



# The Antediluvian

## Ohio's Floodplain Management Newsletter

Volume I

Fall 1994

Issue 2

**MISSION STATEMENT:** The Mission of Floodplain Management Program is to provide leadership to local governments, state agencies, and interested parties toward cooperative management of Ohio's floodplains to support the reduction of flood damage and the recognition of the floodplain's natural benefit. This mission will be accomplished through technical assistance, public awareness, education, and development/protection standards.

### *I will be contacting you in the near future...*

or

### **What are CAVs & Why are they happening to me?**

by Christopher Thoms

*To ensure that the National Flood Insurance Program (NFIP) is being conscientiously administered, Community Assistance Visits are periodically conducted with local officials in participating communities.*

Many Ohio communities that participate in the NFIP receive a letter from our office that begins with the above sentence. This introductory letter outlines the information that will ensure a beneficial Community Assistance Visit (CAV) for both your community and our office. The CAV involves a visit to your community that may last from 1½ to 8 hours. CAVs are an essential part of the NFIP intended to provide assistance and correct problems so that the potential for flood damage is reduced in your community.

The purpose of these visits is to determine the effectiveness of local floodplain management regulations and enforcement practices, as well as to provide an opportunity to address your local concerns about the NFIP.

Our office has been given authority by the Federal Emergency Management Agency (FEMA) to conduct CAVs within Ohio; FEMA also may conduct visits. During this visit our office will learn about how your community manages your identified flood hazard areas and whether your process is in compliance with the minimum standards set by FEMA.

These visits also provide an opportunity for you to ask questions, express concerns, and to pass on relevant information to our office and FEMA.

### **Floodplain Tour**

The visit will include a tour of your flood hazard areas noting new or imminent development and a session with the officials involved with development review and floodplain management.

The tour provides our planning staff an opportunity to get a feel for the development within your floodplain areas. You may be asked to provide documentation of NFIP compliance for development observed during the tour. Also, knowledge of your specific hazards allows our staff to provide better assistance.

### **The Materials Needed**

To facilitate our evaluation, the following information will be requested at the time of the meeting:

- Your community's floodplain management regulations

We will review your regulations to ensure they are still compliant with federal minimum standards. It may seem that the federal minimum standards for flood damage reduction regulations are continually being modified. FEMA does modify and clarify

*(see CAVs next page)*

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certain details of the NFIP to respond to community and program needs. Certain changes may need to be reflected in your local floodplain regulations. FEMA may require participating communities to update their regulations (as was mandated following 1986 NFIP Regulation changes), or FEMA may suggest that communities adopt the changes. Our office will attempt to distinguish required versus suggested changes, and provide assistance to you by supplying copies of model regulations.

- A current copy of the NFIP maps and the Flood Insurance Study for your community  
These maps and the related Flood Insurance Study provide you and your community with basic information describing the location and extent of your identified Special Flood Hazard Areas (SFHAs). They are your basis of regulation for the flood hazard areas. You will have an opportunity to discuss the accuracy of your maps and learn about methods for getting them changed when necessary.

- A current copy of your community's permit, or application for permit, to develop in a flood hazard area

- Information on the number and type of permits or variances that have been issued for activities in the floodplain

Statistically Speaking:  
Over **18,000** communities participate in the NFIP nationally with **692** in Ohio alone.

Your community has the responsibility for recording information describing SFHA developments. If you do not currently have procedures and record forms to address this, our office can provide assistance. If you do have procedures, we can point out necessary additions or learn of innovations that you use that might benefit other communities.

The *Biennial Report*-issued to you by FEMA every two years-is a handy summary of the number of permits and variances issued for SFHA activity if you fill it out accurately.

- Copies of the actual flood hazard area development permits that have been issued (together with related files containing elevation and/or floodproofing documentation) for developments in the floodplain

The SFHA permits that you have issued demonstrate how you implement your floodplain management program. The use of SFHA permits to allow for the review and enforcement of your floodplain regulations is effective in preventing the loss of life and property, as

well as in reducing the economic and social hardships, which result from flooding.

