

USDA Watershed Program Resource Packet

The enclosed materials were developed for watershed project sponsors, NRCS employees and others that use the USDA Watershed Program to meet local resource and conservation needs to utilize in developing informational materials, making presentations and providing facts to the news media, opinion leaders, and decision makers.

Additional resources about the Watershed Program are available on the National Watershed Coalition webpage: www.watershedcoalition.org and on the Natural Resources Conservation Service (NRCS) webpage: <https://www.nrcs.usda.gov/>

This packet was developed by NWC in cooperation with NRCS. USDA is an equal opportunity provider, employer, and lender.



The National Watershed Coalition is a nonprofit organization composed of national, regional, state and local associations, organizations and individuals who advocate using watersheds as the planning and implementation unit when dealing with natural resource problems. Visit our website at: www.watershedcoalition.org

September 2024

Brief Watershed Program History

Severe flooding occurred across the nation in the early part the 20th century resulted in millions of dollars in damages annually. This flooding resulted in loss of lives and damage to homes, businesses, roads, and bridges. It also resulted in severe erosion, damage to crops, loss of livestock and sediment deposition in streams and rivers. It was a national problem that needed a national solution.

There was much discussion about what would be the best solution to the problem. The discussion revolved around what approach would work the best.

There were two primary schools of thought. The Army Corps of Engineers led with the concept of large dams while out in the country side a concept developed by the USDA Soil Conservation Service (SCS) caught hold. The SCS idea was a series of smaller dams coupled with land treatment in a smaller watershed that would trap water from storms and slowly release it over a period of days or weeks reducing the flooding of streams, rivers and lands downstream.

The SCS method with its smaller footprint on the land was favored by many. Congress passed the Flood Control Act of 1936 and directed SCS to develop their small watershed concept. In 1944 Congress passed Public Law 78-534 that authorized eleven watershed projects in the nation and the construction of the small watershed dams began along with the establishment of land treatment with conservation practices in the watershed.

The success in these eleven watershed projects convinced Congress to pass Public Law 83-566 Watershed Protection and Flood Prevention Act of 1954. This Act extended the Soil Conservation Service's authorization to work with local watershed project sponsors to implement the Watershed Program in all states. The Soil Conservation Service was renamed the Natural Resources Conservation Service (NRCS) in 1994.

Local sponsors were required to be local units of government. Conservation districts often took on this responsibility and sometimes partnered with city and county governmental units. More than 11,800 dams have been constructed by NRCS and project sponsors with assistance from the NRCS Watershed Program. These dams make up an estimated \$15 billion infrastructure that provides \$2.3 billion nationally in annual benefits.

The program is far more than just dams. Congress provided authorization in the Program to address a myriad of complex natural resource issues. Project objectives can include flood prevention, agricultural water management, fish and wildlife habitat development, groundwater recharge, water quality conservation, proper utilization of land, municipal and industrial water supply and public recreation area development.

A primary component from the beginning of the program has been land treatment and management with attention to both erosion control and agricultural economics. Many of the activities that must occur prior to structural measures being installed in the watershed require a high percentage of the watershed to be under a land treatment plan with a significant percentage of the planned practices completed.

Today there are 2,118 watershed projects in 50 states, Puerto Rico and the Pacific Basin and while many provide flood control there are also many projects that do not have dams that are addressing other natural resource issues. Even projects with dams that have a primary objective of flood control often provide other benefits such as municipal water supply, recreational areas, fish and wildlife habitat and irrigation.

The Watershed Program has existed for more than 80 years and a tremendous amount of work has been completed with a great deal of success in solving complex natural resource issues. There are still natural resource issues that exist today which can be addressed by utilizing the Program's authorities.

USDA Watershed Program (Public Law 83-566) – Administered by the USDA Natural Resources Conservation Service (NRCS)

The Watershed Protection and Flood Prevention Act (PL-83-566) authorizes the USDA Natural Resources Conservation Service to assist local organizations and units of government plan and implement watershed projects. PL-566 watershed projects are locally led to solve natural and human resource problems in watersheds up to 250,000 acres (less than 400 square miles).

Watershed projects are planned and carried out jointly by local, state, and federal agencies with the support of community landowners and citizens in the watershed.

