State of the Municipal Infrastructure—Summary Status Through Midyear 2006

City of Shreveport

Department of Operational Services

H. M. Strong, Director

July 27, 2006

Underlying Assumptions Related to Infrastructure Assets Valuation and Condition

This report represents a summary of a methodology for systematic approach to infrastructure asset management. This systematic asset management involves development and analyses of large amounts of data related to infrastructure assets inventory, condition, and valuation parameters.

Over time these parameters change due to inflation, construction cost increases, deteriorating physical assets, etc. Since it is not possible to continuously and accurately monitor and adjust all the parameters due to these changes, the data reflected herein should be viewed as the best available data resulting from a reasonable amount of data development and analysis.

The trends of data reflected herein should be considered more representative of the state of infrastructure assets renewal rather than the exact numbers contained herein.

Due to recent events that have significantly affected infrastructure assets costs throughout the Gulf South Area, it is the intent of the Department of Operational Services (DOS) to completely re-evaluate and update the infrastructure assets parameters before the next year-end report is issued.

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PROJECTS OF SPECIAL CONCERN

Infrastructure asset management as described herein and as practiced by the Department of Operational Services (DOS), City of Shreveport, involves ongoing analysis of the complete system of components comprising each infrastructure asset category.

The following is a summary of some special or high priority infrastructure projects/concerns which are identified here to highlight their unique characteristics and to emphasize the importance in timing for addressing these projects.

While these specific projects are identified as high priority, the other projects identified as a part of the DOS systematic infrastructure assets improvement management must also be addressed as scheduled to prevent deterioration of the infrastructure categories to levels which will affect the City's ability to meet customer expectations.

The following are descriptions of some of the special infrastructure projects/concerns:

- **CROSS LAKE DAM:**

  The combined usage of the Cross Lake Dam as both a containment structure for raw water supply to the City of Shreveport's only water treatment plant and as structural support for two existing rail lines for Kansas City Southern Railroad provide an unusual situation requiring a unique balance of responsibilities and accountability related to caretaking of the dam structure and surrounding area.

  The dam was built in the 1920's and needs structural improvements to meet current industry and regulatory standards of dam design, construction, and maintainability. It is estimated that approximately $1 million would be required to construct the necessary structural improvements to the dam.

  In addition, the existence of an active railroad on the top of the dam and the structural configuration of portions of the dam combine to provide the potential for accidental release of materials into Cross Lake which could render the lake unusable as a water supply for an extended period. The City does not currently have an alternative raw water supply capable of providing peak flow water quantities. The railroad/dam configuration also provides a vulnerable sabotage target. It is estimated that approximately $3 million would be required to construct alternative support structures and move the rail lines further from the edge of Cross Lake.

- **INCREASED WATER TREATMENT FACILITY CAPACITY:**

  The T. L. Amiss Water Treatment Facility is aging and requires significant investment to maintain its treatment capacity of 90 million gallons per day (mgd).

  One management alternative for assuring the City adequate water treatment capacity for the next 20 to 50 years would be to construct additional water treatment capacity of between 30 mgd and 60 mgd. By constructing two 30 mgd water treatment plants the City could see relief in water pressure issues in the southern part of the City as well as giving redundancy (of water treatment capacity) in case one plant should become inoperable. These two plants are estimated to cost approximately $150 million each to construct.

  DOS is in the process of performing alternative water treatment pilot testing to provide data for use in optimizing the capacity size; source raw water; and physical location of a second water treatment plant. The estimated cost of this preliminary pilot testing of water treatment technologies and associated engineering analysis is $450,000.

- **SOUTHEAST REGION WATER PRESSURE/SUPPLY PROBLEMS:**

  Low water pressure in this area is due to a combination of inadequate water transmission capacity to specific zones of the water distribution system and inadequate pumping/pressuring capacity for specific elevation differentials in some of these zones.

  Included in the near-term projects which have been identified to address these low water pressure problems are the following three projects:

  1) 36” Water Distribution Main—Walker Road and Inner Loop Parkway (from Walker Road and Meriwether to St. Vincent Avenue):

     The purpose of this project is to install approximately 21,000 linear feet of 36” water main from the existing 36” water main at Walker Road and Meriwether to the existing 16” main at St. Vincent Avenue. This will require the acquisition of servitudes/Right-of-Way and Special Permit Agreements from DOTD and other property owners along the proposed Route as recommended in the 1999 Water Distribution System Report prepared by Black and Veatch LLP. This main will provide a stronger hydraulic connection between Amiss WTP and the Southeast portion of Shreveport. The estimated project budget is $4,935,000.

2) Inner Loop Pump Station and 36” Inner Loop Parkway Water Distribution Main (from St. Vincent Avenue to Bert Kouns Industrial Loop):

A new ground storage and a pumping facility to serve southeast Shreveport. The facility should be located along the Inner Loop Parkway, just west of the Industrial Loop and should be constructed on high ground to reduce pumping head requirements and minimize pumping costs. The first stage of this facility should include two 10 mgd pumps, one 5 mgd pump, a 5 million gallon storage reservoir, and rechlorination facilities. This will require property acquisition for the facility. The estimated project budget is $6,500,000.

The scope of the second portion of this work is a project to include installing approximately 10,000 linear feet of 36” water main along the Inner Loop Parkway from the proposed 36” main at St. Vincent Avenue and the Inner Loop to Bert Kouns Industrial Loop. This will require the acquisition of servitudes/Right-of-Way and Special Permit Agreements from DOTD and other property owners along the proposed route as recommended in the 1999 Water Distribution System Report prepared by Black and Veatch LLP. This main will provide a stronger hydraulic connection between Amiss WTP and the southeast portion of Shreveport. The estimated project budget is $2,350,000.

3) 60” Water Main from Amiss Water Plant to West College:

The purpose of this project is to install approximately 6,200 linear feet of 60” water main from Amiss High Service Pumping Station to the existing 60 inch water main on West College. This will require the acquisition of servitudes/Right-of-Way from KCS Railroad and other property owners along the proposed route as recommended in the 1999 Water Distribution System Report prepared by Black and Veatch LLP. The estimated project budget is $4,650,000.

Subdivisions in the high-growth area of southeast Shreveport are particularly vulnerable to continuing low water pressure problems. It is recommended that no additional subdivisions be added to the water system in this area until adequate water pressures are realized through these projects.

EXECUTIVE SUMMARY

HISTORY

Infrastructure asset management has been given understandable emphasis at the national level (U.S. Environmental Protection Agency (EPA), the General Accounting Office (GAO), American Society of Civil Engineers (ASCE)) and at the local and state levels. [i]

The City of Shreveport developed and implemented an infrastructure asset management program which dates to 1997 and makes it one of the earliest cities to have implemented a comprehensive asset management approach. [ii]

The emphasis on infrastructure asset management is being driven by the widely accepted fact that cities historically have managed their infrastructure poorly. This has resulted in a national concern for municipal infrastructure which is in poor condition and is continuing to deteriorate to the point of negatively impacting the economic strength of cities, as well as health concerns of citizens. [iii] [iv]

Asset management is not new, but is considered a relatively new concept when applied to municipal infrastructure.

In its simplest form, infrastructure asset management is a systematic program to inventory and evaluate the condition of infrastructure assets combined with a management and improvements program which integrates operations and maintenance with capital renewal/improvements.

When implemented and managed properly, an infrastructure assets management program can provide a municipality with an infrastructure which meets expected performance levels **at the lowest possible cost**.

Minimization of expenditures on municipal infrastructure is not the least cost alternative to infrastructure management—it only defers needed expenditures until infrastructure assets' failure require replacement—almost always at a much greater cost due to parts, labor, method of repair and collateral damages. These increased costs are often hidden but are real costs that unnecessarily increase the water and sewer rates that municipal customers pay and negatively affect the quality of water and sewer services provided to customers.

The Department of Operational Services is in the process of implementing a comprehensive infrastructure assets management program for the water and sewer infrastructure that was initiated in 1997.

BACKGROUND

This briefing document is to summarize the management principles underlying the infrastructure assets management approach used by the City of Shreveport; to report the current status of the condition of the infrastructure (and the infrastructure management system); and to make recommendations about the most cost effective actions which will continue to improve the municipal infrastructure.

In 1997 and 1998, a comprehensive infrastructure asset management program was developed and implemented for the water and sewerage department. In the interim period, numerous reports on the status of the water and sewer infrastructure and the progress of the asset management program have been produced for the U. S. Environmental Protection Agency (EPA) and the Louisiana Department of Environmental Quality (DEQ), and for internal City use.

In 2003, the Infrastructure Committee of the City Council requested that streets and drainage be added to the monitoring of infrastructure status.

