

Platte Canyon Water and Sanitation District



Capital Master Plan 2012 -2021

PLATTE CANYON WATER AND SANITATION DISTRICT

CAPITAL MASTER PLAN

2012 -2021

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PLATTE CANYON WATER AND SANITATION DISTRICT CAPITAL MASTER PLAN 2012 -2021

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 78 miles of water mains, 75 miles of sanitary sewer mains, and one potable water pumping 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. Selection and prioritization of capital projects has been updated and enhanced this year. A detailed, objective evaluation process has been developed by which every water main that has experienced at least one failure is analyzed and rated. The evaluation process and criteria are described below.

Although the majority of the District's infrastructure is within its expected useful life, electrolysis caused corrosion and 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 replaced or rehabilitated 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 2012 -2021 Capital Master Plan proposes expenditure of \$1,133,573 in 2012, and \$4,031,415 during the ten year period extending from 2012 to 2021. This compares with last year's master plan projected expenditures for 2012 amounting to \$318,308 and ten year period expenditures totaling \$3,003,704. Water facility replacement projects account for 32 percent of the total proposed expenditures while sewer rehabilitation expenses and vehicle and equipment purchases account for 30 percent and 38 percent respectively.

Expenditures called for in this Capital Master Plan will result in a reserve fund balance of \$9,466,660 at year end 2012. This amount has 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.

CRITERIA FOR RATING WATER AND SEWER MAIN REHABILITATION AND REPLACEMENT PROJECTS

Water

An analytical, objective rating process has been developed to select and prioritize water and sanitary sewer main rehabilitation and replacement projects over the ten year planning horizon. Objective criteria used to evaluate water system facilities include the following factors:

- Age of pipe
- Type of pipe
- Failure rate (timing and frequency of failures)
- Type and cause of pipe failures

The rating system is used to assign a certain number of points to each water system facility that has experienced at least one failure. The number of points applied by each rating factor is as follows:

<u>Factor</u>	<u>Points Assessed</u>
Age of pipe	One point for each year of service
Type of pipe	Each type of pipe is assigned a number of points based on likelihood of failure: cast iron - 75 points ductile iron - 50 points asbestos-cement - 50 points polyvinyl chloride - 50 points
Failure rate	Each failure is assigned a number of points based on the age of the failure and type or cause of the failure (see Age of pipe failure and type of failure factors below)
Age of pipe failure	One year or less - 300 points 1-3 years - 275 points 4-5 years - 250 points 6-10 years - 150 points 11 years or greater - 125 points
Type of failure	beam break - 0.95 (multiplier) electrolysis break - 1.0 (multiplier)

An example of the application of the pipe evaluation rating system follows:

A 35 year old cast iron pipe with two electrolysis caused failures, one occurring in 1996 and one in 2000:	
Age of pipe -	35 points
Type of pipe -	75 points
Failure rate -	275 points [1996 break = 125 points (age of break factor) x 1.0 (electrolysis break multiplier)] and [2000 break = 150 points (age of break factor x 1.0 (electrolysis multiplier)]
Total points -	385 points

Replacement and rehabilitation projects are prioritized and scheduled for construction based on the point value resulting from the evaluation rating process and supplemental evaluation criteria as explained later in this section. The scheduling criteria is as follows:

<u>Rehabilitation - Replacement Scheduling Criteria</u>	
<u>Year scheduled</u>	<u>Points</u>
1	700 or more
2	665-699
3	630-664
4	595-629
5	560-594
6	545-559
7	530-544
8	515-529
9	500-514
10	475-499

In addition to the pipe evaluation rating criteria, the District also considers subjective, supplemental factors that may modify capital project scheduling. These factors include:

- Number and type of customers affected by water outages
- Hydraulics (encrustation of pipe interior)
- Water quality
- Criticality (impact on reliability of water system)
- Cost of pipeline failure - either experienced or potential costs for repairs and property damage
- Coordination with highway and transportation authorities

Sewer

Sanitary sewer pipelines are rated during routine, preventive television inspections. Pipelines deemed to be at risk of failure or stoppage despite increased preventive maintenance, or determined to be a source of infiltration or exfiltration are scheduled for rehabilitation or replacement within a three year timeframe. Other pipelines that are damaged yet can continue to provide reliable service with increased preventive maintenance are scheduled for rehabilitation or replacement in later years based on the extent of damage and potential for failure.

DESCRIPTION OF PLAN ELEMENTS

The facility rehabilitation and replacement evaluation process has resulted in the addition and rescheduling of a number of capital projects from the previous ten year capital plan. These annual fluctuations in project scheduling are likely to be the norm in the future as the timing, type and number of water and sewer main failures determine the priority for rehabilitation and replacement. Those pipelines that do not exhibit continuing deterioration will be deprioritized

while the pipelines that continue to show advanced deterioration will receive priority for rehabilitation/replacement.

Additional infrastructure improvements will be required beyond the current ten year planning period so a long range (50 year) infrastructure rehabilitation and replacement plan has been prepared as a planning document to reflect the long range facility improvements and financial needs of the District. The long term financial plan will be updated and presented to the Board of Directors in late 2011.

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.

One water main replacement project is scheduled for 2012. The proposed project was previously scheduled for 2013, but has been advanced due to continuing deterioration of the pipe and the occurrence of an additional water main break in 2011. The project consists of replacement of 474 feet of 6-inch cast iron pipe in S. Sheridan Ct. between W. Ken Caryl Ave. and W. Hinsdale Ave with 474 feet of 6-inch, C-900, class 150 PVC pipe. The existing water main was installed in 1964. The projected cost for project CIP 12-1W is \$81,168.

Another water main replacement project originally scheduled for 2012 in the 2011 - 2020 capital improvement plan has been delayed to 2014 as a result of not experiencing additional pipe failures or deficiencies.

The single water related capital project scheduled for 2013 proposes replacement of interior piping at the Columbine West Pump Station. A number of leaks have occurred on the steel pipe due to internal corrosion. The leaks are repaired by welding steel plates on the exterior surface of the pipe. While this is a very adequate method of repairing the pipe, at some point all of the steel pipe will need to be replaced. District staff will continue to closely monitor the condition of the pipe and adjust the project schedule accordingly. The estimated cost for replacement of the pump station piping is \$333,270.

Seven additional water main replacement and rehabilitation projects are scheduled for 2014 through 2021 at an estimated cost of \$893,572. Two of the projects call for rehabilitation of a total of 1,650 feet of 16-inch steel transmission pipe in Sheridan Blvd. (extended) between Coal Mine Ave. and Ontario Ave. in the Normandy Estates Subdivision and between Leawood Dr. and the Dutch Creek in the Leawood Subdivision. The pipelines are structurally sound but have experienced pin hole leaks due to exterior corrosion. A cured-in-place method of rehabilitation is proposed due to very limited right of way which could preclude cut-and-cover replacement. The two projects are estimated to cost \$452,088.