Communities identify resource problems to be addressed, practices to be installed, and carry out major portions of a watershed plan, such as obtaining easements, rights of ways, permits and local cost-share funding.

All Watershed Program projects must have a local sponsor that can act as the fiscal agent, provide project management and oversight throughout the different phases of construction, implementation, and project lifespan. At least one sponsor must have the power of eminent domain which is the process of acquiring real property, water, mineral and other land rights needed for a specific project. One of the sponsors will need the authority to levy taxes or have alternative means of financing their share of the project cost as well as the operation and maintenance expenses.

The Watershed Protection and Flood Prevention Act Watershed can provide technical and financial assistance to local sponsors to plan and implement authorized watershed project plans. Projects are typically completed in phases; (1) Preliminary Investigation Findings Report (PIFR) phase - to determine if the potential project has any insurmountable obstacles and is eligible to be planned and implemented through the Watershed Program. (2) Watershed Project Planning Phase - If the PIFR indicates the project should move forward with watershed project plan will be completed to analyze all viable alternatives, determine impacts, and calculate the cost and benefit of the selected alternative. The completed watershed project plan will be authorized for implementation. (3) Design Phase – after the watershed project plan is authorized, the selected alternative is designed. (4) Construction/Implementation Phase – once the design is completed, the selected alternative is implemented.

National Watershed Facts:

Since 1948, NRCS has assisted project sponsors to plan and implement 2,118 watershed projects in all fifty states and three territories. Of these projects, 1,278 include over 11,800 dams built to date. Flood control is a primary purpose of many of the authorized watershed projects

Watershed projects were based on the conservation principal of holding the raindrop high in the watershed as close to where it strikes the ground as possible. This involved installation of a complete set of soil and water conservation practices on the landscape.

Many projects included flood control dams to protect downstream areas. At least fifty percent of the upstream drainage areas of the dams had to be adequately treated with conservation practices before the dams were installed.

The watershed programs are authorized to address a wide range of natural resource concerns including erosion and sediment control, flood damage reduction, irrigation, drainage, municipal and industrial water supply, groundwater recharge, water quality improvement, recreation, fish and wetland and wildlife habitat creation, improvement and restoration.

The over 11,800 watershed dams are almost one third of the 29,251 NRCS-assisted dams that are contained in the National Inventory of Dams (NID) which contains a total of 85,000 dams nation-wide. This demonstrates the significant role USDA has had on dam building in America.

These watershed projects represent a \$15 billion public infrastructure (like roads, bridges, interstates, water systems, etc.) Average annual benefits from watershed projects equal \$2.3 billion each year

Starting in the mid-1950's, an average of one dam was constructed every day for two decades. Now, 60+ years later, an average of one dam each day will reach the end of their design life (this will continue for the next decade).

Number of watershed dams that will reach the end of their evaluated life in 2025 = 8024 (most of the dams were designed for a 50-year life, although many have exceeded this and are still safe functioning dams)

2018 was a milestone year in the watershed program as over half of the watershed dams in the nation reached the end of their evaluated service life (5,845)

Number of high hazard watershed dams in the nation = 2,200. A high hazard classification of a dam means there is a risk for loss of life and property if the dam were to breach.

Watershed Dams in Each State (2023)

State	Watershed Program Authorities				State Totals
	PL-566	PL-534	Pilot	RC&D	
Alabama	100	0	0	7	107
Arizona	21	0	2	2	25
Arkansas	181	0	24	3	208
California	15	0	1	0	16
Colorado	87	0	55	3	145
Connecticut	29	0	0	1	30
Florida	10	0	0	0	10
Georgia	218	117	12	10	357
Hawaii	8	0	0	1	9
Idaho	3	0	0	0	3
Illinois	55	0	11	0	66
Indiana	132	0	0	2	134
Iowa	1,068	485	29	35	1,615
Kansas	799	0	14	17	830
Kentucky	182	0	17	1	200
Louisiana	35	0	0	0	35
Maine	18	0	0	0	18
Maryland	16	0	0	0	16
Massachusetts	30	0	0	1	31
Michigan	13	0	0	0	13
Minnesota	37	0	8	6	51
Mississippi	189	367	0	5	561
Missouri	1,148	0	30	25	1,203
Montana	16	0	0	3	19
Nebraska	619	0	106	13	738
Nevada	8	0	0	0	8
New Hampshire	24	0	0	0	24
New Jersey	19	0	0	1	20
New Mexico	75	0	2	2	79
New York	52	0	2	5	59
North Carolina	101	0	11	2	114
North Dakota	39	0	10	1	50
Ohio	48	0	16	0	64
Oklahoma	987	1,107	6	7	2,107
Oregon	6	0	0	0	6
Pennsylvania	82	0	0	9	91
Puerto Rico	2	0	0	0	2
South Carolina	97	0	7	1	105
South Dakota	33	0	2	21	56
Tennessee	133	0	9	1	143
Texas	697	1,242	60	4	2,003
Utah	40	0	3	2	45
Vermont	4	0	0	0	4
Virginia	118	29	3	0	150
Washington	3	0	0	0	3
West Virginia	77	81	7	4	169
Wisconsin	85	0	2	1	88
Wyoming	12	0	0	1	13
Totals	7,767	3,428	449	197	11,841

