

Watersheds and Nonpoint Source Pollution



**TEXAS A&M AGRILIFE EXTENSION SERVICE
LEON COUNTY**

What is a Watershed?



- A watershed is the area from which a body of water collects runoff.
- It is a basin-like landform defined by highpoints and ridgelines that descend into lower elevations and stream valleys.
- Drop by drop, water is channeled into soils, groundwater, creeks, and streams, making its way to larger rivers and eventually the sea.
- The important thing about watersheds is: what we do on the land affects water quality for all communities living downstream.

Watersheds

Northern Leon County
– Lower Trinity/
Tehuacana

Western Leon County –
Navasota

Southeast Leon County
– Lower Trinity/
Kickapoo



Point-Source Pollution



- Point-source pollution is an identifiable source of pollution
- The various types of point-source pollutants found in waters are as varied as the types of business, industry, agricultural, and urban sources that produce them.

Point-Source Pollution



Industrial Plant



Oil Spill



Nonpoint Source Pollution



- Nonpoint-source pollution is a source of pollution that cannot be identified to a specific site but may be assigned to an area or a broadly applied practice.
- Occurs as water moves across the land or through the ground and picks up natural and human-made pollutants, which can then be deposited in lakes, rivers, wetlands, coastal waters, and even groundwater.
- The water that carries nonpoint-source pollution may originate from natural processes such as rainfall or snowmelt, or from human activities such as crop irrigation or lawn maintenance.

Nonpoint Source Pollution



Household Practices



Chemical



EnviroScape 10 Source Nonpoint Pollution



1. Construction Site
2. Stream banks & Lakeshore
3. Forest
4. Plowed Fields
5. Lawns & Golf Course
6. Crops
7. Highways Roads & Parking Lots
8. Manure
9. Cows & Domestic Animals
10. Household Practices & Waste

Demonstrate How Pollution Moves in a Watershed



- Soil = Dry Cocoa
- Oil & Grease = Green Kool Aid
- Pesticides = Red Kool Aid
- Rain, snowmelt = Spray Bottle

Scenario 1 – Construction Site



- Problem: No vegetation or silt fencing to hold the soil, therefore erosion occurs.
 - Sprinkle dry cocoa on model, spray with water, watch soil erode.
 - Where does the soil go?
- Solution:
 - Initially:
 - ✦ Straw bales, silt fencing, plastic fencing
 - ✦ Grass, Shrubs, and trees

Scenario 2 – Lawns, Golf Courses & Crops



- Problem: Too much pesticide and fertilizer is used and is carried off by the rain.
 - Spread red kool aid on field. Spray with water.
 - Where does the pesticide go?
- Solution:
 - Use pesticides and fertilizers sparingly & never in heavy rain – opt for organic
 - Don't use a grass catcher
 - Test your soil
 - Choose Native plants
 - Rock Gardens and native gardens
 - Do not cut grass within 50 feet of waterway
 - Plant cover crops in between crops to restore nutrients & prevent erosion
 - Rotate crops and allow a field to fallow during a season

Scenario 3 – Highways, Roads, & Parking Lots



- Problem: Oil, antifreeze, and other chemicals from vehicles are left behind and can be carried into water bodies during rain.
 - Spread green kool aid on road and drive way. Spray with water.
 - Where does oil, antifreeze and other chemicals go?
- Solution:
 - Permeable surfaces on parking lots, driveways, and side walks prevent excess oils from being washed off into our water.
 - Catchment tanks allows runoff water to be filtered prior to filtering down into water bodies.

Scenario 4 – Stream bank & Lakeshore



- Problem: Bare ground banks with no vegetation to hold the soil are subject to erosion by water, wind, and snowmelt.
 - Sprinkle dry cocoa on model, spray with water, watch soil erode.
 - Where does the soil go?
- Solution:
 - Vegetation strips prevent erosion.
 - Planting trees, grass and other vegetation.
 - Loose log or rock retaining help prevent erosion.

Scenario 5 – Forest Clearings & Plowed Fields



- Problem: Cleared forests and fields leave exposed soil that can easily be carried away to nearby water bodies.
 - Sprinkle dry cocoa on model, spray with water, watch soil erode.
 - Where does the soil go?
- Solution:
 - Recycle to cut down on demand of tree cutting
 - Use of vegetation strips to reduce run off
 - Proper Tree cutting management
 - Replant and resod costly but useful

What Did We Learn?



- Can we always know where pollution comes from?
- Can actions in one part of a watershed have an impact on a different part of a watershed?
- What can we do to help protect the water in our watershed?
- On the watershed model, what were some examples of point-source pollution?
- On the watershed model, what were some examples of non-point source pollution?

