

Activity: Soils Tunnel Model

Serves: Grades K-4

SOLs Addressed: K.8, 1.4,1.5,2.5,2.8,3.6,3.7,4.5

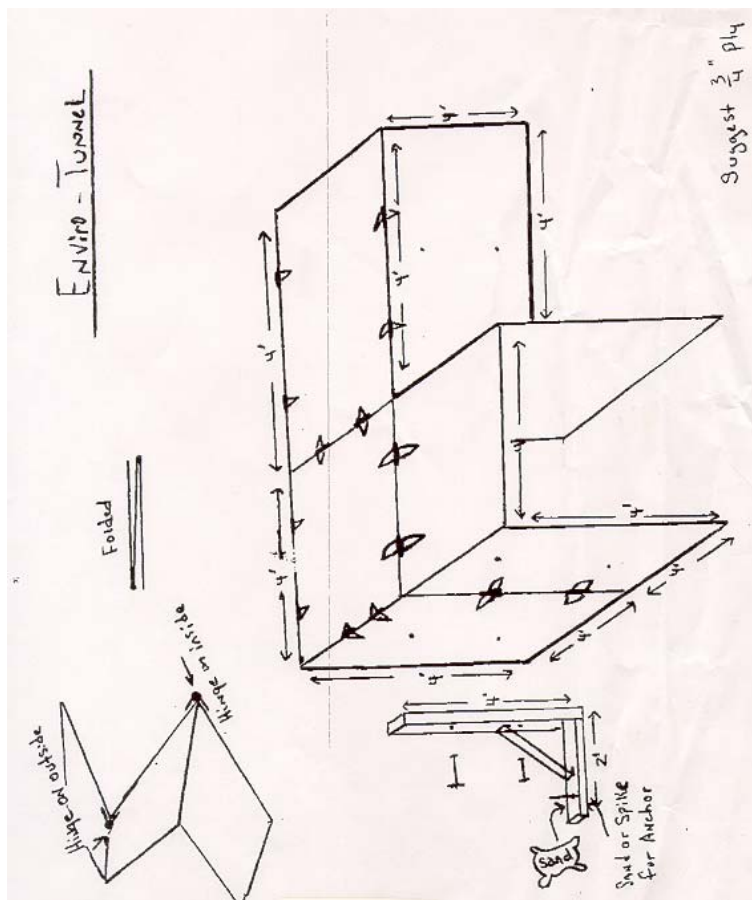
Resources needed: Booklet (Ernie Earthworm) and the Soils Tunnel

Length of time: 20-30 minutes depending on age group

Goal: To educate students about life underground and how it affects the environment.

Timeline or How to instructions: Final instructions will be included in your final draft.

For more information contact Southside SWCD.



Activity: EnviroScape Nonpoint Source Model

Serves: Groups of 20; All ages

SOLs Addressed: K.5, K.10, 1.8, 2.8, 3.6, 3.8, 3.9, 3.10, 4.5, 4.8, 5.6, 5.7, 6.5, 6.7, 6.9, LS.11, LS.12, ES.7, ES.9

EnviroScape units include everything you need for a demonstration — except the water! All deluxe units are approximately 25" x 30" x 5" and are easy to use and clean. Also included in each unit is a user's guide with glossary, which provides easy-to-use guidelines to aid an instructor, group leader or facilitator in presenting a demonstration.

EnviroScape Watershed/Nonpoint Source tracks pollution from nonpoint sources, including: residential areas, forestry areas, transportation, recreation, agriculture and construction, as well as from industry as a point source.



Pollution and runoff are visually apparent when rain falling over the landscape top carries soil (cocoa), chemicals (colored drink mixes) and oil (cocoa and water mixture) through a watershed to a body of water. Stormwater runoff and storm drain function are also addressed.

Best management practices include felt buffer strips as vegetation, clay to create berms and other methods to show conservation and water pollution prevention measures at work. It discusses nonpoint source pollution and the steps everyone can take to help prevent environmental contamination. It is also good for discussion about overall watershed concepts.

EnviroScape Watershed/Nonpoint Source teaches the watershed concept in addition to point and nonpoint source pollution. Two waterways flow into a larger water body, which is representative of a lake, river, bay, or ocean. The unit comes complete with a kit containing everything you need to demonstrate the movement of water through a watershed and the pollution that runoff may cause.