How the Watershed Program is funded:

The USDA Watershed Program is funded through Congressional Appropriations. There are several categories for funding:

Watershed and Flood Prevention Operations (WFPO) Program provides technical and financial assistance to entities of State and local governments and Tribes (project sponsors) for planning and installing watershed projects.

Watershed Surveys and Planning (WSP) authorizes NRCS to cooperate with Federal, State, and local agencies and Tribal governments to protect watersheds from damage caused by erosion, floodwater, and sediment and to conserve and develop water and land resources.

Watershed Rehabilitation Program offers financial and technical assistance to rehabilitate dams constructed through NRCS Watershed Programs. This program extends the service life of dams to meet applicable safety and performance standards or decommission the dams so they no longer pose a threat to life and property.

Emergency Watershed Protection (EWP) implements emergency measures, including the purchase of flood plain easements, for runoff retardation and soil-erosion prevention to safeguard lives and property from floods, drought, and the products of erosion on any watershed whenever fire, flood or any other natural occurrence is causing or has caused a sudden impairment of the watershed.

The Watershed and Flood Prevention Operation Program Authorizes NRCS to Provide Technical and Financial Assistance to Local Watershed Project Sponsors to Solve a Large Variety of Resource Issues

The Watershed Protection and Flood Prevention Program helps units of federal, state, local and tribal of government (project sponsors) protect and restore watersheds up to 250,000 acres.

This program provides for cooperation between the Federal government and the states and their political subdivisions to work together to prevent erosion; floodwater and sediment damage; to further the conservation development, use and disposal of water; and to further the conservation and proper use of land in authorized watersheds.

USDA's Natural Resources Conservation Service (NRCS) offers financial and technical assistance through this program for the following purposes:

- **Flood prevention** – Flood prevention measures reduce flooding and damage caused by floodwater, including reducing runoff, erosion and sediment. These measures may include structural measures, such as dams or levees; nonstructural measures, such as easements, flood proofing, or infrastructure relocation; or a combination of both types of measures.
- **Watershed protection** – Watershed protection includes onsite treatment of watershed natural resource concerns, such as water quality or water quantity. Project measures may target controls for offsite floodwater, erosion, sediment and agriculture related pollutants.

- **Agricultural water management** – Agricultural water management includes measures that help to manage water supply for agriculture and rural communities. Measures such as drainage management, groundwater recharge, irrigation management, water conservation, water quality improvement, and rural water supply are included.
- **Municipal and industrial water supply** – Municipal and industrial water supply includes measures necessary to provide storage capacity in reservoirs to increase the availability of water for present and future use.
- **Fish and wildlife habitat and public recreation development** – Fish and wildlife habitat and public recreation development are often companion purposes in watershed projects. These project purposes may be included in a watershed plan when the sponsor agrees to operate and maintain a reservoir or other area for public recreation or fish and wildlife access
- **Water Quality Management** - Water quality management measures provide water storage capacity in reservoirs for the regulation of stream flow to improve water quality in streams.

Watershed projects vary across the country from constructing flood control dams in states like Oklahoma and Texas, to constructing debris basins in California, to developing irrigation water distribution systems in Hawaii, to implementing water quality projects in Oregon. The program was designed to address the different kinds of resources issues across the country.

