

Stormwater Management Policy Position

The Illinois Chapter of the Soil and Water Conservation Society

Issue

The Illinois Chapter of the Soil and Water Conservation Society (The Illinois Chapter of SWCS) is concerned about the proper stewardship of urban and other water resources. The Society recommends a two-pronged approach to preserve, protect and restore healthy watersheds. First, the Society encourages communities to prevent further degradation of watersheds through broad-based prevention activities such as land-use planning and careful siting and design of new development. Second, the Society encourages local jurisdictions to implement stormwater management and erosion and sediment control programs to prevent flood damages, protect water resources and other natural resources before, during, and after construction.

Stormwater management programs should be developed on a watershed basis and need to consider watershed and receiving stream conditions as well as goals and targets for the overall watershed. Systems should use best management practices such as stormwater detention, wetland protection, sediment traps, stream bank stabilization and other practices that maintain outlet capacity for urban as well as agricultural runoff. Implementation of these programs requires local resources and local commitment to establish stormwater, erosion and sediment control design standards; enforce those standards; and provide for on-going operation and maintenance of structural and non-structural controls. It may even call for the retrofitting of existing systems and the restoration of natural areas to correct the effects of past actions based on new and improved information and technology.

Background

Healthy watersheds provide a variety of values to communities. They provide clean water for drinking, recreational use, and for fish and other aquatic species. Vegetation along streambanks (the riparian area) provides wildlife habitat, soil stability, and filtering of waterborne pollutants. Shade from riparian trees and other vegetation reduces temperatures in-stream as well as in the watershed. Healthy watersheds provide other values such as the tranquil sound of running water and vital green space. Continued degradation of watersheds having excess flooding and pollution problems constitutes a significant loss in community livability and sustainability. Without intervention, watersheds will continue to deteriorate, will be perceived as community liabilities, and will be unable to support basic ecological and societal functions.

Changes in land use and in land management practices have affected the health of watersheds. Large areas of watersheds have been converted from forest and agricultural land to areas paved for industrial, commercial, and residential uses. This conversion has increased surface runoff and frequency of flooding, diminished water quality in receiving waters, destroyed wetlands and other native plant communities, encroached on riparian corridors, and, in some areas, turned waterways into polluted drainage ditches with limited natural resource values. Commonly, urban development so extensively alters watershed hydrology that frequent flooding plagues neighborhoods and businesses, causing repeated property damage and posing threats to health, safety, and economic stability.

Increased sediment in runoff resulting from urbanization may degrade or destroy aquatic habitat. Sediment degrades shellfish beds, clogs fish gills, and smothers fish eggs, reducing spawning success. High turbidity levels reduce aquatic plant production, diminishing food sources for other aquatic species. Many contaminants enter waterways attached to sediment.

Sedimentation also accelerates the loss of storage in lakes and reservoirs and may result in decreased navigability, higher dredging costs, reduced hydroelectric production, and increased water treatment costs.

Land use changes can also modify overland flow characteristics. This may result in increased peak flows and subsequent flood potential. The increased frequency of high flow and higher flow volume can cause streambank erosion and changes in stream shape, steepness, and sinuosity. Changes in flow duration affect riparian conditions and fish habitat. Increased flows often carry pollutants such as bacteria, hydrocarbons, nutrients, and heavy metals associated with urban land uses.

As the application of stormwater management measures has increased, so has their scope and complexity. What started as measures primarily focused on water quantity control for flood and conveyance purposes, has expanded to mitigate a host of impacts from urban and other land use practices. Practitioners have found that a more holistic strategy is necessary to effectively manage a watershed. An effective stormwater management approach requires a clear understanding of the watershed and use of that understanding to set specific targets, criteria, and policies that meet the specific stormwater conveyance and environmental needs of the watershed and the community.

Definition

The Illinois Chapter of SWCS advocates the following to minimize impacts and ensure effective protection of watersheds.