The remaining five capital water projects propose replacement of 1,885 feet of 4, 6, and 8-inch cast iron pipe and 620 feet of 6-inch asbestos-cement pipe. All pipe will be replaced with C-900, class 150, PVC pipe.

The total cost for water main replacement and rehabilitation projects over the 2012 - 2021 period is \$1,308,010 as compared to \$1,273,398 proposed in the 2011 - 2020 plan.

Video inspection of the Coon Creek interceptor sewer has revealed significant internal corrosion of the 50 year old 18-inch and 21-inch concrete pipe. To respond to the problem, rehabilitation of 1,313 feet of 21-inch pipe, 4,803 feet of 18-inch pipe and 27 manholes is scheduled as a high priority capital sewer project in 2012. Much of the pipe is located in narrow easements and rehabilitation will necessitate coordination with private property owners to obtain access and work staging rights. A cured-in-place method of rehabilitation will be utilized for the project to avoid excavation. By-pass pumping will be required and will likely be a significant cost factor. Sixty-nine service connections on the interceptor will have to be restored as a component of the project. These reconnections will be made from the interior of the pipe to avoid multiple excavations. The estimated cost for project CIP 12-1S is \$759,905.

For each year between 2012 and 2021, expenditure of \$50,000 is being proposed for cured-in-place pipeline rehabilitation of sewer mains that are found to be either structurally deficient or heavily infiltrated with roots. The location and scheduling for these rehabilitation projects is determined by routine sewer video inspections. An annual contract is awarded to a single sewer rehabilitation contractor to conduct repair and rehabilitation projects on an as needed and authorized basis.

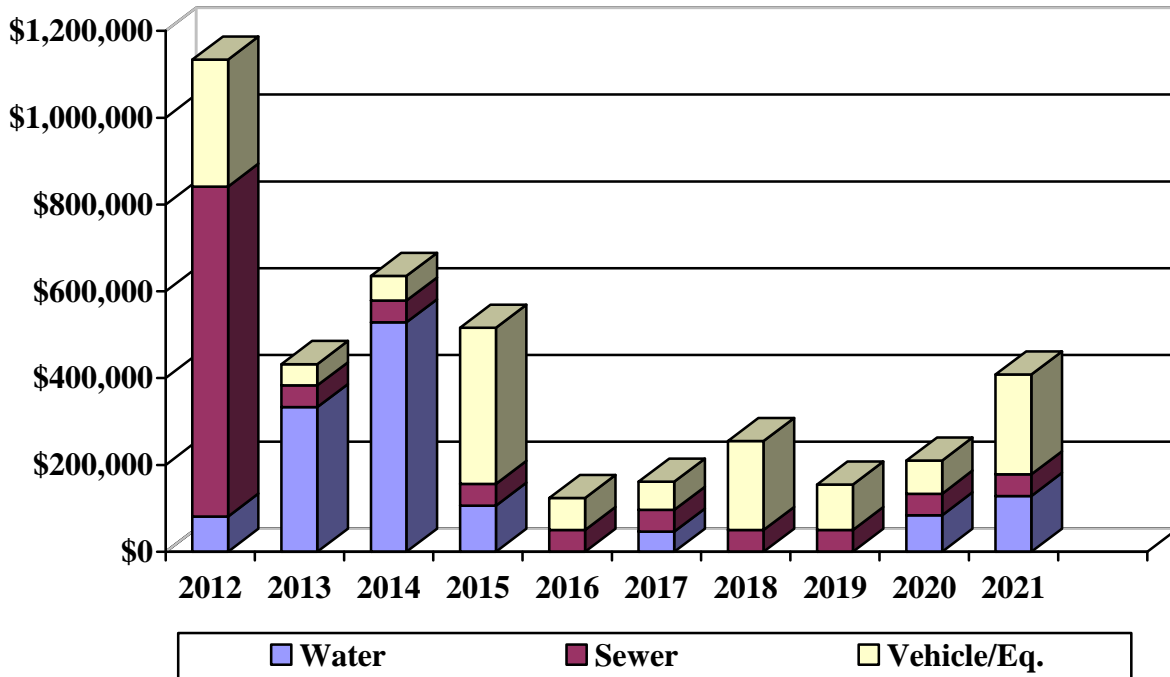
Vehicle replacement costs for the period between 2012 and 2021 are projected to be \$1,511,500, \$557,500 more than the amount proposed in last year's vehicle replacement schedule. The increase is attributed to cost increases for sewer cleaning and video inspection equipment, the addition of mobile valve operator equipment which was not included in last year's schedule and the addition of a replacement for the existing flat bed truck with mounted crane and air compressor. All proposed purchases will replace existing units.

Total capital expenses during the ten year planning period are \$4,031,415; 39.4 percent of the projected year end 2011 reserve fund balance of \$10,232,756. Cash financing is anticipated for all capital projects and no increases in property tax rates, tap fees, or service charges are proposed over the ten year period.

SECTION 2

SUMMARY OF PROPOSED CAPITAL EXPENDITURES FOR THE PERIOD 2012 -2021

Year	Water	Sewer	Vehicle/Equip	Totals
2012	\$ 81,168	\$ 759,905	\$ 292,500	\$1,133,573
2013	\$ 333,270	\$ 50,000	\$ 49,000	\$432,270
2014	\$ 528,595	\$ 50,000	\$ 57,000	\$635,595
2015	\$ 106,170	\$ 50,000	\$ 360,000	\$516,170
2016	\$ 0	\$ 50,000	\$ 74,000	\$124,000
2017	\$ 46,453	\$ 50,000	\$ 65,000	\$161,453
2018	\$ 0	\$ 50,000	\$ 205,000	\$255,000
2019	\$ 0	\$ 50,000	\$ 105,000	\$155,000
2020	\$ 83,781	\$ 50,000	\$ 76,000	\$209,781
2021	\$ 128,573	\$ 50,000	\$ 230,000	\$408,573
TOTALS	\$1,308,010	\$1,209,905	\$1,513,500	\$4,031,415



SECTION 3

WATER DISTRIBUTION AND WASTEWATER COLLECTION FACILITY REHABILITATION AND REPLACEMENT PROJECTS SCHEDULED FOR 2012 -2021

2012 Capital Improvement Projects
Water

Project: **CIP 12-1W**

Location: S. Sheridan Ct. between W. Ken Caryl Ave. and W. Hinsdale Ave.
(Columbine Knolls Subdivision).

Description: Replace 474 feet of 6-inch cast iron pope with 474 feet of 6-inch,
C-900, class 150, PVC pipe.

