EAST CENTRAL FLORIDA REGIONAL PLANNING COUNCIL
REVIEW OF APPROACHES AND TECHNIQUES USED TO ASSIST IN FINANCING THE RETROFITTING OF EXISTING URBAN STORM DRAIN SYSTEMS

by

Gregory Golgowski and Aaron Dowling[1]

Reprinted with permission from the authors and the East Central Florida Regional Planning Council.

INTRODUCTION

One of the major water quality management problems facing. local governments in Florida involves the addition of water quality improvement facilities to existing storm drainage systems in the developed portions of urban areas. Most of the older storm drainage systems in Florida's urban areas were designed and constructed to provide for the efficient removal of stormwater runoff. Concern about the quality of stormwater being conveyed by these systems was not a consideration in their design. Consequently, these older storm drainage systems now represent a significant water pollution source to receiving waterbodies, particularly small urban lakes.

Progress in overcoming the water quality problems of urban storm sewer systems has been exceedingly slow and difficult because of the numerous obstacles to overcome. Foremost among these obstacles are limited physical space, the need for extremely efficient treatment techniques, frequent maintenance requirements, and relatively high construction costs. Complicating the matter considerably is the prevalence of the storm drain systems. A review of the existing storm drain systems in the Orlando area revealed that many lakes have between one and two storm drain system outfalls per acre of surface water area, which is to say that a 50 –acre lake may have 50 or more stormwater outfall pipes discharging pollutants during each rainfall event. Increasingly, however, the need for going back into existing neighborhoods and retrofitting them with facilities that protect receiving water bodies from contamination by runoff is becoming apparent. This usually becomes the responsibility of the local government, more specifically, the public works department.

While the level of treatment technology has advanced to the point that workable treatment methods are now available for use in retrofitting the storm drain systems, the methods are extremely costly in terms of initial construction and ongoing operation and maintenance costs. The significant expenses of constructing and maintaining the stormwater treatment facilities on the retrofitted systems, coupled with the general absence of commonly available and reliable

methods of financing the retrofitted improvements, have caused many local governments not to undertake the effort to improve the quality of stormwater being discharged by existing storm drain systems. In many cases, the desire exists to make the necessary improvements, but the knowledge of how to effectively finance the improvements does not exist. This paper is intended to present a summary review of financial alternatives that have been used to fund the undertaking of retrofitted improvements to existing storm drain systems in urban areas and techniques which offer potential for possible use in alleviating the funding problem.

Probably the method that has been used most commonly by local governments in the past to finance retrofit stormwater facilities has been the use of general revenues. As an improvement or repair was needed, funds were allocated or diverted to cover the costs. This meant that local taxpayers carried the financial burden of each project even if the problem was confined to a rather small geographic area. It has become more apparent today that stormwater needs to be managed more comprehensively and that unlesss individual projects are part of a total drainage unit management plan, making improvements in one location may aggravate drainage problems elsewhere, or may address only the problem symptoms and not the cause.

There is also a growing reluctance by the general population to be taxed to pay for public works projects of a localized nature which may only benefit a small portion of the populace. This is particularly applicable to stormwater management. Many of the urban lakes with stormwater-related problems have ho public access to them and so are enjoyed only by those fortunate to have private access opportunities. Hence, there are legitimate questions-- not only why taxpayers outside of the lake's drainage area should contribute to improving its quality, but also why taxpayers within the drainage area, even if they are contributing to the problem, should be required to pay for improving a condition if they are to receive none of the benefits from the improvement. Clearly, some type of equitable and dependable financing technique must be utilized for ongoing management activities to be successful.

ALTERNATIVE FINANCING APPROACHES

There are a number of different opportunities for a local government to finance drainage improvements, each with its own advantages and disadvantages. In many cases, it may be possible to combine one or more methods to create a financing program that is tailored to the special needs of the area involved. Fundamental to any capital needs financing program, however, is a thorough substantiation of the community's short- and long-term stormwater management needs, the appropriate management practices to be utilized for addressing each of the needs, and the most effective method for obtaining the required amount of financing. These components are important not only for constructing an efficient program, but for selling it to the general public which, through referendum, public hearing, or other expression, often has the final say in whether or not the projects are done.