Although most of the following detailed comments relate to the management of the water and wastewater infrastructure asset management program, the general approach applies to streets and drainage as well. The July 6, 2004, memorandum from H. M. Strong goes into great detail concerning water & sewerage infrastructure and fiscal responsibility.

The primary management objective for the water and wastewater municipal infrastructure is to reach and maintain a sustainable level of municipal infrastructure operation, maintenance, and renewal which:

- Provides planned service levels of the water and wastewater infrastructure at the most cost-effective user rates.

- Provides service levels which contribute to attracting and retaining residential, business, and commercial water and wastewater customers.

The following management tools, which were developed and initiated in 1997 and are currently in various stages of implementation, are necessary to achieve these objectives:

- Improved budget preparation, analysis, and management which allow tracking of costs for water and wastewater operations and assets.

- Development of a finance plan which links the water and wastewater operating budget with the capital budget.

- Implementation of an asset inventory system.

- Development and implementation of an asset condition evaluation system.

- Development and implementation of a comprehensive computerized management information system for the identification, prioritization, and monitoring of infrastructure capital improvements projects.

BASIC ELEMENTS OF AN INFRASTRUCTURE ASSETS MANAGEMENT PROGRAM

The most basic tools necessary for implementation and utilization of an infrastructure assets management program consist of:

- A system which provides the ability to inventory the assets. This enables the management of the infrastructure as a whole with the implementation of preventive maintenance and to help avoid a reactive failure repair approach to asset replacement.

- A condition assessment system which relates assets condition to expected service levels. This condition assessment system must look at the infrastructure systems as whole units rather than as a conglomeration of unrelated individual assets. This allows decisions on trade-offs between asset maintenance and asset replacement.

- A systematic, quantitative system for evaluating costs of operation/maintenance compared with asset renewal/replacement. This is an aspect of asset management which utilizes data to make management decisions concerning costs of operation/maintenance versus renewal/replacement of assets.

Most cities will say they perform all of the above at least in the form of subjective consideration by management personnel without a formalized asset management approach. However, if this subjective management approach was effective, most municipalities would not have the deteriorated infrastructures they currently have.

An infrastructure assets management program systematically and quantitatively utilizes all of the above tools to continually assess and improve the infrastructure as a whole system (to maintain operability levels) rather than considering the infrastructure as independent discrete assets which are repaired as they fail.

STATE OF THE MUNICIPAL INFRASTRUCTURE

The following sections summarize the status of investment in the water, sewer, streets, and stormwater drainage infrastructure in the City of Shreveport. The graphs and the data represented therein are updated through mid-year 2006.

MAJOR COMPONENTS OF MUNICIPAL INFRASTRUCTURE

The municipal infrastructure as defined herein consists of the following three major categories:

1) Water and wastewater infrastructure.

2) Roadways infrastructure.

3) Stormwater drainage infrastructure.

INFRASTRUCTURE ASSETS LIFE-CYCLE MANAGEMENT

Asset life-cycle management involves optimizing the following three inter-related costs of a capital asset over its useful economic life:

- Initial capital cost of an asset.
- The cost of operating and maintaining (O&M) that asset over its useful (economic) life.
- The replacement cost of that asset at the end of its economically useful life.

A critical aspect of infrastructure assets management is that maintenance and capital renewal of individual assets are considered interrelated. Maintenance of the assets should be performed until the point where it is more cost effective to replace or rehabilitate the asset to retain the asset's expected operability.

Infrastructure asset management, when performed properly, looks at systems and subsystems as a whole and focuses investment in maintenance and capital replacement on the weakest links in the system.

TOTAL MUNICIPAL INFRASTRUCTURE

For the purposes of this report, the total municipal infrastructure is considered to be comprised of (1) water and sewer infrastructure assets; (2) roadways infrastructure assets; and (3) stormwater drainage infrastructure assets.

Following are brief discussions with graphs of the annual investment expenditure in infrastructure assets by various categories.

Discussion and explanation of specific asset categories are included with each asset category investment status.

In addition, comments related to the audit of the status of infrastructure asset management for the water and wastewater infrastructure are included.

When reviewing these graphs, the following general guidelines should be noted:

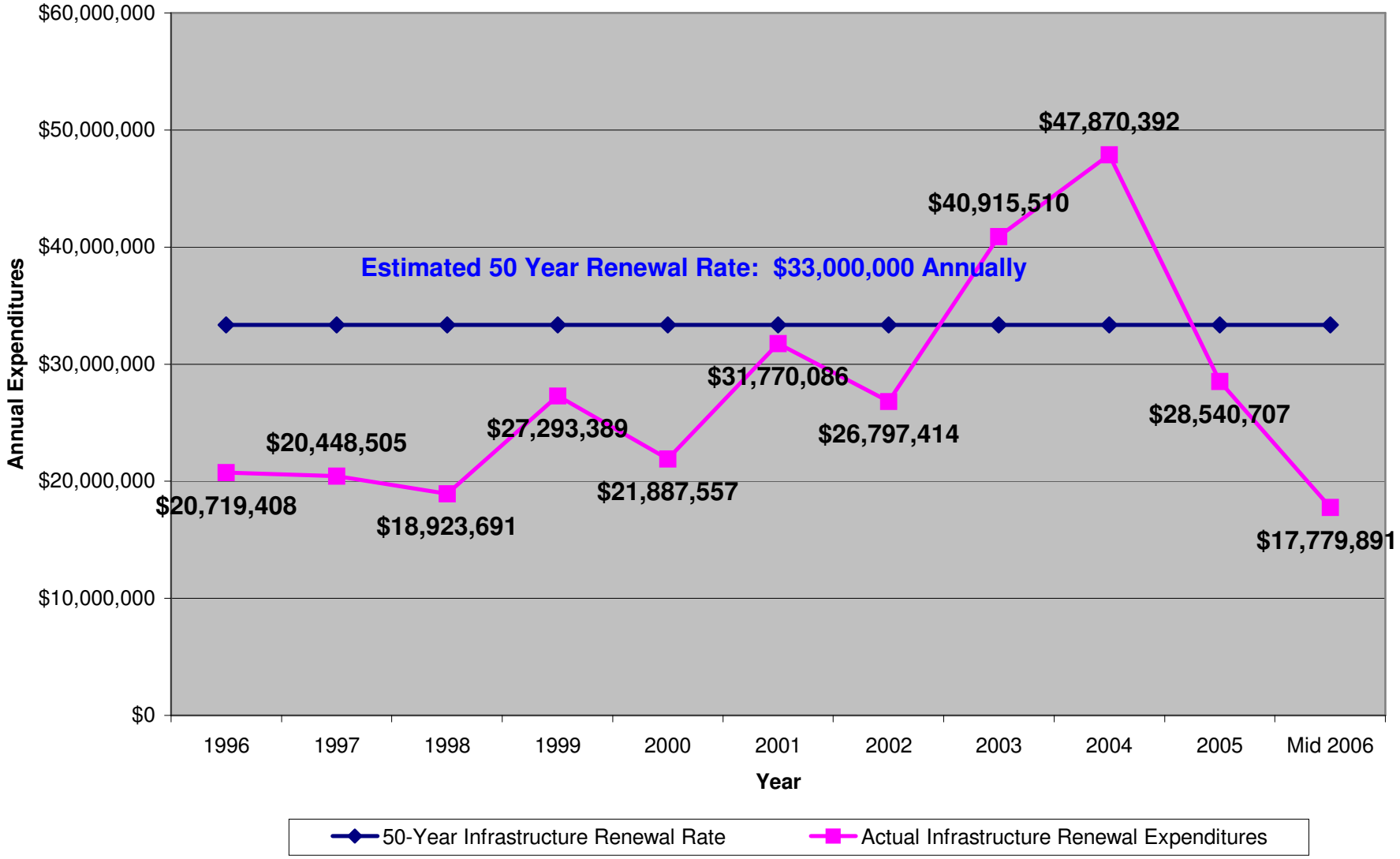
1) The intent of the graphs is to indicate the general investment by infrastructure asset category related to the target annual infrastructure asset renewal rate.

2) The annual infrastructure asset renewal rate is intended to represent a best estimate of the percentage of infrastructure assets which become economically inoperable each year and need to be replaced. The estimated useful economic life of infrastructure assets (other than rotating or other high-wear equipment) is 50 years. Therefore, a first estimate of infrastructure asset annual renewal to replace assets becoming inoperable is 2%.

3) The annual asset renewal rate (2% as indicated above) is applied to the estimated infrastructure assets replacement value. Conservative infrastructure asset replacement values have been used to calculate an estimated annual obsolescent rate of $33 million (for total municipal infrastructure).

4) The better the infrastructure asset management system implemented by the City, the closer to the lower ($33 million) annual investment figure the City will be able to use while improving and sustaining its infrastructure at planned operability levels.