Date Installed: 1964

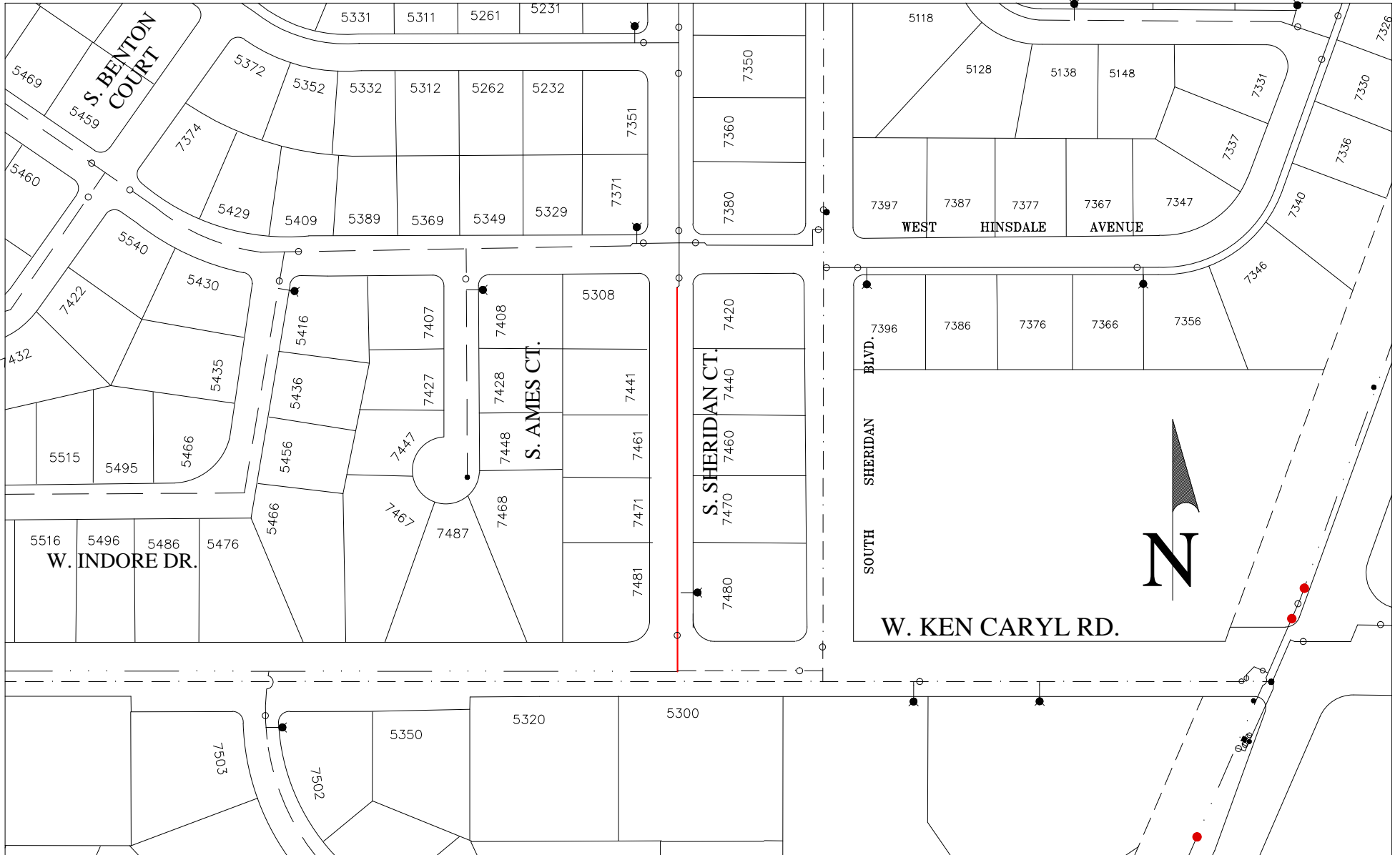
Rating: 922 points
4 breaks

Cost:

Construction:	\$ 61,375
Engineering (15%)	<u>\$ 9,206</u>
	\$ 70,581
Contingencies (15%)	<u>\$ 10,587</u>
	\$ 81,168

PROJECT C.I.P. 12-1W

S. SHERIDAN CT. WATER MAIN REPLACEMENT



**2012 Capital Improvement Projects
Sewer**

Project: **CIP 12-1S**

Location: Various portions of the Coon Creek Interceptor south of W. Bowles Ave. and east of S. Jay Street.

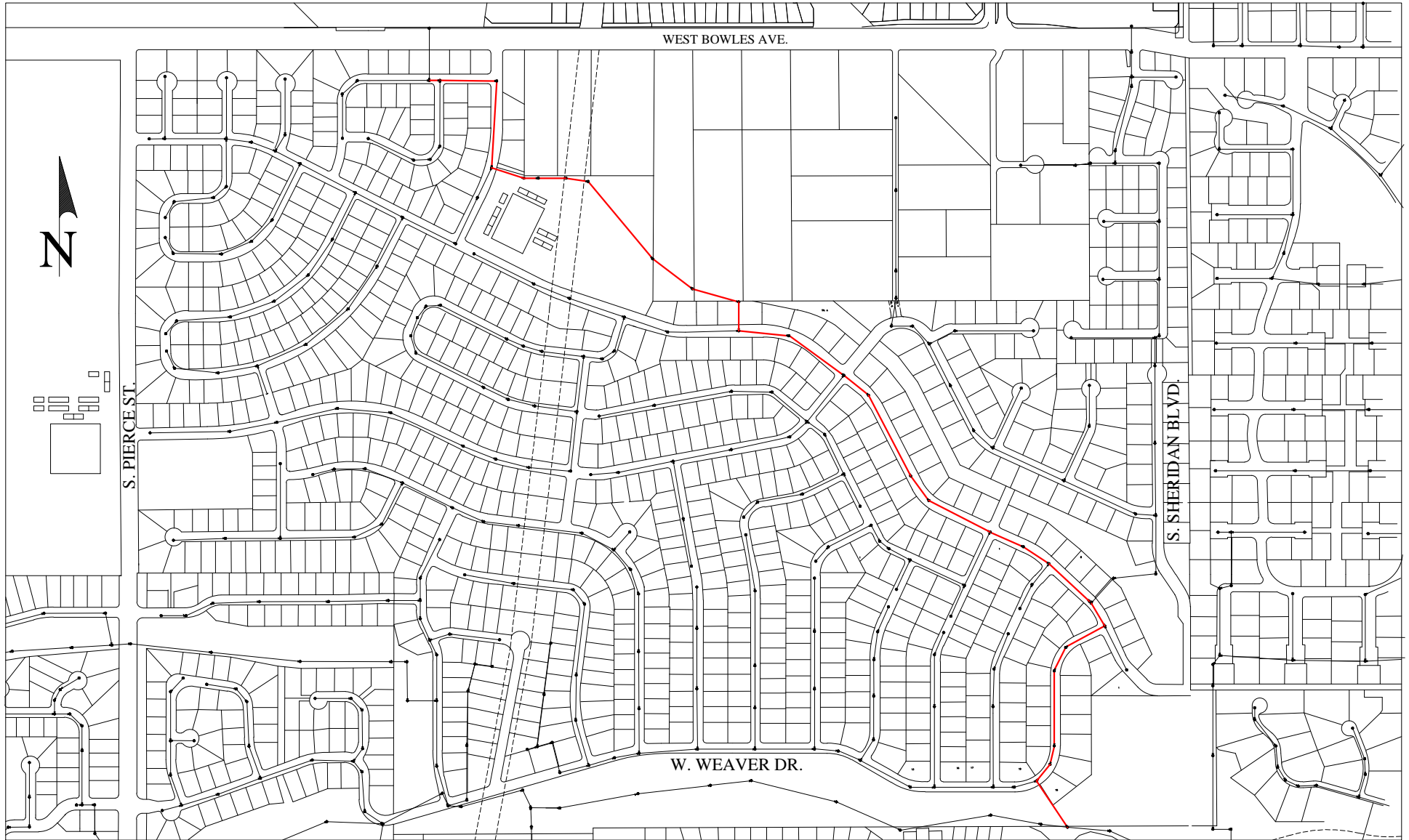
Description: Rehabilitate portions of the Coon Creek Interceptor using a cured-in-place technique. The project consists of rehabilitation of 1,313 feet of 21-inch and 4,803 feet of 18-inch concrete pipe and rehabilitation of 27 manholes. Sixty nine sanitary sewer service connections must be restored as a component of the project.

