



SWIF GRANT

Nutrient Reduction Project

Project Number Buck11-04M:

The Ohio EPA has awarded the Village of Buckeye Lake \$75,000 in grant funding to address the flow of siltation and other debris from the Village-controlled locations into Buckeye Lake. With the grant, the Village removed a portion of their existing parking lot and replaced it with pervious pavement so the silt will filter into the pavement rather than entering the flow toward the drainage system. Also, the Village installed a Rain Garden and four rain barrels. Two catch basins that outletted into the lake were replaced with sediment catchers.

Environmental Results:

This project resulted in the successful reduction of the amount of silt and debris discharged into Buckeye Lake.

Additional Information and Resources

Ohio Environmental Protection Agency
www.epa.state.oh.us
epa.ohio.gov/dsw/nps/index.aspx

The Village of Buckeye Lake
buckeyelakevillage.com

Fairfield County Soil & Water Conservation District
www.fairfieldswcd.org

Licking County Soil & Water Conservation District
www.lickingswcd.com

Pervious Pavement
www.perviouspavement.org

Rain Garden Network
www.raingardennetwork.com

Stormwater Manager's Resource Center
www.stormwatercenter.net

Suntree Technologies, Inc.
www.suntreetech.com

Photo Courtesy:

- Austin's Ferry, Tasmania, Australia ·Inhabitat.com
- Buckeye Lake Village ·Suntree Technologies, Inc. ·Ohio EPA



Permeable Parking Lot, Rain Garden, & Catch Basin Fact Brochure

About the Ohio EPA>>>

"The Ohio Environmental Protection Agency is a trusted leader and environmental steward using innovation, quality service and public involvement to ensure a safe and healthy environment for all Ohioans. Our mission is to protect the environment and public health by ensuring compliance with environmental laws and demonstrating leadership in environmental stewardship."



Improving the Village of Buckeye Lake's Surface Water.

Catch Basin Grate Skimmer Box

An effective way to reduce silt, debris, and other unwanted elements from entering the storm sewer system and in some cases Buckeye Lake is to capture and collect the debris using a grate skimmer box.

As stormwater enters the basin through the grate it passes through a **Storm Boom** located around the top of the **Grate Inlet Skimmer Box**. The stormwater then flows down into the lower filtration chamber, which is equipped with 3 different sieve size filtration screens and bypass openings.

The fine sieve size screens are sized to be able to capture sediment such as sand, clay, phosphates, etc. A sand filter quickly forms across the bottom which has the potential to capture the finest of particles.

The **turbulence deflector** dramatically reduces the turbulence in the lower filtration chamber, which allows sediment to continue to settle, without re-suspending sediment that has previously been captured.

The coarse screen is sized to capture floatables like foliage and litter. At this stage water is flowing through all the different sieve size screens, the turbulence deflector continues to dramatically reduce the turbulence in the lower filtration chamber, and sediment continues to settle and collect toward the bottom.

If the storm event creates an extremely high flow rate into the inlet which exceeds the flow through all the screens, the water flow can bypass the filtration screens through skimmer protected bypass openings near the top of the Skimmer Box. Storm events that produce such high flow rates are rare and typically don't last very long.



After The Storm Event:

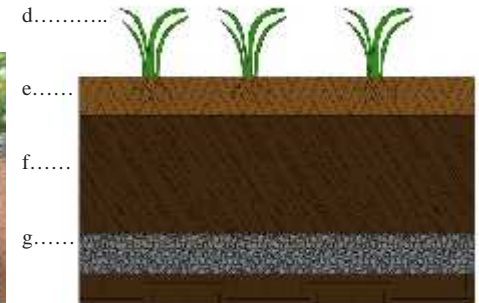
The stormwater drains completely out of the Skimmer Box. The debris collected in the unit is stored in a dry state which helps to contain the nutrient pollutant load, prevents the filter from going septic, and prevents mosquitoes from breeding in the unit. After each storm event more debris is collected, and the box will have to be periodically emptied.

What is Permeable Pavement?

Permeable pavement is a great addition to any nutrient reduction project because it filters storm water in a natural way and reduces runoff into a stormwater system that could otherwise carry pollutants into nearby waterways. Here are some other facts you might want to know...

How does it work?

Permeable pavement is similar to conventional pavement, but some of the fine material is not added to the mix (a). This results in small openings that allow storm water to pass through the pavement. An 18" layer of gravel lies underneath the pavement. The gravel acts as a stone recharge bed, filtering any pollutants and sediment that could find their way into the ground water. The storm water sits in the gravel and slowly soaks into the ground (b). A layer of filter fabric is placed beneath the gravel recharge bed to act as a last filter for any pollutants that might make it through the recharge bed (c).



What are the benefits?

Permeable pavement is just as strong and durable as ordinary pavement, so here are some of the additional benefits permeable pavement has to offer:

- Decreases the amount of runoff leaving a site

- Improves water quality by filtering pollutants

- Reduces the speed of storm water runoff

- Requires less need for other stormwater infrastructure, such as piping, ditches, catch basins, and ponds

- Reduces ice formation during cold weather

- Reduces spray from tires, making for safer driving conditions.

- Less prone to ice buildup

- Recharges the ground water supply

How is it maintained?

Maintenance of permeable pavement includes vacuum sweeping, inspecting for sedimentation and clogging, and pressure washing. People can help keep permeable pavement working well by not allowing sand or other fine material on it. Cold temperatures, snow, and ice have not affected permeable pavement. Should freezing occur, however, salt can be used to de-ice the surface, and the pavement can be plowed clear of snow.

Rain Garden Breakdown

The rain garden was designed to mimic the conditions of a local forest floor. Each level in the rain garden is meant to filter out pollutants from the roadway and parking lot in a natural way. Native plants are acclimated to the local climate and therefore require less maintenance and no fertilizer (d). Plants help with evapotranspiration of water and help to recharge the atmosphere. Mulch is used to conserve moisture, improve fertility of soil, and reduce weed growth (e). A layer of blended soil, composing of approximately 60% sand, 20% topsoil, and 20% organic leaf acts as a filter for pollutants entering the rain garden (f). The soil is blended to allow water to drain properly but not allow pollutants to pass. The gravel layer is used to contain the soil and all the pollutants collected but still allows storm water to drain into the ground water supply (g).