4. Present Activities and Roles

The present missions, authorities, activities and roles of the various agencies involved with flood protection, floodplain management and flood-damage reduction are identified in the following tables. Table 4-1 provides a listing of the programs administered by each agency. Tables in Appendix L provide a listing of the projects (operating, under construction or proposed) in the state and the locks and dams constructed by the Natural Resources Conservation Service, the West Virginia Conservation Agency, the U.S. Army Corps of Engineers and dams subject to regulation by the Department of Environmental Protection, Division of Water and Waste Management, Dam Safety Program. The navigation locks and dams constructed by the Corps of Engineers are operated and maintained for navigation purposes only and provide no increment of flood protection to downstream communities.

The tables do not include farm ponds constructed with the assistance of the NRCS. Mining impoundments regulated by DEP are not listed in the tables. For more information on mining impoundments, contact the DEP at:

Division of Mining and Reclamation
601 57th Street SE
Charleston, WV 25304-2345
(304) 926-0490

Other agency programs not directly related to flood damage reduction, flood warning systems or floodplain management can be found by accessing the various Internet sites and agency home pages displayed in Chapter 3 at local public libraries or on home computers with Internet access

Dams judged to be deficient by the WV Department of Environmental Protection (DEP), Division of Water and Waste Management (DWWM), Dam Safety Program may be found in Appendix M. For more information on these structures and the Dam Safety Program, contact the Dam Safety Program Manager at:

Division of Water and Waste Management
Dam Safety Program
601 57th Street SE
Charleston, WV 25304-2345
(304) 926-0495

a. ROLE OF FLOOD CONTROL DAMS:

The role of flood control dams is to reduce downstream flooding that would result from the 100 year, six hour duration, storm. Corps of Engineers flood control dams are designed to reduce flooding in large watersheds (flows greater than 800 cfs). Natural Resources Conservation Service (NRCS - formerly Soil Conservation Service) dams generally provide flood control for small watersheds. Figures 4-1 and 4-2 show a typical small flood control dam. Design of a typical flood control dam has the following features:

- An earth embankment or concrete structure creates a relatively small volume reservoir under normal weather conditions for sediment accumulation and other purposes. The dam contains a pipe spillway or multiple intake structure to discharge normal stream flow (which maintains normal reservoir level), plus an overflow channel spillway at a higher elevation for discharge of large rainfalls.

Figure 4-1

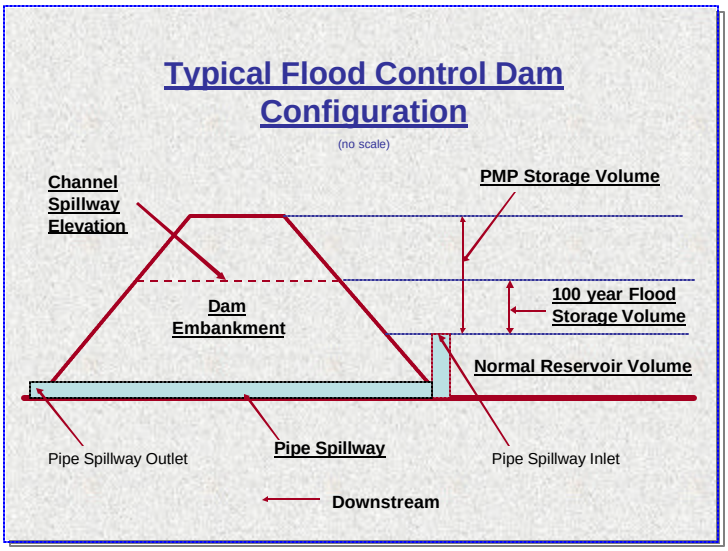
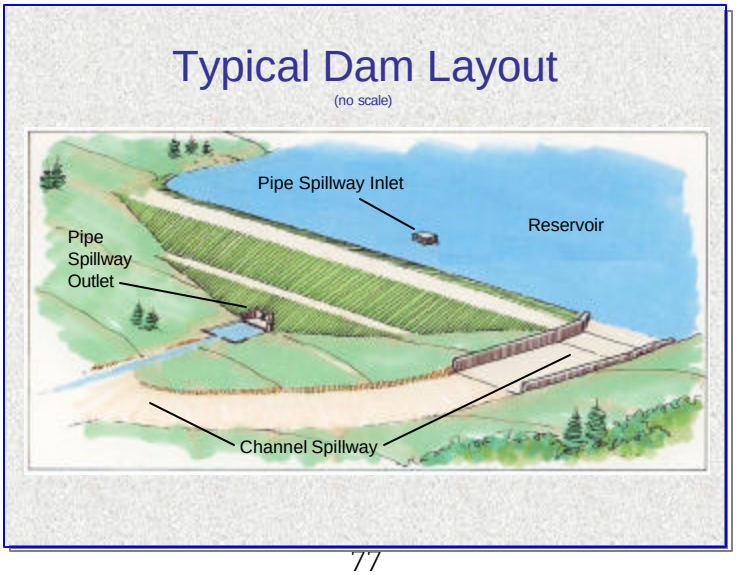