TOTAL MUNICIPAL INFRASTRUCTURE ANNUAL RENEWAL



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WATER AND SEWER INFRASTRUCTURE

Water and sewer infrastructure assets are physical structures with related equipment, piping, and appurtenances which treat and transport water and wastewater.

The level of water and sewer service is highly dependent upon the condition and functional capability of the water and sewer infrastructure assets.

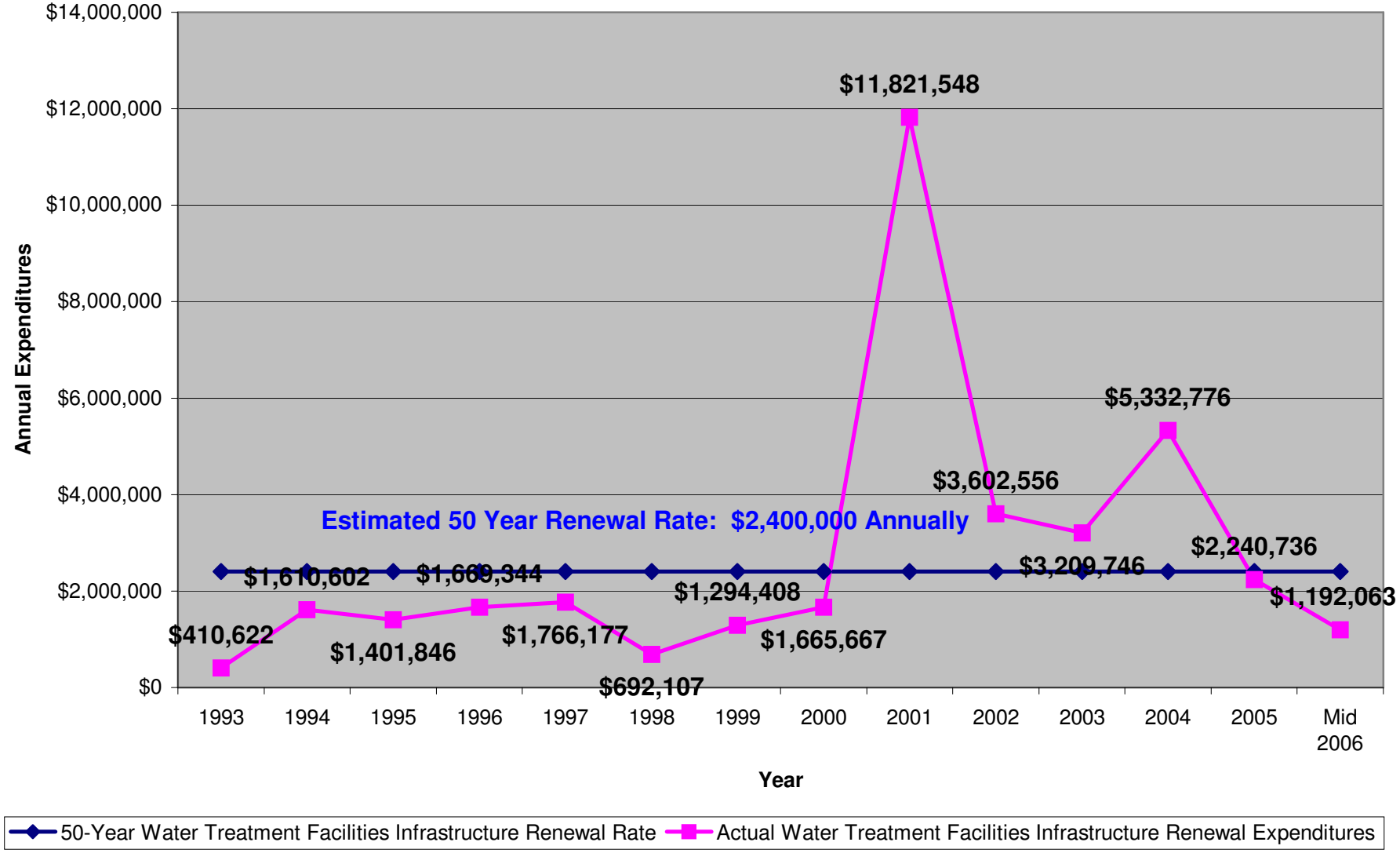
CATEGORIES OF WATER AND SEWER INFRASTRUCTURE ASSETS

The four major categories of water and wastewater infrastructure assets are:

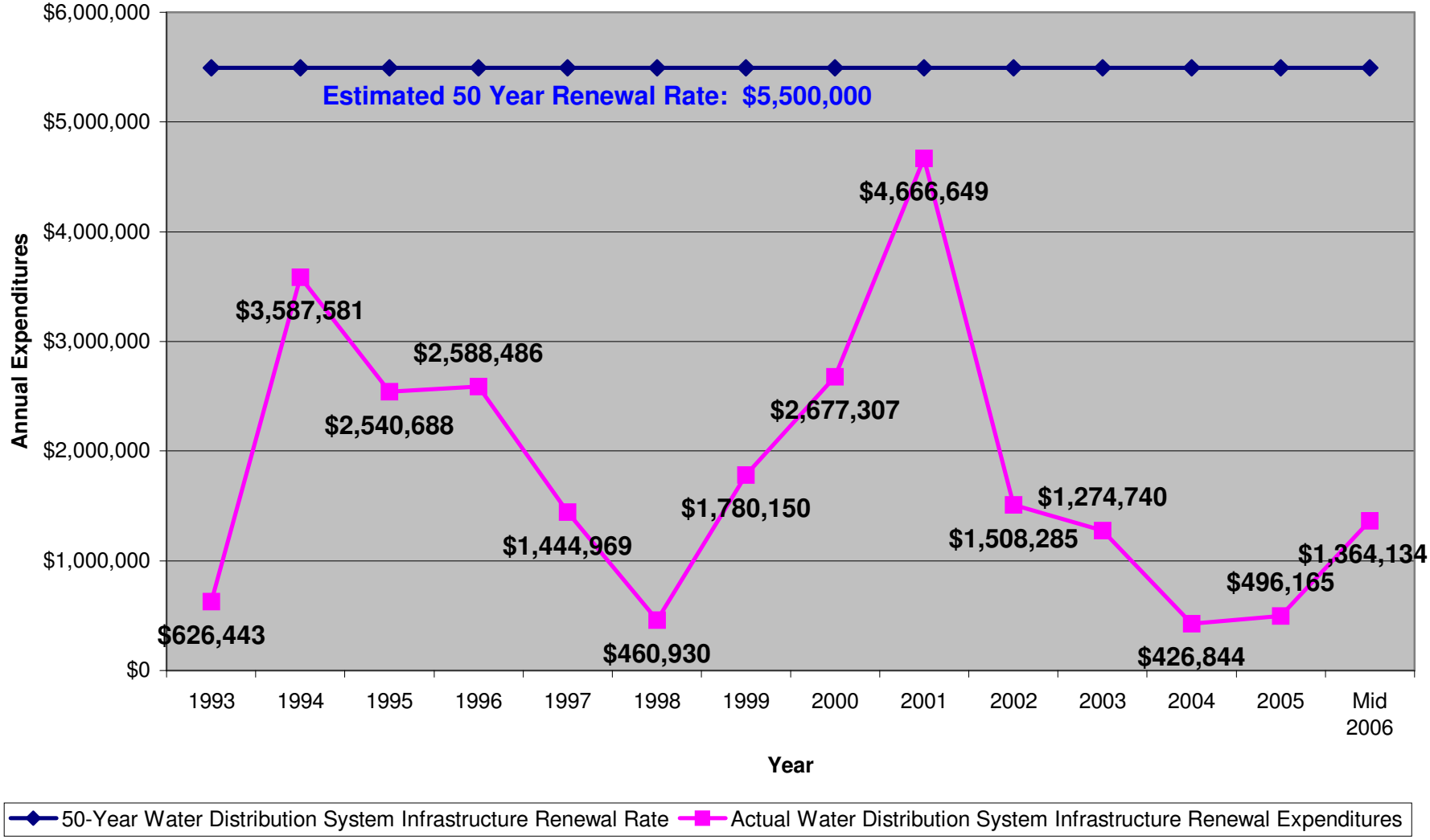
1) Water Supply and Treatment Facilities.
2) Water Distribution System (Piping and Pumping).
3) Wastewater Collection System (Piping and Pumping).
4) Wastewater Treatment Facilities.

The following graphs indicate the historical investment in infrastructure by the above water and wastewater infrastructure asset categories.