A. Watershed planning

Stormwater management should be conducted at the watershed level since all residents of a watershed, both rural and urban, contribute to watershed health and can control its future. Local watershed organizations are in the best position to balance ecological, economic and social concerns. The Illinois Chapter of SWCS encourages local jurisdictions, conservation districts, farm organizations, environmental groups, local residents, and industrial and commercial land users to join together to form local watershed management oversight committees.

A number of land use management techniques can be implemented to minimize negative watershed impacts from new development. Additionally, redevelopment of existing urban areas can be used to preserve undeveloped land and reduce costs, to economic, environmental and social acceptance. The Illinois Chapter of SWCS recommends that government agencies:

Target federal and state funds to help local jurisdictions form watershed management groups and prepare comprehensive watershed plans.

Use state and local agency land use planning authorities (including zoning and comprehensive plans) to encourage and, where necessary, require preventive actions including protection of riparian areas and other natural features to promote sustainable development.

Encourage developers to use project designs that minimize land clearing activities and impervious surfaces and retain native vegetation for landscaping, such as conservation developments where 50% of the land area remains in open space and homes are clustered. Designs should duplicate existing flow regime and volume conditions as closely as possible in a

manner that recognizes groundwater flows and protects water quality. Designs should utilize the pervious landscape to naturally filter and infiltrate runoff before it leaves the development site where possible.

Encourage modification of local codes to allow for creative development such as cluster development.

Consider the carrying capacity of the watershed in designing a stormwater management system.

Encourage new construction activities to utilize previously developed areas or "redevelopment" areas.

Limit land disturbance so people can walk or bike, reducing pollutants associated with car use.

Protect riparian areas and wetlands by requiring building setbacks, buffer zones or clustering and/or requiring that natural vegetation be protected.

Encourage restoration of riparian zones that are restored to native vegetation and maintained as buffer zones.

Use tax breaks and development credits as financial incentives to direct growth to areas that help protect sensitive resource areas.

Institute a development rights program that will preserve prime farmland and entire ecosystems such as wetlands, and natural areas on a landscape scale while setting aside other areas for relatively unrestricted development.

B. Stormwater management systems

As part of a watershed program that includes pro-active land use management, local jurisdictions need to implement programs for erosion and sediment control and stormwater management. Stormwater management is one tool to protect and conserve watersheds. Stormwater management plans should be developed on a watershed basis to identify specific targets to be met, including both water quantity and quality. The Illinois Chapter of SWCS encourages state, and local governments to require stormwater management system designs that:

Provide for stormwater flow, volume and velocity control to replicate pre-development or pre-settlement conditions for all runoff events, where possible. In any case post-development runoff volumes and velocities should meet locally identified watershed needs.

Mitigate water quality effects such as nutrient, sediment, and heavy metals loadings and the impact of stormwater discharges on aquatic species.

Minimize impacts of stormwater system design on surface water and groundwater, wetlands, prime farm land and other areas of natural value.

Provide incentives for individuals and developers to control stormwater runoff onsite.

Reflect the full flow regime (base, bankfull, riparian, and flood flows) to avoid stream impacts.

Result in economically sound and sustainable stormwater facilities and development sites.

Include maintenance programs to ensure continued effectiveness of stormwater facilities and outlet channels.

C. Erosion and sediment control programs

Erosion and sediment control remains largely a state, and local issue best handled and managed at those levels. The Illinois Chapter of SWCS encourages state and local governments to implement erosion and sediment control programs that: Promote erosion control as essential and effective means of reducing impairments to stormwater management systems related to sedimentation. Continue to emphasize effective sediment control practices.

Establish watershed-based sediment loading standards for water quality purposes.

Set standards for sediment removal efficiencies expected for silt traps and other sediment control devices and include monitoring requirements.

Combine voluntary implementation of best management practices with the use of regulatory and enforcement tools, if necessary.

Provide incentives for individuals and developers to control erosion onsite.

Utilize economically sound best management practices.

Identify on-going operation and maintenance requirements by implementing routine and regular inspection programs by financially responsible parties using qualified inspectors.

Develop erosion and sediment control plans that minimize the time of disturbance, do construction and clearing in phases, and control runoff during construction.

Re-vegetate construction sites as soon as possible; use temporary vegetation to avoid erosion during construction.