Figure 4-2



- The design of the dam provides for downstream flood reduction of the 100 year frequency, 6 hour duration storm. According to National Weather Service information, the statistical chance of the 100 year storm occurring at a given location is 1 percent per year. In West Virginia, the 100 year storm averages 4.5 inches of rainfall in 6 hours. Most of the 100 year storm volume is stored in the reservoir. The 100 year storm would raise the reservoir elevation equal to that of the channel spillway – but not high enough for water to flow through the channel. Generally, the pipe spillway or multiple intake structure slowly discharges the 100 year storm volume of water over several days to return the reservoir to normal elevation.
- The combination of reservoir storage and slow discharge of water through the pipe spillway results in greatly reduced flows downstream for the 100 year storm than would occur if the dam were not present.
- Rainfall greater than the 100 year storm will raise the reservoir to a higher level and cause the channel spillway to flow. Channel spillways have a much greater discharge capacity than pipe spillways. As a result, flow through the channel spillway may result in a dramatic increase in the amount of water discharged to the downstream area (but always less than if the dam were not present). The channel spillway is designed to discharge (in combination with additional reservoir storage to the top of the dam) the Probable Maximum Precipitation (PMP). The National Weather Service theoretically combines meteorological conditions to estimate maximum rainfall amounts for a given location to calculate the PMP rainfall. There is no assigned return frequency for the PMP storm. In West Virginia, the PMP averages 27.5 inches of rainfall in 6 hours. By design, the PMP would raise the reservoir to the top of the dam embankment (but not overtop the embankment) with the channel spillway and pipe spillway both flowing at maximum volume. In July 1889, Rockport West Virginia received a record 19 inches of rain in 2 hours and 10 minutes – the equivalent of the PMP.
- Flood control dams are designed to significantly reduce downstream flooding for storms up to and including the 100 year storm. For storm events exceeding the 100 year storm, flood control benefit exists, but is greatly reduced. The dams are designed not to fail during the PMP storm.

b. ROLE OF OTHER DAMS IN FLOOD CONTROL:

Dams may have many different purposes such as flood control, water supply, recreation, power generation, navigation, waste disposal, irrigation, and sediment control. Most dams (except for navigation dams) provide some measure of flood control; however, the amount of flow reduction downstream is dependent upon the purpose and design of the dam. For example, flood control dams are designed to maximize storage of excess storm water with a corresponding major rise in reservoir elevation, which allows minimum spillway discharge amounts over a long period of time. The presence of the flood control dam results in greatly reduced flow in the area downstream compared to storm flow without the dam.

In contrast, a recreational dam owner often wishes to prevent large fluctuations in reservoir elevation to protect docks and facilities. To prevent significant rise of the reservoir elevation during the design storm, the dam may be designed to maximize spillway discharge with only minor rise in reservoir elevation. As a result, the flood control benefit of a recreational dam is generally much less than a dam designed solely for flood control. Where dams have multiple

purposes (i.e. water supply, hydropower, recreation, flood control), the resulting dam design may affect the flood control aspects of the structure. Figures 4-3 and 4-4 show examples of large multiple purpose dams in West Virginia.

