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## Developing South Dakota Watersheds

Cooperative Extension  
*South Dakota State University*

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## Developing South Dakota Watersheds

Watersheds are as old as the hills. Watershed development, however, is a new idea for many people. Although the term is becoming more common in South Dakota as soil and water conservation measures increase, "watersheds" still are not widely understood.

A watershed is any area of land that drains into a particular stream or lake. It may be small or it may be large; small and medium-sized watersheds go into making up larger ones.



The drainage pattern of a watershed is illustrated in this diagram. In effective watershed development, the total area must be considered, uplands, stream channels, and lowlands.

Watershed development deals with all aspects of land-water conservation. Water control cannot be separated from soil conservation and soil management. It is within separate watersheds that communities can manage their water resources to best meet their own needs. This takes teamwork.

### SOUTH DAKOTA'S WATER PROBLEM

In South Dakota, we are concerned with a program for small watershed development. Holding soil and water on farms and ranches is a job that requires immediate attention. Conserving water resources is one of this state's biggest problems because South Dakota's average annual rainfall is 19 inches (the average annual rainfall in the U. S. is 30 inches). Our rains tend to fall quickly, often causing floods and heavy runoff.

By Fay Kerr, Water Resources Specialist, and Joseph T. Paulson, Watershed Flood Control Specialist

## Developing South Dakota Watersheds

Cooperative Extension Service



If water runs off the land too fast, it cuts gullies and carries off the rich topsoil, resulting in loss of farm production of food and other raw materials. Runoff may carry debris into streams and lakes to spoil fishing. Rapid runoff may decrease the amount of shallow ground water, which is the main source of water supplies to towns, farms, and industry in the eastern half of the state. Flood and property damage from heavy runoff is costly.

The objective of a watershed is to hold as much water as possible on the uplands of that particular watershed by good soil management and soil conservation practices. Water that cannot be held by such methods is detained behind flood detention dams, and permitted to drain out slowly over a period of several days. This orderly flow is what prevents floods on the low lands. Such development of small watershed areas, in turn, means the beginning of control in the larger watershed areas.

### THE IDEA IS NOT NEW

The idea of developing watersheds to conserve water is not new. In 1800, Major Powell, chief of the Geological Survey team that surveyed South Dakota and other plains territories, is reported to have stated before a Congressional committee: "The economy of the settlers of the western great plains will always be limited by water. For this reason I recommend to the Congress that when these states are formed, they not be subdivided into the usual counties and townships but that the division be made on a basis of their **WATERSHEDS**. This will give the people an opportunity to control the water during periods of too much and thereby have it available during periods of too little."

In 1954, the United States Congress passed Public Law 566 to deal with the existing watershed problems recognized 150 years earlier by Major Powell.

#### U. S. PUBLIC LAW 566

To state it briefly, Public Law 566 authorized the U. S. Department of Agriculture to assist local communities in their flood control and certain other water management problems *if the request is made by the local people, if sufficient local interest is indicated and if one dollar of benefit (for local people) can be obtained for each dollar of Federal cost.* This is known as the benefit-cost ratio.

#### COST SHARING

It is intended that the watershed be a local project with federal assistance, not a federal project with local assistance.

##### The Federal government agrees to pay

1. Total cost of construction of dams and similar works needed.
2. Total cost of channel improvement needed.
3. Total engineering costs.

##### Local People Must Agree to

1. Secure all easements and rights of way.
2. Pay all administrative costs.
3. Operate and properly maintain the project after it is completed.
4. Provide a legal organization that is capable of properly operating and maintaining the project.
5. Protect all dams, etc., from excessive silt deposit by good land use practices.

#### SOUTH DAKOTA WATERSHED ACT

In 1957, the South Dakota State Legislature passed a Watershed Act which was revised in 1959. The Act spells out the procedure to be used in organizing a Watershed District so that communities may take advantage of Public Law 566.

A few of the more important points covered by the Act and its revision are:

1. A Watershed District may be created by two methods. Method 1: An initiating petition signed by 25% of the landowners may be used to call the question to a vote at a referendum. If 60% of the votes cast at the referendum are favorable, the district may be formed. Method 2: A petition signed by at least 60% of the landowners who own not less than 60% of the land will automatically create the Watershed District without putting the question to a vote.

2. The affairs of the Watershed District are handled by a board of Managers. They must be landowners residing within the watershed. They may number either three or five on a board.

3. The Managers must adopt a financing plan that will insure sufficient funds to properly maintain the works of improvement and pay other operating costs.

4. Any financing plan adopted must be voted on and passed by a 60% vote. Only those involved in the plan are entitled to vote.

5. When a Watershed District is first created, the Managers, if they wish, may levy a tax of not to exceed one mill against the land and buildings in the watershed for a period not to exceed two years. This is to give them operating money while the financing plan mentioned above is being worked out and voted in.

#### TECHNICAL ASSISTANCE

The job of planning a Watershed Development and organizing a Watershed District will require some help from people who have made a study of the legislation involved and who have an engineering background.

The Extension Service is charged with assisting on the general information and education program. The Extension Service and Soil Conservation District Supervisors assist in Watershed District organization. The people in a watershed are assisted by the Soil Conservation Service and the Soil Conservation District Supervisors in matters pertaining to planning the project.



Developing watersheds involves various types of earth moving and dam construction. Here, men are laying the outlet tube for one of the detention dams in the Pattee Watershed in Lincoln County. The tube will run through the base of the completed dam, and will allow the orderly flow of reservoir water to the creek channel below the dam.

#### PROGRESS IN SOUTH DAKOTA

In South Dakota, 22 watersheds were under construction or in some stage of organization by 1960. The smallest of these is the 2,900-acre Scott Creek Watershed in Union County. The Crow Creek Watershed in Marshall County is near the maximum size allowed for assistance under the Federal Watershed Act, 250,000 acres.