The Watershed/Nonpoint Source unit includes: Nonpoint source landscape top (topographical map) with storm drain pipe, clear base, houses, barn, factory, drain pipe, treatment plant, trees, golf flags, cows, cars and best management practices such as buffer strips, clay berms, manure container, soil, oils and chemicals (cocoa, drink mixes and oil mix), bridges, watercatcher, rainmaker, water plug, and User's Guide.

Cost: \$ 679, Carrying Case \$ 199

Where to get one: Borrow from a Soil and Water Conservation District or a Department of Conservation and Recreation Field Office location or purchase from EnviroScape. EnviroScape, c/o JT&A, inc., 14524-F Lee Road, Chantilly, VA 20151, Phone: (703) 631-8810, Fax: (703) 631-6558, Email: info@enviroscapecom

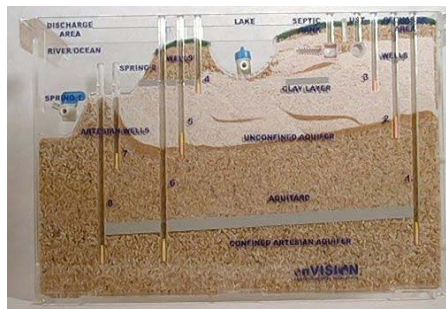
Additional EnviroScape Kits: Coastal, Landfill, Wetlands, Groundwater, Hazardous materials, and Riparian.

Activity: Groundwater Model

Serves: Groups of 20; All ages

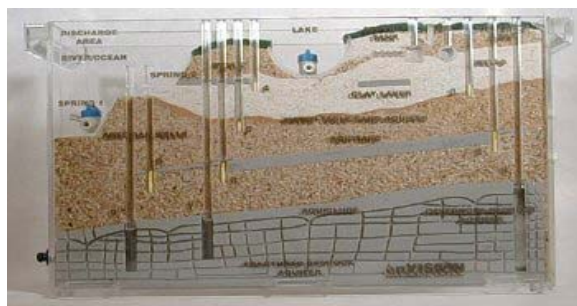
Envision 2000 – Sand and Gravel Aquifer Model

This simulator shows groundwater flow and contamination in sand and gravel aquifers typical of valley fill and/or glacial-deposit geologic settings. The simulator shows the interaction between wells in unconfined and semi-confined aquifers, including interaction between ground and surface waters. Wells are located at varying depths to simulate the various types of wells in use from a shallow homeowner well in an unconfined aquifer to a deep commercial well cased to a semi-confined aquifer. Contamination plume flow is accurately simulated showing how some wells can become contaminated while others not contaminated. Key Features include: 8 wells (including 2 artesian wells), 2 springs, Lake, Stream/Ocean, Septic System, Sand & Gravel Aquifer, Confined Aquifer, Unconfined Aquifer, Underground Storage Tank, Aquitard, Recharge & Discharge Areas, Recirculating Reservoir and Tank system, Manual pumping mechanisms simulating high and low volume well pumps, Top display showing watershed/surface activities, AC/DC power supply. *Detailed instruction manual included.*



Envision 3000 -Bedrock/Karst Aquifer Model

This simulator shows all the key features of the Envision 2000 with the added features of a bedrock aquifer. It shows groundwater flow and contamination in both unconfined and confined sand and gravel aquifers overlying cavernous limestone and fractured-bedrock aquifers. Presenters can easily compare and contrast the different flow patterns between the various types of aquifers. This simulator is particularly useful in areas where the local geology contains caves, sinkholes, fractured non-porous bedrock or has been extensively deep-mined. Key features include: 9 wells (including 2 artesian wells), 2 springs, Lake, Stream/Ocean, Septic System, Sand & Gravel Aquifers, Confined Bedrock Aquifer, Cavernous Limestone/Karst Aquifer, Fractured Bedrock Aquifer, Unconfined Aquifer, Underground Storage Tank, Recharge & Discharge Areas, Recirculating Reservoir and Tank system, Top display showing watershed/surface activities, AC/DC power supply, Manual pumping mechanisms simulating high and low volume well pumps. *Detailed instruction manual included.*



Additional Themes: *Karst Topography adaptation available* from Carol Zokaites at the Department of Conservation and Recreation Radford Karst Office, (540) 831-4057, czokaites@dcr.state.va.us

Cost: \$ 700- 900 (dependent upon model and accessories)

