

## Sound Flood Plain Management Practices Within Pennsylvania

*“Each of the signatory parties agrees to control flood plain use along and encroachment upon the Susquehanna River and its tributaries and to cooperate faithfully in these respects.”*

*--Section 6.6 of the Susquehanna River Basin Compact, P.L. 91-575; 84 Stat. 1509 et seq.*

The Susquehanna River Basin Commission (SRBC) is a federal-interstate compact commission established by the signatory parties of the U.S. Congress and the legislatures of New York, Pennsylvania and Maryland. SRBC is responsible for guiding the construction, development and administration of the water resources of the basin and coordinating the water resource management activities of the three states and federal agencies.

### **Why are flood plains important?**

The Susquehanna River Basin is one of the nation’s most flood-prone areas. Large-scale and localized flash floods cause significant property damage and result in the loss of lives. Flash floods, which usually affect smaller tributaries, can occur with little warning. Since the effects of flooding are mostly localized, municipalities play an important role in protecting their communities through the use of sound flood plain management practices.

Flood plains provide a natural form of flood protection. A naturally functioning flood plain has many benefits, including the storage and conveyance of floodwaters, recharging groundwater; and providing habitat for fish and wildlife. Vegetation on the flood plain absorbs water, collects debris, and reduces erosion, thus protecting surface water quality. A properly maintained flood plain protects the local community, as well as those downstream.

### **How do flood plain regulations protect flood plains?**

Flood plain management regulations are codes and/or ordinances that have been adapted by a municipality to provide a standard for land use and development of the flood plain. Common examples are comprehensive plans, building codes, zoning and single purpose flood plain management ordinances.

### **What is the National Flood Insurance Program?**

In 1968, the federal government enacted the National Flood Insurance Act. The act created the National Flood Insurance Program (NFIP). The Federal Insurance Administration (FIA), which at the time was in the Department of Housing and Urban Development, administered the program. In 1979, the NFIP and the FIA were transferred to the newly-formed Federal Emergency Management Agency (FEMA).

The goals of the program were to transfer the costs of private property flood losses from the taxpayers to flood plain property owners through flood insurance premiums, provide flood plain residents and property owners with financial aid after floods, guide development away from flood hazard areas and require that new or substantially-improved buildings be constructed in a manner that would minimize or prevent damage in a flood. The NFIP is funded primarily through insurance premiums and has been self-supporting since 1986.

### **How does the NFIP work?**

The NFIP is based on a mutual agreement between the federal government and the community. Federally-subsidized flood insurance is available in those communities that agree to regulate development in their designated flood plains. If the communities comply with the NFIP flood plain development criteria, FEMA provides flood insurance for properties in the community. While the NFIP requirements serve as the basis for minimum state and local requirements in flood plain management, state and local governments are authorized and encouraged to initiate additional requirements.

## What is the state's role in flood plain management?

The Pa. Department of Community and Economic Development (DCED) is the primary agency for the regulation and management of flood plain development. DCED relies on two state laws to assist with this responsibility. The Pennsylvania Flood Plain Management Act of 1978 (Act 166) and the Pennsylvania Municipalities Planning Code authorize the municipalities to establish, implement and enforce local policies that best serve their community. Act 166 requires any municipality with flood-prone areas to comply the NFIP and to establish:

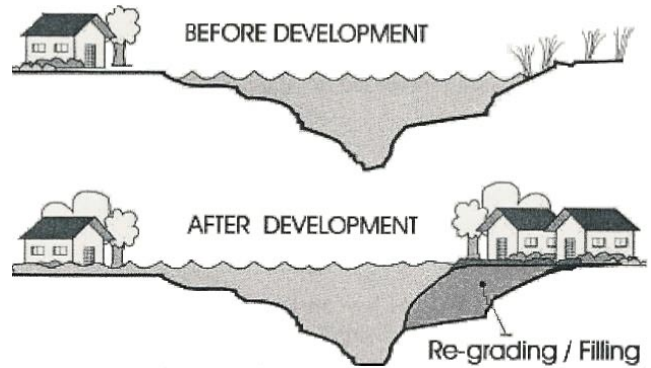
- a special permit process for developing hospitals, nursing homes, jails, and mobile home parks in a flood plain;
- more stringent development standards for flood plain storage of construction materials and substances that have been determined to be dangerous to human life; and
- a building permit process requiring applicants to certify that the lowest floor of a new or substantially-improved structure is 1.5 feet above the 100-year flood elevation.

These requirements provide an additional level of safety above the NFIP requirements.