Generally, the methods available for financing retrofit projects are based upon county and municipal powers for taxing, making special assessments, borrowing, issuing bonds, receiving

public and private grants and donations, charging user fees, establishing special funds and receiving revenue sharing funds. Some of the methods in practice that utilize these capabilities are sumarized as follows:

Use of General Revenues

General revenues are derived from the various taxes and other receipts that are not restricted to specific programs for expenditure, but can be used for any of the day-to-day functions of county and municipal government. As such, they represent a "pay as you go" source of funding and eliminate any additional expenses entailed in borrowing money for capital projects. Using general revenues for stormwater facilities remains as a very viable approach; however, the growing concern of using funds derived from all portions of the tax base for the perceived exclusive benefit for only a portion of the residents is an issue that merits investigation of alternatives. Secondly, the myriad needs that must be met by general revenue funds usually result in stormwater system improvements receiving little, if any, general revenue funds.

Special Assessments Against Benefited Propettx

Chapter 170, Florida Statutes, enables municipalities to construct and repair facilities as part of a comprehensive stormwater management system and provides for the funding of these activities by making special assessments against real property that receives a benefit from these improvements if the benefit received is different in type or degree from benefits provided to the community as a whole. For example, installation of a drainage swale might benefit specific properties by removing their stormwater and so each could be assessed for its proportionate share of the project construction and maintenance costs, but those same properties could not be singled out to bear the total cost for street sweeping services if the equipment is used throughout the city.

This method allows for the assignment of costs for providing management only to those properties that will receive direct benefit from it and so addresses the concern of unfairly distributing the costs throughout the tax base. The municipality may still contribute from its general improvement fund if it sees fit and may also sponsor bonds to cover immediate construction expenses. An important point of concern in implementing such a program is clearly identifying the benefits that landowners receive. While it is easy to show that a lakefront owner will benefit from improved water quality, it is more difficult to convince an upland owner that a direct benefit is being received.

Creating a Drainage District

Special drainage districts can be created by counties under the provisions of Chapter 157, Florida Statutes. Although originally passed in 1901 to enable construction of public "ditches, drains or canals" to promote the expeditious removal of groundwater as well as stormwater from lands,

drainage districts are also enabled to provide for other improvements that today are considered part of sound stormwater management. A drainage district is somewhat unique in its formation in that it originates from a petition supported by a majority of the landowners who would be included in the district. This petition is presented to the board of county commissioners of the appropriate county which, after receiving public comments, decid,es to approve or deny the request. An appointed committee oversees the construction and operation of facilities within the district with financing provided through the county which assesses the landowners within the district for all expenses of planning, construction, maintenance and financing according to the benefits derived from the stormwater projects.

An important difference between the financing capabilities of drainage districts and special assessments described earlier is that general funds may not be used to aid in financing any part of the work done for drainage districts. Bonds issued for financing the works of such special districts usually carry a higher interest rate than general obligation bonds as the full county resources are not obligated toward their repayment. Another, drawback toward the use of special districts is that they can only be created by the initiative of the landowners involved. If the landowners do not perceive a drainage problem significant enough for them to take personal steps to improve it, then this approach will not work.

Chapter 298, Florida Statutes, also provided for the creation of drainage districts, known as water control districts but allowed them to be created by petition to the Florida Department of Natural Resources, rather than the jurisdictional county. Such districts had extraordinary power to build any type of drainage improvement affecting virtually any land or water resource as the district's board of supervisors saw fit, without the need to comply with any ordinarily applicable state or local review pertaining to natural resources. Financing was provided by a benefit assessment upon lands within the district, including state lands, and was collected by the applicable county tax collector. Should the county not turn over collected revenues promptly, it was liable for a 10% penalty to be paid to the district. The district was empowered to construct drainageways across private lands outside of the district if necessary and should the landowner not cooperate voluntarily, condemn a right-of-way for its work and begin assessing the landowner for his share of the benefits received from the ditch. Although few of these districts have been created in recent years and legislative amendments have modified some of their powers, this type of district remains as a viable alternative for drainage management.

