Infiltration is a non-vegetative practice that provides runoff reduction. Surface infiltration trenches or basins may utilize a berm to pond runoff; subsurface trenches or basins store runoff in a gravel reservoir, open-bottomed chamber, or perforated chamber. Infiltration does not convey runoff like a French Drain.



Contact your local
SWCD to learn more!

Could IF benefit your property?

This practice treats concentrated or dispersed flows from larger drainage areas such as parking lots, multiple lots, and/or commercial rooftops. Infiltration should be located in common areas or within drainage easements, to treat a combination of roadway and lot (pervious or impervious).

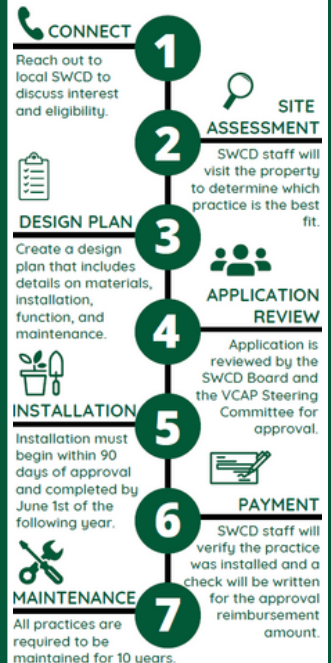
Reduces Stormwater Runoff: Infiltration practices capture and slowly release stormwater into the ground, reducing the volume of water that flows over the surface. This helps prevent flooding and erosion.

Alleviates Pressure on Storm Drains: By reducing the amount of water entering storm drains, infiltration practices help prevent overflows during heavy rainfall events.

Reduces Pollution in Waterways: By reducing the amount of polluted runoff entering streams and rivers, infiltration practices help protect aquatic ecosystems and improve water quality overall.

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Permeable Pavement



Alternative surfaces that allow stormwater runoff to filter through voids in the pavement surface into an underlying stone reservoir, where it is temporarily stored and/or infiltrated. All permeable pavement systems have a similar structure, consisting of a permeable surface layer, bedding layer, reservoir layer, and under drain with geotextile fabric installed underneath if needed based on site characteristics. A variety of Permeable Pavement surfaces are available, including pervious grid pavers, porous asphalt/concrete, and permeable interlocking pavers.



Contact your local
SWCD to learn more!

Could PP benefit your property?

Permeable Pavement is used as an alternative to conventional pavement at residential, commercial and institutions. This practice is not intended for industrial sites or areas with high sediment and debris loadings due to potential groundwater contamination and clogging of the practice.

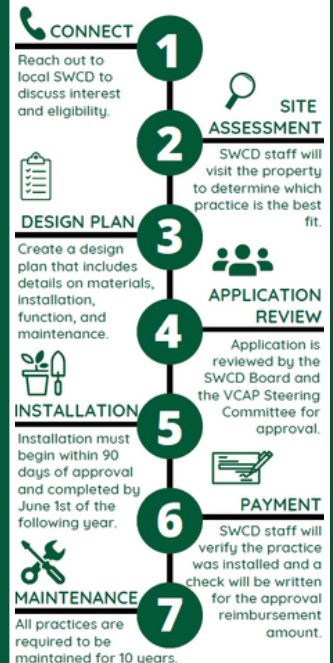
Permeable Pavement shall only be installed when it is either replacing impervious surface or when treating additional impervious surface that offsets the square footage of the practice footprint.

Permeable Pavement can be used to replace gravel or paved driveways, patios, sidewalks and parking lots. Permeable pavement around pools is not eligible for cost share.

Reduces Stormwater Runoff: Permeable pavement captures and slowly releases stormwater into the ground, reducing the volume of water that flows over the surface. This helps prevent flooding and erosion.

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Green Roof



Green Roofs or vegetated roofs are alternative roof surfaces that typically consist of waterproofing and drainage materials and an engineered growth media that is designed to support plant growth. Vegetated roofs capture and temporarily store stormwater runoff in the growth media. A portion of the captured stormwater evaporates or is taken up by plants, which helps reduce runoff volumes, peak runoff rates, and pollutant loads on development sites.



Contact your local SWCD to learn more!

Could a GR benefit your property?

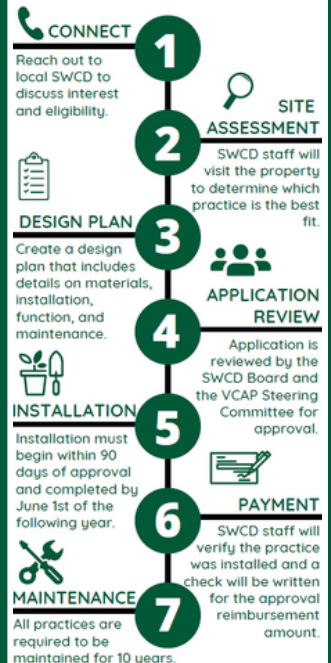
Green roofs capture and temporarily store rainwater in growth media for evaporation and plant uptake to occur. This practice helps reduce runoff volume, peak rates, and pollutant loads entering natural waterways.

Green roofs improve air quality and create habitats that boost urban biodiversity.

Designs can include deeper growth media (6-48 inches), supporting diverse plant life, including trees. Or shallower growth media (2-6 inches), planted with drought-tolerant vegetation.

\$20 per square foot up to \$30,000

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Living Shorelines



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Living Shorelines encompass a range of shoreline stabilization techniques along estuarine coasts, bays, sheltered coastlines and tributaries. A Living Shoreline incorporates vegetation and/or other soft elements alone or in combination with harder shoreline structures (e.g. oyster reefs, rock sills) for added stability. Living Shorelines maintain continuity of the natural land-water interface and reduce erosion while providing habitat value and enhancing coastal resilience.



Contact your local SWCD to learn more!

Could a LS benefit your property?

Living Shorelines use natural elements to stabilize tidal areas, reducing erosion, improving water quality, and protecting habitats, all while maintaining natural processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials.

Living Shorelines include marsh management techniques using vegetation. Marsh management refers to the enhancement of existing marshes, planting new marsh at existing grade, or planting new marsh on sand fill.

Sills and breakwaters may be used where applicable when incorporated with vegetation.

80% reimbursement of total eligible cost up to \$30,000

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