Local Watershed Solutions

Project sponsors access program assistance through the Watershed and Flood Prevention “**Operations**” component of this program. Project sponsors can use land treatment solutions or structural solutions, which require construction. An authorized watershed project plan must be in place prior to initiation of any corrective land treatment or structural solutions. The completed watershed project plan will outline the next steps in implementation and the roles of the project sponsor to complete the local watershed solution.

Watershed Protection and Flood Prevention Program Scope

Statutory and regulatory criteria include:

- Eligible Sponsoring Local Organization
- Watershed Projects up to 250,000 acres
- Structures providing less than 12,500 acre-feet of floodwater detention capacity or less than 25,000 acre-feet of total capacity
- Project must show that benefits exceed the cost
- Benefits that are directly related to agriculture, including rural communities, must be at least 20 percent of the total benefits for the project.

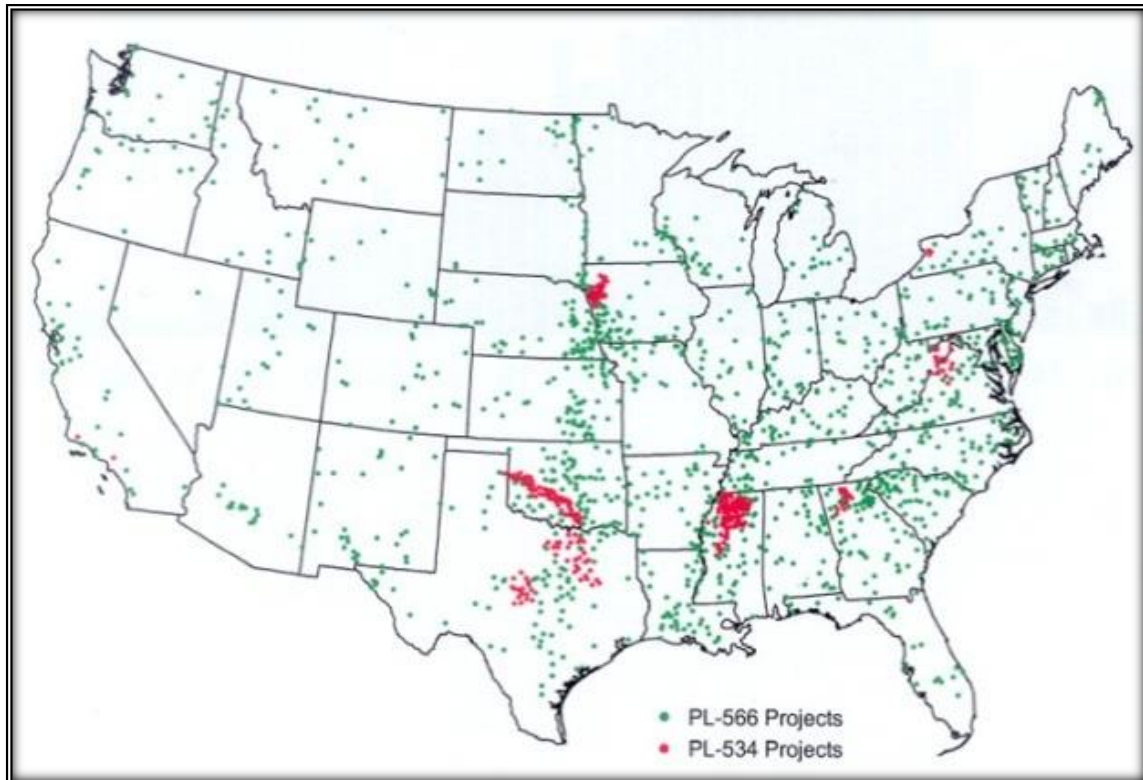
Accessing the Watershed Protection and Flood Prevention Program

Project sponsors initiate a request for assistance thru their local or state NRCS office to develop a preliminary investigation finding report (PIFR) which helps communities consider sustainable climate resilient solutions to address watershed resource concerns. After a findings report is conducted, a watershed plan is completed, reviewed, approved and authorized. Once authorized, projects sponsors gain access to NRCS's financial and technical resources to help implement their plan. An approved watershed plan must be in place prior to implementation (design or construction).

