INTRODUCTION

Lenexa, Kansas is a rapidly developing suburb in the Kansas City Metro. Presently its population is in excess of 45,000. In addition it is also home to an equal number of jobs. The land area of Lenexa is 34 square miles. See Figure 1. In 1995, about half of that land area was fully developed, the balance, due to lack of sanitary sewers, was almost totally undeveloped. In 1995, sewers began to be constructed in the undeveloped area west of Interstate 435. As a result, development along the K-10 corridor began to escalate.

Figure 1. Lenexa City Map

Lenexa had long been known as a rapidly developing region in Kansas City. The opening of the western areas by sanitary sewers provided an escalation and major growth pressures into a previously rural area. In 1996 the City initiated a community visioning process to coincide with the coming millennium event. The visioning, named Lenexa Vision 2020, was aimed at identifying desired outcomes for ongoing changes in the maturing areas of the city and direction and focus for the newly developing areas.
Contained within this document were very strong statements concerning the types and nature of desired development, infrastructure, quality of life, and environmental goals.

THE PERFECT STORM

Subsequently, in 1998 a "perfect storm" of events began to take place. As the program was being developed, there were many misgivings on the part of the Governing Body. Lenexa does not have major flooding issues generally. However, as the study was being debated during September and October of 1998, the storm of the century hit the Kansas City area. Many people were watching as the Kansas City Chiefs hosted the Seattle Seahawks on national television. During the game, a major rainstorm struck the area. Water on the field was more than six inches deep. Water ran from the stands in literal torrents and the game had to be suspended for rain. Across the Metro, major flooding was underway, with substantial loss of life. Lenexa was not spared the storm, the damage or the loss of life. This tragedy served to provide the needed exclamation point.

By now, development of the previously untouched areas began in earnest at a very accelerated pace. This "new canvas" upon which to paint caused staff and policy makers to ask the question, "what mistakes have we made in the existing area that we really should learn from and not repeat in this new area?" A clear answer to that question was how stormwater had been handled. In the existing city, it had been handled in the traditional, structured manner of collecting and expediting its departure, with a nodding attempt at retention of the 100 year storm. This had led to the predictable results of localized flooding, localized erosion, and massive stream degradation. This had resulted in a small, but very vocal number of citizen complaints, followed by considerable outlays of City funds.

About the same time, it became clear that the City, along with hundreds of other cities, would be subject to the National Pollutant Discharge Elimination System (NPDES) Phase II of the Clean Water Act. This would clearly require some response on the part of the City. It appeared to staff that this requirement, coupled with Vision 2020 and the ever pressing need to examine the current way of doing business with regard to stormwater in the developing portion of the City, provided an opportunity to launch a comprehensive look at stormwater management in our City.

When developing the parameters for the study, we posed the question "what if stormwater were not defined as a problem to be solved, but an asset upon which to capitalize?" It was this basic approach that led the study team to build upon the findings of Vision 2020 and to examine alternative approaches to stormwater management. While the approaches suggested are not unique and are in fact common in many other parts of the country, they are in fact a major departure in the Kansas City area specifically and in the region generally.

The study developed into a management plan as opposed to merely a cataloging of capital needs. (Bucher, Willis and Ratliff Corporation, 2001) The focus of the study in the developing portions of the city was upon maintaining water quality and avoiding stream
degradation. The work began by conducting a stream asset inventory, which categorizes each stream by type and degree to which it is already impacted. (Patti Banks Associates, 2001) See Figure 2.

Figure 2. Lenexa Stream Inventory Condition Map

VISION 2020

The source document for this study and for all actions taken in regard to the stormwater management program was Vision 2020. In all cases we insisted on maintaining a “line of sight” to this document. In other words, we wanted to be able to show the actions we were contemplating related directly to implementation of goal statements within Vision 2020. Vision 2020 was also the foundation for the creation of the City’s new and innovative watershed management program which anchors itself on vision statements such as the following:

"Maintain a balance between Lenexa’s natural resources and manmade environments, while preserving key natural features and promoting quality growth and development."

"Adopt a philosophy of land conservation as the central organizing principle around which house lots and streets are designed, and in which a sense of “nature” is maintained."

"Conserve urban forests."
Provide for the incorporation of open space within Lenexa's residential developments that preserves and enhances the natural beauty of the environment.

Investigate a regional approach to drainage in the central and western portions of the City, including regional retention facilities for stormwater management.

Provide for generous streamway setbacks with appropriate buffers. Design streamway buffers to accommodate the complementary goals of open space preservation, wildlife habitat, stormwater management, bank stabilization, and erosion control.

Provide educational programs for Lenexa citizens on the advantages of open space design, buffered land uses, and the preservation of the environment....

Use open-space design to conserve our lands, retain a sense of nature, stop suburban sprawl, encourage clustered housing, and develop neighborhood interaction.

In order to promote open-space developments and other imaginative conservation-conscious designs, the City should provide incentives to creative, flexible developers.

