

# Platte Canyon Water and Sanitation District



## Capital Master Plan 2006-2010

# PLATTE CANYON WATER AND SANITATION DISTRICT

## CAPITAL MASTER PLAN

2006-2010

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**PLATTE CANYON WATER AND SANITATION DISTRICT  
CAPITAL MASTER PLAN  
2006-2010**

**BACKGROUND**

Platte Canyon Water and Sanitation District was organized in May 1959 to provide water distribution and wastewater collection and transmission services to properties located within the District boundaries. Since the formation of the District, over 75 miles of water mains, 72 miles of sanitary sewer mains, one potable water pumping station, and one sewage lift station have been installed by the District and private developers. Platte Canyon now has the responsibility for operation, maintenance, rehabilitation, and replacement of all wastewater collection and water distribution facilities installed by and conveyed to the District.

In response to the catastrophic failure of the District's outfall sewer main in 1985, Platte Canyon implemented a systematic rehabilitation and replacement program in 1986. Although the majority of the District's infrastructure is well within its expected useful life, electrolysis caused corrosion and the normal aging and deterioration processes have left some facilities in need of rehabilitation or replacement. The capital improvement program provides a systematic method for scheduling these necessary system improvements.

**PURPOSE**

The purpose of the Capital Improvement Master Plan is to itemize and schedule water and wastewater facility expansion, rehabilitation and replacement projects, and vehicle and equipment purchases.

The master plan enhances the accuracy and effectiveness of budgeting and cash flow analysis. The scheduled capital expenditure program allows the District to schedule expenditures and determine appropriate levels of capital reserves. It allows long range planning of tax and service fee revenues and thus avoids the potential for large annual fluctuations in tax or service fee rates. The program further allows for planning and scheduling system replacements and rehabilitations on a fairly consistent and level basis to match proposed revenues.

One of the most important benefits of the capital expenditure plan is that it allows the District to be pro-active rather than reactive when dealing with rehabilitation needs. System modifications are prioritized so the facilities most in need of repair are corrected on a timely basis. This allows for minimizing operation and repair expenses and helps avoid unscheduled repair, replacement, and rehabilitation of deteriorating facilities. Most importantly, an aggressive capital rehabilitation and replacement program helps avoid system deterioration and disruption with potential associated safety, health and property damage impacts.

For vehicle and equipment needs, the capital master plan provides for systematic replacement of the District's fleet and equipment. Replacements are scheduled so as to avoid large expenditures for equipment repairs, excessive down time of malfunctioning equipment, and inordinate

expenditures for replacements in any one year. The plan allows for consideration of service life, manufacturers production lead time, and changing performance requirements for various vehicles and pieces of equipment.

In summary, the Capital Improvement Master Plan has been prepared to increase the accuracy and reliability of budgetary and long range financial analysis, and to improve short and long term facility and maintenance planning.

## **FINANCIAL**

The 2006-2010 Capital Master Plan proposes expenditure of \$2,426,592 in 2006, and \$3,807,362 during the five year period extending from 2006 to 2010. This compares with last year's master plan projected expenditures for 2006 amounting to \$678,090 and five year period expenditures totaling \$3,666,800. Water facility replacement projects account for 64 percent of the total proposed expenditures while sewer rehabilitation expenses and vehicle and equipment purchases account for 18 percent and 18 percent respectively.

The District's target reserve fund balance is \$6,083,265 in 2005 and \$7,401,221 in 2010. These have been determined to provide adequate reserves to meet expenditures proposed in the Capital Master Plan. No increases in tax revenues, tap fees or annexation fees will to be required to meet the goals of the current plan.

## **DESCRIPTION OF PLAN ELEMENTS**

In 2002 the District's Capital Improvement Master Plan was reduced in scope from ten years to five years as a result of the extensive facility improvements that had been accomplished over the past sixteen years. Many of the facilities in immediate need of replacement or rehabilitation had already been upgraded allowing the District to concentrate specific facility rehabilitation projects within a five year time frame. Additional infrastructure improvements will be required beyond the five year planning period and a long range (75 year) infrastructure rehabilitation and replacement plan has been prepared as a planning document for the long range facility improvements and financial needs of the District.

The Master Plan has been divided into water facility rehabilitation and replacement, sanitary sewer rehabilitation and replacement, and vehicle and equipment expansion and replacement components. Most water facility projects are planned replacements of cast iron and steel water mains which have experienced leaks due to electrolysis caused corrosion. No facilities are proposed for the purpose of expanding capacity to serve new development. Existing District facilities are adequate to serve proposed development within the District's ultimate service area.

Two water main replacement projects have been scheduled for 2006. Neither project was included in the previous master plan but have been added to the 2006 schedule due to some serious, costly pipe failures experienced this year.

Project CIP 06-1W proposes replacement of 1,065 feet of 16-inch cast iron pipe in S. Webster St. between W. Glasgow Pl. and W. Frost Dr., and replacement of 180 feet of 6-inch cast iron pipe in W. Geddes Cir. east of S. Webster St. Five breaks have occurred on the 16-inch pipe during the past three years. All of the breaks have resulted from electrolysis caused corrosion of the cast iron pipe.

S. Webster St. is the main distribution pipe for the Columbine West subdivision. Denver Water has performed a hydraulic analysis for the District and determined that the water main cannot be reduced in size but must remain 16-inch in order to meet peak demands and fire flows. The water main will be replaced with either ductile iron or PVC pipe. Normally, the District would not install ductile iron pipe in an area known to have corrosive soils, however, PVC pipe costs have risen dramatically in the past few months and ductile iron pipe may be much less expensive to install. The District anticipates bidding the replacement project with two pipe alternatives. Cathodic protection using plastic wrap will be required and will be carefully and thoroughly inspected to ensure quality control in the event ductile iron pipe is selected. Denver Water has granted a waiver for the use of 16-inch PVC pipe should the District choose to specify it as the replacement material. The waiver was required because Denver Water Engineering standards do not permit use of PVC pipe greater than 12-inches in diameter.

The second water project proposed for 2006, project CIP 06-2W, contemplates replacement of 1,521 feet of 6-inch cast iron pipe in S. Depew Wy. between S. Depew St. and W. Canyon Trail in the Columbine Hills subdivision. Two electrolysis caused pipe failures have occurred on this water main. The latest break caused extensive road and private property damage which resulted in repair expenses in excess of \$10,000. Much of the cast iron pipe located in the southern portion of Columbine Hills has experienced electrolysis breaks and a number of pipes have already been replaced. The pipe was installed in the late 1950's and early 1960's when cathodic protection was not required. It is very likely that the remaining unwrapped cast iron pipe will continue to corrode and fail and will need to be replaced over the next few years.

Two sewer capital projects are scheduled for 2006. On W. Rowland Ave. between S. Gray Ct. and S. Sheridan Blvd., 3,600 feet of 8-inch vitrified clay pipe (VCP) will be lined using a cured-in-place method of pipeline rehabilitation. Video inspection of this pipeline has revealed numerous cracks, separated joints and structural concerns. The estimated cost of project CIP 06-2S is \$149,040.

A second sewer project proposed for 2006 will either consist of construction of a bypass pipeline around the District's Platte River Sewage Lift Station to connect the outfall sewer to a new pipeline being constructed by Roxborough Park Metropolitan District, or the rehabilitation of components of the lift station. The District is currently negotiating with Roxborough Park to connect the existing outfall sewer to a pipeline Roxborough is building adjacent to the lift station. Such a connection would enable the District to abandon the present lift station and convey wastewater to the City of Littleton's interceptor sewer at Belleview Ave. and Santa Fe Dr. rather than at Church St. and Santa Fe Dr. Roxborough's consulting engineer is conducting an analysis to determine if the connection is technically feasible and, if so, what the cost would be to oversize the pipeline to accommodate Platte Canyon wastewater flows. It is expected that Platte Canyon will have to relay a portion of the outfall sewer line to raise the elevation to match the proposed elevation of Roxborough's pipe. As the costs become known, Platte Canyon staff

will prepare an analysis to compare the total bypass costs with the cost of continuing to operate, maintain and ultimately replace the lift station.

If the lift station bypass proves to not be feasible or economically acceptable, the District will proceed with project CIP 06-2S(a). This project proposes rehabilitation of the lift station grit trap, wet well and channel by applying a non-corrosive coating to the concrete structures.

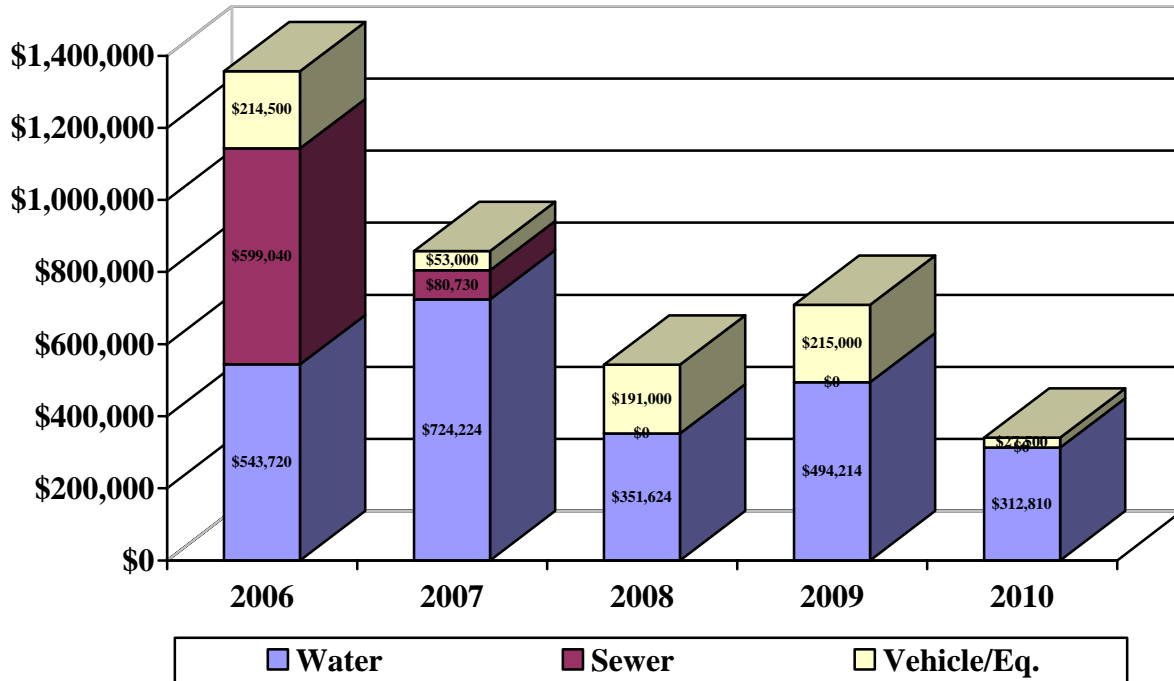
Total 2006 proposed expenditures for water infrastructure, sewer infrastructure, and vehicle purchases is \$543,720, \$599,040 and \$214,500 respectively. Total projected capital expenditures are \$1,357,260.

Between 2007 and 2010, nine additional water rehabilitation and replacement projects have been scheduled at an estimated cost of \$1,882,872. Two sewer projects have been scheduled for this period at a projected cost of \$80,730. Vehicle replacement costs for the years 2007-2010 are estimated to be \$486,500.

