

## Meeting a Higher Standard—the CRS 400 Series

Insurance agents, public officials, lenders, and other community leaders are being rewarded for working together to protect the floodplain. NFIP communities that engage in activities meeting higher standards of floodplain mapping and regulation not only mitigate future flood damage, but also become eligible to receive flood insurance premium discounts for area residents.

FEMA's Community Rating System (CRS) offers incentives for communities to be more proactive in protecting their citizens from flooding (see message from CRS Task Force Chair Richard Decker on page 5). There are 18 activities that earn credit toward premium discounts for residents of the 948 NFIP communities that (as of May 1, 2002) participate in the CRS. These activities are grouped in four broad categories: Public Information (300 Series), Mapping and Regulations (400 Series), Flood Damage Reduction (500 Series), and Flood Preparedness (600 Series).

This article about Mapping and Regulations (400 Series) activities is the second of several (in *Watermark*) that examine the four CRS categories and the hundreds of ways in which communities can earn credit. Public Information (300 Series) activities were discussed in the Summer 2002 *Watermark*.

### Mapping and Regulations

Not all parts of the floodplain are created equal. Mapping and regulatory standards that work for one community's floodplain may not take into account conditions existing in another community. As the cost to produce and update Flood Insurance Rate Maps (FIRMs) increases, and communities continue to grow and change the landscape, there is an ever-greater need for local communities to help in the generation of new FIRMs and to regulate newly defined floodplains.

The CRS 400 Series provides that incentive through a variety of activities such as creating new maps, enforcing tougher building standards, preserving open space, and applying GIS technology to land use decisions. In addition, the CRS rewards communities that regulate development in areas of their communities that are affected by any of the eight special flood hazards not fully regulated under the NFIP (see upper right).

A community receives CRS credit for higher standards of mapping and development by determining

### Special Flood Hazards

1. Uncertain flow paths such as alluvial fans, moveable stream beds and other floodplains where the channel moves during a flood.
2. Closed basin lakes (with small or no outlet) that may stay above flood stage for extended periods.
3. Ice jams caused when warm weather and rain break up a frozen river and the broken ice floats downstream until it is blocked by an obstruction (such as a bridge) and causes a dam.
4. Land subsidence caused by the withdrawal of subsurface water, minerals, or soil.
5. Coastal dunes and beaches.
6. Mudflow hazards such as a river or inundation of liquid mud down a hillside after brush cover has been lost and groundwater has accumulated after a period of heavy rain.
7. Coastal erosion in which land masses are worn away by oceanic wave action.
8. Tsunamis caused by underwater earthquakes or volcanoes.

what portions of its floodplain area are affected by each element of its mapping or regulatory program. The *CRS Coordinator's Manual* provides impact adjustment ratios for making this determination and specifies documentation requirements for receiving 400 Series credit (see the *CRS Coordinator's Manual* on-line at [www.fema.gov/nfip/crs.htm](http://www.fema.gov/nfip/crs.htm)).

### Activity 410: Additional Flood Data

Good floodplain maps and other information about local flood hazards are crucial for determining which properties require flood insurance coverage, rating insurance policies, and regulating new development. FIRMs that include details about at least some of the

#### Activity 410: Additional Flood Data

Charlotte County, Florida, joined the CRS in 1992. Now a Class 6 community, Charlotte County has developed flood map overlays that show the floodplain and floodways, building and lot locations, the Base Flood Elevations established by both FEMA and the county, FIRM zones, special hazards, 2-foot contours, all changes to previous FIRMs, and the projected elevations and boundaries of floods having a .2 percent chance of occurring in any given year.

existing flood hazards are available for most NFIP communities. However, even mapped communities have flooding areas where specific data may not be provided on the FIRM. New development in these communities is particularly vulnerable to flood damage.

Communities that use a higher mapping standard than the FEMA flood insurance study to collect flood data can earn hundreds of CRS points. Even more credit is available for communities that sign Cooperating Technical Partner (CTP) agreements with FEMA.

### Cooperating Technical Partners

CTPs are communities, regional agencies, or State agencies that enter into an agreement with FEMA to formalize their contribution and commitment to flood mapping. CTPs take advantage of this partnership with FEMA to ensure that their flood maps are accurate, up to date, and based on local conditions.