Continue to update and expand on the festivals now in place, and seek to develop and expand new festivals.

Consider establishing a utility for stormwater in Lenexa.

A PROGRAM IS BORN

As the study was being developed, three major goals evolved. Those goals have become the three-fold mission of the Rain to Recreation Program. (www.raintorecreation.org)

That mission is as follows:

- Prevent Flooding
- Enhance or maintain water quality
- Provide recreational and educational opportunities

There were two significant Measures of Effectiveness that were established at the outset. First, one way in which we would judge the program's effectiveness was the extent to which the principles and practices being advocated would become integrated throughout the various departments. For Public Works, issues of water quality would be important as all types of capital projects were being designed and constructed as maintenance activities were undertaken. In the Planning Department, land use decisions, development plan review, development regulations and all similar decisions would fully integrate the practices and principles being communicated. Similarly, the Parks Department, Fire Department, Police and others would incorporate this thinking appropriately into their activities. This measure has largely been accomplished. Watershed planning is increasingly the organizing principle that drives many development decisions, is central to the increased emphasis toward habitat preservation and passive recreational trails
along stream corridors by the Park Department, and is a major focus of capital project and maintenance planning in Public Works.

A second Measure of Effectiveness was the extent to which this program would be accepted and adopted regionally for which there are several examples. First, in March 2002, Lenexa was the first city in the Kansas City Metropolitan Area to adopt a Stream Setback Ordinance, proving itself a regional leader in watershed protection. Two years later, the city of Overland Park, Lenexa’s neighbor to the east, also adopted a similar stream setback ordinance. Currently, Johnson County, the county in which Lenexa resides, is also preparing a stream setback ordinance based upon Lenexa’s model for unincorporated Johnson County and will serve as a model for Johnson County municipalities. Other communities in the metropolitan area are also considering stream setbacks including the largest, Kansas City, Missouri; as well as Independence, Missouri; and Jackson County, Missouri in which both cities reside. Second, Lenexa’s Rain to Recreation Program was the initiator and collaborator with the regional planning organization, Mid-America Regional Council (MARC), and the Kansas City Chapter of the American Public Works Association (APWA), to develop regional standards related to water quality. As a result two products were developed and adopted by APWA in November, 2003; (1) a revised APWA Section 5600 Storm Drainage Systems and Facilities Design Criteria with emphasis on open conveyance and stream protection strategies and (2) Manual of Best Management Practices for Stormwater Quality establishing a stormwater quality “level of service” corresponding to the increase in impervious area. www.kcapwa.net/specifications.asp. The Lenexa City Council adopted both APWA products on April 20, 2004, the first municipality in the metropolitan area to do so. Subsequently, many other communities in the metropolitan area are considering these measures after Lenexa has blazed the way and are able to share lessons learned with the region. Third, many communities in the Heartland from the states of Iowa, Missouri, Nebraska, Illinois, Oklahoma and Kansas have viewed the multipurpose vision of Rain to Recreation as a model for their current or future programs.

As stated previously, Lenexa does not have a major nor generalized flooding issue. It was not clear to staff nor the Governing Body that the public would support a major, comprehensive approach to stormwater management. In order to test the premise, a citizen opinion survey was designed and administered by a recognized polling organization. The results of the survey were quite enlightening. Less than 15% of those surveyed had ever experienced any sort of stormwater problem. These were clearly not numbers upon which to build a new program or with which to obtain funding. However, the study went on to discover that a vast majority of people were concerned about water quality. A similar number were also concerned with habitat preservation and would like to see enhanced recreational opportunities associated with such initiatives. The recreational opportunities valued included many passive activities such as walking, bird watching, and similar hobbies. Moreover, 80% indicated a willingness to pay for such a program. This information provided a great deal of encouragement to the Governing Body who then chose to move the program forward.
HIE PROGRAM APPROACH

As part of the comprehensive watershed management study, a comparison of the cost of doing business the traditional way was compared to a more green way of addressing stormwater infrastructure needs. The green approach would save the city and the development community nearly $25 million dollars or approximately 25% of capital cost through the course of build out of the city. This savings would be achieved by (1) regionalization of stormwater management through a watershed based approach (2) prevention versus reaction and (3) the use of less hard infrastructure (i.e., curbs, gutters and pipes). The adopted watershed based approach is illustrated in Figure 3.

Figure 3. Lenexa’s Watershed Management Approach

A DIVERSIFIED FUNDING PACKAGE

Seizing the moment of opportunity, the City embarked on an extraordinary campaign in 1998 to create and fund the city’s stormwater program. The campaign slogan was “Turning Rain into Recreation.” The campaign sought to have the public view stormwater not as a liability but an asset to the community. If managed as such with the appropriate support (i.e., funding) the quality of life of Lenexans would be greatly enhanced. Over a two-year period the educational campaign consisted of numerous public meetings and presentations, news conferences, open house events and the first Lenexa WaterFest. The first annual WaterFest was a festival innovatively designed to inform the general public about project goals, educate citizens about the value of water quality conservation, and to celebrate stormwater as an asset to the community. WaterFest continues to be a popular Lenexa festival. A sales tax campaign led by a
special committee of the Lenexa Economic Development Council (LEDC) was created. The LEDC attended WaterFest and put out campaign signs.