## SECTION 2

### SUMMARY OF PROPOSED CAPITAL EXPENDITURES FOR THE PERIOD 2006 - 2010

Year	Water	Sewer	Vehicle/Equip	Totals
<b>2006</b>	\$ 543,720	\$ 599,040	\$ 214,500	\$1,357,260
<b>2007</b>	\$ 724,224	\$ 80,730	\$ 53,000	\$ 857,954
<b>2008</b>	\$ 351,624	\$ 0	\$ 191,000	\$ 542,624
<b>2009</b>	\$ 494,214	\$ 0	\$ 215,000	\$ 709,214
<b>2010</b>	\$ 312,810	\$ 0	\$ 27,500	\$ 340,310
<b>TOTALS</b>	<b>\$2,426,592</b>	<b>\$ 679,770</b>	<b>\$ 701,000</b>	<b>\$3,807,362</b>



## **SECTION 3**

### **WATER DISTRIBUTION AND WASTEWATER COLLECTION FACILITY REHABILITATION AND REPLACEMENT PROJECTS SCHEDULED FOR 2006-2010**

## 2006 Capital Improvement Projects

Project:	CIP 06-1W	
Location:	S. Webster St. between W. Glasgow Pl. and W. Frost Dr. and W. Geddes Cir. east of S. Webster St. (Columbine West).	
Description:	Replace 1,065 feet of 16-inch cast iron pipe with 1,065 feet of either 16-inch class 51 ductile iron pipe or C905, class 235 PVC pipe, and replace 180 feet of cast iron pipe with 180 feet of C900, class 150 PVC pipe.	
Rationale:	<p>The 16-inch cast iron water main in S. Webster St. has experienced five breaks in the past three years. The severity of the breaks and repair costs are greatly exacerbated by the large size of the pipe. Due to extreme corrosion, routine repair methods have been ineffective and sections of the pipe have had to be cut and removed from service in order to effectuate repairs.</p> <p>It is anticipated that the replacement project will be bid with alternatives for either PVC or ductile iron pipe. Due to corrosive soils, PVC pipe is the preferred replacement material; however, the cost of PVC pipe has risen dramatically as a result of raw material cost increases. Ductile iron pipe is subject to corrosion but is an acceptable replacement material as long as caution is exercised during installation to ensure cathodic protection is applied in a quality manner.</p>	
Date Installed:	1972	
Estimated Cost:	Construction:	\$ 245,000
	Engineering (15%)	<u>\$ 36,750</u>
		\$ 281,750
	Contingencies (20%)	<u>\$ 56,350</u>
		\$ 338,100

# PROJECT C.I.P. 06-1W S. WEBSTER ST. WATER MAIN REPLACEMENT



## 2006 Capital Improvement Projects

Project:	CIP 06-2W	
Location:	S. Depew Wy. between S. Depew St. and W. Canyon Trail (Columbine Hills).	
Description:	Replace 1,521 feet of 6-inch cast iron pipe with 1,521 feet of 6- inch C900, class 150, PVC pipe.	
Rationale:	Two water main breaks have occurred on this 1,521 foot section of pipe. The latest break caused extensive property damage and resulted in District repair expenses exceeding \$10,000. The water main is located in an area that has incurred widespread corrosion damage. Cathodic protection was not used when these mains were installed, so it is very likely that corrosion will continue to deteriorate the cast iron pipes. Several water mains have previously been replaced in the vicinity of this pipeline.	
Date Installed:	1959	
Estimated Cost:	Construction:	\$ 149,000
	Engineering (15%)	<u>\$ 22,350</u>
		\$ 171,350
	Contingencies (20%)	<u>\$ 34,270</u>
		\$ 205,620

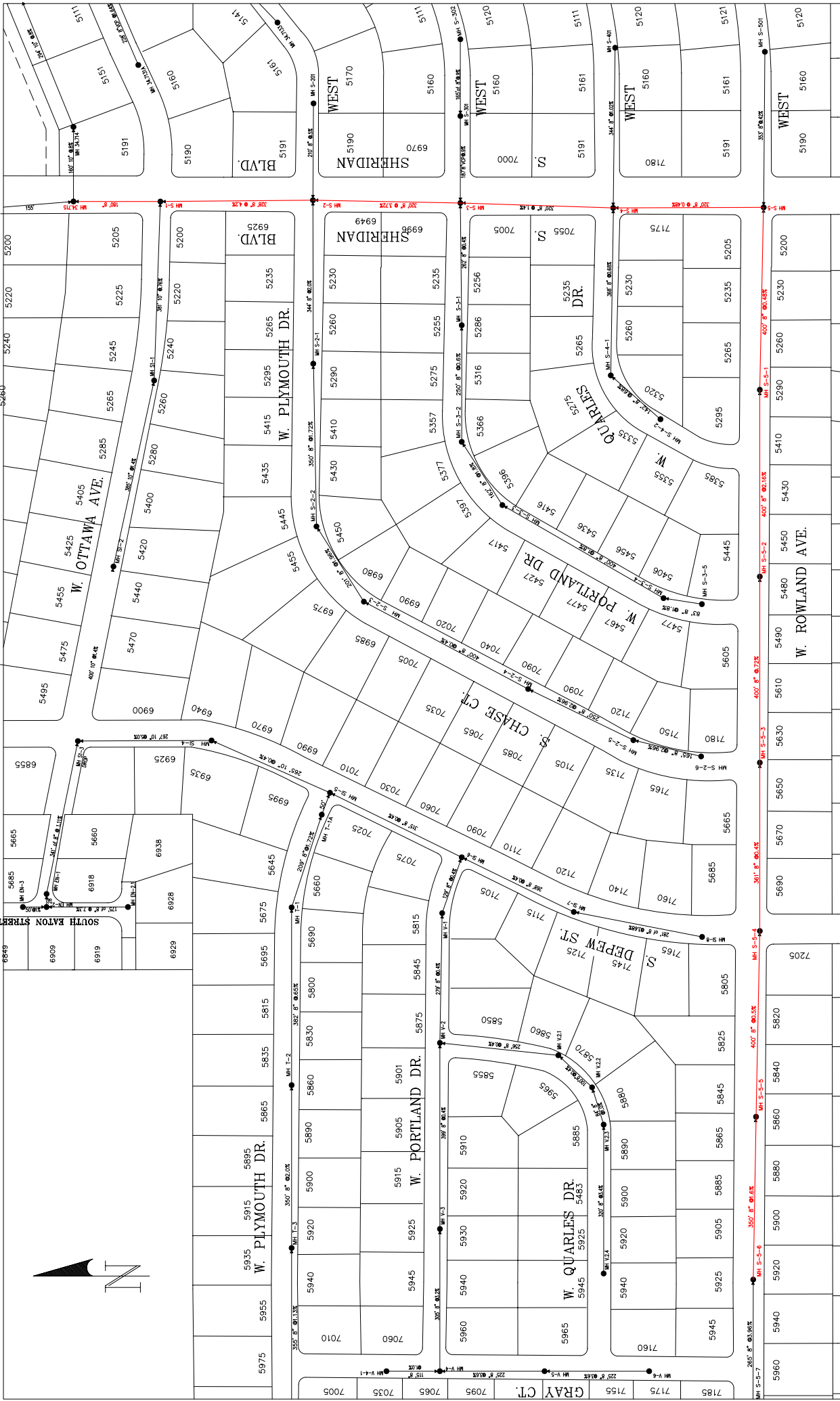
# PROJECT C.I.P. 06-2W S. DEPEW WAY WATER MAIN REPLACEMENT



## 2006 Capital Improvement Projects

Project:	CIP 06-1S	
Location:	On W. Rowland Ave. between S. Gray Ct. and S. Sheridan Blvd. and on Sheridan Blvd. between W. Rowland Ave. and W. Ottawa Ave. (manholes S-5-6 to S-1).	
Description:	Rehabilitate 3,600 feet of 8-inch vitrified clay pipe using a cured-in-place method of rehabilitation.	
Rationale:	Television inspections of these pipe segments have revealed numerous cracks, separated joints and structural concerns. The pipes do appear to be sufficiently structurally sound to be rehabilitated using a cured-in-place rehabilitation technique.	
Date Installed:	1959	
Estimated Cost:	Construction:	\$ 108,000
	Engineering (15%)	<u>\$ 16,200</u>
		\$ 124,200
	Contingencies (20%)	<u>\$ 24,840</u>
		\$ 149,040

# PROJECT C.I.P. 06-1S ROWLAND AVE. SEWER REHABILITATION



## 2006 Capital Improvement Projects

Project:	CIP 06-2S(a)	
Location:	Platte River Sewage Lift Station	
Description:	Rehabilitate concrete grit trap vault, wet well and channel by applying epoxy, polyurethane, or cementitious coating.	
Rationale:	The channel, wet well, and grit trap vault are over 50 years old and are beginning to degrade due to hydrogen sulfide and sulfuric acid attack. The specific coating product to be used to restore the integrity of the concrete structures will be determined during project design.	
Date Installed:	1959	
Estimated Cost:	Construction:	\$ 75,000
	Engineering (15%)	<u>\$ 11,250</u>
		\$ 86,250
	Contingencies (20%)	<u>\$ 17,250</u>
		\$ 103,500

## 2006 Capital Improvement Projects

Project: CIP 06-2S(b)

Location: Platte River Sewage Lift Station

Description: Connect District's outfall sewer to new sewer interceptor being constructed by Roxborough Park Metropolitan District at the site of the Platte River Sewage Lift Station. The connection will enable the abandonment of the District's lift station.

Rationale: Roxborough Park is currently designing a sewer interceptor which will extend from W. Belleview Ave. and S. Santa Fe Dr. to the Roxborough Park Wastewater Treatment Plant. Upon completion of construction, the City of Littleton will assume ownership of that portion of the interceptor located between Belleview Ave. and C-470. Platte Canyon is working with Roxborough and the City of Littleton to determine the feasibility and costs for connecting Platte Canyon's outfall sewer to the new Roxborough/Littleton pipe. At this time specific costs are undetermined but will include the following:

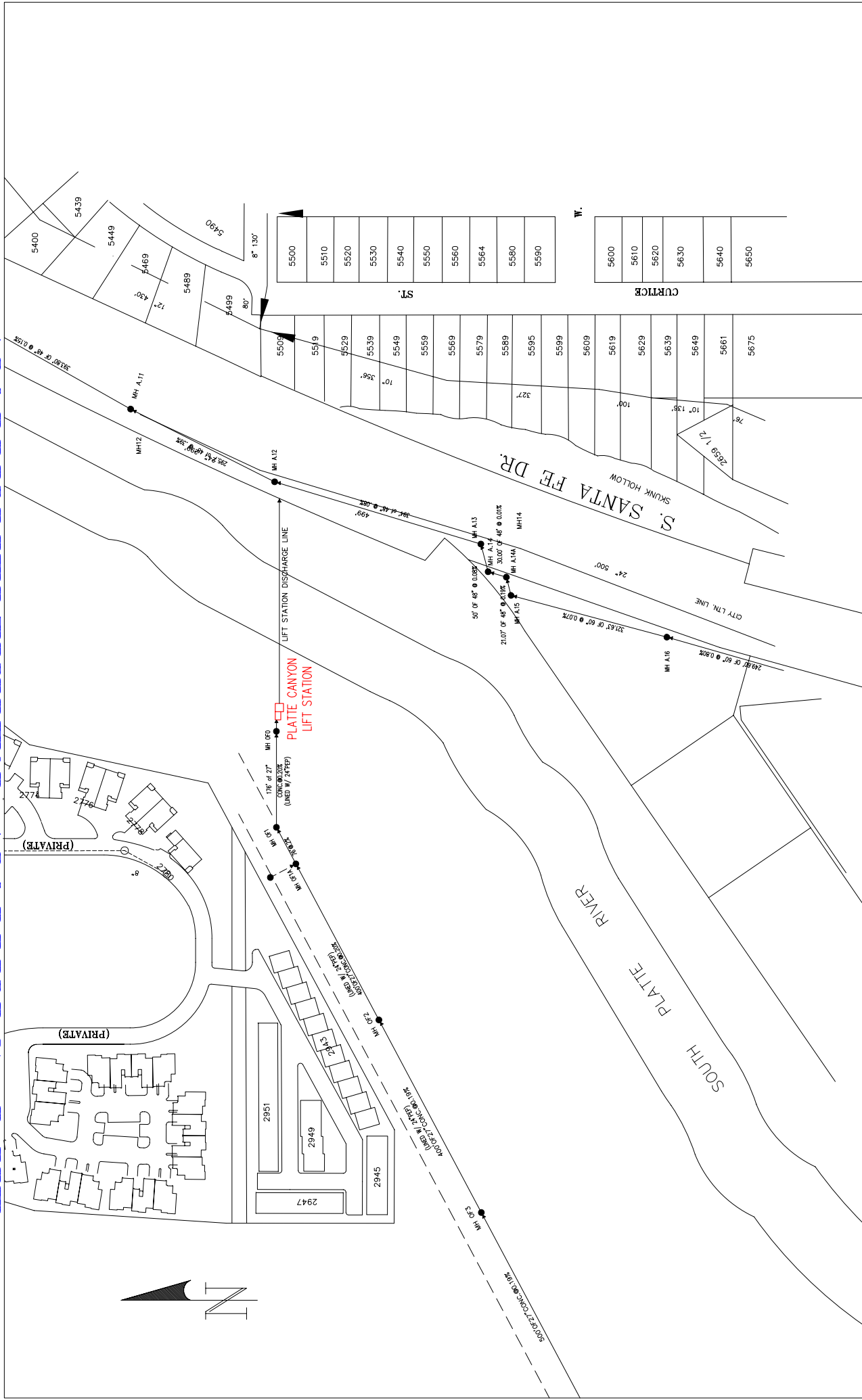
- Payment for capacity in the Littleton/Roxborough interceptor.
- Construction costs for extending the Platte Canyon outfall sewer from the inlet side of the lift station to the new interceptor.
- Construction costs for relaying portions of the Platte Canyon outfall sewer to decrease depth to match the elevation of the Roxborough/Littleton pipe.

The total amount of these costs will determine whether a connection to the Roxborough/Littleton interceptor is economically justified.

If this project moves forward, project CIP 06-2S(a) will not be constructed. Alternatively, if this project is determined to not be viable, then project CIP 06-2S(a) will be constructed.

Estimated Cost:	Construction:	\$ 300,000
	Engineering (15%)	<u>\$ 60,000</u>
		\$ 360,000
	Contingencies (25%)	<u>\$ 90,000</u>
		\$ 450,000

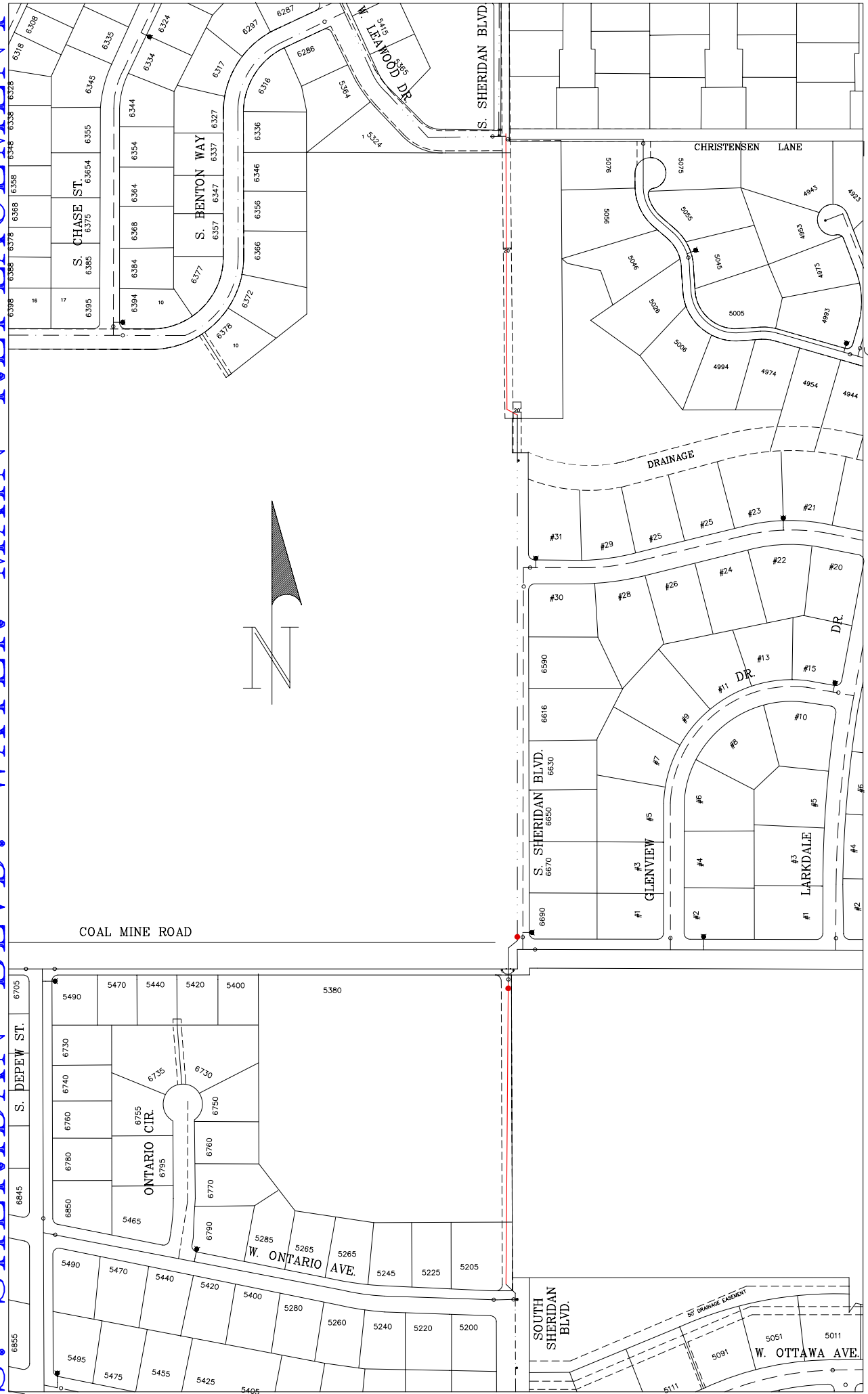
# PROJECT C.I.P. 06-2S LIFT STATION REHABILITATION



## 2007 Capital Improvement Projects

Project:	CIP 07-1W	
Location:	S. Sheridan Blvd. (extended) between Dutch Creek drainage basin and W. Leawood Dr. and S. Sheridan Blvd. (extended) between W. Coal Mine Ave. and W. Ontario Ave.	
Description:	Replace or rehabilitate 1,795 feet of 18-inch steel pipe with 1,795 feet of 16-inch cast iron pipe.	
Rationale:	<p>The District has experienced numerous corrosion caused failures on the S. Sheridan Blvd. 16-inch and 18-inch water transmission main. Cathodic protection on the pipeline consists of a bitumastic coating over the steel pipe. Any breach in coating concentrates corrosion and ultimately results in pipe failure. Replacement of the entire pipeline began in 1995 and will continue until completely replaced or rehabilitated.</p> <p>District staff will explore replacement and cured-in-place rehabilitation of the existing pipeline prior to proceeding with design engineering. Cured-in-place rehabilitation is becoming more common as a rehabilitation technique for water mains. It has been extensively used for sewer main rehabilitation, but, until recently, has been little used for water main rehabilitation. Estimated costs shown below assume replacement rather than cured-in-place rehabilitation.</p>	
Date Installed:	1959	
Estimated Cost:	Construction:	\$ 270,000
	Engineering (15%)	<u>\$ 40,500</u>
		\$ 310,500
	Contingencies (20%)	<u>\$ 62,100</u>
		\$ 372,600