Date Installed: 1962

Cost:

Construction:	\$ 600,715
Engineering (10%)	<u>\$ 60,072</u>
	\$ 660,787
Contingencies (15%)	<u>\$ 99,118</u>
	\$ 759,905

PROJECT C.I.P. 12-1S COON CREEK INTERCEPTOR CIPP PROJECT



2013 Capital Improvement Projects Water

Project: **CIP 13-1W**

Location: Columbine West Pump Station - 7677 W. Ken Caryl Ave.

Description: Replace inlet, outlet and interior cast iron and steel pipe.

Date Installed: 1972

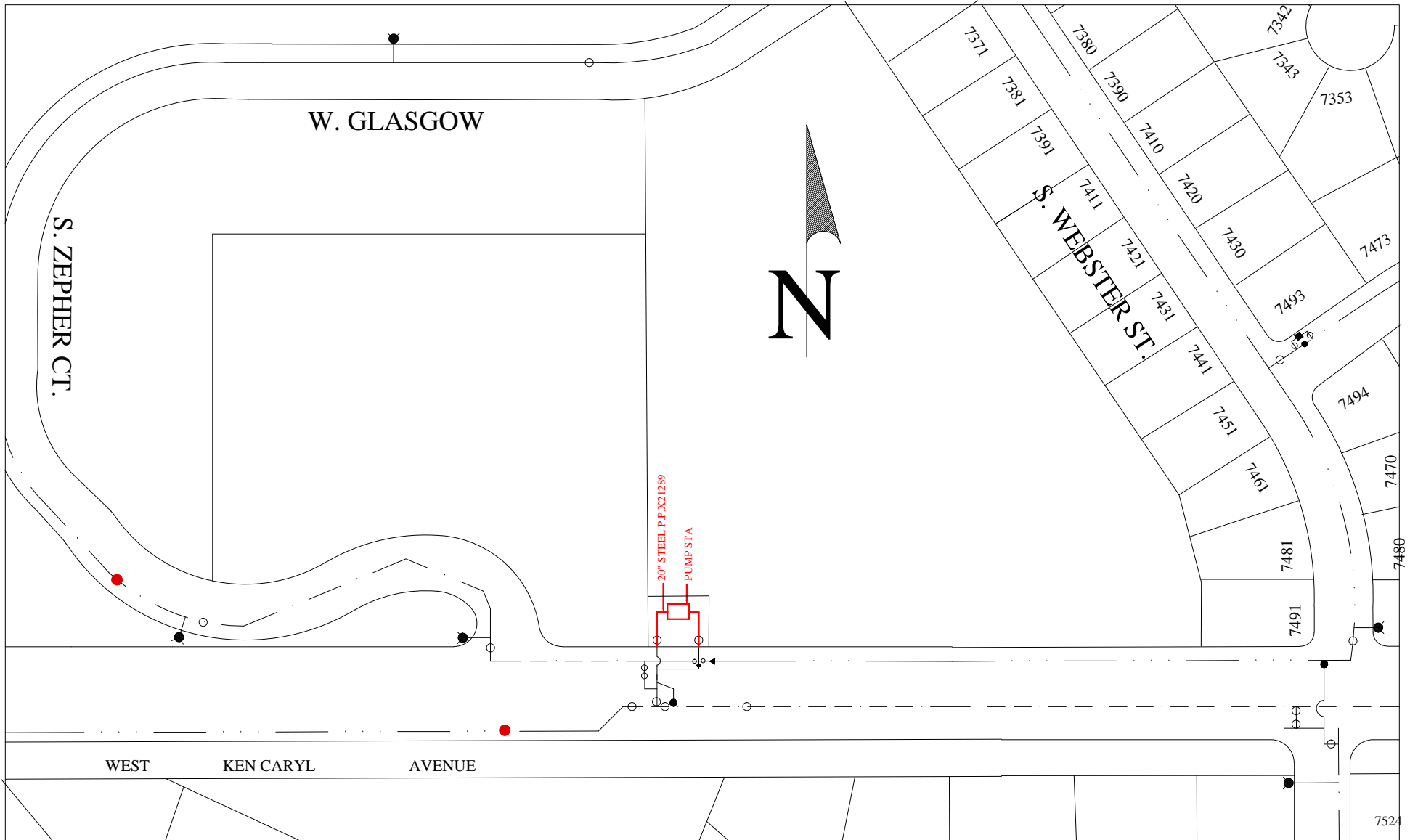
Rating: Several small leaks have occurred on the interior pump station piping. The leaks have been attributed to interior corrosion of the steel pipe.

Cost:

Construction:	\$ 252,000
Engineering (15%)	<u>\$ 37,800</u>
	\$ 289,800
Contingencies (15%)	<u>\$ 43,470</u>
	\$ 333,270

PROJECT C.I.P. 13-1W

COLUMBINE WEST PUMP STATION PIPE REPLACEMENT



2013 Capital Improvement Projects Sewer

Project:	CIP 13-1S
Location:	Various
Description:	Rehabilitate various sections of sewer collection system pipe using cured-in-place pipe rehabilitation process. A contract will be issued to a single contractor to line those sections of sewer pipe that are determined each year to be in need of rehabilitation due to structural deficiencies and/or severe root intrusion.
Cost:	\$ 50,000

2014 Capital Improvement Projects Water

Project: **CIP 14-1W**

Location: S. Sheridan Blvd. (extended) between W. Coal Mine Ave. and W. Ontario Ave. (Normandy Estates).