Watershed Operations Funding

For projects that meet the Watershed and Flood Prevention Operations Statutory and Regulatory criteria, funding is available pending the following:

- Annual Congressional appropriations
- State and national priorities



No money was appropriated for the NRCS Watershed Program for construction of new projects from 2010 to 2018.

Recent Watershed Program Funding

2018 Farm Bill

The 2018 Farm Bill made one-half billion dollars available to NRCS for Watershed Operations and/or Rehabilitation at a rate of \$50 million in mandatory funds per year for ten years.

These mandatory funds are outside of the annual appropriations process i.e. any watershed funds secured through the normal appropriations process are in addition to these mandatory funds.

\$200 million was authorized for the Watershed Program in 2019 which included \$50M of Mandatory funding in the Farm Bill. \$204 million was authorized for the Watershed Program in 2020.

On November 21, 2021, President Joe Biden signed the Bipartisan Infrastructure Law (BIL), an historic once-in-a-generation investment opportunity to rebuild our nation’s infrastructure and generate jobs. NRCS Watershed Programs received \$918 million of BIL funds for conservation efforts that mitigate flooding, build climate resiliency, and rehabilitate ageing dams (\$500 million Watershed Protection and Flood Prevention (WFPO) Program and \$118 million for Watershed Rehabilitation Program.

The Watershed and Flood Prevention Operations (WFPO)—was funded at \$75.0 million in the FY2023 appropriation, which was \$25.0 million less than the funding level provided in FY2022.

The Watershed Rehabilitation Program received \$2.0 million in the FY2023 appropriation, \$1.0 million more than appropriated in FY2022.

For FY2024, the Administration requested \$175.0 million for WFPO and \$10.0 million for the Watershed Rehabilitation Program. Additional requested funds are to address increased construction and staffing costs for planned watershed projects

Hazard Classification for Dams

LOW HAZARD POTENTIAL - Dams assigned the low hazard potential classification are those where failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner’s property

SIGNIFICANT HAZARD POTENTIAL - Dams assigned the significant hazard potential classification are those dams where failure or mis-operation results in no probable loss of human life, but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

HIGH HAZARD POTENTIAL - Dams assigned the high hazard potential classification are those where failure or mis-operation will probably cause loss of human life.

Number of dams that will exceed their 50-year life expectancy by year

Year	No. of Dams that Exceed 50 Years
2013	3,307
2014	3,828
2015	4,423
2016	4,944
2017	5,439
2018	5,845
2019	6,216
2020	6,548
2021	6,859
2022	7,179
2023	7,496
2024	7,757
2025	8,024
2026	8,325
2027	8,526
2028	8,771
2029	8,972
2030	9,158
2031	9,282
2032	9,383
2033	9,492

Most of the flood control dams constructed with assistance from NRCS Watershed Program from 1948 -2000 were designed with a 50-year planned life span.

This doesn't mean that the dams won't be safe or not functioning as design after 50 years. It means that the dam will have returned the planned benefits that justified constructing the dam and that the planned sediment storage area is expected to be filled with sediment. The amount of flood storage may be reduced but the dam will still provide flood protection and other benefits. Some of the dams after 50 years may need rehabilitating to replace concrete and metal components and have other improvements to meet the current state dam safety standards.