Issuing Municipal Bonds

Municipal bonds can be used for financing many capital improvement projects and can be classified either as general obligation, special assessment or revenue bonds. General obligation bonds commit the taxing power of the entire community to paying interest and retiring the debt and therefore are likely to be issued at a lower interest rate than special assessment bonds which are repaid by levies on individual properties or revenue bonds which are only repaid through revenues generated by a special service district.

While bonds can quickly raise large amounts of funds for projects, their financing can add an additional 50-100% to the cost of the project. Therefore, they are not well suited to annually

recurring programs, even if they are of a capital improvement nature. It is in the local government's long-term best interest to pay for such programs with current revenues.

State and Federal Grants in Aid

There are few state or federal grant programs that have been established specifically for helping local governments deal with their stormwater runoff problems. There are, however, ongoing aid programs that provide funding for street and highway construction, parks development, community development and other traditional public works projects. Each of these should be examined to determine its applicability to stormwater management needs. Gas tax monies, for example, will pay for improvements to drainage facilities as a part of road resurfacing, and park development funds have been used for the construction of retention basins which double as playing fields. It is important, therefore, for local governments to examine the sometimes hidden opportunities in many of its ongoing public works programs. Care should be taken, however, to see that the drainage projects are designed to fit into the comprehensive drainage plan and are not devised simply to take advantage of financial opportunities,

Voluntary Contributions of Property and Services

Voluntary contributions of property and services are usually classified almost as "Acts of God" by governments--something uncontrolled that happens whether one plans for it or not. Such contributions can play important roles in financing retrofit projects just the same, and advance thought should be given as to how such opportunities can best be handled. Donations of land by businesses or individuals can have important tax consequences for the donor and, if located in a project area, can make available valuable property in built-up areas that otherwise would have had to have been purchased on the open market or through often lengthy condemnation proceedings. At the very least, such donated property can be sold, with the proceeds used for planned projects. It may also be possible for developers working in outlying areas to assist in land acquisition or facility construction in-built-out portions of the community in exchange for suitable concessions from building restrictions at their development location. Such arrangements might be more properly termed "quasi-voluntary donations" and patterned after transfer of development rights programs, but the important point is that donations can offer flexible and creative opportunities for public projects to receive financial support and should warrant advance preparation and perhaps cultivation to make the most of them.

EXAMPLES OF ACTIVE FINANCING PROGRAMS

A number of state, county and local programs have been used around the nation to successfully conduct stormwater management programs. Most of those programs have been developed in an

effort to alleviate flood damage caused by stormwater which, due to differences of gradient and size of flood corridors, can have more severe economic impacts on communities than is generally the case in Florida. All of these programs are based upon the principles which have been discussed and may be applicable to Florida situations, even though the management goals might be different.

Special Assessments

The City and County of Denver, Colorado, began billing all owners of improved land within their jurisdictions for stormwater services in January 1981. Revenues are used for both capital development and, ongoing operations and maintenance. Billing rates are based upon the percent imperviousness of the property with ratios of impervious cover to total land area divided into ten groups from 0-100%. Rates vary for each group and increase from $0.37 on the low end to $1.17 per 100 square feet for properties nearly completely covered by impervious surfaces. Land use is not a factor in determining rates.

Denver made a prior attempt to initiate this charge in 1974, but it was rescinded by the city council after being operative for only five months. This action was taken in response to a class-action suit brought against the city and underscores the importance of providing adequate public education concerning the need for, and use of such charges.

Portland, Oregon, began a similar stormwater program in 1977. Assessments are levied against all owners of land that contributes runoff to publicly-owned surface water collection systems. The monthly charge is slightly different from Denver's and is based on a flat rate of $0.615 per 1000 square feet of impervious area. An important distinction is that .properties draining directly to rivers or sloughs are exempted from the charge, the reason being that they are not benefiting from any city-owned drainage collection system and so should not be required to pay for its development or maintenance.

A third variation of special assessments is used in Billings, Montana. Assessments are made on all land within the city, whether developed or not, and is based on the area of the parcel and its zoning classification.

