



CRS Credit for Drainage System Maintenance

— A Handout for the National Flood Insurance Program Community Rating System —

A community that inspects and clears out debris from the streams, canals, ditches, detention basins, and other portions of its drainage system could receive CRS credit under Activity 540 (Drainage System Maintenance). For credit, the community must

- Annually or regularly inspect some or all of its drainage system,
- Conduct inspections after major storms and in response to citizens' complaints,
- Remove debris and other obstructions to flow or storage when they are found, and
- Have written procedures for maintenance. The procedures must include six items:
 - (1) Who is responsible for the various aspects of the maintenance program,
 - (2) An inventory of the system, including ownership,
 - (3) A map of the drainage system and the parts subject to the program,
 - (4) The procedures for inspection (e.g., when and how inspections are conducted),
 - (5) The procedures for debris removal, (e.g., how soon the problem is fixed after an inspection and what can and cannot be removed), and
 - (6) The records kept to document the inspections and the removal projects.

How to Calculate Credit for Channel Debris Removal (CDR)

Up to 200 points are available for channel debris removal (CDR). The score is determined by the percentage of components inspected and maintained (CDR) Here are the steps to determine this.

- (1) For CDR, prepare a map of the developed areas of your community. Start with a map of the community and mark or exclude the following areas:
 - Parks, farms, forests and other undeveloped areas, lakes, bays, and other bodies of water;
 - Areas zoned and developed for low density, i.e., lots of at least five acres with a maximum of 10% lot coverage; and
 - Other areas where insurable buildings will not be affected by a lack of maintenance. For example, debris will not cause flooding of buildings subject to coastal flood hazards, on very large rivers, or in steep ravines.
- (2) The remaining area on the map is considered the area that needs to be inspected and maintained to protect insurable buildings. This map must include those areas that have repetitive loss properties where the damages were due to local drainage problems or small, frequent storms. Although this activity encourages maintenance of ALL undeveloped areas for any reason (e.g., to keep a road from flooding), CRS credit is based on the program's impact on buildings.
- (3) Prepare an overlay to the map (or a geographic information system (GIS) layer). Show all of the surface drainage system in the developed areas on the map. Include the following drainage features, regardless whether they are publicly or privately maintained:
 - All streams, channels, and other surface drainageways that drain more than 40 acres.
 - Any other channels known to have maintenance problems that affect developed properties.
 - Any portion of the surface system that has been placed underground (to show how stormwater drains through the community).

This activity focuses on surface drainage features that are prone to obstruction from debris. It is assumed that storm drains are public property and are publicly maintained. Thus, you do not need to include storm drains on the map.

- (4) Prepare an inventory of your entire system, including streams, channels, bridges, control structures and other components of the system. The inventory must show ownership, location, and whether it is subject to the maintenance program. Determine the number of components in your system.
- (5) Prepare a second overlay (or GIS layer) to the map. Show the drainage features covered by the inspection and maintenance program. Some features may not be covered because
 - You do not inspect or maintain channels on private property,
 - Budget limitations prevent your crews from inspecting all developed areas every year, or
 - You only inspect bridges and culverts on public roads, not the rest of the channels.
- (6) Determine the total number of components covered by your program.
- (7) Divide the result from step (6) by the result from step (4). The result is the “impact adjustment ratio” that reflects the percentage of the drainage system in your community’s developed areas that are covered by your drainage maintenance program. The number is multiplied by 200 to derive your score.

For example, suppose there are 300 components within your community’s drainage system. Because of budget constraints, your public works department only inspects and maintains 150 of these features. The impact adjustment ratio = $150 \div 300 = 0.5$. Your score will be $200 \times 0.5 = 100$ points. You would receive $\frac{1}{2}$ the maximum credit because your program covers $\frac{1}{2}$ of the components that need to be covered.

Improving the CDR Score

Here are the four most common reasons why communities do not get the full 200 points and suggestions on how they can improve their scores.

Problem: Many creeks run through private property where homeowners associations and crews cannot go.

Possible solution 1: Work with the owners to obtain easements for inspections and maintenance. Owners should realize that the program will protect them from flooding from small, frequent storms and should cooperate by allowing the community access.

Possible solution 2: Check your community’s statutory authority. You may have the authority to order private property owners to correct problems that would cause damage to others. If you can see the creeks, e.g., by looking at them from bridges, you can conduct the annual or regular inspections. If a problem is found, you may have the authority to order the owner to correct it. If it is not corrected in a certain time, you may have the authority to go on the property and fix it. Check with your attorney and develop procedures to ensure removal of debris when problems are found. Incorporate those into your procedures.

Possible solution 3: Amend your subdivision or development regulations so that your community assumes inspection and maintenance responsibilities for drainage facilities constructed in the future. All new developments will, in effect, provide a drainage easement for your inspection and maintenance staff.

Problem: Environmental regulations prohibit working on some streams.