ANNUAL WATER TREATMENT FACILTIES INFRASTRUCTURE RENEWAL RATE



ANNUAL WATER DISTRIBUTION SYSTEM [WATER PIPING] INFRASTRUCTURE RENEWAL RATE



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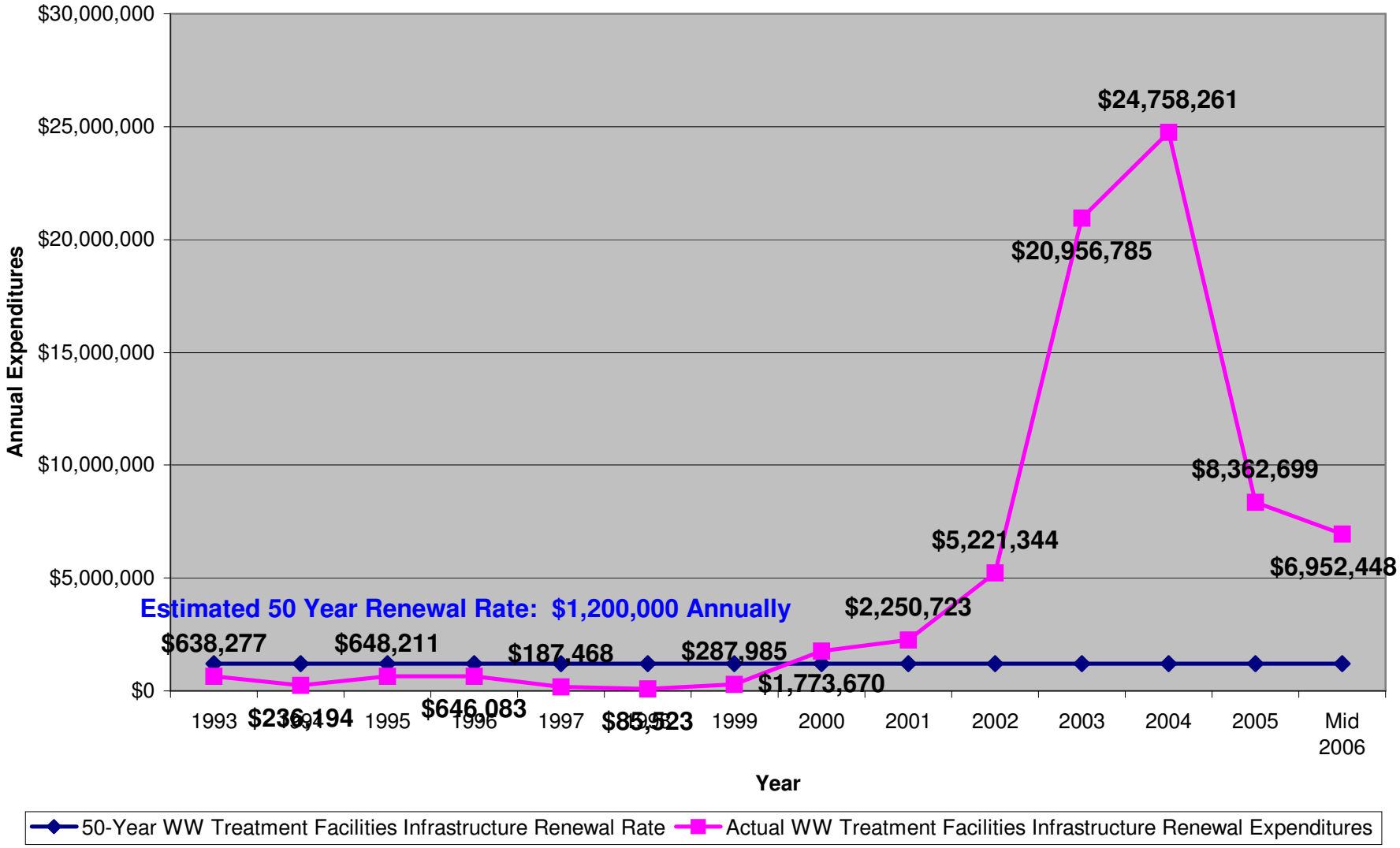
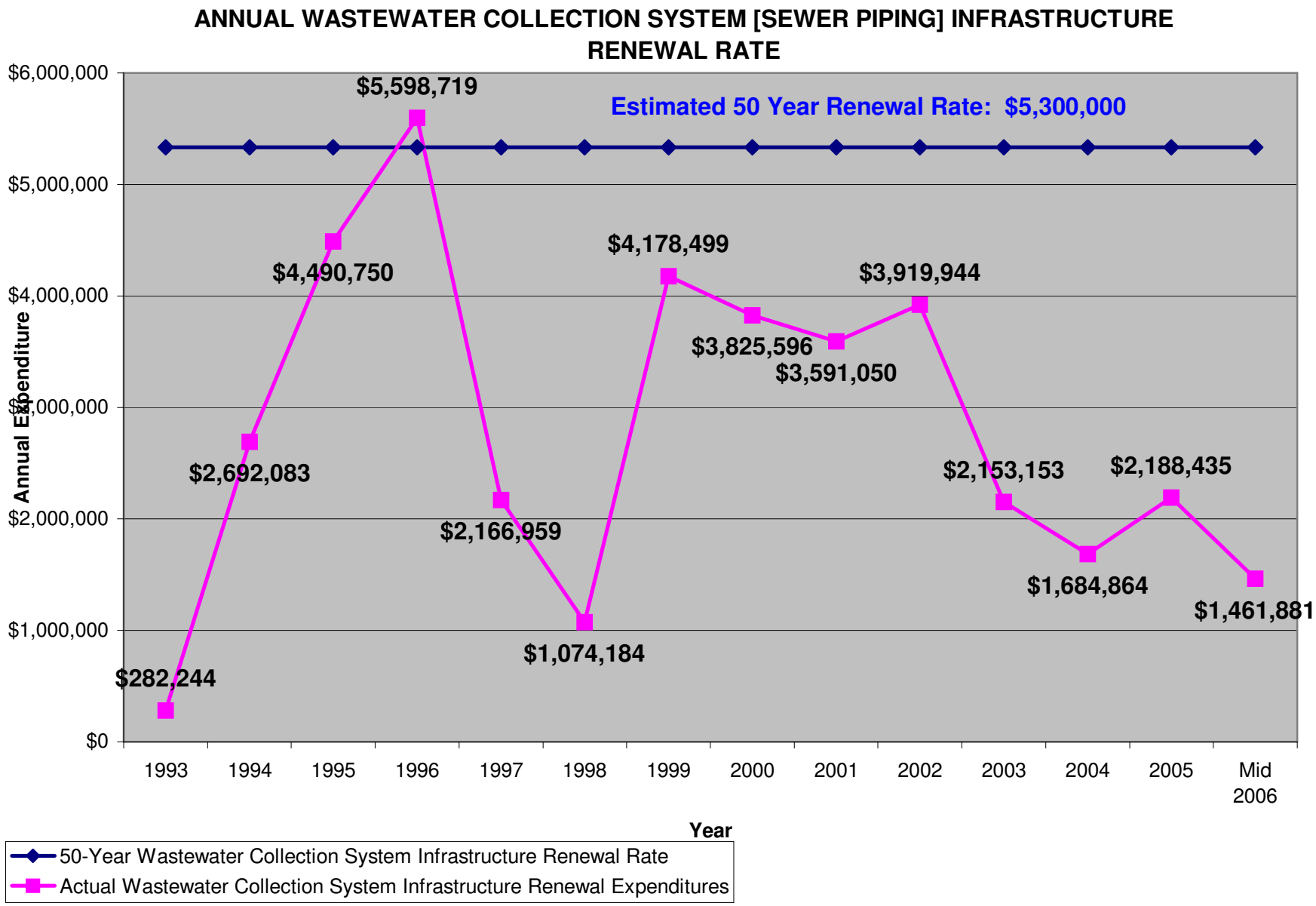
ANNUAL WASTEWATER TREATMENT FACILITIES INFRASTRUCTURE RENEWAL RATE




ANNUAL WASTEWATER COLLECTION SYSTEM [SEWER PIPING] INFRASTRUCTURE RENEWAL RATE
Estimated 50 Year Renewal Rate: $5,300,000
$6,000,000
$5,000,000
$4,000,000
$3,000,000
$2,000,000
$1,000,000
$0
Annual Expenditure
$282,244
$2,692,083
$4,490,750
$5,598,719
$2,166,959
$1,074,184
$4,178,499
$3,825,596
$3,591,050
$3,919,944
$2,153,153
$1,684,864
$2,188,435
$1,461,881
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
Mid 2006
Year
50-Year Wastewater Collection System Infrastructure Renewal Rate
Actual Wastewater Collection System Infrastructure Renewal Expenditures

Rev 3

Roadways Infrastructure

Roadways infrastructure assets are the physical road structures with related bridges, overpasses, and appurtenance which are used by vehicular traffic.