Using the established rates, a 6000-square- foot residential property would be assessed $7.25 and a two-acre parcel of property zoned community commercial would be charged $281 annually. The Billings program has been in place since 1978 and credits its revenues to its Municipal Storm Sewer System Fund. This system has allowed the city to issue revenue bonds to meet, construction and operation needs of its stormwater system and retire them from Fund revenues.

Stormwater Utilities

Several municipalities have established stormwater utilities to concentrate on drainage problems. By doing so, a separate entity is established within the local government which can not only assess fees against property served, but also participate in revenue sharing and become an established part of the municipal budget.

Boulder, Colorado, established such a utility in 1974. Its operating revenues are derived from Boulder's share of the state sales tax, the city's general fund, and property assessments. In Boulder's case, all developed property is assessed, with the cost to each parcel being determined according to its proportionate share of several parameters, including size, percent of impervious cover, site location and proximity to floodplains. The city uses its fee schedule to encourage certain stormwater practices in new development as well. Rates charged to commercial and industrial developments are reduced substantially if on-site detention is used. Conversely, if a property is developed in a floodplain, it is considered to be disproportionately adding to the city's stormwater management burden and is assessed at a rate one and one half times the rate for a similar development in an upland area.

The stormwater utility established in Corvalis, Oregon bases its service charge on an "equivalent service unit" (ESU) which reflects the amount of impervious surface area of a parcel. Using random field measurements of properties in various land use categories, one ESU was defined as being 2750 square feet, or the average amount of impervious area on single family residential properties. Multi-family and industrial/commercial properties were found to average 4.8 and 12.5 ESU'S. respectively. This system allows for assessments to be made on developed properties without the need to actually calculate the impervious area for parcels or provide costly recalculations for properties as they are modified.

State and Federal Grants in Aid

Although runoff from urban land is usually considered to be the primary source of runoff-related pollutants, studies have shown that agricultural lands can provide significant loadings as well by virtue of their often large percentage of the total drainage area. The Federal Soil Conservation and Domestic Allotment Act authorizes cost-sharing funds to be administered by the Agricultural Stabilization and Conservation Service (ASCS) for the installation of management practices for controlling runoff on developed agricultural land. These funds are limited to only 20% of the total construction costs and usually in short supply for any one area, so their effectiveness is limited.

To address this, several states have enacted legislation that will provide funding to augment the available federal funds. The State of Maryland allocated $7 million to be awarded over a two-year period as grants for the installation of agricultural best management practices. Awards can be made for up to $5000 per project and $25,000 per farm, provided the projects meet a specified cost-effectiveness level and the recipient agrees to abide by a. 15-year maintenance schedule. After approximately one and one half years of operation this program has committed $5 million to 1700 projects. Similar programs are in effect in Kansas, where it is expected that 2000 projects using $3 million in state funds will be financed in 1985, and in Idaho, where $6.8 million was appropriated from 1981 td 1983. Idaho's program is financed by a $1.5 million bond issue and receives ongoing revenues from the state's cigarette, tobacco and inheritance taxes. Clearly, for such programs to be implemented, the problem of stornrwater management must be well understood and given high priority by the state legislature and general public.

FLORIDA CASE STUDY

Although many of the approaches presented rely upon changes to existing county and municipal institutional frameworks or legislating additional programs, much can be done within existing structures to finance successful stormwater management programs. A case in point is the program of the City of Orlando, Florida.

A primary concern of Orlando and Orange County is the degradation of their many lakes and waterways. These resources often suffer from oxygen depletion, increased nutrient loadings, and high pathogen concentrations-- problems which are directly attributable to stormwater loadings. As the area's economy is so dependent upon maintaining a high quality in these water resources, a substantial incentive was present for both governments to begin active stormwater quality management programs in recent years.

Orlando has not established any drainage utility but utilizes the Engineering Bureau of the Public Works Department to oversee most drainage improvements. All departments are required to implement management practices in their construction activities, however, as the opportunity arises. Drainage improvements are included as a part of the city's capital improvement program and an examination of it shows the versatility of the funding sources used. A brief description of some of the funding sources currently employed includes:

* Community Development Block Grant Funds - These are Federal grant funds used for specific purposes as presented in the grant. Drainage improvements are generally intended to be only supportive of a principal project intended to improve community conditions.