Status of Watershed Rehabilitation Projects

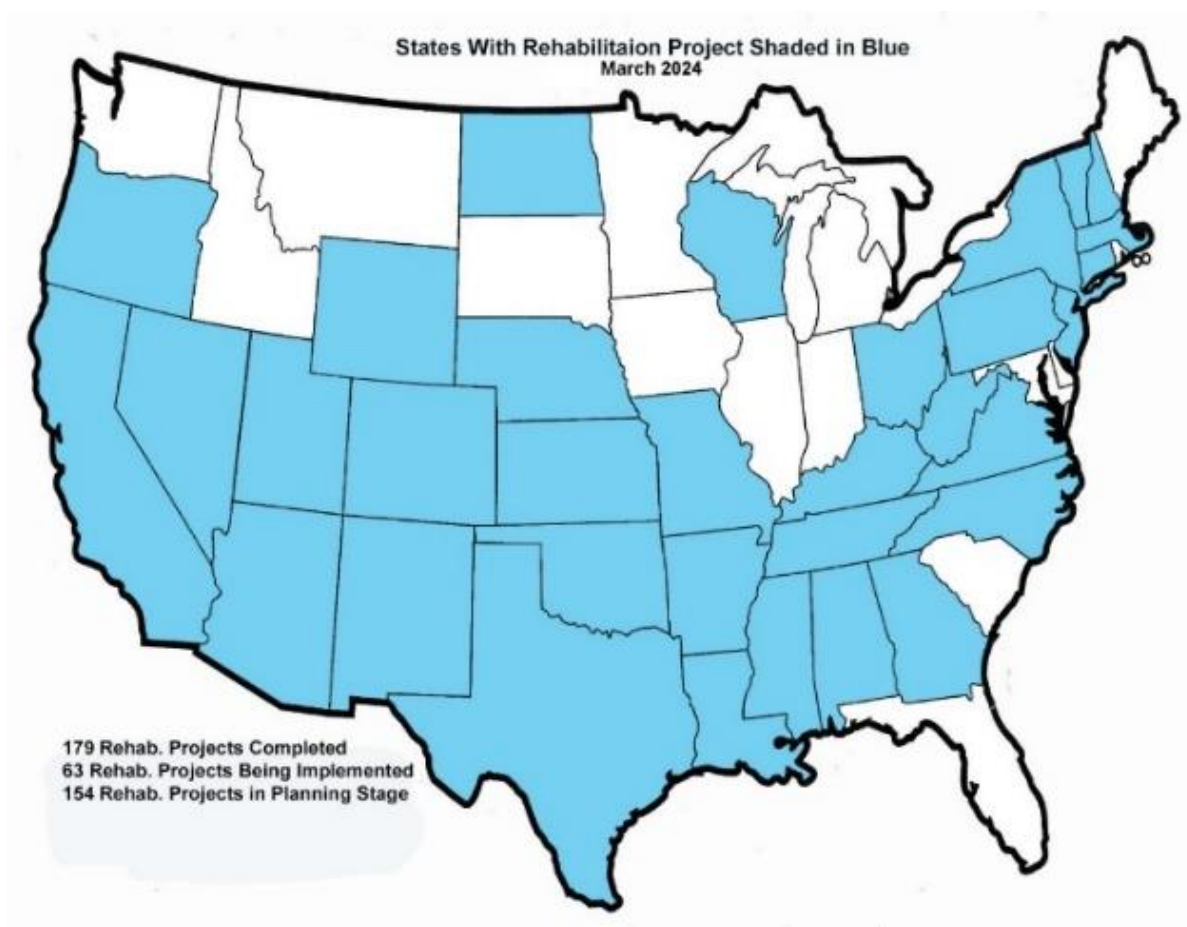
Many dams today are in a far different setting than when they were constructed. Population has increased; residential and commercial development has occurred upstream and downstream from the dams; land uses have changed; sediment pools have filled; and concrete and metal components have deteriorated.

Many dams do not meet current State dam safety standards that have more stringent requirements than when the dams were built. Many of these dams are also nearing the end of their planned service life of 50 years. These need rehabilitating to ensure they remain safe, continue to function as designed and continue providing benefits.

In the year 2000 Congress passed The Watershed Rehabilitation Amendments to the Watershed Protection and Flood Prevention Act (PL 83-566). The amendments authorize the USDA Natural Resources Conservation Service (NRCS) to work with local communities and watershed project sponsors to address public health and safety concerns and potential adverse environmental impacts of aging dams. The Amendments authorized NRCS to provide technical and financial assistance to watershed project sponsors in rehabilitating dams that were originally constructed with assistance of the NRCS Watershed Program.

As of March 2024, there are 278 approved (authorized) rehabilitation projects in 27 States. One hundred and seventy-nine of these projects in 22 States have been completed; 63 projects in 16 States are being implemented (either in design or construction phase) and 154 projects in 27 States are in the planning stage.

Examples of completed dam rehabilitation projects in states can be found on the National Watershed Coalition web page under Rehabilitation heading:
www.watershedcoalition.org



Emergency Watershed Program (EWP)

The EWP Program is administered by the USDA Natural Resources Conservation Service and implements emergency measures, including the purchase of flood plain easements, for runoff retardation and soil-erosion prevention to safeguards lives and property from floods, drought, and the products of erosion on any watershed whenever fire, flood or any other natural occurrence is causing or has caused a sudden impairment of the watershed.