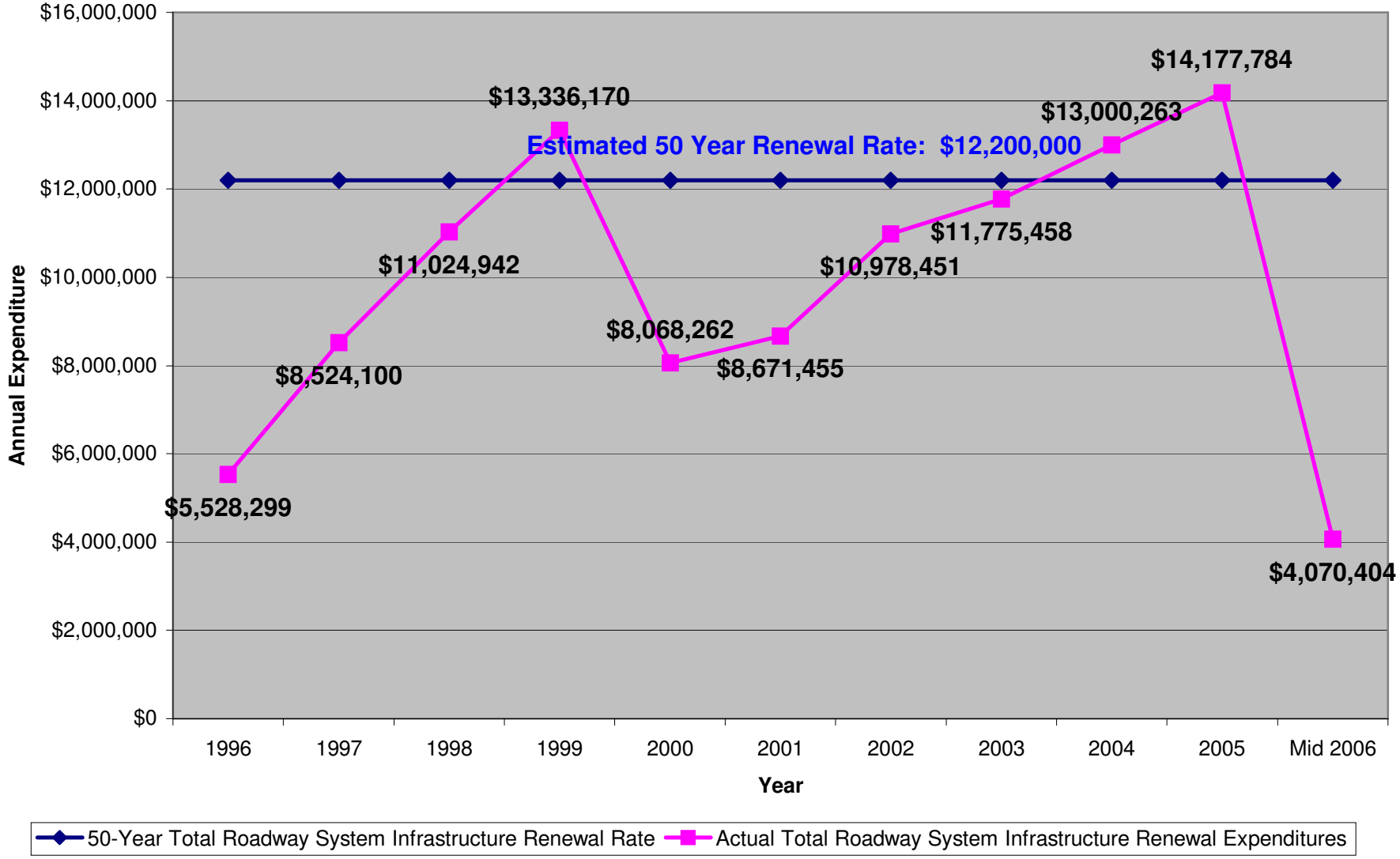
The level of operability as reflected by such parameters as lost time due to alternative routing for detours is highly dependent upon the condition and functional capability of the roadway infrastructure assets.

Categories of Roadway Infrastructure Assets

The two major categories of roadway infrastructure assets are (1) concrete roadways and appurtenances and (2) asphalt roadways and appurtenance.

The following is a graph of roadway annual investment.

TOTAL ROADWAY SYSTEM ANNUAL RENEWAL RATE



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Stormwater Drainage Infrastructure

Stormwater drainage infrastructure assets are the physical structures which convey stormwater to waterways.

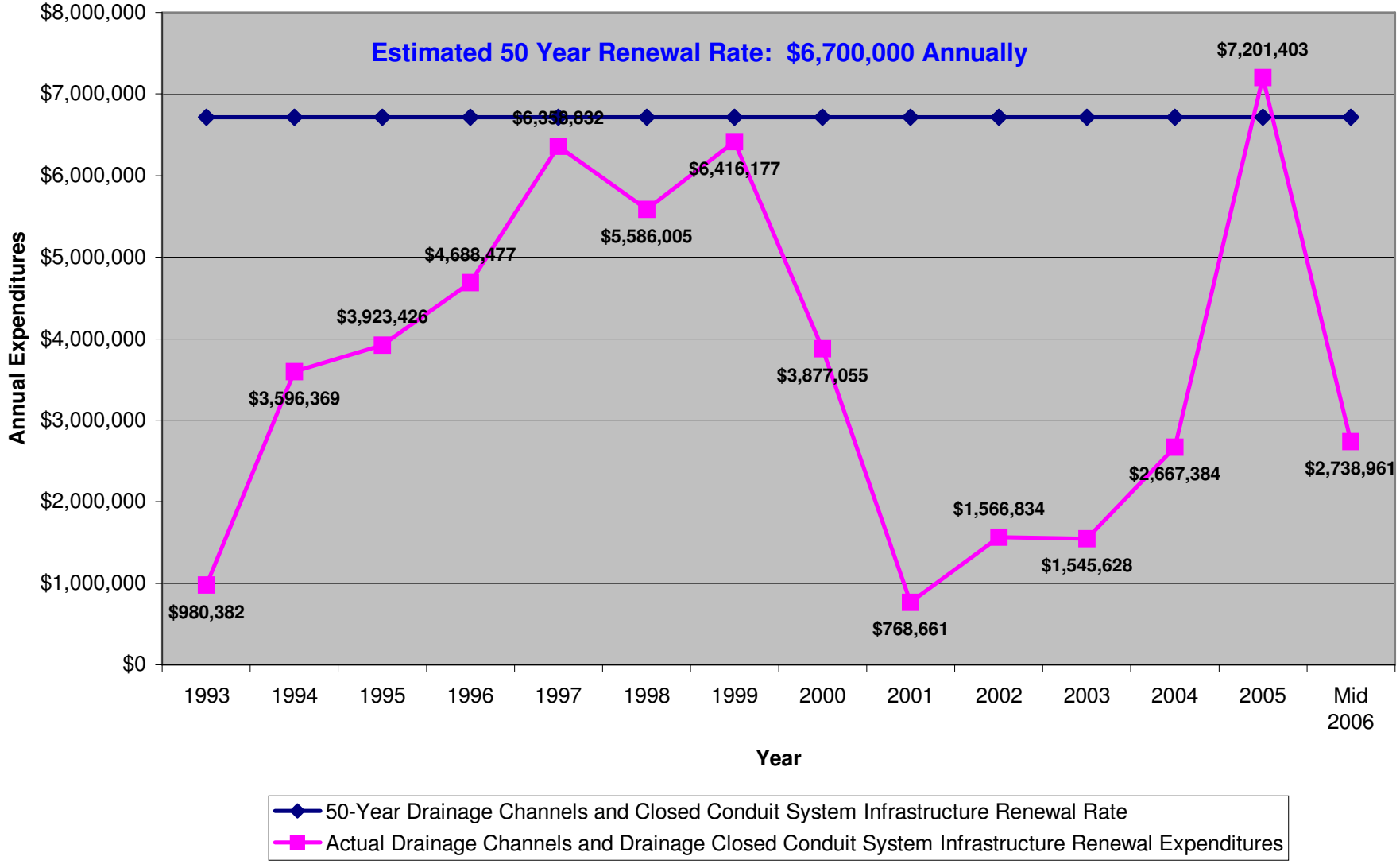
The level of operability as reflected by such parameters as annual liability costs due to flooding is highly dependent upon the condition and functional capability of the stormwater system.

Categories of Stormwater Infrastructure Assets

The major categories of stormwater infrastructure assets are (1) open ditches and channels and (2) closed conduit, pumping, and piping systems.

The following is a graph of stormwater infrastructure annual investment.

TOTAL DRAINAGE INFRASTRUCTURE RENEWAL RATE



Finance Plan

In 1997 and 1998, a finance plan was developed for the water and sewerage department as an integral part of the implementation of the water and sewerage infrastructure asset management program. This finance plan was updated and correlated to the Water and Wastewater Infrastructure Master Plan which was completed in 1999. The purpose of this finance plan was to provide a basis for budget planning and management of:

- Personnel and physical resources,
- Capital investment levels, and
- Water and sewer rates.