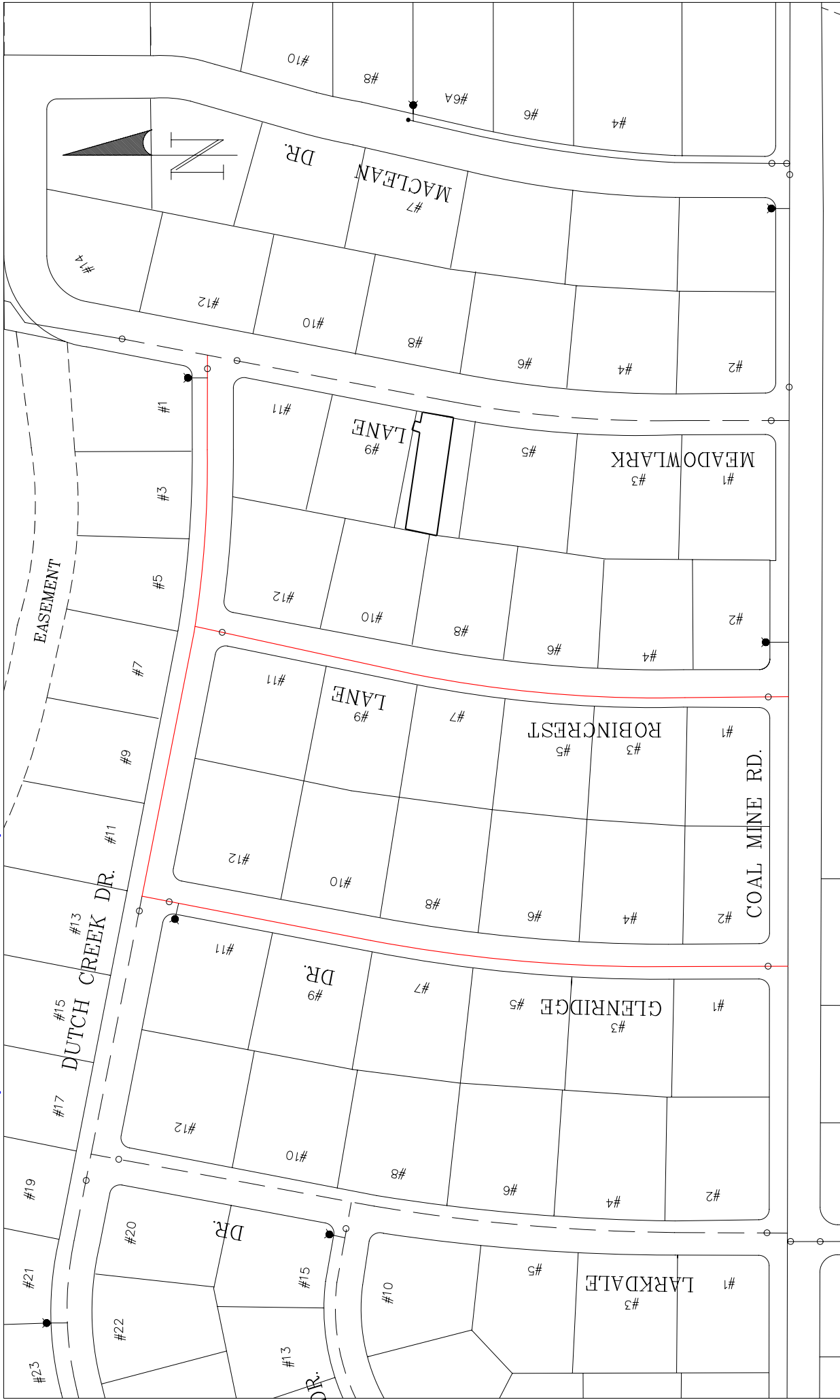
# PROJECT C.I.P. 07-1W S. SHERIDAN BLVD. WATER MAIN REPLACEMENT



## 2007 Capital Improvement Projects

Project:	CIP 07-2W	
Location:	<ul style="list-style-type: none"><li>▪ Robincrest Lane between W. Coal Mine Ave. and Dutch Creek Dr. (Columbine Heights).</li><li>▪ Glenridge Dr. between W. Coal Mine Ave. and Dutch Creek Dr. (Columbine Heights).</li><li>▪ Dutch Creek Dr. between Glenridge Dr. and Meadowlark Ln. (Columbine Heights).</li></ul>	
Description:	Replace 1,750 feet of 6-inch asbestos cement pipe and 850 feet of 4-inch asbestos-cement pipe with 2,600 feet of 6-inch C900, class 150, PVC pipe.	
Rationale:	Six breaks have occurred on these 37 year old sections of asbestos-cement pipe. Replacement of these pipes will enable installation of additional fire hydrants to improve fire protection capability. Existing isolation valves are also worn and will be replaced.	
Date Installed:	1966	
Estimated Cost:	Construction:	\$ 254,800
	Engineering (15%)	<u>\$ 38,220</u>
		\$ 293,020
	Contingencies (20%)	<u>\$ 58,604</u>
		\$ 351,624

PROJECT C.I.P. 07-2W  
DUTCH CREEK/ROBINCREST/GLENRIDGE WATER MAIN REPLACEMENT



## 2007 Capital Improvement Projects

Project: CIP 07-1S

Location: W. Chestnut Ave. between manholes 71.94 and 71.7

Description: Rehabilitate 1,660 feet of 8-inch vitrified clay pipe using a cured-in-place method of rehabilitation.

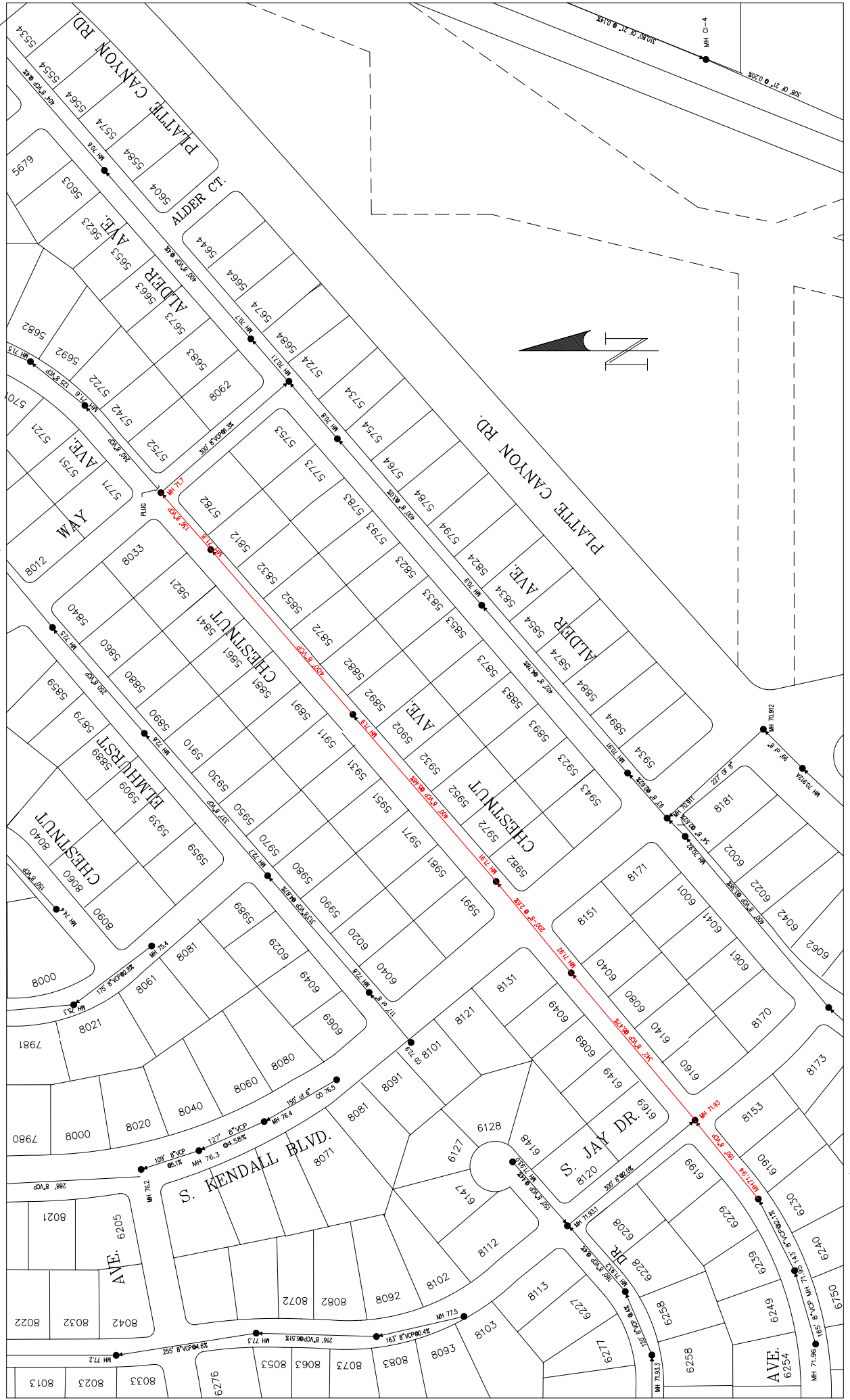
Rationale: Closed circuit television inspection of this 44 year old pipe has revealed numerous cracks, separated joints and root intrusion. The pipe is structurally sound enough to provide for the use of a cured-in-place method of rehabilitation rather than the more disruptive and costly excavate and replace technique.

Date Installed: 1960

Estimated Cost:

Construction:	\$ 49,800
Engineering (15%)	<u>\$ 7,470</u>
	\$ 57,270
Contingencies (20%)	<u>\$ 11,454</u>
	\$ 68,724

# PROJECT C.I.P. 07-1S CHESTNUT AVE. SEWER REHABILITATION



## 2007 Capital Improvement Projects

Project: CIP 07-2S

Location: S. Depew Wy. between manholes 08 and 07 (Columbine Hills).

Description: Rehabilitate 290 feet of 8-inch vitrified clay pipe using a cured-in-place method of rehabilitation.

Rationale: Television inspections of this sewer pipe has revealed numerous cracks and displaced pipe joints enabling extensive root infiltration into the pipe. Since the pipe remains structurally sound, a cured-in-place method of rehabilitation will be used to minimize traffic disruption, street restoration, and customer inconvenience.

Date Installed: 1959

Estimated Cost:

Construction:	\$ 8,700
Engineering (15%)	<u>\$ 1,305</u>
	\$ 10,005
Contingencies (20%)	<u>\$ 2,001</u>
	\$ 12,006

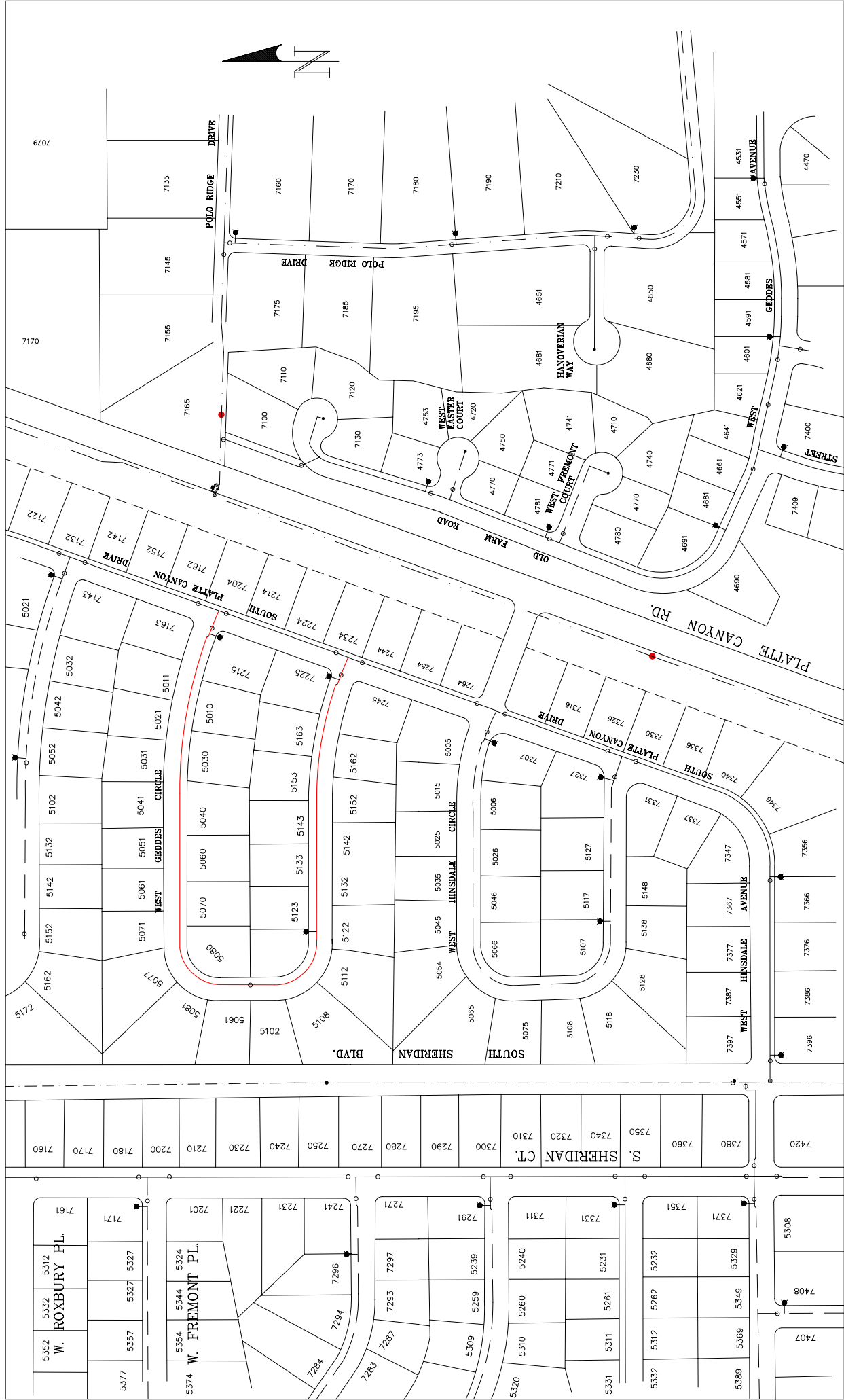
# PROJECT C.I.P. 07-2S DEPEW WAY SEWER REHABILITATION