EWP does not require a disaster declaration by federal or state government officials for program assistance to begin. The NRCS State Conservationist can declare a local watershed emergency and initiate EWP program assistance in cooperation with an eligible sponsor. For a sponsor to be eligible they must:

- be a State or political subdivision thereof, Federally recognized Indian tribe or tribal organization, or unit of local government,
- have a legal interest in or responsibility for the values threatened by a watershed emergency,
- have the capability to obtain necessary land rights,
- have the capability to carry out any operation and maintenance, and
- be able to contribute their cost share

NRCS offers financial and technical assistance for implementing various recovery measures under the EWP Program, including:

- Remove debris from stream channels, road culverts and bridges;
- Reshape and protect eroded streambanks;
- Protect facilities and utilities from further flooding and/or erosion;
- Establish vegetative cover on critically eroding lands;
- Purchase of EWP Buyouts.

All EWP recovery measures must:

- Provide protection from additional flooding or soil erosion,
- Reduce threats to life or property from sudden watershed impairment that was caused by a natural occurrence,
- Restore hydraulic capacity to the natural environment to the maximum extent practical, and
- Be economically and environmentally defensible and technically sound

Regional Conservation Partnership Program (RCPP)

The Watershed Protection and Flood Prevention Program authority can be utilized by NRCS to implement the Regional Conservation Partnership Program (RCPP) to assist local people solve natural resource issues.

The Regional Conservation Partnership Program (RCPP) is a partner-driven approach to conservation that funds solutions to natural resource challenges on agricultural land.

By leveraging collective resources and collaborating on common goals, RCPP demonstrates the power of public-private partnerships in delivering results for agriculture and conservation.

RCPP projects fall under two different categories: RCPP Classic and RCPP Alternative Funding Arrangements (AFAs). RCPP Classic projects are implemented using NRCS contracts and easements with producers, landowners and communities, in collaboration with project partners.

A portion of the material presented in this packet was sourced from the USDA Watershed Figures and Figures document compiled by former NRCS employee Larry Caldwell. That publication contains detailed watershed information and is available in full on the NRCS website at : <https://www.nrcs.usda.gov/resources/data-and-reports/usda-watershed-programs-facts-figures>



How a Watershed Dam Works

Flood Control and More

The Watershed Program (Watershed Protection and Flood Prevention Act, Public Law 83- 566) and Flood Control Act of 1944, Public Law 78- 534) helps communities and rural areas reduce flooding and sedimentation, provides water supplies and recreational areas and creates thousands of acres of wildlife habitat. There are watershed projects in all 50 states and the Caribbean. Since 1948, 2,000 watershed projects, covering 160 million acres, have been organized by local project sponsors with assistance from the USDA Natural Resources Conservation Service.

Eleven thousand watershed dams have been built in 47 states. Watershed projects make up a \$15 billion national infrastructure that provides \$2 billion in annual benefits to over 47 million people.



Watershed lakes average from about 5 to 25 acres in surface area. A few are larger, up to several hundred acres and some are designed as dry structures with no permanent water.

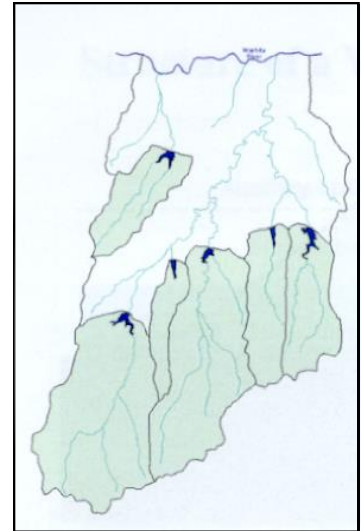
How Watershed Dams Reduce Flooding

The concept of watershed projects is simple. A series of watershed dams are built across small tributaries to larger streams. The dams temporarily store flood water after rain storms and slowly release it over a period of several days through a pipe in the dam.

This reduces the amount of water that reaches the main water course after a rain, reducing flooding.

Land treatment programs in the watershed help control erosion, which reduces the sediment that flows into the streams and lakes.

