

APPENDIX H

POLICY ON DESIGN OF STORMWATER CAPITAL PROJECTS ADOPTED BY MSD BOARD JULY 11, 1994

Policy Statements

a. General

Flood reduction solution alternatives shall be evaluated primarily based upon relative cost. MSD shall implement the most cost-effective solution whenever feasible. In addition to standard and traditional alternatives, such as modifying or replacing downstream structures and improving stream conveyance, floodproofing of affected structures shall be routinely considered in evaluating solution alternatives. If acquisition and relocation or demolition of affected structures is identified as the most cost-effective solution alternative for a drainage problem, then the Board shall consider the specific situation and decide on the alternative to be used.

Solution alternatives should be evaluated secondarily on the opportunity to use Best Management Practice (BMPs) to improve water quality and maintain natural habitat. Of alternatives with similar estimated costs, the alternative with the highest potential to improve water quality and maintain habitat shall be chosen.

b. Priorities for Project Evaluation

Projects should address drainage requests in the following order of priority:

1. Eliminate or reduce flowing with risk of personal injury.
2. Eliminate first floor flooding.
3. Eliminate or reduce basement flooding.
4. Provide an outlet for drainage from a critical upstream project or area.
5. Eliminate or reduce flooding which interferes with transportation of priority access roads to neighborhoods.
6. Control erosion in situations where structures or property are being damaged or erosion is occurring outside of defined easements.
7. Eliminate long-term standing water of "yard flooding" which occurs outside a defined easement.
8. Control erosion within a defined easement.
9. Eliminate long-term standing water due to the lack of an outlet within an easement.

The final solution to the problems within a project area should address as many as possible of the above-listed items that exist, while remaining cost-effective.

c. Definition of Project Scope

Improvement projects fall into the three categories, depending upon the numbers and locations of affected buildings and residents and the scope of construction effort required: mini-project, neighborhood project, and regional project.

Mini-projects shall meet the following criteria. If one or more of the listed criteria are not met, the project is beyond the scope of a mini-project and is either a neighborhood or regional project.

1. Project addresses a problem located within a single defined subdivision or group of structures.
2. Project does not involve construction of, or improvement to, a regional detention facility.
3. Project does not involve improvement of conveyance within a defined blueline stream.

Neighborhood projects shall meet the following criteria. If one or both of the listed criteria are not met, the project is beyond the scope of a neighborhood project and is a regional project.

1. Project addresses a problem located in one or more subdivisions or groups of structures in a centralized area.
2. Project does not involve construction of a regional detention facility.

Regional projects shall meet the following criteria:

1. Project addresses problems of multiple subdivision, developments, or groups of structures; at least some of the problems are independent and could be solved by separate neighborhood projects.
2. Project influences extend downstream and upstream in the watershed, beyond the typical reach of a neighborhood project.
3. Project involves construction or modification of a regional detention facility or improvement to conveyance of a blueline stream.

d. Design Criteria and Guidelines

Specific design criteria for drainage projects are found in this Design Manual. General guidance for all drainage design and particular guidance of various project categories follows.

For all projects, the guidelines of the Stream Corridors/Greenways Multi-Objective Plan shall be followed. The disturbance of natural stream corridors should be minimized, the preservation of natural streams and habitat should be emphasized, and the use of the piped systems and lined channels should be discouraged. In addition, designs should incorporate BMP's for water quality control.

Structural improvements, such as downstream culvert replacements or upstream detention ponds, shall be designed to mitigate existing flooding problems and provide one foot of freeboard for the 100-year event. If improvements require phasing of funding and/or construction, phasing should be done beginning from the downstream improvements and proceeding upstream. An exception to this general phasing rule is a detention facility, which should be constructed in the early phases of overall project construction. All projects shall be constructed in conformance with the Soil Erosion and Sediment Control Ordinance.

Mini-projects will be designed to establish adequate conveyance capacity of improve the conveyance capacity of the existing drainage system to control frequent storm events. Drainage systems shall be designed so that no flooding of habitable structures occurs during a 100-year event. Neighborhood projects shall be designed similarly so that drainage systems do not allow flooding of habitable structures for the 100-year event. Regional projects shall be designed to reduce or eliminate flooding of habitable structures and property. Regional facilities should also be evaluated for their impacts on base flow, since maintenance of adequate base flow in receiving waters is essential to watershed-wide water quantity and quality management.

e. Non-structural Solution Alternative Design Criteria

e.1. Floodproofing

Floodproofing is the term for procedure which eliminate or reduce flood damage by protecting or modifying buildings instead of preventing flood waters from reaching them. Dry floodproofing seals the exterior of the home and protects the interior. Wet floodproofing involves designing or retrofitting a building's electrical systems, utilities, and valuable items so that they are located above the predicted flood stage and allowing flood water to pass into or through the structure. Both types of floodproofing shall be routinely considered among possible alternatives for solving drainage and flooding problems. If floodproofing alone, or in combination with other measures, provides the least expensive solution to a problem, it should be utilized.