## 2008 Capital Improvement Projects

Project:	CIP 08-1W	
Location:	W. Geddes Cir. between S. Platte Canyon Dr. (south intersection) and S. Platte Canyon Dr. (north intersection) (Columbine Manor Subdivision).	
Description:	Replace 1,600 feet of 6-inch cast iron pipe with 1,600 feet of 6-inch C900, class 150, PVC pipe.	
Rationale:	Two electrolysis caused breaks have been experienced on this water main. In addition, much of the cast iron pipe in Columbine Manor Subdivision has exhibited signs of deterioration caused by corrosive soils. The cast iron pipe is not wrapped nor was cathodic protection installed during construction. Further corrosion resulting in additional water main breaks is likely to occur during the next few years.	
Date Installed:	1961	
Estimated Cost:	Construction:	\$ 156,800
	Engineering (15%)	<u>\$ 23,520</u>
		\$ 180,320
	Contingencies (20%)	<u>\$ 30,064</u>
		\$ 216,384

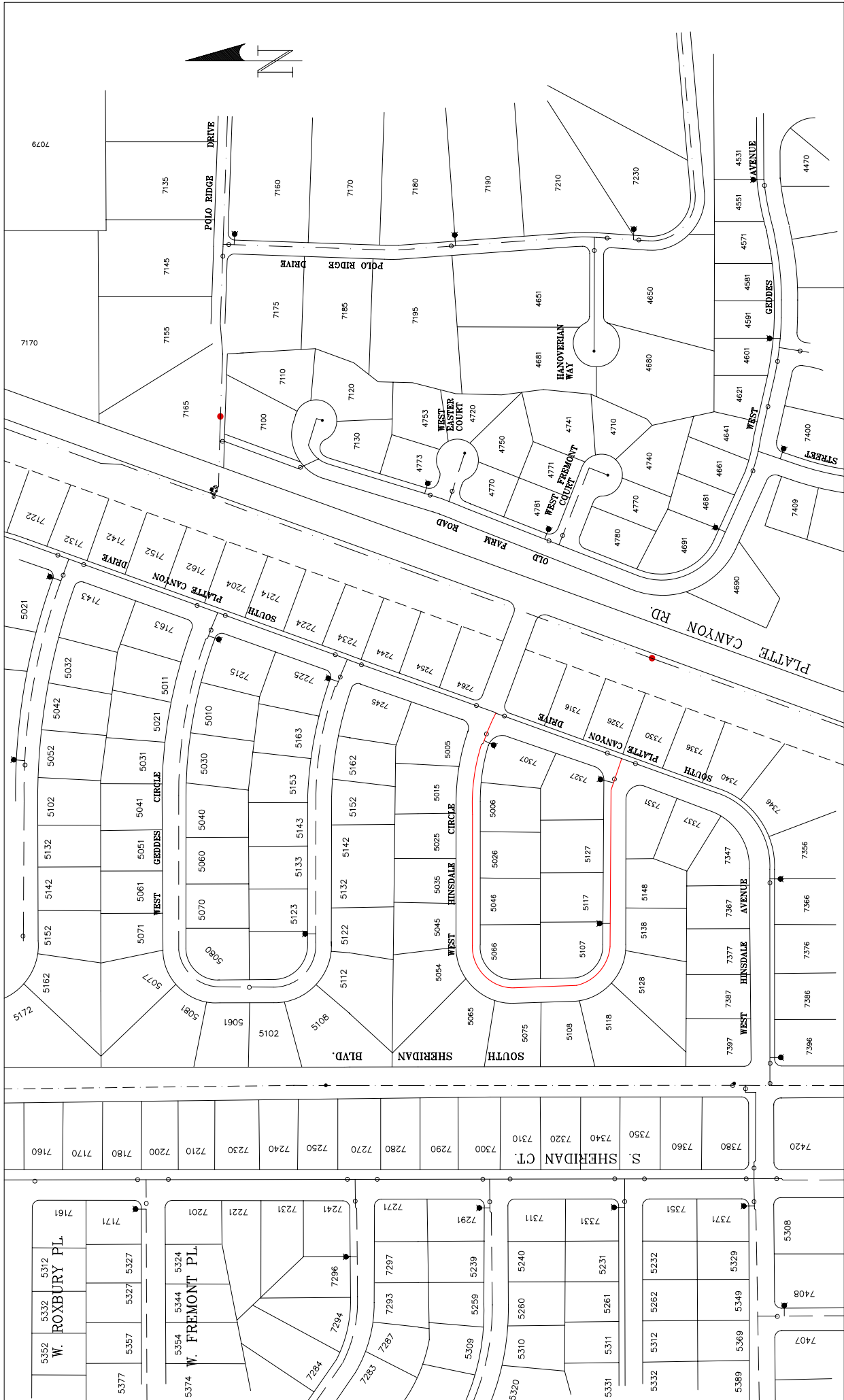
# PROJECT C.I.P. 08-1W W. GEDDES CIR. WATER MAIN REPLACEMENT



## 2008 Capital Improvement Projects

Project:	CIP 08-2W	
Location:	W. Hinsdale Cir. between S. Platte Canyon Dr. (south intersection) and S. Platte Canyon Dr. (north intersection) (Columbine Manor Subdivision).	
Description:	Replace 1,000 feet of 6-inch cast iron pipe with 1,000 feet of 6-inch C900, class 150, PVC pipe.	
Rationale:	Two electrolysis caused breaks have been experienced on this 1,000 foot long section of pipe. As stated in the rationale for project CIP 06-1W, the Columbine Manor Subdivision has experienced widespread pipe failure due to corrosion of unwrapped cast iron pipe. Over one half of the water pipe has been replaced and proposed projects CIP 06-1W and CIP 06-2W will complete replacement of all water pipe in the entire subdivision.	
Date Installed:	1961	
Estimated Cost:	Construction:	\$ 98,000
	Engineering (15%)	<u>\$ 14,700</u>
		\$ 112,700
	Contingencies (20%)	<u>\$ 22,540</u>
		\$ 135,240

# PROJECT C.I.P. 08-2W W. HINSDALE CIR. WATER MAIN REPLACEMENT



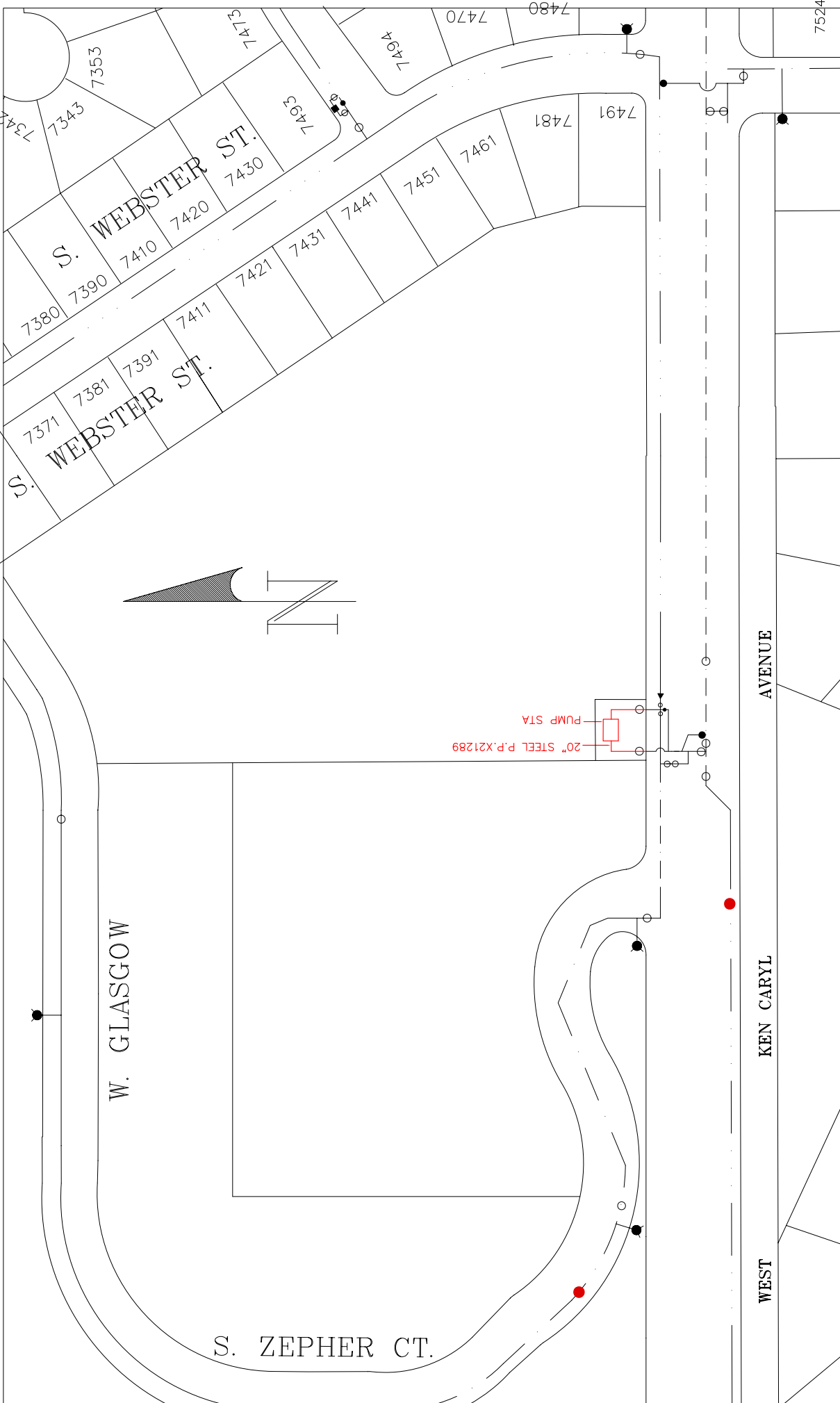
## **2008 Capital Improvement Projects**

No sewer rehabilitation or replacement projects have been proposed for 2008.

## 2009 Capital Improvement Projects

Project:	CIP 09-1W	
Location:	Columbine West Pump Station (7677 W. Ken Caryl Ave.)	
Description:	Replace all interior and yard piping at the Columbine West Pump Station	
Rationale:	The steel pipe inside the Columbine Pump Station has experienced several leaks due to corrosion of the steel suction and discharge pipes. The corrosion is occurring internally. The yard piping at the pump station site is the same grade of steel pipe as that used inside of the station. It is assumed that corrosion is also occurring to the yard piping although no leaks have been experienced yet. This project is proposed to replace the yard piping before a major failure occurs which could result in serious damage to the pump station.	
Date Installed:	1972	
Estimated Cost:	Construction:	\$ 220,000
	Engineering (15%)	<u>\$ 33,000</u>
		\$ 253,000
	Contingencies (20%)	<u>\$ 50,600</u>
		\$ 303,360

PROJECT C.I.P. 09-1W  
COLUMBINE WEST PUMP STATION PIPE REPLACEMENT



## 2009 Capital Improvement Projects

Project: CIP 09-2W

Location: S. Kendall Ct. between W. Roxbury Pl. and W. Fremont Dr.

Description: Replace 750 feet of 6-inch asbestos-cement pipe with 750 feet of 6-inch C-900, class 150, PVC pipe.