The CTP initiative maximizes limited funding by combining resources and aligning the objectives of FEMA and the CTP. To become a CTP, communities may contact the CTP Coordinator at the nearest FEMA Regional office (see the contact information on the tear-off flap on *Watermark's* back cover). Arrangements will be made for the community to enter into a Partnership Agreement. CTPs then identify mapping activities and coordinate with FEMA the scope and type of mapping products to be contributed. Together, FEMA and the community will determine their responsibilities and contributions. The community then will initiate mapping activities and review this process annually.

### Activity 420: Open Space Preservation

One of the best ways to prevent flood damage is to keep floodprone areas undeveloped by preserving them as open space. The CRS defines "open space" as land that is free of buildings, fill, and other barriers to flood waters. Some pavement, such as a small parking lot or a park roadway, is acceptable, but it must be designed to minimize development.

Additional CRS credit is given for programs that preserve environmentally sensitive areas such as wetlands, natural areas, animal sanctuaries, and beaches from development. Additional credit is provided if any of these areas are also subject to any of the eight listed CRS special flood hazards (see page 1). Even more CRS credit is available for communities that take the extra step to deed-restrict these areas as open space for generations to come.

### Activity 420: Open Space Preservation

Stone Harbor, New Jersey, has been involved in the CRS program since October 1994 and has been a CRS Class 8 community since October 1996. This community receives nearly 200 of 420 possible CRS points for maintaining areas in their floodplain as open space, including their beaches, park and recreation areas, and bird sanctuaries. Some of these areas also are subject to deed restrictions through the state of New Jersey's "Green Acres" program. The Stone Harbor Bird Sanctuary and Sedge Island areas are subject to natural and beneficial functions, because they not only preserve part of the floodplain for flood storage but also serve as nesting grounds for a variety of bird species.

### Activity 430: Higher Regulatory Standards

The minimum regulatory standards required for participation in the NFIP provide improved flood protection for a community. However, flood damage still can occur because floodplain elevation regulations are based on estimates of flood heights subject to inaccuracies, particularly in areas without long-term flood and rainfall records. In addition, urbanization and other changes made in the watershed after a FIRM was published can increase the hazard of flooding.

Many communities have adopted higher regulatory standards, such as requiring "freeboard" on all new construction, that provide more protection for new development and redevelopment. Freeboard is a measurement of the height the lowest floor of a building must be elevated above the projected height of floodwaters, the Base Flood Elevation (BFE), to ensure the building's safety. The extra margin of protection provided by freeboard takes into account the effect of waves, debris, miscalculations, or lack of data.

Higher regulatory standards also include requiring foundation protection from settling, scour, and erosion. For example, prohibiting construction of building enclosures below the BFE eliminates a source of debris that might hit other buildings. This prohibition also discourages property owners from storing valuable or hazardous items in an area that is vulnerable to flood waters or coastal wave action.

Regulatory standards that reduce flood damage to vital public buildings ensure that critical facilities can operate during flood emergencies and may also reduce pollution of floodwaters by hazardous materials.

### Activity 430: Higher Regulatory Standards

In July of 2001 the State of Michigan officially adopted the International Code Series, along with the approved state rules, as the Michigan Building Code. The effects of this adoption are far reaching and have an immediate impact on CRS participation in Michigan. In addition to the Freeboard, Foundation Protection, and Protection of Critical Facilities credits of the new code, under the 2002 *CRS Coordinators Manual*, each community that has adopted the required Michigan Building Code now will be eligible for all or part of the new Building Code credits that are based on the adoption of the International Code Series (I-Codes). Adoption of the I-Codes also will eventually impact the community's Building Code Effectiveness Grading Schedule classification and the related CRS credit points.

Higher regulatory standards are nothing new to the State of Michigan. In fact, based on their state mandated standards for Additional Flood Data (Activity 410), Higher Regulatory Standards (Activity 430) and Stormwater Management (Activity 450) alone, any Michigan community that meets the minimum requirements of the CRS and is properly enforcing the State regulations would easily qualify for a CRS Classification of 9.

Flooding can occur when floodplains lose their ability to absorb runoff. Building on fill in a substantial portion of the floodplain reduces storage for floodwater and often increases peak flows downstream. Regulations that prohibit use of fill reduce this problem. To compensate for floodwater storage that is lost when land is developed, regulations can be enacted that require excavation of retention and detention ponds.