The finance plan analysis allowed the evaluation (i.e., sensitivity analysis) of the effects of the interrelationships among the above three budget factors for various levels of revenues and costs.

Conclusions/Recommendations

The City of Shreveport municipal infrastructure assets are currently in unsustainable condition due to previous decades of neglect.

To reach a sustainable level of infrastructure condition, the City needs to:

1) Finalize implementation of management tools and systems to allow systematic management of the infrastructure (integrated management of operations, maintenance, and capital improvements).

2) Assure that operations/maintenance management of assets as well as ongoing systematic evaluation of operability (i.e., adequate service level) of assets are included as integral parts of the decision process in the determination of capital improvements.

3) Invest to make infrastructure asset improvements to essentially 'catch up' on previously neglected improvements.

   As provided in documents previously, DOS recommends an accelerated $130 million water/sewer infrastructure investment program to restore the water/sewer infrastructure to a sustainable condition which meets service level requirements for customers. Of this $130 million, $75 million was approved by the City Council in 2004.

4) Initiate systematic annual renewal investment of infrastructure assets which replaces assets that no longer provide an adequate service level (i.e., annually replace those assets whose condition no longer allow them to be adequately functional).

As provided in documents previously and as reflected in the pertinent following graphs, it is estimated that approximately $14 million to $15 million annually is needed to replace water/sewer infrastructure assets which become operationally obsolete.

5) Implement a budget which reflects a water and sewer rate structure which supports all of the above aspects of cost-effective, systematic infrastructure assets management.

6) Potential Funding Sources:

- Impact fees for water, sewage, and roadway infrastructure.
- Implementation of a stormwater utility enterprise fund.
- Implementation of a dedicated sales tax for infrastructure.
- Implementation of a dedicated property tax for infrastructure.
- Implementation of a taxing authority around Cross Lake for upkeep of the lake.
- General Obligation Bonds issued for water and sewerage infrastructure.

[i] 'Water Infrastructure: Comprehensive Asset Management Has Potential to Help Utilities Better Identify Needs and Plan Future Investments', GAO: United States General Accounting Office: Report to the Ranking Minority Member, Committee on Environment and Public Works, U. S. Senate, March 2004.

[ii] 'State of the Water and Sewer Infrastructure Report: City of Shreveport, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005', by M. G. Hogan, P.E.

[iii] Report Card for America's Infrastructure, 2003 Progress Report: An Update to the 2001 Report Card, American Society of Civil Engineers.

[iv] Report Card for America's Infrastructure, 2005 Progress Report. An update to the 2003 Report Card, American Society of Civil Engineers.

ATTACHMENT 1

PROPOSED DRAINAGE IMPROVEMENT PROGRAM—REVISION NO. 1

INTER-OFFICE MEMORANDUM
City of Shreveport

DEPARTMENT OF OPERATIONAL SERVICES
Office of the City Engineer

Phone: (318) 673-6000 **Fax: (318) 673-6004**

DATE: **June 1, 2006**

TO: **H. M. Strong**
Director of Operational Services

FROM: **Ron Norwood, P.E.**
City Engineer

SUBJECT: **Proposed Drainage Improvement Program – Revision No. 1**

Attached are our recommendations for what should be included in a future Drainage Bond-Issue Program. We have detailed project lists to accommodate proposed $30, $60, and $81 million programs.

I am available to discuss this at your convenience.

Ron Norwood, P.E.
City Engineer

RN:lsm

Attachments

CITY OF SHREVEPORT
DEPARTMENT OF OPERATIONAL SERVICES
DRAINAGE IMPROVEMENT PROGRAM

$81,000,000

DRAINAGE IMPROVEMENTS:	COST
Airport Ditch Repairs (Wyngate Drive)	**$1,300,000**
Pierremont Park Ditch – Gilbert Lateral	**1,500,000**
Gilmer Bayou Overflow Bridge West of Dean Road At Colquitt (Reduce flooding in Southern Oaks area)	**1,380,000**
Brush Bayou Clearing & Dredging Inner Loop to Flournoy-Lucas Road	**3,700,000**
Brookwood Ditch (Replace Hawthorne Street crossings)	**420,000**
Summer Grove Ditch Repairs (Baird Road to Williamson Way)	**1,300,000**
Jones-Mabry Lateral Paving (Improves major earthen ditch in MLK area)	**1,840,000**
MLK Ditch Paving (Linear Street upstream to existing paved section – 1994)	**1,610,000**
Juniper Place-River Oaks Ditch Improvements (Improve an existing earthen ditch to accommodate future Development in the area)	**650,000**
Green Forest Drive Ditch Paving	**160,000**
Albert Street Drainage (from Youree east to Anniston Street)	**680,000**

Box Culvert/Ditch along Bert Kouns from Town South Apartments to Sand Beach Bayou	**980,000**
Kingston Road Drainage **North of Williamson Way, South of Willow Drive**	**560,000**
Red Stone Ditch Paving **MLK Area from Shreveport-Blanchard Road to MLK Drive**	**980,000**
Earthen Ditch from Bert Kouns to Cromwell Drive (2500 l.f.)	**650,000**
9200 Block Dawnridge Drive Drainage (Industrial Loop to Cana)	**580,000**
Baywood Drie Drainage (Dean Road East)	**250,000**
Norris Ferry/Harts Island Study Projects (Estimated needs for future projects in the area)	**5,000,000**
100 Block Oakridge Drainage	**1,080,000**
Gilmer Bayou Ditch Repairs at Quail Ridge Bridge	**200,000**
North Highland Area Drainage (Empire Circle, Dearborn, Deer Park, Timber Lane, Wildwood Ave.)	**850,000**
Wintergarden Ditch Paving Wintergarden to North Market (Approximately 1100 l.f. 8' x 4' ditch paved)	**675,000**
Archer Drainage (3300 block of Youree to the 100 block of Archer)	**860,000**
Brush Bayou Paving (Mansfield Road @ Southern Pacific RR South to Mopac RR)	**12,800,000**
Pleasant Hill Road Drainage (Ellerbe West Drainage Improvements)	**1,350,000**
Broadacres Road Drainage (70th Street to south of Westwood)	**900,000**
Bickham Bayou Paving (Pines Road @ Tierra to City Limits)	**7,000,000**

MLK Ditch Paving (Jones Mabry to North of Willis)	**5,000,000**
Acadiana Ditch Paving Stonebriar to Prestonwood	**450,000**
3802 West College Drainage	**120,000**
Jewella to Tate Drainage Improvements (Morningside Baptist Church)	**350,000**
Baxter Street/Denton Drainage Improvements Subsurface drainage system approximately 540 l.f.	**250,000**
Fernwood-Valleyview Ditch Paving Airport Ditch to Timberwood Drive	**1,150,000**
Green Terrace Ditch (Ardis Taylor Road to Givens Mobile Home Park, 2000 l.f.)	**1,100,000**
7100 Block Glenleaf Drainage	
(a) Paving ditch & 1500 l.f.	**865,000**
(b) Earthen from Church to Glenleaf Mobile Home	**310,000**
Judy Lane Ditch (at Watercrest Drive) Re-align earthen ditch within R.O.W. & erosion protection	**350,000**
McAdoo Street, Coronado, Birch, & Normandie Drive Drainage Improvements	**1,100,000**
TOTAL	**$60,300,000**

CITYWIDE PROGRAM

Citywide Drainage Improvements	**$10,000,000**
Drainage Ditch Repairs (Citywide to maintain paved drainage infrastructures)	**7,800,000**
Purchase of Flood Prone Properties (Citywide)	**2,000,000**
FEMA Updates & BFEs for "A" Zones	**900,000**
TOTAL	**$20,700,000**

SUMMARY

Drainage Improvements	**$60,300,000**
Citywide Program	**20,700,000**
TOTAL	**$81,000,000**

ATTACHMENT 2

PROPOSED TRANSPORTATION PROGRAM—REVISION NO. 1

INTER-OFFICE MEMORANDUM
City of Shreveport

DEPARTMENT OF OPERATIONAL SERVICES
Office of the City Engineer

Phone: (318) 673-6000 **Fax: (318) 673-6004**

DATE: **June 1, 2006**

TO: **H. M. Strong**
Director of Operational Services

FROM: **Ron Norwood, P.E.**
City Engineer

SUBJECT: **Proposed Transportation Program – Revision No. 1**

Attached are our recommendations for what should be included in a future Transportation/Bond-Issue Program. We have detailed project lists to accommodate proposed $73, $196, and $452 million programs.

I am available to discuss this at your convenience.