Rationale: Two water main breaks have been experienced on this pipeline. Replacement of the asbestos-cement pipe with C-900 PVC pipe will eliminate structural failures due to ground movement.

Date Installed: 1969

Estimated Cost:

Construction:	\$ 73,500
Engineering (15%)	<u>\$ 11,025</u>
	\$ 84,525
Contingencies (20%)	<u>\$ 16,905</u>
	\$ 101,430



## 2009 Capital Improvement Projects

Project: CIP 09-3W

Location: W. Chestnut Wy. between W. Elmhurst Dr. and W. Elmhurst Ave.  
(Columbine Hills).

Description: Replace 660 feet of cast iron pipe with 660 feet of C900, class 150,  
PVC pipe.

Rationale: Three water main breaks have occurred on this 660 foot segment  
of cast iron pipe within the last two years. All of the breaks were  
the result of electrolysis caused corrosion of the cast iron pipe.  
Several water mains have already been replaced in the southern  
portion of the Columbine Hills subdivision and it is anticipated that  
the remaining unprotected cast iron pipe will require replacement  
in the next ten years.

Date Installed: 1960

Estimated Cost:

Construction:	\$ 64,800
Engineering (15%)	<u>\$ 9,720</u>
	\$ 74,520
Contingency (20%)	<u>\$ 14,904</u>
	\$ 89,424

# PROJECT C.I.P. 09-3W W. CHESTNUT WAY WATER MAIN REPLACEMENT



## **2009 Capital Improvement Projects**

No sewer rehabilitation or replacement projects have been proposed for 2009.

## 2010 Capital Improvement Projects

Project:	CIP 10-1W	
Location:	W. Plymouth Dr. between S. Sheridan Blvd. and W. Ottawa Ave. (Normandy Estates).	
Description:	Replace 917 feet of 6-inch asbestos pipe with 917 feet of 6-inch C900, class 150, PVC pipe.	
Rationale:	This pipeline has experienced two water main breaks and will be monitored for future structural failures.	
Date Installed:	1970	
Estimated Cost:	Construction:	\$ 89,866
	Engineering (15%)	<u>\$ 13,480</u>
		\$ 103,346
	Contingency (20%)	<u>\$ 20,669</u>
		\$ 124,015

# PROJECT C.I.P. 10-1W PLYMOUTH DR. WATER MAIN REPLACEMENT



## 2010 Capital Improvement Projects

Project:	CIP 10-2W	
Location:	W. Portland Dr. between S. Sheridan Blvd. and W. Ottawa Ave. (Normandy Estates).	
Description:	Replace 1,396 feet of 6-inch asbestos-cement (AC) pipe with 1,396 feet of 6-inch C900, class 150, PVC pipe.	
Rationale:	Two breaks have occurred on this section of asbestos-cement pipe. Much of the AC pipe installed in Normandy Estates has been subject to failure and most of it has been replaced or is scheduled to be replaced.	
Date Installed:	1958	
Estimated Cost:	Construction:	\$ 136,808
	Engineering (15%)	<u>\$ 20,521</u>
		\$ 157,329
	Contingency (20%)	<u>\$ 31,466</u>
		\$ 188,795

# PROJECT C.I.P. 10-2W PORTLAND DR. WATER MAIN REPLACEMENT



## **2010 Capital Improvement Projects**

No sewer rehabilitation or replacement projects have been proposed for 2010.

## **SECTION 4**

### **VEHICLE AND EQUIPMENT PURCHASES**

## VEHICLE AND EQUIPMENT PURCHASES\*

<b><u>2006</u></b>	<p>¾ ton, 4WD pickup (Replaces 2000 ¾ ton (pewter), 4WD pickup (\$27,500)</p> <p>Pipeline Television Inspection Unit (Replaces 1992 inspection unit) (\$160,000)</p> <p>4WD utility vehicle (Replaces 2002 4WD utility vehicle) (\$27,000)</p>	<b>\$214,500</b>
<b><u>2007</u></b>	<p>Trailer-mounted grit &amp; debris vacuum unit (New equipment purchase) (\$11,000)</p> <p>1½ ton w/mounted compressor and crane (Replaces 1997, 1 ton truck) (\$42,000)</p>	<b>\$ 53,000</b>
<b><u>2008</u></b>	<p>½ ton, 4WD small pickup (Replaces 2004 Colorado Pickup) (\$24,000)</p> <p>¾ ton, 4WD pickup (Replaces 1999 Dodge Pickup) (\$27,000)</p> <p>2,000 gallon high pressure sewer cleaner (Replaces 1998 high pressure cleaner) (\$140,000)</p>	<b>\$191,000</b>
<b><u>2009</u></b>	<p>¾ ton, 4WD pickup (Replaces 2003 Chevy (Blue) 4WD Pickup) (\$27,500)</p> <p>¾ ton, 4WD pickup (Replaces 2003 Chevy (Red) 4WD Pickup) (\$27,000)</p> <p>Pipeline Television Inspection Unit (Replaces 1998 inspection unit) (\$160,000)</p>	<b>\$ 215,000</b>

**2010**

<sup>3</sup>/<sub>4</sub> ton, 4WD pickup  
(Replaces 2005 Chevy Pickup) (\$27,500)

**\$ 27,500**

**\*All costs in 2005 Dollars**

## **SECTION 5**

### **COMPLETED CAPITAL CONSTRUCTION PROJECTS**

## COMPLETED CAPITAL CONSTRUCTION PROJECTS

- October, 2005**      **Project CIP 05-3W**  
Replaced 8-inch pressure reducing valve and vault on S. Webster St., 235 feet south of W. Ottawa Ave. (Columbine West). (\$70,000 est.)
- September, 2005**      **Project CIP 05-1W**  
Replaced 2,150 feet of 8-inch cast iron pipe with 8- inch, C900, class 150 PVC pipe in W. Elmhurst Dr. between S. Kendall Blvd. and W. Elmhurst Ave. (Columbine Hills). (\$207,478)
- September, 2005**      **Project CIP 05-2W**  
Replaced 2,150 feet of 8-inch cast iron pipe with 8-inch, C900, class 150 pipe in W. Chestnut Ave. between S. Kendall Blvd. and W. Elmhurst Ave. (Columbine Hills). (\$208,145)
- August, 2005**      **Project CIP 04-5W**  
Replaced 1,025 feet of 18-inch steel pipe with 1,025 feet of 16-inch ductile iron pipe in S. Sheridan Blvd. (extended) between Dutch Creek and W. Coal Mine Ave. (\$213,865)
- May, 2005**      **Project CIP 05-1S**  
Rehabilitated with a cured-in-place method of rehabilitation 2,154 feet of 8-inch vitrified clay pipe in Morning Glory Ln. between manholes 17.63.10 and 17.63 (Bow Mar South). (\$62,565)
- September, 2004**      **Project CIP 04-2S**  
Replaced 239 feet of 8-inch SDR-35 pipe with 239 feet of C-900, class 200, PVC pipe in W. Frost Dr. (\$44,760)
- August, 2004**      **Project CIP 04-1W**  
Replaced 830 feet of 6-inch cast iron pipe in W. Elmhurst Dr. between W. Clifton Pl. and the end of the cul-de-sac. (\$114,549)
- August, 2004**      **Project CIP 04-3W**  
Replaced 14 fire hydrants at the following locations:
- On W. Hinsdale Cir. 326' W of Platte Canyon Dr. (E12-F2)
  - On W. Fremont Pl. at S. Pierce Ct. (H11-F16)
  - On S. Webster St. at W. Ken Caryl Rd. (H12-F1)
  - On S. Pierce Ct. at W. Hinsdale Dr. (H12-F12)
  - On S. Vance St. at W. Hinsdale Dr. (H12-F2)
  - On S. Upham St. at W. Hinsdale Dr. (H12-F3)
  - On S. Teller St. at W. Hinsdale Dr. (H12-F4)
  - On W. Plymouth Dr. 515' east of Gray Ct. (F10-F2)

On W. Plymouth Dr. at S. Depew St.	(F10-F3)
On W. Rowland Ave. 400' east of Gray Ct.	(F10-F9)
On S. Saulsbury Ct. at W Hinsdale Dr.	(H12-F5)
On S. Reed Ct. at W. Hinsdale Dr.	(H12-F6)
On S. Quay Ct. at W. Hinsdale Dr.	(H12-F8)
On S. Zephyr Way at W. Glasgow Pl.	(I12-F2)
On W. Glasgow Pl. 600' west of S. Webster St.	(I12-F4)
On W. Glasgow Pl. at S. Webster St.	(I12-F5)
On W. Canyon Ave. at S. Kendall Blvd.	(G14-F12)
On W. Indore Pl. at S. Kendall Blvd.	(G12-F5)

(\$50,418)

**July, 2004**

**Project CIP 04-1S**

Rehabilitated with a cured-in-place method of rehabilitation 803 feet of 8-inch vitrified clay pipe in Roxbury Dr. between S. Pierce St. and S. Newland St. (\$26,017)

**October, 2003**

**Project CIP 03-1S**

Rehabilitated 26 manholes on the Outfall Sewer in Platte Canyon Rd. between W. Coal Mine Ave. and W. Chatfield Ave. (\$22,273)

**September, 2003**

**Project CIP 03-2W**

Replaced 2,250 feet of 8-inch cast iron pipe in W. Alder Ave. between S. Depew St. and S. Kendall Blvd. with 2,250 feet of 8-inch, C900, class 150, PVC pipe (Columbine Hills). (\$197,693)

**August, 2003**

**Project CIP 03-2S**

Rehabilitated 738 feet of 8-inch vitrified clay pipe in S. Sheridan Ct. and within an easement between manholes 49.2 and OF60 using a curried-in-place method of rehabilitation (Columbine Hills). (\$23,185)

**August, 2003**

**Project CIP 03-3S**

Rehabilitated 270 feet of 10-inch vitrified clay pipe in S. Depew St. between W. Ottawa Ave. and manhole S1-4 using a cured-in-place method of rehabilitation. (\$12,217)

**April, 2003**

**Project CIP 03-3W**

Replaced 11 each 4¼-inch fire hydrants at the following locations:

On W. Chestnut Ave. 450' NE of Chestnut Wy.	(F15-F6)
On W. Alder Wy. 350' north of W. Alder Ave.	(F15-F8)
On W. Elmhurst Ave. at W. Kendall Blvd.	(G15-F9)
On W. Elmhurst Dr. at S. Kendall Blvd.	(G16-F11)
On W. Rowland Pl. 600' west of Ingalls Wy.	(F11-F1)
On S. Marshall St. at W. Portland Ave.	(G10-F6)

On W. Rowland Ave. at S. Marshall St. (G10-F7)  
 On W. Roxbury Pl. 550' east of Marshall St. (G11-F13)  
 On W. Roxbury Pl. at Kendall Blvd. (G11-F9)

(\$14,885)

**September, 2002**

**Project CIP 02-1S**

Rehabilitated 15 manholes on the Outfall Sewer in Bowles Ave. and S. Platte Canyon Rd. (manholes OF 15 to OF 30). (\$19,513)

**August, 2002**

**Project CIP 02-2S**

Installed Muffin Monster sewage grinder at the Platte River Lift Station. (\$49,963)

**August, 2002**

**Project CIP 02-2W**

Replaced 948 feet of 6-inch and 881 feet of 8-inch cast iron pipe in S. Depew St. between W. Rowland Pl. and W. Fremont Dr. with 1830 feet of 8-inch C900, class 150, PVC pipe. (Columbine Knolls). (\$170,182)