Where to get one: Several Soil and Water Conservation Districts have groundwater models that your office may borrow. To purchase a model contact Envision Environmental Education, c/o AHGI, P.O. Box 146, New Wilmington, PA 16142, Phone: 877-804-1431 (724-946-3004), FAX: 724-946-9940, E-mail: ahgimages@aol.com, <http://www.envisionenviroed.net/>

Activity: Crawl Through Tunnel

Variations: Soil tunnel
Karst/cave/groundwater tunnel
Storm drain tunnel

Resources needed:

Aluminum fold out table (or 2 card tables, other tables without center legs)
Fabric (brown, blue, green, other colors in a variety of textures and weights)
Thread
Sewing Machine
Spray foam insulation
Styrofoam insulation (comes in panels 16" wide)
Foam core or other materials for sign bases
Spray paint and/or acrylic paint, permanent markers, and/or bottles of fabric paints
Plastic props such as plastic worms, bugs, vegetables, bats, cars, fences, etc.
Velcro (peel and stick)



The crawl through tunnel has two areas for information – what is on the table or above the ground and what is under the ground. Use your imagination and materials to create a garden or landscape above the ground and soil profile or cave formations below the ground.



How To Directions:

Sides

Below ground:

Measure the length of the table and cut two lengths of brown fabric the length of the table and the width of the table top to the floor. I like to use a brown fabric backed vinyl. It is a sturdy surface to apply other fabrics to and the fuzzy backing sticks to the loop side of the Velcro. The vinyl also needs no edge finishing.

Peel and adhere strips of Velcro to the underside of the table edge. This will hold the sides of the inner tunnel up.

Appliqué or paint the underground on the brown vinyl.

For the karst model, I appliquéd gray and brown shiny fabric stuffed with quilt batting and old newspapers to create cave formations on one side. (See Project Underground) for detailed pictures of curtain, bacon, soda straws, stalactites, stalagmites and other formations). On the other side, I illustrated a well and underground sinkhole and a soil profile. You can make a case of netting and fill it with trash, plastic cars, cows and tractors to illustrate what gets dumped into sink holes that can pollute groundwater. Use fabric markers or paint to label or write messages to interpret what people are looking at.

For soil tunnel: Paint or appliquéd different textures of fabric to represent the soil profile. You can create worm or mole tunnels, etc. to illustrate what is below the ground. A large tree root can be appliquéd or

painted on the side. Use fabric markers or paint to label or write messages to interpret what people are looking at.

For the storm drain:

On one side, illustrate a septic system. On the other, make a 3-D drain pipe outlet. Cut a rectangle of muslin, tan or gray fabric about 8" wide and 24" long. Fold with right sides together, and stitch edge and bottom together to create a tube. Turn to the right side and stuff with quilt batting. Fold raw edges to the inside on open end. Push finished end into the opening to form a circle and hand stitch in place to create the opening of the outlet pipe. Take a length of shiny light blue or metallic fabric to represent water coming out of the pipe and stitch to inside of "pipe." Sew a 4" piece of loop side Velcro to edge. Sew the pipe to the brown vinyl fabric near the top edge. Adhere a long strip of fuzzy side Velcro to the underside of the table where the pipe will rest to help support the pipe from the top. You can also sew the blue "water" to the bottom edge to keep it in place when people crawl through. Make sure you let the blue fabric drape to give the feel of water.

Use fabric markers or paint to label or write messages to interpret what people are looking at.

Underside of table:

Karst/cave model:

Create stalactites by cutting triangular pieces of brown or gray fabric and stuff them with quilt batting. Score the bottom opening with scissors.

Cut a piece of Styrofoam the width of the table. Make sure it will fit tightly when pushed into the underside of the aluminum table. You can put Velcro on the Styrofoam and the underside of the table, but it comes loose easily. Cutting a tight fit will help hold the "underground" in place. Push unfinished fabric edges of the stalactites into the foam with a blunt knife or the edge of the scissors so that they stick out perpendicular from the Styrofoam. Spray foam around the edges to create the texture of the cave ceiling. The foam will swell and hold the stalactites in place. When the foam dries, it can be painted.

To hang a bat from the cave ceiling, attach a rubber bat to a piece of elastic or string. Attach a paper clip to the other end. Slightly fold the table so there is a crack where the table folds and push the paper clip from the bottom up through the crack. Let the table lay flat. The paper clip will hold the bat in place.