- Variance records for floodplain developments

Your community may receive a request for a variance to the floodplain management regulations. It is very important that the person in your community responsible for issuing floodplain code variances becomes familiar with the criteria and guidelines for floodplain regulation variances provided in your regulations. You should have record of any variance action within your community and documentation of the justification for granting/denying that variance. Our office will want to review the variances issued to ensure that they are consistent with the NFIP intent.

### Who's Invited?

We suggest that all officials involved with the local review of proposed development, including new buildings and other structures; improvements to existing structures; development other than buildings such as mining, grading, dredging, filling, paving, and stream or channel alteration be invited to attend. In addition, a representative of your variance body may wish to attend.

Depending upon the framework of your local government, examples of appropriate officials would be those involved with zoning administration, building inspection, engineering, and planning or community development.

Your community also may be the recipient of a Community Assistance Contact (CAC). The CAC may include a visit, but is typically conducted by telephone and is much less detailed than the CAV. During a 20-30 minute phone conversation an ODNR staff planner will assess your community's floodplain management issues. The CAC is a screening tool to help ODNR decide which communities may need assistance at the level afforded by a CAV. The CAC is an effective means for establishing or reestablishing contact with NFIP participating communities.

Our office attempts to conduct a CAV or CAC with participating communities at least once every five years. If there is a need for, or the community requests more frequent assistance, we will attempt to assist you on an as-needed basis. We look forward to the opportunity to discuss your local floodplain management program and the NFIP with you. If you have any questions about CACs, CAVs, or floodplain management, contact us at (614) 265-6750. Together we can achieve the goal of reduced flood losses in Ohio. 

For answers to Flood Insurance questions call

**1-800-638-6620**

## Federally Funded Projects



by Chad Berginnis

As the summer winds down no doubt many communities have federally “funded” projects well underway or completed. These projects may have received financing from sources like the Farmers Home Administration, Department of Housing and Urban Development or Office of Local Government Services for infrastructure improvements, housing rehabilitation and a host of other projects. For the purposes of this discussion, funded means federally financed, undertaken or assisted construction and improvements. Like all other development in flood hazard areas, federally funded projects are also subject to compliance with flood damage prevention standards.

On the federal level funding agencies are bound to abide by Executive Order 11988 - Floodplain Management. Issued in 1977, the Order directs federal agencies to establish a process to evaluate their actions based on the standards of the National Flood Insurance Program (NFIP). These standards apply to all development in identified 100-year floodplain areas to avoid actions located in or adversely affecting floodplains unless there is no practical alternative,

The funding agency should first determine whether the proposed action is in the 100-year floodplain. Possible sources for this information may include coordination with other federal or state agencies and local governments. Funding agencies should use the best available and most current data accessible to them when making determinations.

For actions located within the 100-year floodplain, the next step involves an early public review. The early coordination allows local floodplain managers and other interested parties to review the project for compliance with local floodplain regulations and provides an opportunity for input into the federal agency's decision-making process. The public review identifies potential problems early in the planning process. Federal agencies can then modify projects to incorporate these comments before construction begins

and thereby avoid costly flood hazard mitigation later.

It is the funding agency's responsibility to identify and evaluate practical alternatives to locating a project in the 100-year floodplain, as well as to evaluate the impact of the proposed action. If no practical alternatives to locating the project in the 100-year floodplain exist, mitigation of the impact must be considered that will minimize threats to life and property, restore degraded floodplain uses and preserve natural and beneficial floodplain values. In some instances when the community applies for federal dollars, the funding agency may require proof of compliance with local floodplain regulations as a condition of the project approval.

Once alternatives are formulated and impacts are reevaluated, the best alternative is selected. A statement of findings and public explanation must be issued. This choice is subject to another short public comment period and inter-agency review. After a decision has been reached by the funding agency and the project plans approved, funds can be appropriated and the ground breaking can begin!

To provide appropriate mitigation and flood protection, federal agencies are required to distinguish “critical action” projects from noncritical activities. As defined by the *Water Resource Council Floodplain Management Guidelines*, a critical action is any activity for which even the slightest chance of flooding is too great. Theoretically, this means that no critical action should take place within a flood prone area; however, a minimum flood protection threshold of the 500-year flood event has been generally accepted.