Description: Line 850 feet of 16-inch steel pipe.

Date Installed: 1959

Rating: Based on criticality evaluation. Pipeline is located in narrow easement and failure would cause significant property damage.

Cost:

Construction:	\$ 180,180
Engineering (15%)	<u>\$ 27,027</u>
	\$ 207,207
Contingencies (20%)	<u>\$ 41,441</u>
	\$ 248,648

Project: **CIP 14-2W**

Location: S. Sheridan Blvd. (extended) between W. Leawood Dr. and Dutch Creek. (Sheridan 16").

Description: Line 800 feet of 16-inch steel pipe.

Date Installed: 1959

Rating: Based on criticality evaluation. Pipeline is located in narrow easement and failure would cause significant property damage.

Cost:

Construction:	\$ 147,420
Engineering (15%)	<u>\$ 23,113</u>
	\$ 169,533
Contingencies (20%)	<u>\$ 33,907</u>
	\$ 203,440

2014 Capital Improvement Projects
Water (continued)

Project: **CIP 14-3W**
 Location: S. Quay Ct. between W. Hinsdale Pl. and end of cul-de-sac
 (Columbine West Subdivision).

Description: Replace 325 feet of 4-inch cast iron pipe with 325 feet of 4-inch,
 C-900, class 150 PVC pipe.