**August, 2002**

**Project CIP 02-1W**

Replaced 1,700 feet of 6-inch cast iron pipe in S. Sheridan Ct. between W. Canyon Trail and end of Sheridan Ct. cul-de-sac with 1,700 feet of 6-inch C900, class 150 PVC pipe. (Columbine Hills). (\$142,614)

**July, 2002**

**Project CIP 02-3W**

Replaced 11 each 4¼-inch fire hydrants at the following locations:

On S. Ames Wy. at W. Ken Caryl Ave. (F13-F12)  
 On S. Depew Wy. at S. Depew St. (F13-F7)  
 On S. Depew Wy. at W. Caryl Pl. (F13-F8)  
 On W. Canyon Dr. at W. Canyon Ave. (F14-F2)  
 On W. Canyon Ave. at S. Fenton St. (F14-F3)  
 On S. Eaton Wy. at S. Depew St. (F14-F4)  
 On S. Depew Wy. at W. Canyon Trail (F14-F5)  
 On W. Chestnut Dr. at W. Elmhurst Ave. (F15-F2)  
 On W. Elmhurst Dr. at W. Elmhurst Ave. (F15-F3)  
 On W. Chestnut Ave. 285' west of Chestnut Wy. (F15-F5)  
 At 5123 S. Geddes Cir. (E11-F5)

(\$17,775)

**July, 2002**

**Project CIP 02-4W**

Installed isolation valves on each side of each District water main crossing of the Denver Water Department's Conduit 20. Valve locations were as follows:

W. Bowles Ave. east of S. Jay Ct. (Leawood) (2)	12"
W. Leawood Dr. east of S. Jay Ct. (Leawood) (2)	8"
W. Maplewood Pl. at S. Ingalls St. (Leawood) (2)	6"
W. Maplewood Dr. at S. Ingalls St. (Leawood) (2)	6"
W. Fair Dr. at S. Ingalls St. (Leawood) (2)	8"
W. Arbor Ave. at S. Ingalls St. (Leawood) (1)	8"
W. Caley Ave. at S. Ingalls St. (Leawood) (2)	6"
S. Jay Wy. at S. Jay Wy. (Leawood) (2)	6"
W. Weaver Dr. at S. Jay Wy. (Leawood) (2)	12"
W. Coal Mine Ave. at S. Marshall St. (Misc.) (1)	8"
W. Marshall St. (Pierce Street Mall) (1)	8"
W. Portland Ave. at S. Marshall St. (Columbine Knolls) (2)	8"
W. Canyon Ave. at S. Pierce St. (Columbine Hills) (2)	12"

(\$61,566)

**August, 2001**

**Project 01-2W**

Replaced 1,100 feet of 6-inch cast iron pipe in W. Fremont Dr., between W. Fremont Ave. and S. Platte Canyon Dr. with 1,100 feet of C-900, class 150, PVC pipe. (\$112,045)

**August, 2001**

**Project 01-3W**

Replaced 2,110 feet of 8-inch cast iron pipe in S. Sheridan Ct. between W. Hinsdale Ave. and W. Rowland Pl. (Columbine Manor). (\$254,234)

**August, 2001**

**Project 01-4W**

Replaced 12 each 4¼ fire hydrants at the following locations:

On Blue Sage Dr. at W. Berry Ave.	(D03-F1)
On Blue Sage Dr. at Sumac Ln.	(D03-F2)
On Morning Glory Ln. 835' south of Berry Ave.	(D03-F3)
On Blue Sage Dr. at Morning Glory Ln.	(D04-F1)
On Wood Sorrel Dr. at Tule Lake Dr.	(D04-F4)
On Marigold Ln. at Sumac Ln.	(E03-F2)
On Laurel Pl. at W. Bowles Ave.	(E04-F7)
On Snowberry Dr. at Tule Lake Dr.	(E04-F9)
On S. Jay Dr. at W. Coal Mine Ave.	(G08-F11)
On Summit Dr. at S. Kendall Wy.	(G08-F12)
On S. Depew St. at W. Rowland Pl.	(F11-F6)
On S. Chase Wy. at W. Rowland Pl.	(F11-F8)

(\$36,893)

**July, 2001**

**Project 01-1S**

Rehabilitated 2,676 feet of 10-inch concrete sewer pipe in an easement between S. Sheridan Blvd. and S. Platte Canyon Rd. (Normandy Estates)

Outfall Sewer) with cured in place lining. Rehabilitated 10 manholes located on the pipeline. (\$106,810)

**July, 2001**

**Project 01-2S**

Rehabilitated 1,200 feet of 8-inch clay tile pipe in an easement between S. Sheridan Blvd. and Shasta Circle north of Bowles Ave. with cured in place lining. (\$40,579)

**December, 2000**

**Project 00-2S**

Rehabilitated 15 manholes (OF1 to OF14) on the District's outfall sewer main. (\$26,669)

**September, 2000**

**Project 00-1W**

Replaced 1,050 feet of 18-inch steel water main in S. Sheridan Blvd. Between W. Portland Dr. and W. Fremont Ave. with 1,050 feet of 16-inch ductile iron pipe. (\$236,106)

**September, 2000**

**Project 00-2W**

Replaced 1,573 feet of 6-inch cast iron pipe in W. Rowland Ave. between S. Sheridan Blvd. And W. Quarles Drive, including the Normandy Pl. cul-de-sac with 1, 573 feet of C-900, class 150, PVC pipe. (\$145,663)

**September, 2000**

**Project 00-3W**

Replaced 17 Pacific States fire hydrants at the following locations:

- On S. Gray Ct. at W. Fair Dr. (F06-F1)
- On W. Fair Dr. at W. Maplewood Dr. (F06-F2)
- On S. Fenton Ct. 1000' north of W. Weaver Dr. (F06-F3)
- On S. Eaton Ct. at W. Maplewood Dr. (F06-F4)
- On W. Leawood Dr. at W. Fair Dr. (F06-F5)
- On W. Leawood Dr. at S. Chase St. (F60-F6)
- On S. Gray Ct. 500' north of Weaver Dr. (F07-F2)
- On S. Fenton Ct. at W. Weaver Dr. (F07-F3)
- On S. Depew Ct. 250' north of Weaver Dr. (F07-F5)
- On S. Chase Ct. 400' north of Weaver Dr. (F07-F6)
- On S. Chase St. 700' north of Weaver Dr. (F07-F7)
- On S. Chase St. at W. Weaver Dr. (F07-F8)
- On W. Leawood Dr. 50' northwest of Benton Wy. (F07-F9)
- On W. Maple wood Dr. at S. Ingalls St. (G06-F9)
- On W. Canyon Ave. at W. Nova Dr. (G14-F11)
- On W. Canyon Ave. at St. Newland St. (G14-F2)
- On S. Pierce St. 245' south of Canyon Ave. (H14-F14)

(\$41,351)

<b><u>August, 2000</u></b>	<b>Project 00-1S</b> Rehabilitated 2,775 feet of 8-inch vitrified clay sewer pipe in the Bow Mar South subdivision using the cured-in-place (Insituform) method of rehabilitation. (\$93,747)
<b><u>December, 1999</u></b>	<b>Project 99-3S</b> Installed ultrasonic sewage flow meter at Platte Canyon Sewage Lift Station. (\$16,924)
<b><u>December, 1999</u></b>	<b>Project 99-2S</b> Rehabilitated manholes OF51, OF52, OF53, OF54 and OF55 on the District's outfall sewer main. (\$12,055)
<b><u>September, 1999</u></b>	<b>Project 99-1S</b> Rehabilitated 2,392 feet of 24-inch concrete sewer main between manholes OF34 and OF39 using a cured in place rehabilitation process. (\$178,043)
<b><u>September, 1999</u></b>	<b>Project 99-3W</b> Installed eight 6-inch gate valves at various locations. (\$24,009)
<b><u>September, 1999</u></b>	<b>Project 99-1W</b> Replaced 2,725 feet of 6-inch cast iron pipe in S. Platte Canyon Dr. between S. Sheridan Blvd. and W. Fremont Ave. (Columbine Manor Subdivision. (\$161,153)
<b><u>September, 1999</u></b>	<b>Project 99-2W</b> Replaced 10-inch pressure reducing valve and vault on W. Hinsdale Dr. at S. Webster St. (\$53,340)
<b><u>November, 1998</u></b>	<b>Project 98-2S</b> Rehabilitated manholes OF30 through OF33 and OF61 through OF64 on the District's outfall sewer main (eight manholes). (\$11,025)
<b><u>November, 1998</u></b>	<b>Project 98-1S</b> 1. Sliplined 406 feet of 24-inch concrete pipe between manholes OF32 and OF33 and 1,016 feet of 18-inch concrete pipe between manholes OF61 and OF64 on the District's outfall sewer main. (\$68,534)  2. Insituformed 905 feet of 24-inch concrete pipe between manholes OF24 and OF30 on the District's outfall sewer main. (\$79,241)
<b><u>October, 1998</u></b>	<b>Project 98-1W</b> Replaced 760 feet of 6-inch cast iron pipe in W. Quarles Dr. between S. Sheridan Blvd. and Normandy Parkway with 760 feet of 6-inch C900,

class 150, PVC pipe. (\$81,212)

**September, 1998**

**Project 98-2W**

Replaced 1,322 feet of 8-inch cast iron pipe in Tule Lake Dr. between S. Sheridan Blvd. and Shasta Cir. with 1,322 feet of 8-inch C900, class 150, PVC pipe. (\$106,088)

**May, 1998**

**Project 01-1W**

Replaced 1,263 feet of 6-inch cast iron pipe in S. Gray Ct. Between W. Plymouth Dr. and W. Rowland Ave. with 1,263 feet of 6-inch, C900, class 150 PVC pipe. (\$90,096)

**May, 1998**

**Projects 97-4W and 97-5W**

Replaced 10-inch pressure regulating valve and vault on S. Webster St. at W. Frost Dr., replaced 6-inch pressure regulating valve on W. Frost Dr. at S. Webster St., replaced 10-inch pressure regulating valve and vault on W. Fremont Dr. at S. Allison St. (\$90,198)

**May, 1998**

**Project 97-1W**

Replaced 1,046 feet of 18-inch steel water main with 1,046 feet of 16-inch ductile iron pipe, and 290 feet of 6-inch cast iron pipe with 290 feet of class 50 ductile iron pipe in S. Sheridan Blvd. in Normandy Estates Subdivision. (\$228,137)

**February, 1998**

**Project 97-1S**

Sliplined 2,035 feet of 24-inch concrete sanitary sewer main with 22-inch O.D., SDR 32.5 PE pipe between outfall sewer manholes OF19 and OF30. (\$122,864)

**July, 1997**

**Project 97-2W**

Replace IKOR variable speed motor controller at the Columbine West Water Pumping Station. (\$58,536)

**July, 1997**

**Project 97-3W**

Installed centralized, telemetered, computerized supervisory control and data acquisition (SCADA) system. (\$55,908)

**October, 1996**

**Project 96-1S**

Sliplined 1,517 feet of 27-inch sanitary sewer main between manhole OF3 and OF7. (\$100,395)

**June, 1996**

**Project 96-1W**

Installed 1,508 feet of 12-inch class 150 PVC pipe with associated appurtenances in S. Pierce St. between W. Fair Dr. and W. Leawood Dr. (\$74,908)