Three general categories of critical actions exist. The first deals with actions that could provide an added risk to the flood disaster such as storing highly volatile, toxic or water-reactive materials within the floodplain. The second category affects buildings whose occupants are insufficiently mobile to avoid loss of life and injury given reasonable flood warning time. Examples include schools, hospitals and nursing homes. The last category applies to those structures containing utilities or emergency services that may be lost or become inoperative if flooded such as water/wastewater treatment facilities, police and fire stations.

Executive Order 11988 attempts to set up a consistent framework for sound floodplain management practices for all federal agencies. The ultimate goal is to have each agency establish a review process that will evaluate their projects' impact upon floodprone areas and be consistent with at least the minimum standards of the National Flood Insurance Program.



## GONE YESTERDAY...

### HERE TOMORROW

Dena Cox has left ODNR to continue her Mater's studies. We wish her well and will miss her. We look forward to welcoming a new planner this fall.

## Public / Private Sector NFIP Roles & Responsibilities

by David Schein, FEMA & Peter Finke, ODNR

The National Flood Insurance Program (NFIP) is a public/private sector partnership. Participation in the NFIP is based upon an agreement between a local community and the federal government that states if a community will implement and enforce flood damage reduction regulations, the federal government will make flood insurance available within that community. For the NFIP to be most effective, local community officials and insurance agents, banks, and other lenders, realtors, surveyors, builders, and engineers need to understand their respective roles and responsibilities.

### LOCAL OFFICIALS

A local community administers the NFIP flood damage reduction requirements through the adoption and enforcement of a local **floodplain management ordinance** or **resolution**. City councils, village boards, and county commissioners are responsible for adopting the necessary building and zoning standards. Building inspectors, zoning administrators, community development planners, municipal engineers, and community legal counsels are responsible for enforcing the adopted regulations. Only if these criteria are adopted and enforced will the government underwrite the sale of flood insurance throughout the community.

### PRIVATE SECTOR

Insurance agents need to be familiar with the workings of the NFIP to be able to deliver a flood insurance policy when needed. They should have the floodplain maps for their service area. They should market the federal flood policy to their clients who may need this protection. Failure to provide information on flood risks and flood insurance could expose the agent to "errors and omissions" liability.

Bankers and other mortgage lenders need to be familiar with the federal requirements for flood insurance, including which loans require flood insurance, how much insurance is needed and for how long, and how appeals to the

floodplain maps are handled. They or their appraisers should have the floodplain maps for their service area. They also need to know how and when to notify borrowers of the flood insurance requirement and what kinds of proof of coverage are acceptable.

Realtors should have the floodplain maps for their area and be able to interpret the risk zones on the map to their clients. They also should be sufficiently familiar with the federal flood insurance requirements imposed by lenders to explain where flood insurance is required, why, and what it typically costs. Realtors also should be familiar with the floodplain map correction and appeals process. Surveyors should be familiar with the floodplain maps and flood insurance studies and be able to transfer flood data to plats and other plans and maps so this important information is properly recorded.

Builders should be aware that the NFIP standards govern floodplain construction in over 18,300 communities in the country, each having the same minimum construction standards. Additional requirements may be imposed by states and local communities and other regulatory bodies such as drainage and levee districts and health departments. At a minimum, the *lowest floor including basement* of a residence is required to be elevated above the base flood (Base flood or *100-year flood*: a one percent probability of occurrence in any given year).

Engineers who plan, design, or construct flood control projects, stormwater management facilities, and new subdivisions should be aware that their work may alter the assumptions made in the flood insurance study and therefore render the floodplain maps obsolete. It is the responsibility of the project's sponsor to alert the Federal Emergency Management Agency (FEMA), which administers the NFIP, to these changes *before* they are undertaken so the proper coordination can be arranged. Unless and until FEMA changes the official effective floodplain map and/or flood study, those documents govern development in the floodplain, regardless of any new flood control projects, sewers, or fill being in place. By understanding these simple and discreet responsibilities, government officials and private sector firms and individuals can help assure the NFIP functions for the benefit of the community. 