Public health regulations can restrict floodplain development that might degrade the beneficial, natural functions that floodplains perform. For example, when septic and surface water mix during a flood, the resulting pollution can cause health hazards. CRS credit is available for enacting regulations that prohibit hazards such as sanitary landfills or septic systems in the floodplain.

CRS credit also can be earned for requiring new streets in floodplains to be constructed at or above the BFE to provide access for emergency vehicles during a flood, and requiring all new residential and commercial buildings to have dry land access.

There are many other approaches to developing higher regulatory standards. Among them are implementation of more stringent building improvement rules, development and implementation of a local building code, certification of regulatory staff as floodplain

managers, subjecting manufactured (mobile) homes to the same elevation requirements as conventional homes, and making use of zoning to maintain a low density of development in the floodplain.

### Activity 430LD: Land Development Criteria

Activity 420 (described on page 2) is designed to keep development out of the floodplain entirely. However, merely reducing the amount of development that is allowed in the floodplain can also be helpful in decreasing the potential for flood damage.

Many communities already have adopted regulations for preserving farmland or protecting environmentally sensitive areas. Regulations that encourage developers to keep buildings out of floodprone areas and that establish zoning restrictions on the density of floodplain construction can earn CRS credit under Activity 430LD. For example, credit is given if floodprone areas of new subdivisions are set aside as open space, drainage fields, or back yards. Credit also can be earned when buildings, streets, and other damage-prone infrastructure are grouped on natural high ground out of the regulatory floodplain while the floodplain is used for open space or recreational land.

Low-density zoning can receive CRS credit when development is limited to no more than one building per acre. Additional credit is allowed when density drops to no more than 1 building per 10 acres.

### Activity 440: Flood Data Maintenance

Making available a community's current FIRM is a minimum requirement of the NFIP; therefore, CRS credit is not given for this. However, communities can earn CRS credit for maintaining and making available copies of all FIRMs, Flood Insurance Studies, Floodway Maps, and Flood Hazard Boundary Maps that have ever been issued for the community.

Floodplain maps must be updated frequently to include revisions, analyses, better elevation data, annexations, and new hazard data. Unfortunately, the need to update maps is greater than the funding currently available to FEMA. CRS credit is provided for updating flood data; digitizing FIRMs, Flood Hazard Boundary Maps, and Floodway Maps; and maintaining flood hazard data on computerized parcel records.

Use of a computerized parcel system allows a building official, real estate agent, or anyone else interested in the flood hazard on a property to quickly find data such as the flood zone, flood elevations, and lowest

---

floor elevations. In addition, maintaining current permanent elevation reference marks (such as engraved metal discs set in concrete) makes it easier and less expensive for developers and property owners to determine grade, lowest floor, and BFEs for insurance and construction purposes. Communities can earn additional credit for maintaining coastal erosion data in GIS, digitized parcel data, or overlay map format.

#### **Activity 450: Stormwater Management**

As forests, fields, and farms are covered by impermeable surfaces such as streets, rooftops, and parking lots, more rain runs off at a faster rate. Urbanization of an area can increase the rate of runoff five-fold or more. Stormwater runoff travels faster on streets and in storm drains than in streams and rivers or when absorbed by soil. The result is an increase in the frequency and severity of flooding.

This CRS activity credits five approaches to stormwater management. The first regulates development on a case-by-case basis to ensure that the peak flow of runoff from each site is not greater than it was before the site was developed.

Regulating development according to a stormwater management master plan that analyzes the combined effects of existing and expected development on drainage through and out of the watershed is another approach.

Nearly a third of all flood insurance losses occur in moderate-risk X Zones. Much of this damage can be prevented by requiring new development to be elevated above the BFE. This often can be accomplished through implementation of regulations that require lowest floors or basement openings to be elevated above the centerline of the street.

Sediment control is particularly important in watersheds where land is disturbed by construction or farming. Drainage systems clogged with sediment from construction sites create a significant source of water pollution. A fourth creditable approach to stormwater management is implementation of watershed regulations that minimize the effects of erosion.

Regulating the quality of stormwater runoff also can earn CRS credit. Communities can raise the quality of stormwater runoff by incorporating appropriate "best management practices" such as grass filter strips, velocity dissipators, and infiltration trenches in the design of stormwater management facilities.