Possible solution 1: Check whether those streams are in the developed areas. If they only go through parks or forests and not the more densely developed areas, your program does not need to cover them.

Possible solution 2: Check the environmental regulations. Don't assume you can't touch these areas. You may not be allowed to modify a channel without a state or federal permit, but you can probably remove debris like shopping carts and trash. You may not be allowed to remove downed trees or other "natural" debris, but you should be able to write your maintenance procedures so you would have an effective program in these areas.

Problem: There are not enough staff or funds to cover the whole system.

Possible solution: Look at your priorities. Are you currently inspecting and maintaining drainageways in undeveloped areas? What would it cost to conduct an annual inspection of all streams in the developed areas? Remember, we're not talking about channelization or dredging projects. The CRS credits an annual inspection conducted by one person and the removal by a crew of problem debris that has accumulated since the last inspection.

Problem: The community does not have any authority over ditches managed by state highways or canals owned by a drainage or water management district.

Possible solution: The CRS credits what affects the community, regardless of who is responsible for it. The impact adjustment ratio can only reflect the area credited. For full credit, the community must coordinate with the other agencies and show that their procedures meet the CRS credit criteria in the *CRS Coordinator's Manual*. If this is not done, the map and the impact adjustment ratio must reflect that some areas are not covered by the credited inspection and maintenance program.

Additional Credit

An additional 150 points can be earned under this activity if credit for CDR is received. In addition to the basic inspection and debris removal program, a community can receive

- Up to 50 more points, if the its program identifies specific "choke points" or other obstructions to flows that are inspected and maintained differently or more frequently than other parts of the drainage system. Such inspections must be in addition to those credited under the basic program.
- Up to 70 more points, if the community has an ongoing program, such as a capital improvement plan, to eliminate or correct drainage problems, improve drainage or storage facilities, or construct "low maintenance" channels or other facilities. There is no credit for this item if the community does not spend money on a regular basis on such improvement projects (a one-time-only project would not be credited). There is no credit if the funded projects are not part of the drainage system that is described in the community's inspection and maintenance procedures.
- Up to 30 more points, for enacting and enforcing regulations prohibiting dumping in drainageways and storage basins and for informing the public about the regulations.

How to Calculate Credit for Storage Basin Maintenance (SBM)

Up to 120 points are available for storage basin maintenance (SBM). The score is determined by the percentage of storage basins inspected and maintained. Here are the steps to determine this.

- (1) For SBM, prepare a map showing all the public and private storage basins within the community, especially those required by your stormwater management regulations to prevent increases in peak flows due to development. Do not include ponds that are only designed for water quality purposes.

- (2) Prepare an inventory of the basins showing ownership, location, and whether they are subject to the maintenance program. Determine the number of basins in your community.
- (3) Prepare an overlay (or GIS layer) to the map. Show the basins that are covered by the inspection and maintenance program. Some may not be covered because
 - o You do not inspect or maintain basins on private property, or
 - o There are budget limitations.
- (4) Determine the total number of components covered by your program.
- (5) Divide the step (4) result by the result from step (2). The result is the “impact adjustment ratio” that reflects the percentage of the basins in your community covered by your storage basin maintenance program. The number is multiplied by 120 to obtain the score.

For example, suppose there are 200 storage basins within your community. Because of budget constraints, your public works department only inspects and maintains 150 of these features. The impact adjustment ratio = $150 \div 200 = 0.75$. Your score will be $120 \times 0.75 = 90$ points. You would receive $\frac{3}{4}$ of the maximum credit because your program covers $\frac{3}{4}$ of the basins that need to be covered.

Improving the SBM Score

Here are the two most common reasons communities do not get the full 120 points and suggestions on how they can improve their scores.

Problem: Many basins are on private property where crews cannot go.

Possible solution: Work with the owners to get maintenance easements. Owners should realize that the program will protect them from flooding from smaller, more frequent storms and should cooperate by allowing the community access.

Possible solution: Have the owner of the storage basin submit an annual inspection and maintenance report to you to ensure they are properly maintaining the basin.

Possible solution: Check your community’s statutory authority. You may have authority to order a property owner to correct a problem that would cause damage to others. If it is not corrected in a certain time, you may have the authority to go on the property and fix it. Check with your attorney and develop procedures to ensure removal of debris when problems are found. Incorporate those into your procedures.

Possible solution: Amend your subdivision or development regulations so that your community assumes inspection and maintenance responsibilities for all storage basins constructed in the future. All new developments will, in effect, provide a drainage easement for your inspection and maintenance staff.

Problem: There are not enough staff or funds to cover the whole system.

Possible solution: Look at your priorities. Remember, the CRS credits an annual inspection conducted by one person and the removal by a crew of problem debris that has accumulated since the last inspection.

For More Information

CRS Credit for Drainage System Maintenance provides more detailed explanations of defining and mapping the drainage system for this activity, along with examples of inspection and maintenance procedures.