To obtain copies of FEMA flood maps and flood insurance studies contact:

FEMA Flood Map Distribution Center  
6930 (A-F) San Tomas Road  
Baltimore, MD 21227-6227  
Or call toll free (800) 358 - 9616

# Natural Benefits of Floodplains



by Andrew Reimann

Rivers and streams are dynamic systems where flooding, erosion, sedimentation, and channel migration are the result of tens of thousands of years of physical and biological processes. The landscape elements of a floodplain do not function as separate and isolated components of the watershed, but as a single integrated natural system, or ecosystem. The natural processes of floodplains influence human activities, and in turn, floodplains are affected by our activities.

Floodplain ecosystems exist in a state of dynamic equilibrium, if one segment of the system is altered or disturbed, the entire system will readjust toward a new equilibrium. Disruption of any part of the system can often be felt far from the original site of the disturbance. For example, poor practices in: forestry, agricultural, or urban development, upstream; can cause additional water runoff to peak, surge, or accumulate downstream.

Throughout the history of Ohio, rivers have been highways for exploration, migration, and commerce. Most of our major cities have been developed along rivers or at the mouths of rivers. Yet after only two centuries, the natural values of most of our floodplains have been significantly altered by human actions, and in most cases they have been severely degraded or destroyed. Changes to the ecosystem caused by human intrusions remove conditions under which natural processes can continue.

Floodplains and their associated water and land ecosystems, represent important natural functions and values that provide both opportunities and limitations for particular uses and activities. While much attention has traditionally been on the hazards associated with flood events, little investigation has been directed toward the natural and cultural values of floodplains. In the aftermath of the (so-called) Great Flood of 1993, the natural values and benefits associated with undisturbed, or naturalized, floodplains have received much needed increased attention and research to assess the ecological, economic, and social impact of floodplain development.

The natural resources of the floodplain can be classified into three groups 1) water resources, 2) biological resources, and 3) cultural resources, **Tables 1 & 2** identify some specific benefits and

**Table 1. NATURAL BENEFITS OF FLOODPLAINS**

Water Resources	
<i>Natural Flood &amp; Erosion Control</i>	<i>Water Quality Maintenance</i>
<ul style="list-style-type: none"> <li>• reduce flood velocities</li> <li>• reduce flood peaks</li> <li>• reduce erosion potential &amp; impacts</li> <li>• stabilize soils</li> <li>• accommodate stream meander</li> <li>• provide a broad area for stream to spread out &amp; temporary storage of floodwater</li> </ul>	<ul style="list-style-type: none"> <li>• .reduce sediment loads &amp; amount of sediments</li> <li>• filter nutrients &amp; impurities</li> <li>• process organic &amp; chemical wastes</li> <li>• moderate water temperature</li> <li>• protect the physical, biological, &amp; chemical integrity of water</li> </ul>
<i>Maintain Groundwater Supply &amp; Balance</i>	
<ul style="list-style-type: none"> <li>• promote infiltration &amp; aquifer recharge</li> <li>• reduce frequency &amp; duration of low flow by increasing/enhancing base flow</li> </ul>	
Biological Resources	
<i>Support Flora</i>	<i>Provide Fish &amp; Wildlife Habitat</i>
<ul style="list-style-type: none"> <li>• maintain high biological productivity of floodplain &amp; wetland vegetation</li> <li>• maintain productivity of natural forests</li> <li>• maintain natural crops</li> <li>• maintain natural genetic diversity</li> </ul>	<ul style="list-style-type: none"> <li>• maintain breeding &amp; feeding grounds</li> <li>• create &amp; enhance waterfowl habitat</li> <li>• protect rare &amp; endangered species habitat</li> <li>• maintain natural genetic diversity</li> </ul>

Source: U.S. Water Resource Council, *A Unified National Program for Floodplain Management* Washington D.C., U.S. Water Resources Council, 1979

values associated with floodplain resources that remain in their naturalized (undisturbed) condition. These resources are closely related and are interactive. An excellent example of the interaction of these resources is the movement of surface water and groundwater through floodplains, wetlands, and watersheds.