Ron Norwood, P.E.
City Engineer

RN:lsm

Attachments

CITY OF SHREVEPORT
DEPARTMENT OF OPERATIONAL SERVICES
TRANSPORTATION PROGRAM

$452,000,000

ROADWAY IMPROVEMENTS:	COST
Ellerbe Road Widening (3 Lanes), Including intersection @ Norris Ferry Road Norris Ferry to Flournoy-Lucas	**$ 7,000,000**
Linwood Avenue Widening (4 Lanes) Industrial Loop to Southern Loop	**10,000,000**
Kings Highway Corridor Improvements Youree to I-49 (widen & off-street parking)	**7,500,000**
Flournoy-Lucas Road Widening (3 Lanes) Kingston to Linwood	**4,500,000**
Pines Road Widening (3 Lanes) 70th to Bert Kouns	**6,500,000**
E. Southfield Extension to East 70th New Roadway	**3,200,000**
Buncombe Road Widening (3 Lanes) West 70th to Bert Kouns	**2,300,000**
Extension of LA 526 (Ind. Loop) Jefferson Paige to Greenwood Road	**7,250,000**
Wallace Lake Road Widening (5 Lanes) Bert Kouns to Southern Loop	**13,600,000**
Southern Loop Extension Linwood to LA 526 (Four-Lane w/Median)	**35,400,000**
Kingston Road Extension (3 Lanes) Williamson Way to Southern Loop	**3,300,000**
LA 3132; Flournoy-Lucas to Highway 1 (Four-Lane w/Median)	**32,000,000**

Williamson Way Extension Kingston to Linwood (asphalt with shoulders)	**1,500,000**
Roy Road Widening (4 Lanes) Shreveport-Blanchard to Old Mooringsport	**9,300,000**
Fant Parkway Extension Mayfair to Ravendale (Four-Lane w/Median)	**21,000,000**
South Lakeshore (3 Lanes) Lakeshore Drive to Lakeshore Drive	**4,200,000**
Curtis Lane (3 Lanes) Greenwood to Lakeshore	**2,600,000**
Red River Crossing @ 70th Street (New Bridge) (Est. $25,000,000)	**5,000,000**
Knight Street Preston to Frontage Road	**3,800,000**
Joe Lewis Reconstruction MLK to Jameson	**850,000**
Jackie Robinson MLK to Kelsey	**500,000**
Miriam Street Wardlow to Jessica	**200,000**
Sarah Lane Hoyte to Mackey	**650,000**
Total…….	**$182,150,000**

BRIDGES:

Murphy Street Viaduct (remove/replace west abutment)	**$ 1,000,000**
Millicent Avenue Extension/Bridge (3 Lanes) Creswell to Camelback	**2,000,000**
Linwood Overpass (Replacement)	**13,000,000**
US 171 Midway Railroad Bridge (Improve drainage)	**1,000,000**
Stoner Avenue Overpass (Replacement) Over Line Avenue	**10,000,000**
S. Lakeshore Bridge Replacement (2)	**$ 1,000,000**
Total……....$	**28,000,000**

INTERSECTION IMPROVEMENTS:

East 70th @ Gilbert Add turn lanes	**$ 750,000**
Line @ Ockley Add turn lanes	**1,250,000**
Hollywood @ Mansfield Add turn lanes	**1,000,000**
East 70th @ Creswell Add turn lanes	**750,000**
Kings @ Hearne Fairgrounds Entrance Improvements	**1,600,000**
Fant Parkway @ Knight Street Extension	**2,500,000**
Total…….$	**7,850,000**

GENERAL CITYWIDE

• Sidewalk Program	**$ 35,000,000**
• Traffic Signals	**30,000,000**
• Street Lighting	**7,000,000**
• Railroad Crossing	**7,000,000**
• Neighborhood Street Improvements	**125,000,000**
• Economic Development	**15,000,000**
• GIS Program	**15,000,000**
Total……$	**234,000,000**

SUMMARY

ROADWAY IMPROVEMENTS	**$ 182,150,000**
BRIDGES	**28,000,000**
INTERSECTION IMPROVEMENTS	**7,850,000**
GENERAL CITYWIDE	**234,000,000**
Total Program……$	**452,000,000**

ATTACHMENT 3

PROPOSED WATER & SEWER BOND ISSUE— REVISION NO. 3

INTER-OFFICE MEMORANDUM
City of Shreveport

DEPARTMENT OF OPERATIONAL SERVICES
Office of the City Engineer

Phone: (318) 673-6000 **Fax: (318) 673-6004**

DATE: **June 1, 2006**

TO: **H. M. Strong**
Director of Operational Services

FROM: **Ron Norwood, P.E.**
City Engineer

SUBJECT: **Proposed Water & Sewer Bond Issue – Revision No. 3**

Attached are our recommendations for what should be included in a future Water & Sewer Bond-Issue Program. We have detailed project lists to accommodate proposed $75, $145, $173, $198, $298, and $540 million programs.

I am available to discuss this at your convenience.

Ron Norwood, P.E.
City Engineer

RN:lsm

Attachments

CITY OF SHREVEPORT
DEPARTMENT OF OPERATIONAL SERVICES
WATER & SEWERAGE BOND ISSUE

$540,000,000

FACILITIES

Project Name	Estimated Cost
Water Treatment Plant Improvements: Improvements to Low Service Pump Station and Electrical Switchgear	**$500,000**
Water Treatment Plant Improvements: Improvements to McNeil Water Pump Station and Storage	**1,500,000**
Water Treatment Plant Improvements: Improvements to Plant 2/2E Flocculation/Sedimentation Systems and Lime System	**15,000,000**
Electrical Switchgear Improvements at the T. L. Amiss Water Treatment Plant	**6,000,000**
Water Treatment Plant Improvements: Improvements to Amiss High Service Pumping Station	**2.300,000**
Water Treatment Plant Improvements: Improvements to Ozone or Alternative System Improvements	**5,000,000**
Water Treatment Plant Improvements: Improvements to Auxiliary Electric Power System (Amiss and Pump Stations)	**4,200,000**
Auxillary Power Generation, 68th, Union Pumping Station, and McNeil Pumping Station	**2,000,000**
12 Mile Bayou Pump Station Improvements: Replace Pump Units and Switchgear (2 pumps, 70 MGD each)	**5,000,000**
12 Mile Bayou Pump Station Improvements: New 60 inch Raw Water Line	**2,000,000**

Improvements to Cross Lake Dam	**2,500,000**
Auxillary Power Generation for Lucas WWTP and North Regional WWTP	**2,000,000**
Water Treatment Plant/Pilot Plant for Red River Water Treatment	**5,000,000**
New 25 MGD (Phase I) Water Treatment Facility to pump from Red River	**120,000,000**
New 25 MGD (Phase II) Water Treatment Facility to pump from Red River	**120,000,000**
Basins 1 – 6 @ Amiss	**10,500,000**
70th & Pines Pumping Station	**2,500,000**
New T & D Facility at Greenwood Road Site	**10,000,000**
Inner Loop/Bert Kouns Pumping Station and 5 million Gallon Reservoir	**8,900,000**
Amiss Sludge Facility Expansion & Improvements	**2,500,000**
Finish Improvements at Lucas & North Regional WWTP	**15,000,000**

Subtotal…….. $342,400,000

LIFT STATIONS

Project Name	Estimated Cost
Wallace Lift Station Replace entire lift station with modern facility, URS currently doing design	**$8,000,000**
Woolworth Road Sewer Extension, Force Main and Lift Station Lift station and force main from landfill to end of gravity on Woolworth Road	**350,000**
Long Lake Lift Station Replace pumps and station piping (existing package LS) with new package LS providing higher head and larger motors	**130,000**
Stratmore Lift Station Replace pumps and station piping	**80,000**
Darien Lift Station Replace pumps, station piping, bar screen, and flowmeter	**800,000**
Looney Lift Station Replace "can" LS with new package LS and wet well	**150,000**
Agurs Lift Station Replace pumps, station piping, bar screen, flowmeter, and force main	**2,090,000**
Legardy Lift Station Replace pumps, station piping, and flowmeter; add bar screen	**410,000**
Hattie Lift Station Replace pumps and station piping with new package LS that includes equipment enclosure and replace force main	**190,000**
Querbes Lift Station Odor & Climate Control Systems Lift station improvements	**375,000**
Lucas Lift Station Improvements and odor control	**500,000**

