

## **Association of State Floodplain Managers’ Floodplain Management Body of Knowledge**

Floodplain management is a process that promotes the wise use of floodplains in order to minimize flood risks, reduce losses from floods, protect public health and safety, and improve the quality of life for a community. These management activities should also not adversely impact the natural environment.

Floodplain managers usually specialize in one or more aspects of floodplain management. The Certified Floodplain Manager (CFM<sup>®</sup>) program promotes a level of expertise in the National Flood Insurance Program (NFIP). Certified Floodplain Managers are expected to have a working knowledge of:

- a. Flood studies and maps
- b. NFIP Rules and Regulations
- c. Regulatory standards
- d. Ordinance administration
- e. Flood insurance
- f. Hazard mitigation
- g. Natural and beneficial floodplain functions

The NFIP serves as the basis for our profession. This Program does not comprise all the aspects of floodplain management. A certified floodplain manager should strive to have a working knowledge of a broad array of topics.

The topics listed below form a comprehensive body of knowledge that is needed to effectively manage floodplains. The list is arranged by topic and the order does not imply a level of importance. All topics do not have equal weight in floodplain management. It is not intended to be a comprehensive list of every aspect of floodplain management, but a tool to:

- Guide the Certification Board of Regents and
- Individual CFM<sup>®</sup> in identifying training needs.

## **Floodplain Management Body of Knowledge**

1. The physical processes operating on the stream channel, shoreline, floodplain and watershed
  - a. Effects of Global Warming
  - b. Hydrologic cycle influences
  - c. Formation and evolution of river basins, rivers, and shorelines
  - d. Sediment production and mobilization
  - e. Relationship of the river corridor to coastal processes.
2. The biological processes active in the floodplain
  - a. Ecological principles and biological processes
  - b. Stream and river ecology
  - c. Water quality effects on biological processes, recreation, water supply, aesthetics

3. Human interactions with floodplains and drainage basins
  - a. Reasons for riverside and coastal development
  - b. Historic development in the US
  - c. Impact of land cover and human development on the physical and biological processes
  - d. History of government responses
  - e. Institutional framework for government programs
  - f. Cultural biases that influence human behavior and management decisions
  
4. Risk assessment models
  - a. Floodplain Mapping models (HEC RAS).
  - a. Data collection tools and accuracy (gages, remote sensing, LIDAR, NEXRAD...)
  - b. Hydrology and hydraulic principles
  - c. Uses of GIS and Spatial analytic tools
  - d. Water quality measurement (biological or chemical oxygen demand...)
  - e. Ecological risk assessment
  - f. Hazards US (HAZUS)
  - g. Standard hydrologic and hydraulic models and varying limits of accuracy
  - h. Coastal models and methodology and limitations
  - i. Mapping scales, vertical and horizontal datum
  - j. Mapping scale and data precision
  - k. Interpretation of topographic data
  - l. Benefit/cost analysis
  
5. Policy, guidance and plans
  - a. Hazards Insurance
  - b. Statutory and regulatory authority and responsibility
  - c. Legal obligations and constraints, Property Rights and responsibility, other specialized areas such as public trust doctrine.
  - d. Planning processes (Issues, goals, objectives, policies, programs, strategies, tactics...)
  - e. Zoning processes (guiding development away from hazardous areas)
  - f. Code compliance, administration and enforcement.
  - g. Subdivision regulations (setting the pattern and infrastructure of development)
  - h. Stormwater and watershed management processes (detention, retention, best management practices)
  - i. Natural areas rehabilitation, conservation and restoration (wetlands regulations, sensitive areas regulations, greenways, buffer areas, overlay districts )
  - j. Coastal zone processes (erosion control, dune and beach protection)
  - k. Sedimentation, erosion and water velocity management
  - l. Other specific watershed management activities that might not be included above. (water supply, water quality)
  - m. Building codes

6. Management skills
  - a. Partnering with related disciplines (planning, emergency management, architecture and landscape architecture)
  - b. Working with teams and groups
  - c. Communication and presentation skills (written, oral...)
  - d. Time management
  - e. Managing people
  - f. Arbitration and conflict resolution
  - g. Project planning
  - h. Ethics
  - i. ICS
  - j. Outreach skills (developing an outreach programs, training...)
  - k. Consensus and coalition building ability
  
7. Role in mitigation
  - a. Community Rating System (CRS)
  - b. Unified National Program
  - c. Sustainable development, Smart Growth
  - d. No Adverse Impact (NAI),
  - e. Mitigation Operations Manual (MOM)
  - f. Low impact development (LID)
  - g. FireWise, TsunamiReady, StormReady...
  - h. Executive Order 11988
  - i. Project Impact
  - j. Specific hazards mitigation tools (floodproofing, structural flood controls, retrofitting and acquisition)
  - k. Other holistic watershed management programs (stormwater, protection & restoration, water supply, water quality, water & sewer master planning, land use planning)
  - l. Use and understanding of Increased Cost of Compliance
  - m. Substantial Damage determinations
  
8. Role in preparedness, response and recovery operations
  - a. Emergency response (warning, evacuation, flood-fight...)
  - b. Disaster recovery (Stafford Act Sections 404 and 406, National Response Plan ESF 14, identifying mitigation opportunities through response and recovery operations...)
  - c. Debris Management
  - d. Mutual Aid compacts and agreements
  
9. Organizations, agencies, and programs
  - a. Federal agencies and programs (FEMA, EPA, NOAA, HUD USGS, USACE, USDA NRCS... )
  - b. State agencies and programs
  - c. Local agencies and programs
  - d. Professional / Trade organizations (ASFPM, ASCE, APA, ASDSO, AMS...)
  - e. Environmental organizations (National Wildlife Federation, beach protection groups)
  - f. Public interest organizations (American Red Cross, Land Trust Alliance, IBHS, NSC, MCO, NEMA .. )
  - g. Business organizations, (Chamber of Commerce...)
  - h. Schools and school programs (Project WET...)
  - i. Community/faith based organizations (World Vision, Mercy Corps...)