#### **Your Community Deserves Credit**

Enacting and enforcing regulations that exceed the NFIP's minimum standards provides more flood protection for new development and preserves existing buildings. Many communities already have regulations on the books that prohibit or restrict floodplain development. Getting credit for flood map data maintenance and higher regulatory standards may be simply a matter of documenting what is already in place.

Credits in excess of 2000 points, not including the extra credit that can be earned for regulating the special hazards listed on page 1, are available for 400 Series activities. It takes accumulating only 500 points from creditable activities for a community to join the CRS at the Class 9 level. Most communities enter the CRS at Class 9 (earning a 5 percent discount) and then engage in activities that move toward increasingly better classifications, earning as much as a 45 percent discount. Once participating in the CRS, a community needs only 500 points to move from one CRS class to the next, with a 5 percent insurance premium discount for each class improvement (see table at right)!

If your community is not yet part of the CRS and you'd like to help area property owners reduce their flood insurance premiums, an ISO/CRS Specialist can help you apply to the program and design, implement, and document the activities that earn even greater premium discounts. To get started, contact the Insurance Services Office by telephone (317-848-2898) or by e-mail ([nfipcrs@iso.com](mailto:nfipcrs@iso.com)).

*Special thanks in preparing this article to ISO's Flood Technical Coordinator, Bill Trakimas, and to ISO/CRS Specialists Linda Clarity, Rob Flaner, and Errol Garren.*

---

Article excerpted from the Fall 2002 edition of *Watermark*, a quarterly newsletter published by the Federal Emergency Management Agency on the National Flood Insurance Program.

## CRS Classes

Credit Points	Class	Premium Reduction for Property Located in a High-Risk SFHA	Premium Reduction for Property Located Outside an SFHA or in an AR or A99 Zone*
500-999	9	5%	5%
1,000-1,499	8	10%	
1,500-1,999	7	15%	
2,000-2,499	6	20%	10%
2,500-2,999	5	25%	
3,000-3,499	4	30%	
3,500-3,999	3	35%	
4,000-4,499	2	40%	
4,500+	1	45%	

\* Preferred Risk Policies are not eligible for CRS premium discounts.

## The CRS Credo

*Richard Decker, CRS Task Force*

The mantra of the CRS is, in effect, its purpose, which comes trippingly off the tongue as "reduce flood losses, promote awareness of flood insurance, and facilitate accurate insurance rating." What do these mean?

### Reduce flood losses

The main purpose of the CRS is to show community officials how to protect the lives and property of their constituents from the ravages of flooding. The wonderful reduction in flood losses achieved by Tulsa, Oklahoma, during the last 15 years is evidence of just what a community can do for itself when it has a mind to.

We encourage communities to implement as many of the 18 CRS activities as they feasibly can. We then monitor their activities to make sure they don't backslide.

### Promote awareness of flood insurance

We recognize the value of being prepared. No matter how equipped a community is, it still may be at risk of flooding. Communities and insurance providers need to promote flood insurance. The purpose of the CRS is to help communities become flood *resistant*. No one can do the impossible; no community is flood *proof*.

This is why, for the last 33 years, the NFIP has provided flood insurance to help property owners protect themselves from economic losses caused by flooding.

### Facilitate accurate insurance rating

With CRS premium discounts, we recognize the fact that, when public officials engage in CRS activities, they are reducing the possibility of flood losses in their communities. The discounts demonstrate the NFIP's confidence that CRS mitigation efforts work. Policyholders can save 5 to 45 percent of the applicable premium, depending on the overall reduction in the community's exposure to flooding.

In addition, and almost as a bonus, all American taxpayers save money to the extent that CRS activities also protect community members who have not purchased flood insurance. These uninsured townspeople would have been dependent on Federal financial assistance if a flood had occurred.

### It Works For You

The CRS creates a win-win situation for all participants. And any NFIP stakeholder can take the lead in implementing this program or improving the class rating of his or her community. Visit the CRS web site ([www.fema.gov/nfip/crs.htm](http://www.fema.gov/nfip/crs.htm)) for more information.



**Richard Decker, Chair,  
CRS Task Force**

*Richard Decker has been Chair of the CRS Task Force since it was created in 1987. With almost 50 years of experience in the property and casualty industry, 11 of these as President of the Automobile Insurance Plans Service Office, Decker now serves as Consultant to the Administrator of the Federal Insurance and Mitigation Administration.*