Figure 4-3 Burnsville Dam in Braxton County, West Virginia

Figure 4-4 Bluestone Dam in Summers County, West Virginia

TABLE 4-1: FLOOD CONTROL PROGRAMS AVAILABLE IN WEST VIRGINIA

AGENCY	PROGRAM	OBJECTIVES	COMMENTS
WEST VIRGINIA CONSERVATION AGENCY			
	PL 566 Watershed Protection and Flood Prevention	Protecting watersheds from damage caused by erosion, floodwaters, and sediment and to conserve and develop land and water resources.	Partnered with USDA-NRCS to develop 34 water resource plans and install 180 measures. 75% federal / 25% state or local for non-structural measures.
	Emergency Watershed Protection Program	Recovery from sudden impairment caused by fire, flood or other natural disaster. Safeguard lives and property.	Partnered with USDA-NRCS 75% federal / 25% state or local cost share. (NRCS pays 100% of technical assistance.)
	PL 106 / 472, Small Watershed Rehabilitation Amendments of 2000	Provide technical and financial assistance to rehabilitate dams constructed under PL 534, PL 566 and Resource Conservation and Development programs.	Partners with USDA-NRCS 65% federal / 35% state or local cost share.
WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION			
	Abandoned Mine Lands	Restores and rehabilitates abandoned mine areas.	It is possible that AML could reduce the possibility of dam failure related flooding in specific areas by eliminating abandoned coal mine waste impoundments.
	Division of Water and Waste Management Dam Safety Program	Protection of lives and property against dam failures.	Prevention of flooding through regulated construction, renovation or removal of dams.
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION – DIVISION OF HIGHWAYS			
	Bridge Construction and Repairs	Provide and maintain a highway transportation system designed to have minimal negative impact on storm water runoff and other floodplain issues.	
	Highway Construction and Repairs		
WEST VIRGINIA DIVISION OF FORESTRY			

	Stewardship Program	Provides technical assistance for forest resource management planning to protect and improve the timber, wildlife, soils, water, recreation and aesthetic values of forest.	Cost share assistance available.
	Forest Fire Suppression Program	Control all forest fires and limit acres burned as to protect forest floor and habitat to reduce erosion and runoff and protect the resource.	Southern WV continues to be the highest occurrence area in the state involving 90% of the total acres burned.
	Forest Legacy Program	Protect forestland from development through conservation easements between the State and the landowner.	Voluntary program.
	Urban Forestry Program	Work with municipalities to increase green space for beautification, stormwater runoff, and air quality through tree planting projects.	Grant program available for cost-share assistance.
	Logging Sediment Control Act Program	Regulates the logging industry to reduce erosion and sedimentation into waters of the State.	Site inspections conducted randomly and through complaints.
	Clements State Tree Nursery	Produces seedlings that can be utilized for reforestation, erosion control, wildlife and riparian buffers.	More than 30 different species at various prices and packages.
WEST VIRGINIA DIVISION OF NATURAL RESOURCES PUBLIC LANDS CORPORATION			

	Right of Entry Permit	Provide legal real-estate entry to the streambed for any construction activity by obtaining a state authorized real estate right of entry permit.	**A state wide permit required for any stream bed disturbance on a stream that:** a. Flows at least 6 months per year or; b. Is named on a USGS Topographic map or; c. Is named on Division of Highways county road map or; d. Has been locally recognized and named.
WEST VIRGINIA OFFICE OF EMERGENCY SERVICES			
	Integrated Flood Observing and Warning System (IFLOWS)	Provides real time data on precipitation.	Coverage has been expanded to almost all of West Virginia. Data is provided to county warning points and to the National Weather Service.
	Community Assistance Program	Provides technical assistance to counties and municipalities participating in the NFIP.	Identify and resolve floodplain management issues with participating communities.
	Hazard Mitigation Grant Program	Reduction of flood damages by: 1) removing structures from the floodway/floodplain 2) or elevating them, or 3) floodproofing them.	Assists in acquiring, relocating or elevating structures.
	Flood Mitigation Assistance Program	Works to reduce flood damages to structures insured through the NFIP by: 1) removing them from the floodway/floodplain, 2) elevating them, or 3) floodproofing them.	Assists in acquiring, relocating or elevating structures.
FEDERAL EMERGENCY MANAGEMENT AGENCY			
	National Flood Insurance Program – Community Mitigation Planning Branch	Provides assistance to communities in managing floodplain	Provides education about developing special flood hazard areas to minimize the risk to new and existing structures.

