



Soil and Water Conservation

Scouts BSA · Nature

Name

Started

Completed

Soil and Water Conservation is about caring for the ground that grows our food and the water we all need. You will learn how soil forms, how water moves, and what people do to protect both. Then you'll get your hands dirty on real conservation projects.

Requirements

Every official requirement, in plain language. Check the official wording when you sign off (scouting.org/merit-badges/soil-and-water-conservation/). Tips and examples are ideas, not extra requirements.

1 Soil basics

Tips for this section: Dig a small hole in your yard or a park with permission and look at the layers. Talk about what makes soil healthy.

Example for this section: Fill a clear jar about a third full of soil, add water, shake it, and let it settle overnight. You'll see layers of sand, silt, and clay. Use it to explain how soil forms and what makes it good for plants.

- ☐ **1a** Explain what soil is and how it forms

- ☐ **1b** Describe three kinds of soil and how they differ from each other

- ☐ **1c** Name the three main nutrients plants get from fertile soil and explain how they can be replaced once used up

2 Soil erosion

Tips for this section: Look for erosion on a hillside or near a stream after a rain, and sketch what you see.

Example for this section: Illustrate two kinds of erosion you can find nearby: sheet erosion on a bare patch of dirt, gully erosion on a steep path, or streambank erosion where roots are exposed. Sketch each and label the cause.

- ☐ **2a** Define soil erosion

- ☐ **2b** Explain why soil erosion matters and how it affects you

- ☐ **2c** Name and describe three kinds of soil erosion

- ☐ **2d** Photograph or draw two kinds of soil erosion

3 Conservation practices

Tips for this section: Find examples like cover crops or plantings along a stream, then draw three practices.

Example for this section: Draw three practices and explain how each one works: cover crops that hold soil in winter, grass strips along a stream, and terraces or contour farming on a hillside.

- ☐ **3a** Explain what conservation practices are

- ☐ **3b** Describe what three kinds of erosion-control practices do and how they work

- ☐ **3c** Take photos or make drawings of three different erosion-control methods

4 Watersheds, river basins, and aquifers

Tips for this section: Use an online or paper map to trace where rain in your town flows and which river it joins.

Example for this section: On a topographic (contour) map of your area, follow the contour lines to outline the smallest watershed you can find, like the land draining into one small creek. Then outline the larger watershed it flows into, and trace that river downstream to see which river basin it belongs to.

- ☐ **4a** Explain what a watershed is

- ☐ **4b** On a contour map, outline the smallest watershed you can find

- ☐ **4c** On the same map, outline as far as it allows the next larger watershed that contains the smallest one

- ☐ **4d** Explain what a river basin is and why everyone living in one should care about how its land and water are used

- ☐ **4e** Explain what an aquifer is and why communities may depend on one

5 Water and soil

Tips for this section: Draw the water cycle on a poster and try a simple demo, like a jar with water and soil.

- ☐ **5a** Draw the hydrologic (water) cycle

- ☐ **5b** Show at least two ways water behaves with soil, choosing from capillary action, evaporation, percolation, precipitation, and transpiration

- ☐ **5c** Explain how removing vegetation changes the way water runs off a watershed

- ☐ **5d** Explain how the ways forests, rangeland, and farmland are used affect the supply of usable water

- ☐ **5e** Explain how industry's use of water affects the water supply

6 Water pollution and treatment

Tips for this section: Visit or learn about your local wastewater plant to see how water is cleaned before it returns to nature.

Example for this section: Explain where water goes after it leaves your sink or a storm drain, and how a wastewater plant settles solids, uses bacteria to break down waste, and disinfects water before releasing it.

- ☐ **6a** Explain what water pollution means

- ☐ **6b** Describe common sources of water pollution and the effects of each

- ☐ **6c** Explain biochemical oxygen demand, primary water treatment, and secondary waste treatment

- ☐ **6d** Draw a diagram showing how complete waste treatment works

7 Conservation projects and visits: Choose 2 of 6

Tips for this section: Ask a conservation district or park ranger about projects you can help with or places to visit.

Example for this section: Your two could be planting 100 native trees and shrubs along a creek with a conservation group, and visiting two places, like a farm that uses no-till planting and your town's drinking water plant, then writing your report on the conservation practices you saw.

- ☐ **7a** Visit TWO of the places below, then write a report (over 500 words) on the soil, water, and energy conservation practices you observed (choose 2 of 9 below)

- ☐ **7a1** An agricultural experiment

- ☐ **7a2** A managed forest, woodlot, range, or pasture

- ☐ **7a3** A wildlife refuge or an area managed for fish or game

- ☐ **7a4** A farm or ranch managed for conservation

- ☐ **7a5** A managed watershed

- ☐ **7a6** A waste-treatment plant

- ☐ **7a7** A public drinking water treatment plant

- ☐ **7a8** An installation where industry uses water

- ☐ **7a9** A desalination plant

- ☐ **7b** Plant 100 trees, shrubs, and/or vines for a worthwhile purpose

- ☐ **7c** Seed at least one-fifth of an acre with suitable grasses or legumes (alone or mixed) for a useful conservation purpose

- ☐ **7d** Study a soil survey report and describe its contents. On tracing paper, copy one of its soil maps in pen, outline an area with three or more soil types, and list each by full name and map symbol

- ☐ **7e** List places near you (neighborhood, camp, school grounds, or park) with erosion, sedimentation, or pollution problems, and describe how individuals or groups could fix them

Soil and Water Conservation worksheet (continued)

- ☐ **7f** Do another soil and water conservation project your counselor approves