## How does development affect flood plains?

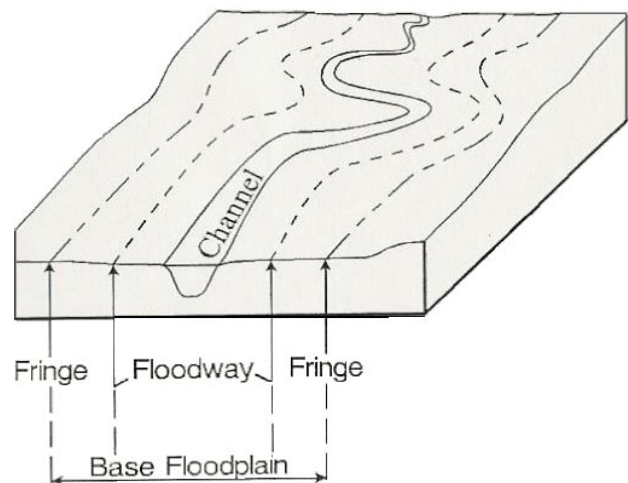
Development can have several effects on flood plains. Construction sites, additional rooftops and paved surfaces increase the amount of stormwater runoff in a community. The Department of Environmental Protection (DEP) fact sheet *Stormwater Management in Pennsylvania* (3900-FS-DEP1840) is a good summary of state requirements and management suggestions. The fact sheet can be downloaded from the internet at: [dep.state.pa.us/dep/deputate/Watermgmt/WC/FactSheets/WUP/FS1840.pdf](http://dep.state.pa.us/dep/deputate/Watermgmt/WC/FactSheets/WUP/FS1840.pdf).

Increasing the elevation of a flood plain by adding fill material increases the velocity of floodwaters and redistributes it into other areas.



## What is a floodway?

FEMA defines a floodway as the land that contains the stream channel and that portion of the adjacent flood plain that must remain open to permit the passage of a 100-year flood. In the 1970s, the FIA conducted detailed analyses of many flood-prone waterways. The results of these studies were published in flood insurance studies. If a flood insurance study was conducted, the floodway is illustrated on the community's FEMA map. In the absence of a FEMA-defined floodway, the state defines a floodway as the area including the stream channel and 50 feet landward from the top of the stream bank on both sides of the stream channel. In addition to DCED regulations, floodways are under the jurisdiction of the DEP.



## What role does mapping play in flood plain management?

An accurate and current map is a critical flood plain management tool. Section 401 of the Pa. Municipalities Planning Code authorizes

municipalities to create or revise an official map. This map illustrates the flood plain boundary as well as emergency facilities, assisted care units, emergency shelter centers, transportation routes and public utilities. An official map can assist local governments during the permit review process. By illustrating currently protected areas and potential hazard areas, a community can control and direct development.

### **What are the types of flood plain maps?**

Four types of maps were distributed to flood prone municipalities:

- Flood Boundary Floodway Maps (pre-1986) also are called floodway maps. Flood boundary floodway maps are a product of and accompany flood insurance studies. These maps illustrate the 100-year flood plain and floodway boundaries as determined through extensive engineering analyses.
- Flood Hazard Boundary Map (pre-1986) were made in the 1970s and early 1980s for nearly all flood-prone communities. These maps outline the approximate boundary of the 100-year flood plain. They are used in conjunction with other local studies and other available data.
- Flood Insurance Rate Maps (pre-1986) were compiled by the addition of flood insurance rate zones to information from flood boundary floodway maps and flood hazard boundary maps. These maps had the 100-year flood plain designated into as many as 66 insurance rate classifications. If the flood insurance rate map was based on a detailed study, the 100-year flood elevation is provided. Flood elevations are not provided in flood insurance zones with approximate boundaries.
- Flood Insurance Rate Maps (post-1986) provide a new format for the Flood Insurance Map. Several revisions were conducted to make the maps easier to use. Additional details from flood boundary and floodway maps were provided and the floodway is better illustrated. The 100-year flood plain insurance classifications were reduced to eight. With these changes, community officials, land surveyors, engineers, and property owners use flood insurance rate maps to determine flood hazards in a given location.

### **Where can I get supplemental flood elevation information?**

Municipalities that use maps with approximate 100-year flood plain delineations are required by FEMA to consider flood elevation data from additional sources. Additional sources are the U.S. Army Corps of Engineers (USACE), the federal Natural Resources Conservation Service, Pa. Department of Transportation and the DEP. The SRBC assists municipalities in obtaining and understanding flood plain maps.