- July, 1995**                    **Project 95-2W**  
Relocated 732 feet of 12-inch asbestos-cement pipe with 732 feet PVC pipe in W. Coal Mine Avenue between S. Webster Street and the entrance to The Terrace at Columbine . (\$33,470)
- July, 1995**                    **Project 95-3W**  
Replaced 1,758 feet of 6-inch cast iron pipe with 1,758 feet of PVC pipe in W. Geddes Place between S. Sheridan Court and S. Depew Street in the Columbine Grove Subdivision. (\$95,432)
- July, 1995**                    **Project 95- 4W**  
Replaced 1,179 feet of 6-inch cast iron water pipe with 1,179 feet of 6-inch PVC pipe in S. Ames Way between W. Caryl Avenue and W. Canyon Trail. (\$66,744)
- July, 1995**                    **Project 95-1S**  
Sliplined 1,064 feet of 27-inch concrete pipe between manholes OF7 and OF12 in S. Julian Street between W. Bowles Avenue and W. Alamo Place and 875 feet of 24-inch concrete sewer main between S. Julian Street and S. Lowell Way. (\$170,332)
- September, 1994**            **Unscheduled**  
Replaced 500 feet of 6-inch cast iron pipe with 500 of 6-inch PVC in the W. Fremont Place cul-de-sac west of S. Sheridan Blvd. (\$132,102)
- August, 1994**                **Project 94-3W**  
Replaced 1,550 feet of 6-inch cast iron water pipe with 1,550 feet of 8-inch PVC pipe in W. Fremont Avenue between Platte Canyon Road and S. Sheridan Boulevard. (\$95,959)
- July, 1994**                    Sliplined 1, 375 feet of 21-inch concrete sewer main in Platte Canyon Road between manholes OF42 and OF47. (\$64,757)
- November, 1994**            Insituform rehabilitated 500 feet of 8-inch vitrified clay sewer pipe in an easement between S. Ingalls Street and S. Jay Way. (\$29,277)
- September, 1994**            **Project 93-3W**  
Replaced 1,500 feet of 18-inch steel water main with 1,600 feet of 16-inch ductile iron pipe between W. Bowles Avenue and W. Leawood Drive. (\$123,000)
- April, 1993**                    **Project 93-1W**  
Replaced 800 feet of 6-inch cast iron water pipe in W. Quarles Drive between S. Sheridan Blvd. and W. Rowland Ave. (Normandy Estates Subdivision) with 800 feet of 6-inch PVC pipe. (\$36,000)

**May, 1993**

**Project 93-1S and 93-2S**

Sliplined 545 feet of 21-inch concrete sewer between manholes 56.1 and 58, 501 feet of 18-inch concrete sewer between manholes 58 and 59, and 1,000 feet of 27-inch concrete pipe between the sewage lift station and manhole 3 on the Platte Canyon outfall sewer main. (\$128,410)

**May, 1992**

**Project 92-1W**

Replaced 1,150 feet of 6-inch cast iron water pipe in Sumac Lane west of Blue Sage Dr. to end of cul-de-sac with 8-inch PVC pipe (Bow Mar South Subdivision). (\$62,120)

**May, 1992**

**Project 92-2W**

Replaced 925 feet of 6-inch cast iron water pipe S. Kendall Ct. between W. Elmhurst Ave. and W. Elmhurst Dr. with 6-inch PVC pipe (Columbine Hills Subdivision). (\$51,782)

**March, 1992**

**Project CIP 91-1S**

Sewage Lift Station Rehabilitation Project. (\$199,478)

1. Rehabilitated existing concrete lift station building
2. Constructed generator and storage building
3. Installed automatic electric transfer switch
4. Installed 500 gallon diesel fuel tank
5. Rehabilitated wet well
6. Replaced in-let gates
7. Replaced comminutor
8. Installed wooden fence

**August, 1991**

**Project CIP 91-1W**

Replaced 1,200 feet of 6-inch cast iron water pipe in S. Kendall Ct. between S. Kendall Blvd. and W. Rowland Pl. (Columbine Knolls Subdivision). (\$ 58,066)

**September, 1990**

**Project CIP 90-1S**

Sliplined 1,876 feet of 8-inch and 10-inch clay tile sewer pipe in an easement through the Columbine Hills Shopping Center and in W. Canyon Ave. between S. Pierce St. and S. Kendall Blvd. (\$ 30,537)

**May 1990**

**Project CIP 90-1W**

Replaced 1,219 feet of 6-inch cast iron water pipe in W. Brittany Pl. between W. Leawood Dr. and S. Jay Ct. (Leawood Subdivision). (\$60,949)

**August 1989**

**Project CIP 89-2W**

a). Replaced 950 feet of 12 inch cast iron water main in Blue Sage Dr. between W. Bowles Ave. and Tule Lake Dr. (Bow Mar South

Subdivision)

- b). Replaced 450 feet of 6 inch cast iron pipe in W. Roxbury Pl. west of S. Sheridan Blvd. (Columbine Grove Subdivision). (\$96,200)

**July 1989**

**Project CIP 89-1W**

Replaced 1,550 feet of 6 inch cast iron pipe in Lupine Dr. between W. Bowles Ave. and Shasta Cir. and in Shasta Cir. between Lupine Dr. and Tule Lake Dr. (Bow Mar South Subdivision). (\$75,490)

**December, 1988**

**Project CIP 88-2S**

Replaced manhole 40 on District Outfall Sewer Main in Platte Canyon Road. (\$ 2,500)

**June 1988**

**Project CIP 88-1S**

Sliplined 200 feet of 24 inch concrete sewer between manholes 33 and 34 in Platte Canyon Rd. at Dutch Creek. (\$13,616)

**June 1988**

**Project CIP 88-1W**

Replaced 1250 feet of 6 inch water main in S. Kendall Blvd. between S. Kendall Ct. and W. Rowland Pl. (\$60,164)

**September, 1987**

**Project CIP 87-1W**

Replaced 1,400 feet of 6 inch water main in W. Plymouth Dr. between S. Kendall Blvd. and S. Harlan Ct.; and in S. Harlan Ct. (cul-de-sac) south of W. Plymouth Dr. (\$57,672)

**September, 1987**

**Project CIP 87-1S**

Replaced 1,470 feet of 8 inch sanitary sewer in W. Bowles Ave. between Platte Canyon Rd. and Blue Sage Dr. (\$69,808)

**July 1986**

**Project CIP 86-1W**

Replaced 1,800 feet of eight inch water pipe in Shasta Circle (Bow Mar Subdivision). (\$76,276)

**September, 1985**

**Project CIP 85-1S**

Sliplined 694 feet of 18 inch sewer, 3,064 feet of 21 inch sewer, and 1,604 feet of 24 inch sewer. (\$ 220,780)

**December, 1978**

**Project CIP 78-2W**

Replaced 1,450 feet of six inch water pipe in Summit Dr. and Jay Dr. (Columbine Estates Subdivision). (\$33,782)

**December, 1978**

**Project CIP 78-1W**

Replaced 305 feet of six inch water pipe in W. Rowland Cir., west of S. Lamar St. (Columbine Knolls Subdivision). (\$11,496)

**April 1977**

**Project 77-1W**

Replaced 817 feet of six inch water pipe in Snowberry Dr. (Bow Mar South Subdivision). (\$18,616)

**April 1976**

**Project 76-2W**

Replaced 855 feet of six inch water pipe in Bell Flower Dr. (Bow Mar South Subdivision). (\$11,960)

**April 1976**

**Project 76-1W**

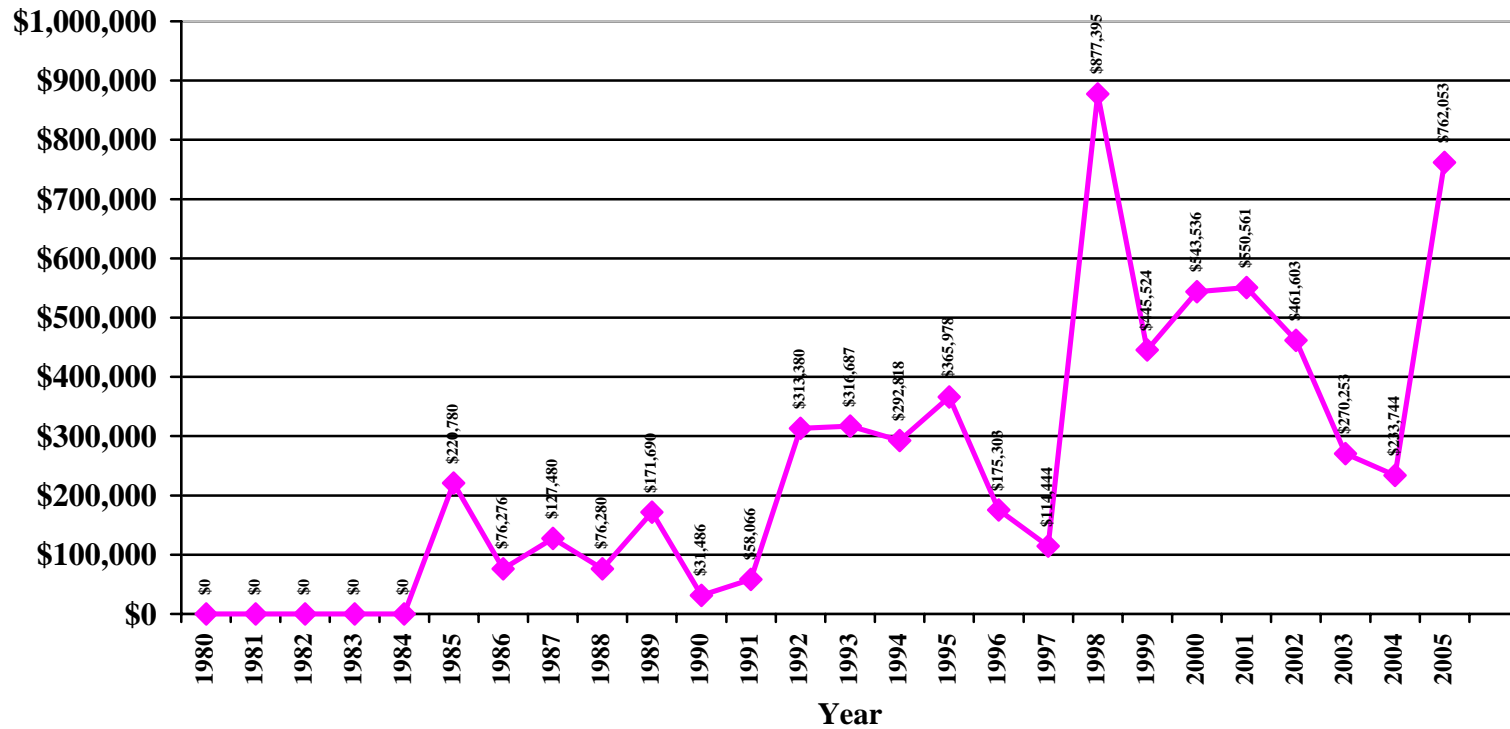
Replaced 855 feet of six inch water pipe in Wood Sorrell Dr.(Bow Mar South Subdivision). (\$11,960)

**March 1975**

**Project 75-1W**

Replaced 1,140 feet of eight inch water pipe in Tule Lake Dr. (Bow Mar South Subdivision). (\$19,873)

# Capital Improvement Expenditures



## **SECTION 6**

### **CAPITAL IMPROVEMENT PROJECT MAP**

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