Watershed projects usually consist of earthen dams constructed on tributaries to a river. The number of dams in a watershed varies depending on the size of the watershed. Some projects do not have dams, but use other conservation methods to meet the needs in a watershed such as erosion control, animal waste management, and water quality practices.

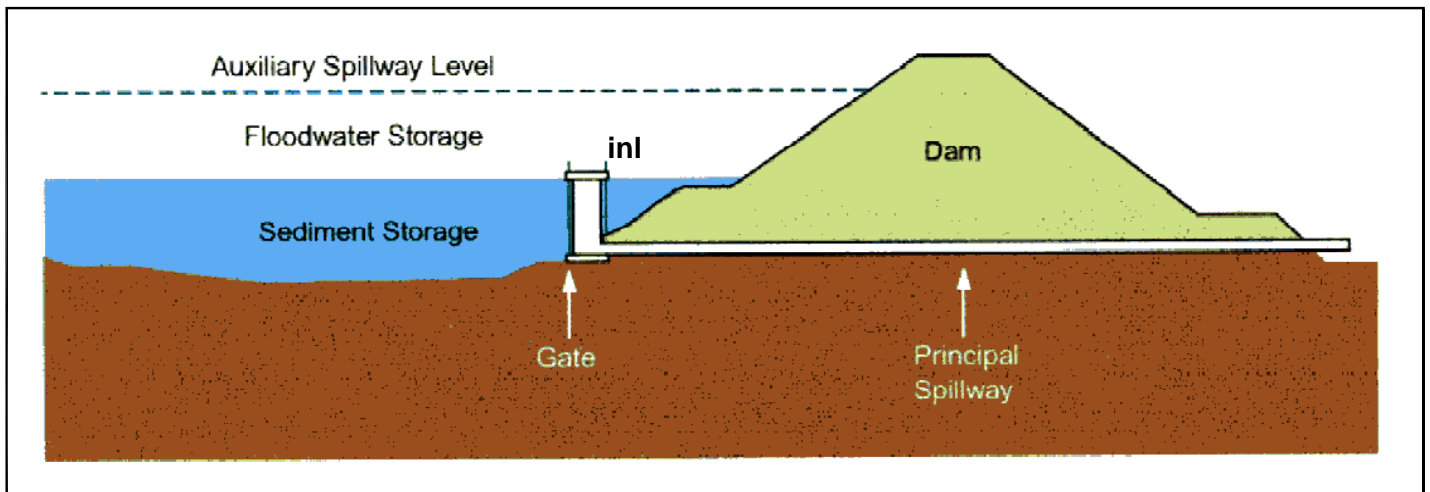


A concrete inlet tower (might be metal on older dams) connected to a pipe extending through the dam serves as a principal spillway for dams, controlling the water level. A slide gate at the bottom of the inlet can be opened to lower the water level for maintenance and repair.



Water is released through a pipe in the dam for several days after a heavy rainstorm.

Cross Section of a Watershed Dam



This cross section of a dam shows the concrete inlet in front of the dam connected to the principal spillway pipe (extending through the dam). When water reaches the opening at the top of the inlet it spills over and goes through the pipe controlling the level of water in the lake. Some inlets also have openings in the side of the tower.

A slide gate, located at the bottom of the inlet tower, can be open to lower the water level for maintenance and repairs.

The diagram also shows the auxiliary spillway level. Water will flow through the earthen spillway at the end of the dam to safely convey large flows to avoid water going over the top of the dam, which could cause dam failure.

The sediment storage area on the cross section is what makes up the permanent pool of water. Over the life time of the dam this area will usually fill with sediment (usually 50 to 100 years).

Flood Storage



The red line on this photo indicates the extent that water can back up in the flood pool upstream before it starts flowing through the earthen spillway. This is where flood water is stored while it is slowly released through the principal spillway pipe.

It is important to keep the inlet tower clear of debris and to keep the earthen spillway clear of any structures such as fences and buildings. Disrupting the flow of the spillway could result in dam failure.

National Watershed Coalition

The National Watershed Coalition is a nonprofit organization composed of national, regional, state and local associations, organizations and individuals who advocate using watersheds as the planning and implementation unit when dealing with natural resource problems. Visit our website at: www.watershedcoalition.org