fifty percent), the post-development peak discharge rate may be as much as five times greater than the pre-development rate. Furthermore, for a fifty percent impervious watershed, the number of full-bank floods (floods that completely fill the stream channel but do not spill over into adjacent floodplains) increases from one every other year to over five each year. This means short duration, heavy intensity thunderstorms

**Table 2. CULTURAL BENEFITS OF FLOODPLAINS**

<i>Maintain Harvest of Natural &amp; Agricultural Products</i>	<i>Provide Recreational Opportunities</i>
<ul style="list-style-type: none"> <li>• create &amp; enhance agricultural lands</li> <li>• provide areas for cultivation of fish &amp; shellfish</li> <li>• protect &amp; enhance silvaculture</li> <li>• provide harvest for fur resources</li> </ul>	<ul style="list-style-type: none"> <li>• provide areas for active &amp; consumptive uses</li> <li>• provide areas for passive activities</li> <li>• provide open space values</li> <li>• provide aesthetic values</li> </ul>
<i>Provide Scientific Study &amp; Outdoor Education Areas</i>	<i>Improve Economic Base of Community</i>
<ul style="list-style-type: none"> <li>• provide opportunities for ecological studies</li> <li>• provide historical &amp; archaeological sites</li> </ul>	<ul style="list-style-type: none"> <li>• increase tourist activity</li> <li>• stimulate natural-resource businesses</li> <li>• improve property values</li> </ul>

Source: U.S. Water Resource Council, *A Unified National Program for Floodplain Management* Washington D.C., U.S. Water Resources Council, 1979

Not all resources are contained in anyone naturalized floodplain. Therefore, efforts to protect or enhance the natural benefits and values of floodplains will be unique for each community. Increasing your knowledge and improving information about the natural resources of your community's floodplains can be used to differentiate between lands that should remain naturalized, lands that can accommodate limited land uses, and areas that can support development. With these distinctions, your community can incorporate floodplain management concerns and protect the natural values of the floodplain through comprehensive planning.

Floodplain resources, including wetlands and agricultural lands. are experiencing increasing pressure for use and development. Development Activities impact on streams and floodplains in four broad ways: 1) changes in stream. hydrology, 2) changes to mean geomorphology, 3) changes in water quality, and 4) changes to aquatic and terrestrial ecology. Table 3 illustrates. the impact of development on floodplain ecosystems.

The intensity of the developmental impact upon floodplains is typically a function of the percent of urbanization within a particular watershed. For example, .in extremely developed watersheds (where the percentage of impervious surfaces such as roads, parking lots, rooftops and: compacted fill exceeds

that barely caused pre-development water levels torise, may turn some streams into raging torrents in the post-development situation. Increased bankfull floods subject stream channels to continual disturbance by channel scour and erosion. The result is stream channels in developing watersheds may continue to scour and erode, creating stream channels four times wider than their pre-development state.

Annual stream flow is also altered by development within a watershed. Stream flow includes runoff from storm events and possibly infiltration from groundwater sources. In natural (undeveloped) watersheds, annual stream flow from storm events is typically between five percent to fifteen percent. However, in extremely developed watersheds, surface runoff typically comprises fifty percent of a stream's annual flow. Intensive urbanization can increase water temperatures by as much as five to ten degrees Celsius. This may adversely affect many aquatic species and the biological diversity of the stream.

Floodplain ecosystems reflect the characteristics of the watershed. The degraded nature of many of Ohio's floodplains is not surprising given the massive physical, biological, and chemical conversion of the naturalized landscape that accompanies urbanization. Protecting and enhancing the natural benefits of floodplains is a difficult task.