Soil tunnel/storm drain model:

Cut a piece of Styrofoam the width of the table. Make sure it will fit tightly when pushed into the underside of the aluminum table. You can put Velcro on the Styrofoam and the underside of the table, but it comes loose easily. Cutting a tight fit will help hold the "underground" in place. Purchase silk or plastic root vegetables from the silk flower section of a craft store. I found carrots, onions and potatoes at the local Wal-Mart. Cut them close to the top if part of the vegetable should appear above ground. Take the part of the vegetable that grows below ground and tape, pin, glue or gently push into the foam to hold temporarily in place. Spray foam around the edges to create the texture of the soil. The foam will swell and hold the vegetables in place. When the foam dries, it can be painted. Roots can be illustrated by pushing jute, raffia or string through the foam soil and tying it on the other side. It's fun to glue and tie peanuts onto strings to show how they grow underground. They tend to get pulled off quickly. But, if you have whole peanut plants for people to see, they are usually surprised to know this is how peanuts grow.

Tablecloth

A tablecloth can be made or purchased to cover the backside of the side panels. You can appliqué or paint your logo or a message on the front.

Table Top:

Think about what is right below on the underside and illustrate what you'd see above the ground.

Cave/karst: Landscape with a stream, house, barn, and sinkhole filled with trash. Don't forget to leave room for signs with your message and something to hold brochures, etc.

Soil tunnel: Above the garden, use the tops of the vegetables or greenery to create the garden you'd see above ground, using the same technique with the spray foam insulation. A scarecrow can hold your message or Squirmen Herman the worm. Indoor/outdoor carpet scraps are great for grass.

Storm water/septic tank:

Create a stenciled sidewalk by painting Styrofoam to represent a section of the sidewalk and storm drain above ground with "Drains to the River." A donation of a toilet bank that makes a flushing noise was a great prop to use above ground where we placed our information and message about proper septic tank maintenance.

By creating several underside panels, you can interchange them for different messages and audiences. Use your imagination and keep your eyes open for things that would work well. Check remnant tables in fabric stores. The more interactive, the better. Kids and adults love to crawl under the table and see what's there.

Activity: Envirothon Resource Trunks

Serves: All ages

Length of time: Dependent upon needs of teacher

Goal: Provide each of the 6 Conservation District Areas with a trunk containing various teaching materials on forestry, wildlife, aquatics and soils.

Evaluation tools: Please provide the VASWCD with any feedback that you have in regards to the trunks. If you would like to see additional items including in the trunk please contact the VASWCD.

Where to get one: The Area Envirothon Coordinating SWCD houses the Resource Trunk at their SWCD Office. The Trunk was purchased with Envirothon funds but may be used for other purposes. Contact your Area Coordinator to set up arrangements.

Contents:

Aquatics

- Pond Life (Golden Guide Book)
- Clean Water for the Frog CD Rom
- Handheld Magnifiers
- Video
- Pond and Stream Safari
- Benthic Macroinvertebrate Flash Cards
- SOS Kick Seine Net
- SOS – America’s Streams Video

Soils

- Soils Color Chart - Earth Colors “The Globe Edition”
- Soil Biology Primer

Forestry

- Forest Trees of Virginia
- Peterson Field Guide – Wildflowers
- Tree Rings
- Increment Borers

Wildlife

- Peterson Field Guide Eastern Birds
- Peterson Field Guide Insects
- Striped Skunk Track Mold
- Cottontail Rabbit Track Mold
- Opposum Track Mold
- Otter Track Mold
- Red Fox Track Mold
- Deer Track Mold
- Fox Scat
- Bat Scat
- Deer Scat
- Turkey Scat



- Hands on Save our Streams – Teachers Manual
- Two-way Magnifying Viewer
- It’s Happening Today on the Chesapeake Bay

- Field Manual to Water Quality Monitoring
- Standard Water Monitoring Kit
- Monitors Guide to Aquatic Macroinverts
- Watershed Pollution

- Tree & Log Scale Stick – Doyle Scale
- Peterson Field Guide – Eastern Trees
- What leaf is it ?
- Compasses

- Peterson Field Guide Mammals
- Peterson Field Guide Reptiles and Amphibians
- Mink Track Mold
- Bobcat Track Mold
- Raccoon Track Mold
- Muskrat Track Mold
- Skunk Track Mold
- Bobcat Track Mold
- Raccoon Scat
- Muskrat Scat
- Mink Scat
- Beaver Scat