	Hydrographic and Hydrologic Studies.	Coordinates Flood Insurance Studies and floodplain mapping.	
NATIONAL WEATHER SERVICE			
	StormReady	Provides communities with the skills and education to survive severe weather.	A voluntary program offered statewide. Very few communities have taken advantage of this program.
US ARMY CORPS OF ENGINEERS			
	Continuing Authority Program – (CAP) Section 205 - Small Flood Control Projects	**Flood control**	Nationwide program. Must be related to flood damages. Cost sharing - 65% federal / 35% state or local match for structural or nonstructural projects.
	General Investigations Program (GI Program)	Flood control, navigation, environmental restoration, hydropower, recreation or water supply.	Nationwide program. Must be related to flood damages. Cost sharing - 65% federal / 35% state or local match for structural and nonstructural projects.
	Section 22 – Planning Assistance to States	Planning studies only for Flood control, water quality, water supply, floodplain management, environmental restoration, navigation, water conservation, etc.	Nationwide program. No event necessary. 50% federal / 50% state or local match. (100% of state or local match may be in-kind services.)
	Continuing Authorities Program – Section 206 Aquatic Ecosystem Restoration	Restoration of aquatic ecosystems to enhance the productivity and diversity of aquatic habitats including wetlands.	Nationwide program Non-Federal sponsor initiated 65% Federal/35% non-Federal match
	Watershed Management, Restoration and Development	Planning and design only. Intended to restore water quality, control and remediate toxic sediments, restore degraded streams for flood control, erosion, sedimentation, protection and restoration of wetlands, nonstructural measures for flood damage reduction.	Basin specific by legislative inclusion. (Currently includes Cabin Creek Watershed). No event necessary. 50% federal / 50% state or local match.
USDA FARM SERVICE AGENCY			
	Conservation Resource Enhancement Program	Provides financial incentives to establish riparian buffer zones.	64% federal /36% state cost share.

	Emergency Conservation Program	Provides financial assistance to restore land, ponds, springs, fences and other agricultural developments impacted by disasters.	64% federal /36% state or local cost share.
	Emergency Loan Program	Financial assistance to farmers who suffered eligible physical or production losses.	3.75% loans to assist in disaster recovery.
	Other Programs.	Provides emergency assistance.	Provides feed, technical assistance, and information on an emergency basis.
US GEOLOGICAL SURVEY			
	National Streamflow Information Program	Fund gages nationwide.	This program would fund 56 stream gages in West Virginia. This program has not been funded as of December 2001.
	West Virginia River Gauge Program	Establish flows at selected points on WV streams.	A network of 107 stream gages in WV.
	Crest-State Gaging Network	Provides data for improving flood-estimating equations for drainages smaller than 100 square miles.	Equations being used now were developed from watershed drainages larger than 100 square miles.
	Reservoir Management System	Real time data on the level of water behind dams owned by partners of West Virginia Conservation Agency.	Under development.
USDA - NATURAL RESOURCES CONSERVATION SERVICE			
	PL 566 Watershed Protection and Flood Prevention	Protecting watersheds from damage caused by erosion, floodwaters, and sediment and to conserve and develop land and water resources.	Statewide NRCS has helped develop 34 water resource plans and install 180 measures. 100% federal funded for structural measures. 75% federal / 25% state or local for non-structural.
	Emergency Watershed Protection Program	Recovery from sudden impairment caused by fire, flood or other natural disaster. Safeguard lives and property.	75% federal / 25% state or local cost share. (NRCS pays 100% of technical assistance.)

	PL 106 / 472, Small Watershed Rehabilitation Amendments of 2000	Provide technical and financial assistance to rehabilitate dams constructed under PL 534, PL 566 and Resource Conservation and Development programs.	65% federal / 35% state or local cost share.