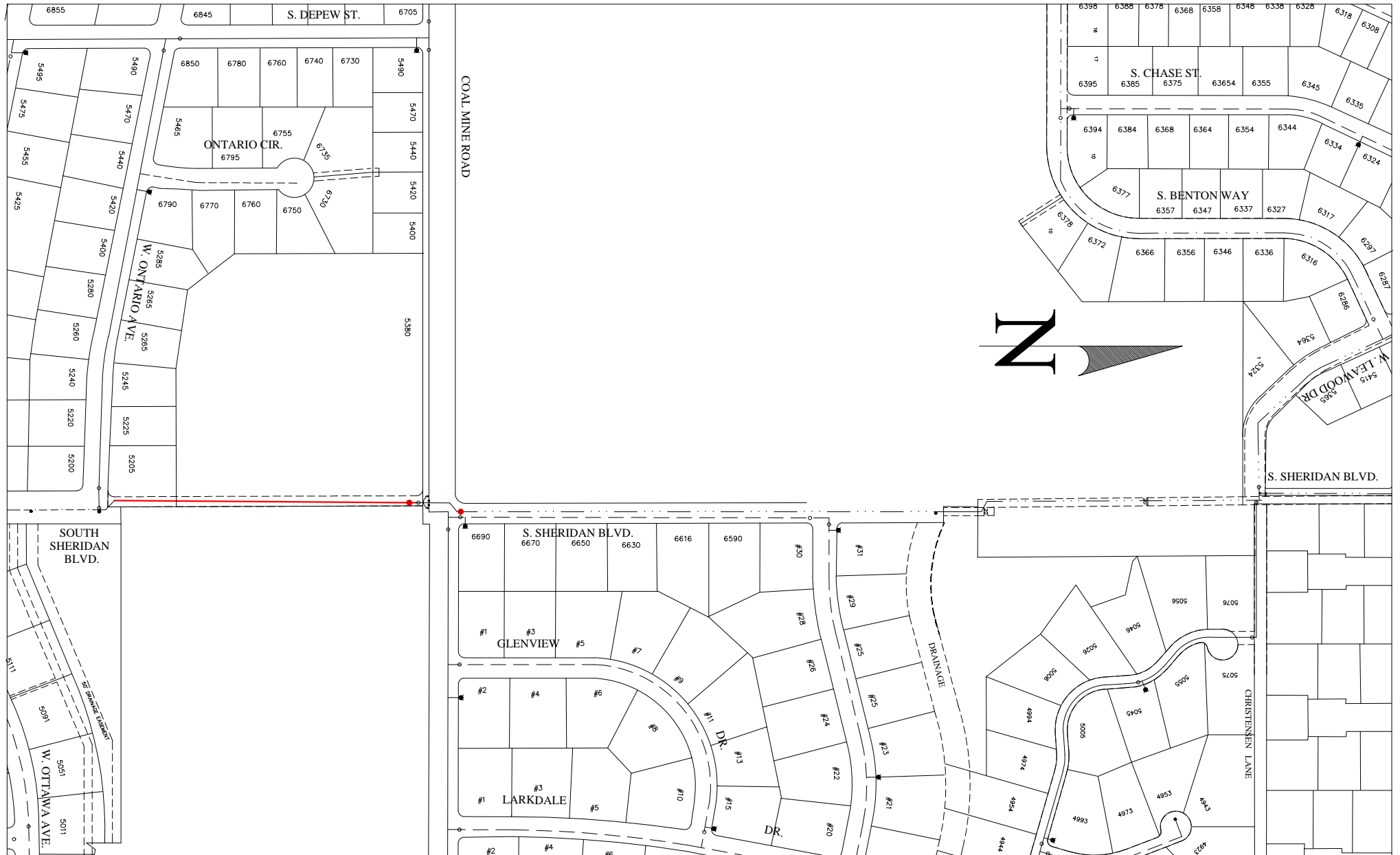
Date Installed: 1973

Rating: 648 points
 3 breaks

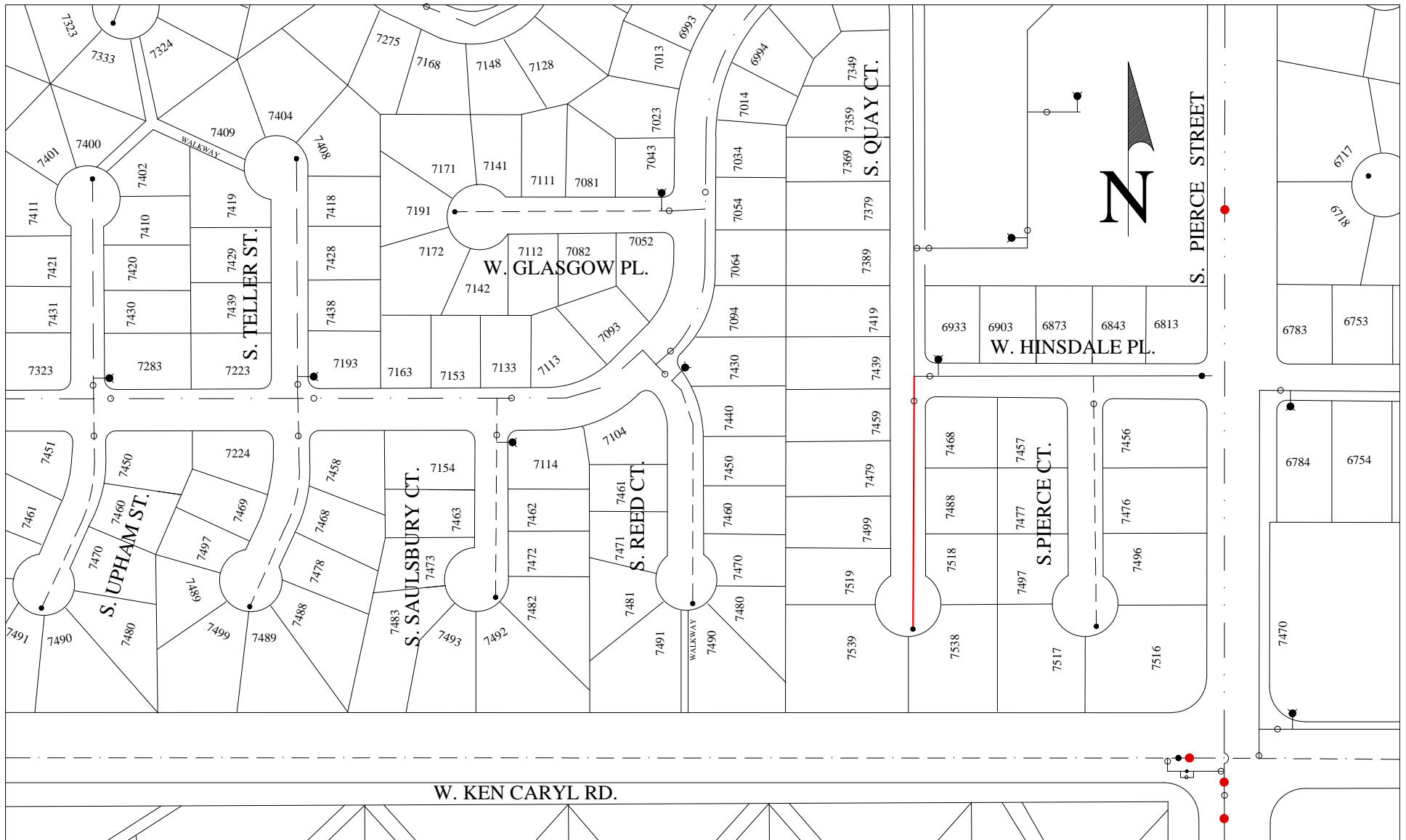
Cost:

Construction:	\$ 57,850
Engineering (15%)	<u>\$ 8,678</u>
	\$ 66,528
Contingencies (15%)	<u>\$ 9,979</u>
	\$ 76,507

PROJECT C.I.P. 14-1W S. SHERIDAN BLVD. WATER MAIN REPLACEMENT



PROJECT C.I.P. 14-3W S. QUAY CT. WATER MAIN REPLACEMENT



2014 Capital Improvement Projects Sewer

Project:	CIP 14-1S
Location:	Various
Description:	Rehabilitate various sections of sewer collection system pipe using cured-in-place pipe rehabilitation process. A contract will be issued to a single contractor to line those sections of sewer pipe that are determined each year to be in need of rehabilitation due to structural deficiencies and/or severe root intrusion.
Cost:	\$ 50,000

2015 Capital Improvement Projects Water

Project: **CIP 15-1W**

Location: W. Caley Ave., between S. Kendall St. and 6316 S. Ingalls St.
(Leawood Subdivision).

Description: Replace 620 feet of 6-inch asbestos-cement pipe with 620 feet of
6-inch, C-900, class 150 PVC pipe.

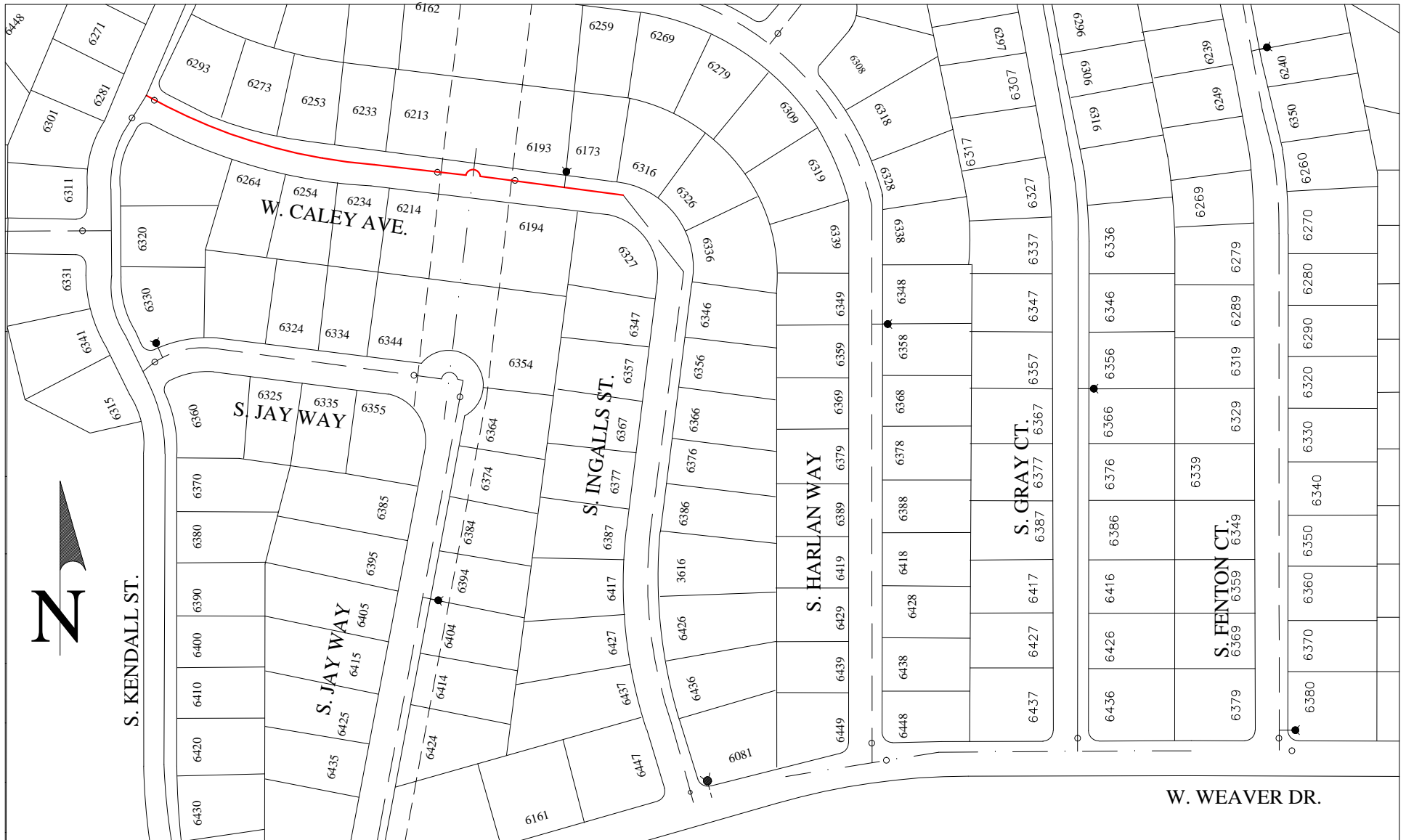
Date Installed: 1962

Rating: 612 points
3 breaks

Cost:

Construction:	\$ 80,280
Engineering (15%)	<u>\$ 12,042</u>
	\$ 92,322
Contingencies (15%)	<u>\$ 13,848</u>
	\$ 106,170

PROJECT C.I.P. 15-1W W. CALEY AVE. WATER MAIN REPLACEMENT



2015 Capital Improvement Projects Sewer

Project:	CIP 15-1S
Location:	Various
Description:	Rehabilitate various sections of sewer collection system pipe using cured-in-place pipe rehabilitation process. A contract will be issued to a single contractor to line those sections of sewer pipe that are determined each year to be in need of rehabilitation due to structural deficiencies and/or severe root intrusion.
Cost:	\$ 50,000

**2016 Capital Improvement Projects
Water**

No projects scheduled

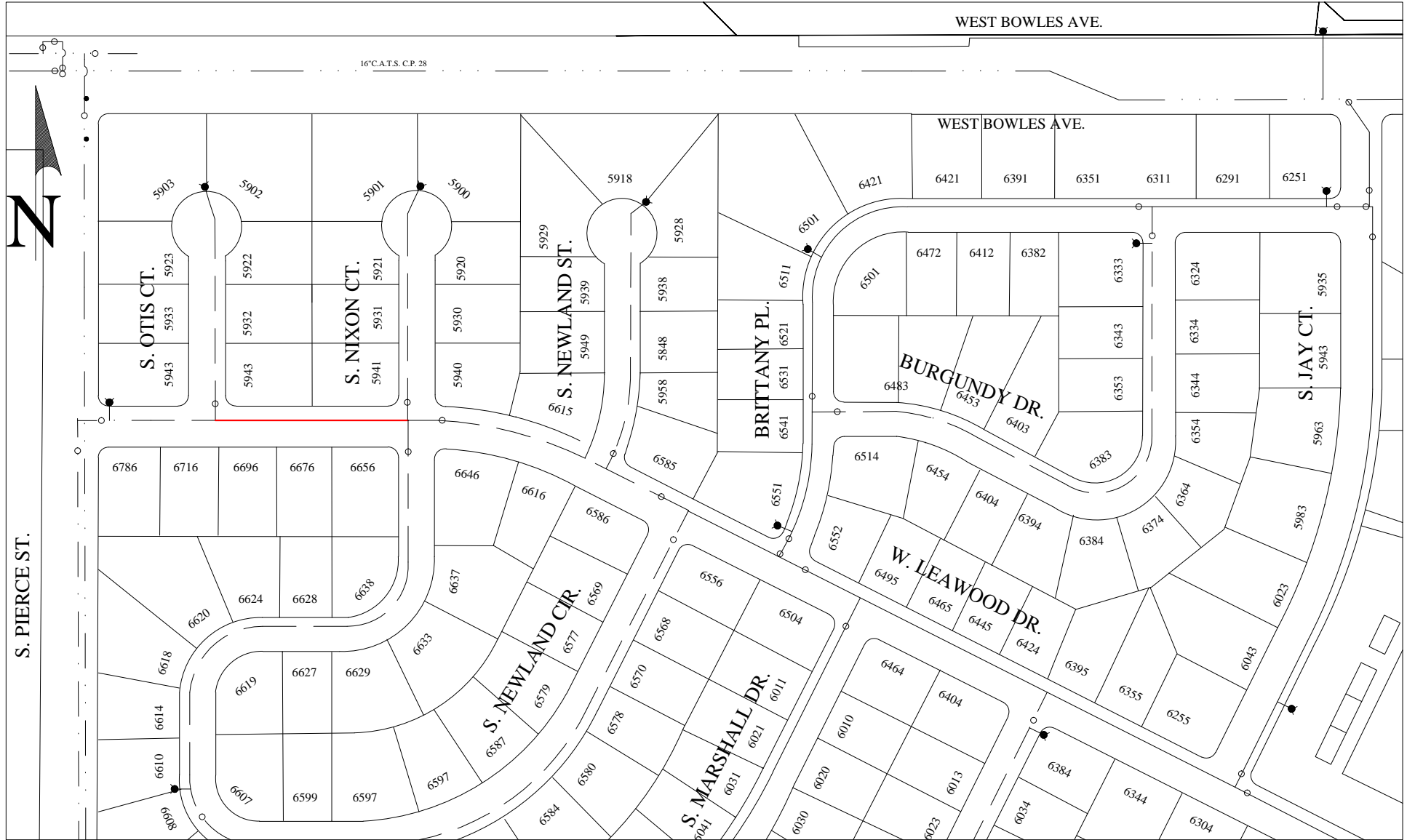
2016 Capital Improvement Projects Sewer

Project:	CIP 16-1S
Location:	Various
Description:	Rehabilitate various sections of sewer collection system pipe using cured-in-place pipe rehabilitation process. A contract will be issued to a single contractor to line those sections of sewer pipe that are determined each year to be in need of rehabilitation due to structural deficiencies and/or severe root intrusion.
Cost:	\$ 50,000

2017 Capital Improvement Projects Water

Project:	CIP 17-1W	
Location:	W. Leawood Dr. between S. Nixon Ct. and S. Otis Ct. (Leawood Subdivision).	
Description:	Replace 280 feet of 6-inch cast iron pipe with 280 feet of 6-inch, C-900, class 150 PVC pipe.	
Date Installed:	1962	
Rating:	549 points 2 electrolysis breaks	
Cost:	Construction:	\$ 35,125
	Engineering (15%)	<u>\$ 5,264</u>
		\$ 40,394
	Contingencies (15%)	<u>\$ 6,059</u>
		\$ 46,453

PROJECT C.I.P. 17-1W W. LEAWOOD DR. WATER MAIN REPLACEMENT



2017 Capital Improvement Projects Sewer

Project:	CIP 17-1S
Location:	Various
Description:	Rehabilitate various sections of sewer collection system pipe using cured-in-place pipe rehabilitation process. A contract will be issued to a single contractor to line those sections of sewer pipe that are determined each year to be in need of rehabilitation due to structural deficiencies and/or severe root intrusion.
Cost:	\$ 50,000