### **What is comprehensive planning?**

A comprehensive plan is a general policy guide for the long-term physical development of a municipality. This plan serves as a good basis for zoning and for implementing ordinances. According to the Governor's Center for Local Government Services, of the more than 2,500 municipalities in Pennsylvania, only half have prepared comprehensive plans. That means nearly 50 percent lack a strategy or plan for the future. Eighty-nine percent of Pennsylvania counties have comprehensive plans.

Section 301 of the Pa. Municipalities Planning Code requires that a comprehensive plan be developed for: flood plain land use; flood plain management as it relates to community facilities and utilities; and protection of flood plains as a natural resource.

Since flood plains do not end at political boundaries, comprehensive flood plain planning and management should be established and administered based on local watersheds. Watershed flood plain planning promotes consistency among neighboring communities and with the county planning commission.

### **What local government regulations should contain flood plain management provisions?**

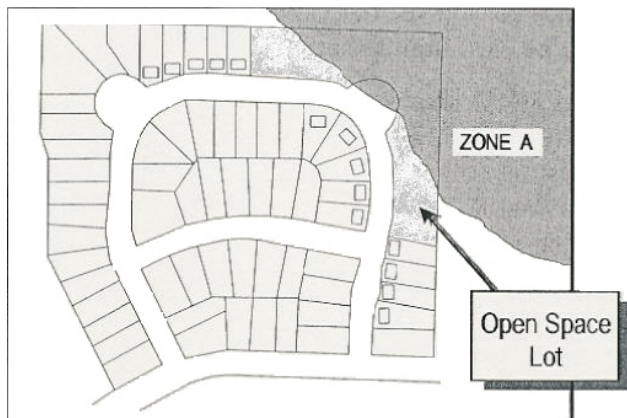
#### Zoning

Sections 604, 605 and 609 of the Pa. Municipalities Planning Code encourages the use of zoning to promote and protect the preservation of flood plains and to assist in flood prevention. Once a municipality has initiated zoning, classifying flood plains as a separate zoning district is encouraged. This assists in the regulation, restriction or prohibition of uses within the flood plain. While reviewing proposed projects, the municipality considers the site's soils, slopes, woodlands and

other natural features to determine the suitability of the project.

#### Subdivision and Land Development Ordinance

A subdivision and land development ordinance is another flood plain management tool. Municipalities ensure that their current ordinances include provisions to preserve and maintain land in flood-prone areas in a manner that is safe for the community, such as open spaces.



#### Local Building Permits

NFIP regulations require the project sponsor to obtain a building permit for any development within the flood plain boundary. New development applies to any new construction, substantially improved structures, altering of public utility lines, and/or land modifications such as dredging, paving, grading, excavation and mining. Building permits also may be required for the storage of harmful materials.

#### **When are additional permits required to develop a flood plain?**

Under several situations, a local permit is not issued until additional state and federal permits have been obtained:

- Title 25, Chapter 105 of the Pa. Code requires a water obstruction or encroachment permit from DEP for any development activity within a floodway.
- Title 25, Chapter 106 of the Pa. Code states that if the project includes any quasi-public entity and/or governmental building within a flood plain, a flood plain management permit from DEP must be obtained. This provision applies to any property owned or operated by the Commonwealth, political subdivisions and public utilities.

- Section 404 of the federal Clean Water Act, applies to any project that may fill a wetland adjacent to a waterway. Such a project would require a permit from DEP and the USACE.
- Water quality, earth disturbance, sewage and state fire marshal permits also may be required for commercial operations within the flood plain boundaries.

#### **Where can I get additional flood plain information?**

Publications and technical assistance for municipalities are available through:

- Pa. Department of Community and Economical Development  
(888) 223-6837  
[www.dced.state.pa.us](http://www.dced.state.pa.us)
- Pa. Department of Environmental Protection  
(717) 787-3411  
[www.dep.state.pa.us](http://www.dep.state.pa.us)
- Pa. Emergency Management Agency  
(717) 651-2009  
[www.pema.state.pa.us](http://www.pema.state.pa.us)

Additional sources of data or mapping information:

- U.S. Army Corps of Engineers  
(410) 962-4223  
[www.usace.army.mil](http://www.usace.army.mil)
- U.S. Natural Resources Conservation Service  
(717) 782-4429  
[www.nrcs.usda.gov](http://www.nrcs.usda.gov)
- U.S. Geological Survey  
(717) 730-6900  
[www.usgs.gov](http://www.usgs.gov)
- Pa. Department of Transportation  
(717) 787-5023  
[www.dot.state.pa.us](http://www.dot.state.pa.us)
- Susquehanna River Basin Commission  
(717) 238-0425  
[www.srbc.net](http://www.srbc.net)