* Special Assessments - These are monies received by assessing the owners of real estate according to the benefits received from specific projects. When 51% of the owners of real estate that will benefit from a project petition for the project, they are assessed 100% of its cost.

* Tax Increment Financing - Where improvements constructed in a Community Redevelopment Area established according to Chapter 163, Part III. Florida Statutes, result in net increases in real property taxes from the properties benefited, the net increase can be used for public improvements within the Redevelopment Area.

* Gas Tax - Derived from four-cent local option gas tax funds, these monies can be used only for specified transportation improvements, including stormwater drainage.

* Road and Bridge Tax Funds - These represent the city's share of funds received from Orange County's Road and Bridge Tax, (Section 336.59, Florida Statutes). This source may only be used for transportation-related improvements.

* Drainage Districts - The city has authorized the creation of drainage districts, as described earlier. Funds raised from such districts must be used for their targeted projects only.

* Private Funding - The city expects to receive donations for Construction of an educational facility at its botanical gardens which will include stormwater treatment.

* State Aid - Florida Boating Improvement Funds will be utilized to improve boat ramp parking and construct a retention area for stormwater.

* Capital Improvement Fund - These are general revenues raised by the city that are not otherwise designated for specific uses. These funds are used primarily as a last resort when no outside source can be found.

As can be seen from this inventory, funds raised from the ad valorum taxes of the entire community represent only one of many potential sources of funding for retrofit projects. The key to a successful stormwater management program involves an efficient use of all existing financial resources and capitalizing on funding opportunities as they arise.

CONCLUSION

In conclusion, the review presented in this paper indicates that there are financing methodologies available and presently in practice that can be applied to stormwater retrofit projects. Two general approaches can be applied to address this problem.

First, a local government can incorporate a stormwater management program into its present institutional structure. The City of Orlando was presented as an example of this, where stormwater projects are largely under the direction of the Department of Public Works and financing is obtained by placing a large dependence on various grants and other programs .in which stormwater plays primarily a supportive role to other public works programs. Such an approach requires an active and imaginative financial manager and may not establish a stable, long-term financial base usually considered necessary for bond support and ongoing maintenance needs.

Second, single-purpose entities can be established in the form of drainage districts or as utility service districts. Such entities are able to create stable revenue bases derived from assessments that can support the implementation of maintenance and small capital construction programs, thus lessening the use of costly bond financing. Such an arrangement represents a significant public commitment to stormwater management, but may not be desirable in all situations, especially in light of the prevailing attitude toward simplification of government structure.

Any method-that is employed must have public support to be effective. All revenues are ultimately derived from the public and, therefore, it is of paramount importance to establish an educational program that supports the particular stormwater management goals. With this support and a comprehensive management plan, the financing vehicles are available to local governments for the creation of successful stormwater retrofit programs.

1 Gregory Golgowski is Chief of the Environmental Projects Section, General Planning Division, at the East Central Florida Regional Planning Council, Winter Park, Florida.

Aaron Dowling is the Assistant Executive Director and Director of the Administrative Services Division at the East Central Florida Regional Planning Council.

Acknowledgement is given to Patricia Tyson, Environmental Planner at the East Central Florida Regional Planning Council, for her diligent research and information compilation efforts.

BIBLIOGRAPHY

Anterican Public Works Association Research Foundation and the Institute forWater Resources of the APWA, 'Urban Stormwater Management", Chicago, IL, pp. 260-263.

Florida Statutes, Chapters 157, 170, 298.

Government Finance Research Center and Municipal Finance Officers Association, "Planning for Urban Stormwater Management: Financial Issues and Options", May, 1980.

Krupnick, A., "The Chesapeake Bay Clean Up", in “Resources”, No. 79, Winter 1985, pp. 1-5.

Orlando, City of, 1984 - 1989 Capital Improvement Program.

NASOA Research Foundation Farmland Project, Vol. 2, No. 2, Washington, DC, March, 1985.

Whipple, W., et al., Stormwater Management in Urbanizing Areas, Prentice-Hall, Inc., New Jersey, 1983, pp. 212-218.