



Erosion and Sedimentation

What is erosion?

The Grand Canyon is just one large example of erosion. Over the course of thousands of years, wind and water slowly wore away small particles of rock to create this natural wonder.

Erosion is a natural process; weathering, corrosion, or abrasion can reduce a material into smaller particles. Normally, these smaller units are relocated by water, wind, ice, or man. Erosion removes topsoil, organic material, and other valuable resources.

What is sedimentation?

Once a material is broken free of the larger mass, it can be carried away and deposited elsewhere. This process of depositing eroded material is known as sedimentation. Some indications of sedimentation are sand dunes, mud in the street around drains, and decreased water holding capacity of a stream, reservoir, or pond.

Why should we be concerned about erosion and sedimentation?

Sediment is responsible for more stream and river degradation than any other pollutant. Deposits of sediments in ditches, streams, and rivers reduce their capacity to store water resulting in more frequent and severe flooding and increased property damage. Accumulations of sediment may result in severe damage to storm drain systems. Many millions of dollars are spent each year to dredge our state waterways, to remove sediments from storm drain systems, reservoirs, and water treatment plants, and to repair flood damage.

Sediment in streams and rivers causes the most damage to aquatic life by severely impacting aquatic animal habitats and degrading water quality. Areas needed for reproduction and food sources are destroyed when fine silts cover the sand and gravel streambed. Decreased clarity of the water prevents sunlight from reaching plants resulting in loss of aquatic plant communities. The result is a reduction in the number and variety of fish and other aquatic life. This impact often can be seen for many miles downstream.

What causes erosion and sedimentation in suburban settings?

Building lots and construction sites are a major source of sediments. Few activities cause the magnitude of disturbance as much as construction sites do. Every time bare soil is exposed there is potential to create significant volumes of sediment-laden runoff. An unprotected 1/4 acre lot can lose from two (2) to twenty-five (25) tons of soil during critical periods. Construction sites will erode but sediment can be controlled.

How do we prevent erosion and sedimentation on construction sites?

Several “best management practices” (BMPs) have been developed to control erosion and sedimentation. Erosion control prevents soil from dislodging and becoming suspended in runoff. Sediment control removes soil from the runoff.

Stopping soil from eroding in the first place is more effective but also much more difficult to integrate into a construction schedule. Controlling erosion by establishing vegetative cover is by far the most effective type of erosion control. Clearing and grading in phases as needed reduces the area of exposed soil and preserves topsoil. Seeding and mulching, both temporary and permanent, must be done several times over the course of construction to maintain adequate soil protection.

Silt fences, settling ponds, and inlet protectors all trap sediment on construction sites. They receive runoff, allow time for suspended solids to settle out, and then let the water slowly continue on its way. They do not work as filters to strain out soil particles or the pollutants they transport but reduce their entrance to our waterways. Even at their best they have limited efficiency. A good job of erosion and sediment control might be 75% effective. Some off-site sedimentation is unavoidable.

These erosion control measures, properly implemented and maintained, are the best management practices of sediment control on construction sites.

Common questions:

Why are the storm drains covered in my subdivision?

During all phases of construction it is necessary to prevent silt and sediment from entering the storm drains that empty directly into the nearest creek or pond. This is done by covering the storm drain inlets downstream from construction activities with a dam of geotextile fabric. A gap at the top edge provides an overflow in event of extreme flooding. These inlet covers slow the water flow to allow settling time for the sediment and to let clean water slowly seep through the mesh.

What about flooded roads?

Temporary ponding in the street and around storm drain inlets is common and may last several hours or a day. Ponding can be kept to a minimum by frequent cleaning of the filters and roads. Even if construction is not taking place adjacent to the inlets they must be protected from sediment carried in from work areas by construction vehicles. Some flooding is inevitable, but with patience and cooperation we can make a positive impact on the health of our streams and rivers.

Resources:

Rainwater and Land Development, Dan Mecklenburg, ODNR, Division of Soil and Water Conservation

The Franklin SWCD and NRCS Field Office strive to serve all people equally.

Franklin Soil and Water Conservation District
Natural Resource Conservation Service
1328 Dublin Rd., Ste. 101, Columbus, OH 43215
Phone: 614-486-9613 Fax: 614-486-9614
www.franklinswcd.org