Floodproofing has limitations; it protects to a specific elevation and does not guarantee a structure will not be damaged by flood waters. Floods exceeding the design event could still damage the structure. Also, some means of floodproofing requires human intervention (e.g., blocking openings and entryways). Education of the owners or residents of floodproofed structures, in terms of their responsibilities and expectations, is essential to the success of floodproofing operations.

Floodproofing designs shall be based upon the 100-year storm event and provide one foot of freeboard. Designs should conform to the guidelines listed in the Kentucky Flood Protection Manual and/or the appropriate Federal Emergency Management Agency (FEMA) Publication.

FEMA 15 – Design Guidelines for Flood Damage Reduction

FEMA 54 – Elevated Residential Structures

FEMA 85 – Manufactured Home Installation in Flood Hazard Areas

FEMA 102 – Floodproofing Non-residential Structures

FEMA 114 – Retrofitting Flood-prone Residential Structures

e.2 Acquisition and Relocation

The cost of acquiring flood-prone properties for relocation or demolition as a solution alternative for flooding problems shall be determined routinely and compared to the costs of other alternatives. For such a property, the total acquisition cost will include the following component costs: for demolition candidates, buying the property, razing the building, disposing of waste materials, and restoring the site; for relocation candidates, buying the old property, buying and preparing the new site, moving and installing the building on the new site, and restoring the old site.

In a case where acquisition appears to be the lowest cost alternative, the MSD Board will receive a summary of alternatives, costs, and supporting arguments. The Board will then decide whether to select acquisition of another alternative to address the specific case. For any property from which a flood-prone building is moved or demolished, redevelopment shall meet the criteria of the floodplain management ordinance.

f. Conformance with Watershed Master Plans

Projects shall be designed and constructed in a manner consistent with the Watershed Master Plan for the area. If a project is proposed that does not conform to the Watershed Master Plan, the impact of the project on the entire drainage basin shall be evaluated prior to final design and construction. The completed project shall be represented in future updates of the Watershed Master Plan model.

g. Public Involvement

g.1. Public Meetings

Public involvement shall be mandatory for all drainage projects. Complaint files and resident interviews shall be the basis for assessing the need for a project and developing its scope. Public meetings will be held for at least three stages of each project: pre-design, presentation of alternatives, and pre-construction. Additional public meetings may be scheduled as needed to inform residents further and to build support for a project.

g.2. Consensus Building

Through the public involvement process, MSD will describe the goals, approach, and anticipated benefits of a proposed project to the affected parties and will evaluate their level of support. A strong majority of affected individuals must support a project for it to proceed. If support is weak, there will be not project. If support is moderate, MSD will approach the local elected official to explain the need for strong support and to enlist the official's help in increasing the local approval. If a strong majority support the project, it will go forward, utilizing condemnation if necessary to assure the project's progress.

h. Easements

Residents who will benefit from a project are expected to provide easements needed for the project at no cost to the project. Residents whose property is affected but not benefited by a project may be asked to donate easements. Easement acquisition must be timely; attempts to obtain easements at no cost must not slow a project's schedule. If a project has strong consensus support and benefits but necessary easements cannot be obtained rapidly, MSD will pursue condemnation after obtaining specific Board approval.

i. Project Funding

In general, MSD will fund the assessment of problems related to public drainage facilities and the design and construction of projects to solve the problems. Projects which provide greater benefits should receive higher priority in the process of scheduling work. During project planning, issues outside MSD's responsibility may be added into a project if the requesting owner or owners are willing to fund the difference in project costs.

Flooding due to existing, approved development shall be addressed by MSD. Alternative solutions shall be evaluated and presented to the affected parties. MSD will fund the most cost-effective feasible solution. If the parties involved prefer an alternative solution and are willing to fund the difference in cost, MSD may consider implementing the alternative.

Flooding resulting from the unapproved actions or development by a citizen, group or company shall be mitigated by that individual. Solution alternatives developed by the responsible party will be subject to review and comment by MSD and the public.

Inter-agency projects for infrastructure improvement are encouraged. MSD will coordinate with other government agencies to review planned projects in areas for which mini-projects are planned. Lead agency approaches, with a single contractor performing all proposed improvements, are encouraged. Costs of the drainage improvements will be prorated to the costs of the other improvements.