SALES TAX

In August 1999, Lenexans went to the polls to vote on an 1/8 cent sales tax to support the new watershed management program (a.k.a Rain to Recreation) and approved by at 78% recall, this is nearly the same percentage of the residents who consider this issue to be important for the quality of life of Lenexa's citizens. This tax would begin January 2000 and sunset at the end of December 2005. However, it was described to the community from the beginning that the need was for 10 years but the city would come back to the voters in 5 years to demonstrate progress and seek their vote/approval for the final 5 year installment. In 2004, the sales tax was passed again by voters by the same margin, 78%, for 2005 - 2010. Preceding the vote, a glossy, color, tri-fold brochure was created to demonstrate progress and it was placed in the City's newsletter, TownTalk, delivered to all residents of Lenexa. Also, a speakers bureau was formed and provided presentations to neighborhood groups and civic organizations. Lastly, a 5 minute video, summarizing the progress of the Rain to Recreation Program was created and was viewed in all public meetings and distributed to Homeowner Associations (HOA) and Parent Teacher Organizations (PTO). The end result another successful campaign.

UTILITY

In 2000, the City's stormwater utility was also established by the City Council. For months prior to the vote, there were numerous educational sessions with the City Council. Stormwater 101 was conveyed to them on what are now know affectionately as the "Dead Sea Scrolls", a roll of brown paper 4 feet wide by nearly 50 feet in length that adorned the council chamber walls for elected officials and the public to view. In establishing the utility charge, the premise was to keep it administratively simple. There is only one rate for commercial, industrial and all residential. The average single family lot is approximately 2,750 square feet which is considered an equivalent dwelling unit (EDU). The rate in 2000 was $2.50 per month per EDU. The current rate is $4.50. For all other uses, the City's GIS Division calculates the total impervious area and divides it by 2,750 square feet to arrive at the number of EDUs to be charged to the respective customer. The utility fee collection is administered by the County Tax Assessors Office on behalf of the City and is collected annually on the property tax bill.

CAPITAL CHARGE

The last and third leg of the funding stool was the anticipated System "Capital" Development Charge with the premise of growth paying for growth. The system is illustrated in Figures 2 and 3 which reflect a system of protected streamways that include the 100-year floodplain modeled for the built out situation, 5 future lakes, approximately 1 per each subshed ranging in size from 10 - 35 acres of surface water and accompanied by wetlands and infiltration galleries for sustainability of the lakes, and lastly, joint use or multipurpose facilities located in various locations throughout the city providing both
active and passive recreation opportunities. The premier facility is Lake Lenexa at Black Hoof Park, the acreage of which is 35 and 240 acres, respectively, as shown in Figure 4.

**Figure 4. Thirty-five Acre Multi-purpose Lake and Watershed Features**

Nearly $60 million of capital improvements were foreseen through various watershed planning studies for the rapidly developing western Lenexa. (Beezhold, 2004) Based on future impervious area, that would be equivalent to a one time cost of nearly $1,500 per EDU. In initial conversations with the City Council during the birth of the Program, it was anticipated that it would be closer to $750 per EDU. Given a factor of inflation, $850 per EDU was proposed to the Council and adopted in April 2004. This fee is collected at the time of building permit issuance. The passage of this charge was coupled with the adoption of the APWA Manual of Best Management Practices for Stormwater Quality that same month. Bringing these two items forward, together, was critical in the acceptance by the development community and LEDC. Savings associated with the regionalization of the System and the use of green infrastructure instead of curbs, boxes and pipes resulted in an overall net savings to the development community in spite of a new fee.

**CONCLUSIONS**

It is important that a strong vision created by the community is in place as the foundation for any significant municipal program. The ability to build on such a foundation has afforded the City to build the Rain to Recreation Program more aggressively with the community's financial support toward the future they envision in Vision 2020. Public education and participation in the activities of the Program have been key to the continued unwavering support of Lenexa's residents. The citizenry's willingness to pay for these amenities, as demonstrated twice by voter approval of the 1/8 of cent sales tax by a nearly 80% margin, is a clear reflection of that support. Similarly, maintaining a
close relationship with our partners in community building, both developers and home builders, greatly contributed to the acceptance of a new capital fee to support the City’s systems approach and completing the funding package to see Vision 2020 through.

REFERENCES

Bucher Willis and Ratliff Corporation (2001), *Lenexa’s Storm Water and Watershed Management Master Plan Volumes I, II and III*

Patti Banks Associates (2001), *Lenexa Streams Inventory: Inventory of Stream Segment and Related Natural Resources in Western Lenexa*