By planning wisely and affording equal-protection to the natural benefits of the floodplain, your community *can balance economic growth and urbanization while protecting the floodplain value to create a better living*

**Table 3. IMPACTS ON STREAMS AND FLOODPLAINS CAUSED BY DEVELOPMENT**

<p><i>Changes in Hydrology</i></p> <ul style="list-style-type: none"> <li>• increase in magnitude &amp; frequency of severe floods</li> <li>• increased frequency of erosive bankfull floods</li> <li>• increase In annual volume of surface runoff more rapid stream velocities</li> <li>• decrease In dry weather baseflow on stream</li> </ul>	<p><i>Changes in Geomorphology</i></p> <ul style="list-style-type: none"> <li>• stream channel widening &amp; downcutting</li> <li>• increased streambank erosion</li> <li>• shifting bars of coarse-grained sediments</li> <li>• elimination of pool/riffle structure</li> <li>• imbedding of stream sediments</li> <li>• stream relocation\enclosure or channelization</li> <li>• stream crossings form fish barriers</li> </ul>
<p><i>Changes in Water Quality</i></p> <ul style="list-style-type: none"> <li>• massive pulse of sediment during construction stage</li> <li>• increased washoff of pollutants</li> <li>• nutrient enrichment leads to benthic algal growth</li> <li>• bacterial contamination during dry &amp; wet weather</li> <li>• increased organic carbon loads</li> <li>• higher toxic levels, trace metals, &amp; hydrocarbons</li> <li>• increased water temperatures</li> <li>• trash\debris jams</li> </ul>	<p><i>Changes in Aquatic &amp; Terrestrial Habitat &amp; Ecology</i></p> <ul style="list-style-type: none"> <li>• shift from external to internal stream energy production</li> <li>• reduction in diversity of aquatic insects</li> <li>• reduction in diversity of aquatic &amp; terrestrial species</li> <li>• destruction of wetlands, riparian buffers, &amp; springs</li> </ul>

Source: Metropolitan Washington Council of Governments, *Watershed Restoration Sourcebook*, Washington D.C., Anacostia Restoration Team, 1992

environment. To be successful, your community must commit to mitigate the impact of development and maintain a quality floodplain ecosystem for the future generations that will live and work within it. 💧

## WORKSHOP WATCH



by Chad Berginnis

**T**hanks to all of you who have either attended or hosted a flood loss reduction workshop. To date, ODNR has conducted ten workshops in the past two years. In that time, we have solicited comments, modified the workshop contents and refined course materials to better serve the needs of Ohio communities. Comments which we have received indicate the workshops are a valuable training tool to both experienced and “green” floodplain administrators alike.

Our purpose in conducting these workshops is to provide a learning opportunity to community staff members who are responsible for enforcing local flood damage prevention codes and ensuring their community's compliance with the National Flood Insurance Program (NFIP). Topics include information and guidance on filling out floodplain development permits and understanding flood damage prevention regulations. A hands-on exercise emphasizes the floodplain management concepts and allows local officials the opportunity to see how well

they understand the administrative process. Also, the workshop provides a forum in which administrators can exchange ideas or express concerns about local floodplain management programs.

If your Community would like to host a flood loss reduction workshop or would like to attend one, please contact our office at (514) 265-6750 so we can notify you when a workshop will be given in your area. 💧

## Local Government Projects

by Chad Berginnis

*Did you know that projects funded by local governments are subject to local flood damage prevention regulations and must be permitted by the floodplain administrator?*

**S**tructures including: county and municipal buildings; recreational facilities, pavilions, amphitheaters, and docks; as well as nonstructural activities that are undertaken by local governments within identified Special Flood Hazard Areas, must also be in compliance with local flood damage prevention regulations. Communities participating in the NFIP agree to issue permits and maintain records for all activities-whether public or private-located within the regulatory floodplain. If you have any questions or need assistance meeting your local responsibilities please contact our office at (614) 265-6750. 💧

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Christopher M. Thoms, Editor.

For more information or assistance with Ohio's floodplain maps and regulations call (614) 265-6750 or visit our offices.



### Have You Moved?

If you know of someone who would want to receive a copy but didn't, please let us know. If your copy of *The Antediluvian* was misdirected, please send us address corrections, office or personnel changes to our offices at 1939 Fountain Square Bldg E-3 Columbus, Ohio 43224



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