Implement and enforce program objectives consistently.

Link governmental requirements for water quality with other watershed management goals.

Recognize and promote professional certification programs like CPESC (Certified Professional in Erosion and Sediment Control) and Professional Engineering that identify professionals in the field who are qualified in planning, design, and implementation of stormwater management measures.

D. Program design

The Illinois Chapter of SWCS encourages state and local governments to develop stormwater management policies on a watershed basis to reflect local resource and environmental conditions. Stormwater management programs should be based on specific targets to meet watershed needs as identified by the local people. Other watershed needs which may seem unrelated to soil or water do have an impact on watershed management strategies. The Illinois Chapter of SWCS recommends the following-general conditions for implementing both stormwater management and erosion and sediment control programs:

Develop and enforce a site plan for each project that considers other activities in the watershed.

Where structural best management practices are required, implement and install site-specific best management practices that meet design specifications.

Inspect and maintain structural and nonstructural practices regularly.

Identify and monitor on-going operation and maintenance needs and the financially responsible parties.

Develop a contingency plan in case parties abrogate their financial responsibilities.

Conduct additional research to ensure that stormwater management and erosion and sediment control practices are economically cost effective and designed for the proper storm event for the local situation. Design standards need to be developed to meet government policies and local watershed needs.

Institute a monitoring program to ensure that claimed environmental and flood control results are achieved in practice and that modifications are made where design standards appear to be inappropriate.

Consider the expected lifetime and life-cycle cost of specific practices in the design of stormwater management systems.

E. Funding and Economics

The Illinois Chapter of SWCS recognizes on-going institutional and financial support as a necessary ingredient to ensure strong watershed management programs. As a companion, all planning efforts need to include a vehicle by which implementation of planned actions can occur. Watershed plans must consider three key factors: environment, social conditions, and economic conditions. The development of stormwater management policies must reflect local economic conditions to ensure that the approach is affordable, effective, and can be implemented. The Illinois Chapter of SWCS recommends that state and local governments:

Identify and take the necessary steps to ensure funding for implementation and continuing operation, maintenance, and replacement of stormwater and management and erosion and sediment control systems.

Encourage innovative ways for funding the implementation of stormwater management practices and the operation, maintenance, or enhancement of systems. These might include instituting user fees, re-designating funds, and initiating special taxation. Legislation is needed for local entities in Illinois to implement user fees.

Educate policy makers that in areas where user fees are implemented they have been found to be fair and equitable revenue source for implementing stormwater management programs.

Offset the costs of stormwater management systems by identifying and utilizing ecological and social beneficial values.

Provide for credits to land users who implement and maintain their own facilities.

Consider the capability of land users and local entities to manage and maintain the system.

Utilize site specific engineering, in lieu of standard designs, to consider local economic, ecological and social situations as well as the capability of local watershed managers to manage the system.

F. Education

New stormwater management and erosion and sediment control techniques and structures are being developed and tested. Design standards and criteria are evolving as water resource professionals gain a better understanding of the hydrology and ecology of watersheds. The Illinois Chapter of SWCS recognizes that professional and public education is essential to build support for watershed activities including stormwater management and erosion and sediment control. The Illinois Chapter of SWCS recommends that state and local governments; watershed groups; and others:

Educate elected officials, planning department staffs, zoning staffs, building and excavation contractors, and the general public about the relationship of stormwater management and erosion and sediment control programs to healthy watersheds and sustainable, cost effective development.

Continue and expand research on "cutting edge"; technology for stormwater management and sediment and erosion control.

Develop a disciplined environmental management approach to assure that the latest techniques in stormwater management are adopted.

Develop stormwater management programs for individual landowners to implement in their own backyards.

Develop stormwater management programs for land developers to consider that enhance economic, ecological, and social values of their property.

Stress an adaptive environmental management approach to stormwater management.

Educate landowners about environmentally sensitive landscape management practices, particularly in wetlands and riparian areas.

The Illinois Chapter of the Soil and Water Conservation Society approved this policy position statement on stormwater management at the January 27, 1999 Board of Directors meeting.