Cedar Grove Lift Station, Odor Control Odor control	**350,000**
Bickham Bayou Lift Station, Pines Road Interceptor Boxes Odor control	**250,000**
Broadmoor – 6000 Block Fern Avenue. Lift Station Odor Control Systems Lift station improvements	**350,000**
Broadmoor Lift Station Replace pumps, station piping, bar screen, and flowmeter	**1.000,000**
Cedar Grove Lift Station Replace check valves & suction valves, replace PLC & VFD units	**250,000**
Marjorie Lift Station Replace pump and station piping with new package LS that includes backup pump and equipment enclosure	**120,000**
Mirador Lift Station Replace/upgrade electrical equipment and miscellaneous repairs to LS climate control and structure	**20,000**
Oak Forest Lift Station Replace pumps and station piping with new package LS that includes equipment enclosure and replace force main	**270,000**
Fannin Lift Station Replace "can" LS with new built in place LS. Replace force main and add bar screen	**930,000**
Dixie Garden Lift Station Replace pumps, station piping, and flowmeter; alternatively, install new package LS and larger wet well	**180,000**
Pine Hills Estates Lift Station Replace "can" LS with new package LS and wet well	**150,000**
Pine Hill Road Lift Station Replace/upgrade electrical equipment, miscellaneous repairs to LS climate control and structure, and wet well rehabilitation	**30,000**

LaCaze Lift Station Replace pumps and station piping with new package LS that Includes equipment enclosure	**110,000**
Willow Point II Lift Station Replace pumps and station piping	**20,000**
David Raines Lift Station Replace pumps and station piping with new package LS that includes backup pump and equipment enclosure	**110,000**
South Highland Lift Station Replace pumps, station piping, bar screen, and flowmeter	**800,000**
North Pierre Lift Station Modify MCC room and install climate control & HVAC	**100,000**
Hardy Lift Station Replace pumps, station piping, bar screen, and flowmeter	**770,000**
Pinecrest Lift Station Replace suction lines & valves, check valves & discharge valves, install motor & pump unit complete	**95,000**
Sunset Lift Station Replace/upgrade electrical equipment and miscellaneous repairs to LS structure	**20,000**
S. Shreveport Regional Lift Station Upgrade and F.M. direct to Lucas	**8,000,000**
Lift Station Rehabilitation & Replacement Citywide – 5 Year Program	**10,000,000**

Subtotal……$ 37,000,000

WATER MAINS

Project Name	Estimated Cost
Renewal and Size Upgrade for Citywide Undersized and Aging Water Mains Replace undersized diameter water mains and replace any other deteriorated water mains. Water mains will need upgrade or replacement using directional bore or open cut methods.	**$ 34,000,000**
Alston from Webster to Dale 1000 LF 8" water main replacement of 2" and additional undersized lines adjacent to project	**500,000**
Garden from west of Haltzman to Norma 1400 LF 8" water main replacement of 2" and additional undersized lines adjacent to project	**500,000**
Industrial Loop from Mansfield to Blom Water Improvements 4500 LF 12" water main replacement	**750,000**
West 78th from St. Vincent to Dillman Water Improvements 700 LF 8" water main replacement	**175,000**
Christian Street from View Street to Milam Street Water Improvements 2000 LF 10" water main replacement and about 2000 LF replacing adjacent undersized lines	**500,000**
Renture Street at Liberty Water Improvement 1400 LF 8" water main replacement	**215,000**
Woodmont from Wyngate to Westbrook Water Improvements 1600 LF 8" water main replacement	**275,000**
Multiple Streets in QS DD-55 including Bates, Daniel, Bethany, Myra, Beckett, and Dillingham Water Improvements 3150 LF 8" water main replacement	**680,000**
Hollywood Avenue at northwest corner of Shreveport Regional Airport 3200 LF 12" water main improvements	**587,000**

Southern Loop Water Main Extension 3000 LF 12", 13500 LF 16", 39000 LF 24" (total 55,500 LF) from Linwood Avenue near elevated tank to Brush Creek, to Norris Ferry to Ellerbe Road to LA Highway 1 at the Port of Shreveport	**9,000,000**
Southern Avenue from Jordan to St. Vincent Water Improvements 7000 LF 16" water main replacement	**1,200,000**
Russell from Grover to Anniston Water Improvements 1000 LF 8" water main replacement	**200,000**
Silver Pines and Frostwood from Lotus to Jonathan and Price from Frostwood to Jonathan Water Improvements 4750 LF 8" water main replacement	**600,000**
Wells Street Water main Extension 2250 LF 8" water main replacement and extension	**250,000**
36" Transmission Main S/E Shreveport, ground storage, & booster station	**15,000,000**
Janie Lane from Glen Erica to Spring Lake Water Improvements 1750 LF 10" water main replacement	**450,000**
QS AA-52 and BB-52 Water Main Improvements (adjacent to the $1,850,000 - 3-phased Corbitt Area Sewer & Water Improvements Approximately 12000 LF water main upsize in QS AA-52 & BB-52 (streets including Michel, Carolina, Alma, Belmont, Joplin, Ridgemoor, Doris, Earl, and State	**1,850,000**
Atlantic from Norway to Youree and Akard from Atlantic to Albert Water Improvements 4100 LF 8" water main replacement	**850,000**
Audry, Falcon Loop, Towers, Aline, and Thatcher Streets Water Main Improvements 5000-7000 LF of 8" water main Audry from MLK to Doll, Falcon Loop from Hawkins to Towers, Towers from Montana to Hawkins, Aline from Sampson to Northside, Thatcher from Airport to EOL	**600,000**
Shreveport Blanchard Highway Water Main Improvements (from Hearne to MLK) 22000 LF 20" water main; coordination/evaluation impacts with LA DOTD street-widening project	**3,500,000**

Purchase & Installation of AMR Water Meters Citywide	**15,000,000**

Subtotal…….. $ 86,682,000

SEWER MAINS

Project Name	Estimated Cost
Rehabilitation and Renewal for Citywide Deteriorated and Aging Sewer Mains and Manholes Estimate sewer mains for rehabilitation or replacement using CIPP, directional bore, pipe-bursting, or open cut methods, and concurrently rehabilitation/replacement of manholes	**$34,500,000**
Corbitt Area Sewer and Water Improvements, Phases 1-3 20,650 LF of sewer and 5900 LF of water over three phases	**5,000,000**
CIPP – Lining Sewer & Manhole Rehabilitation 4330 LF 8", 2325 LF 21" and 24", and 1190 LF 8" and 10" sewer and manhole rehabilitation	**1,535,000**
Querbes Force Main Replacement 7590 LF 20" sewer force main replacement	**3,000,000**
Hearne from Midway to Westover 3000 LF 15" sewer main replacement	**600,000**
Southern Hills Interceptor 5800 LF 30" sewer main; two emergency projects complete and remainder put on hold for additional evaluation	**5,000,000**
1300 Block Summers Street Sewer Improvements 450 LF 10" sewer main replacement	**150,000**
Kingstowne Sewer Improvements Re-route/rehabilitation 15" sewer main replacement or install lift station to prevent overflow	**350,000**
Wallace Force Main at Overton Brooks Road Rehabilitation/Replacement of part of Wallace Force Main	**1,305,000**
Hasset (western alley) from Sunset to Michigan 2000 LF 8" sewer main replacement	**250,000**
Unadilla from Line to Fairfield Sewer Improvements 1375 LF 8" sewer main replacement	**200,000**

Gladstone (southern rear) from Creswell to Highland Sewer Improvements 600 LF 8" sewer main replacement	**150,000**
9700 & 9800 Blocks Norris Ferry Road 1500 LF 8" sewer main installation	**200,000**
3100-3400 Mansfield Road from Claiborne to Kings Sewer Improvements 1980 LF new 8" sewer	**403,000**
Alleys North and South of Johnette Street Sewer Improvements 2000 LF 8" sewer main replacement	**450,000**
Knight Street Force main Replacement 2000 LF 6" sewer force main replacement	**550,000**
Lucas Outfall Replace check valves & suction valves, replace motors & pumps, install an additional pump, install climate control HVAC, modify MCC room	**350,000**
North Hearne Lift Station Improvements Install complete wet well and submersible pumps & controls	**125,000**
Alley South of Patton Avenue from Grover to Kings Highway Sewer Improvements 4000 LF 8" sewer main replacement	**650,000**
Ockley and Creswell toward Gilbert Avenue Sewer Improvements 2200 LF 8" & 21" sewer main replacement	**650,000**
Blanchard Road/Havana Street, MLK Drive Widening Project Upgrade undersized sewer and water mains, eliminate a pump station in conjunction with MLK widening y LS DOTD; project on hold	**2,200,000**
Alleys north & south of Greenway Place (3700 & 3800 Blocks) Sewer Improvements 9000 LF 8" sewer main replacement	**2,300,000**
Wallace Force Main Reconstruction (Kingston-Lucas)	**10,000,000**
SSO Evaluation Program Citywide	**4,000,000**

Subtotal…….. $ 73,918,000

SUMMARY

Facilities	**$342,400,000**
Lift Stations	**37,000,000**
Water Mains	**86,682,000**
Sewer Mains	**73,918,000**
Total……...	**$540,000,000**