**2018 Capital Improvement Projects
Water**

No projects scheduled

2018 Capital Improvement Projects Sewer

Project:	CIP 18-1S
Location:	Various
Description:	Rehabilitate various sections of sewer collection system pipe using cured-in-place pipe rehabilitation process. A contract will be issued to a single contractor to line those sections of sewer pipe that are determined each year to be in need of rehabilitation due to structural deficiencies and/or severe root intrusion.
Cost:	\$ 50,000

**2019 Capital Improvement Projects
Water**

No projects scheduled

2019 Capital Improvement Projects Sewer

Project:	CIP 19-1S
Location:	Various
Description:	Rehabilitate various sections of sewer collection system pipe using cured-in-place pipe rehabilitation process. A contract will be issued to a single contractor to line those sections of sewer pipe that are determined each year to be in need of rehabilitation due to structural deficiencies and/or severe root intrusion.
Cost:	\$ 50,000

2020 Capital Improvement Projects Water

Project:	CIP 20-1W	
Location:	S. Depew St. between W. Ottawa Ave. and W. Plymouth Dr. (Normandy Estates Subdivision).	
Description:	Replace 505 feet of 8-inch cast iron pipe with 505 feet of 8-inch, C-900, class 150, PVC pipe.	
Date Installed:	1974	
Rating:	512 points 2 breaks	
Cost:	Construction:	\$ 63,350
	Engineering (15%)	<u>\$ 9,503</u>
		\$ 72,853
	Contingencies (15%)	<u>\$ 10,928</u>
		\$ 83,781

2020 Capital Improvement Projects Sewer

Project:	CIP 20-1S
Location:	Various
Description:	Rehabilitate various sections of sewer collection system pipe using cured-in-place pipe rehabilitation process. A contract will be issued to a single contractor to line those sections of sewer pipe that are determined each year to be in need of rehabilitation due to structural deficiencies and/or severe root intrusion.
Cost:	\$ 50,000

**2021 Capital Improvement Projects
Water**

Project: **CIP 21-1W**

Location: S. Jay Dr. between W. Monticello Ave. and W. Elmhurst Dr.
(Columbine Hills Subdivision).

Description: Replace 775 feet of 6-inch cast iron pipe with 775 feet of 6-inch,
C-900, class 150 PVC pipe.

Date Installed: 1960

Rating: 488 points
2 breaks

Cost:

Construction:	\$ 97,220
Engineering (15%)	<u>\$ 14,583</u>
	\$ 111,803
Contingencies (15%)	<u>\$ 16,770</u>
	\$ 128,573

PROJECT C.I.P. 21-1W

S. JAY DR. WATER MAIN REPLACEMENT



2020 Capital Improvement Projects Sewer

Project:	CIP 21-1S
Location:	Various
Description:	Rehabilitate various sections of sewer collection system pipe using cured-in-place pipe rehabilitation process. A contract will be issued to a single contractor to line those sections of sewer pipe that are determined each year to be in need of rehabilitation due to structural deficiencies and/or severe root intrusion.
Cost:	\$ 50,000

SECTION 4

VEHICLE AND EQUIPMENT SCHEDULE

VEHICLE AND EQUIPMENT SCHEDULE*

<u>2012</u>	<p>¾ ton, 4WD pickup (Replaces 2006 Chevrolet Pickup) (\$30,000)</p> <p>Utility vehicle (Replaces 2007 utility vehicle (\$37,500)</p> <p>Television inspection unit (Replaces 1998 television inspection unit (\$225,000)</p>	\$292,500
<u>2013</u>	<p>¾ ton, 4WD pickup (Replaces 2007 Pickup) (\$30,000)</p> <p>Trailer-mounted valve operator (\$19,000)</p>	\$ 49,000
<u>2014</u>	<p>¾ ton, 4WD pickup (Replaces 2008 Ford Pickup) (\$30,000)</p> <p>½ ton, small pickup (Replaces 2008 Chevrolet Colorado Pickup) (\$27,000)</p>	\$ 57,000
<u>2015</u>	<p>¾ ton, 4WD pickup (Replaces 2009 Pickup) (\$30,000)</p> <p>Combination sewer cleaner/vacuum unit (Replaces 2002 unit (\$330,000)</p>	\$360,000
<u>2016</u>	<p>¾ ton, 4WD pickup (Replaces 2010 Pickup) (\$30,000)</p> <p>Combination valve operator / vacuum (\$44,000)</p>	\$ 74,000

<u>2017</u>	¾ ton, 4WD pickup (Replaces 2011 Pickup) (\$30,000)	
	4WD utility vehicle (Replaces 2012 utility vehicle) (\$35,000)	\$ 65,000
<u>2018</u>	Television inspection unit (Replaces 2006 Unit) (\$175,000)	
	¾ ton, 4WD pickup (Replaces 2012 Pickup) (\$30,000)	\$205,000
<u>2019</u>	¾ ton, 4WD pickup (Replaces 2013 Pickup) (\$30,000)	
	Flatbed truck with compressor (\$75,000)	\$ 105,000
<u>2020</u>	¾ ton, 4WD pickup (Replaces 2013 Pickup) (\$30,000)	
	½ ton, small pickup (Replaces 2014 Pickup) (\$27,000)	
	Trailer mounted valve operator (\$19,000)	\$ 76,000
<u>2021</u>	¾ ton, 4WD pickup (Replaces 2015 Pickup) (\$30,000)	
	Sewer cleaner (Replaces 2009 Seca unit) (\$200,000)	\$ 230,000

***All costs in 2011 Dollars**

SECTION 5

COMPLETED CAPITAL CONSTRUCTION PROJECTS

COMPLETED CAPITAL CONSTRUCTION PROJECTS

October 2011

Project CIP 11-1S

Replaced 200 feet of 24-inch concrete sewer pipe with 24-inch, PVC sewer pipe in W. Bowles Ave., between Platte Canyon Rd. and Middlefield Ln. (\$72,425 est.)

October 2010

Project CIP 10-1S

Replaced 200 feet of 8-inch vitrified clay pipe in W. Roxbury Dr. between manholes S.4.1.2 and S.4.1.1. with 200 feet of 8-inch, SDR-35 PVC sewer pipe (Columbine Knolls Subdivision) (\$57,821)

September 2010

Project CIP 10-1W

Replaced 325 feet of 4-inch cast iron pipe in S. Pierce St. between W. Hinsdale Pl. and end of Pierce St. cul-de-sac with 325 feet of 4-inch, C-900, class 200 PVC pipe (Columbine West Subdivision) (\$45,820)

September 2010

Project CIP 10-2W

Replaced 1,100 feet of 6-inch cast iron pipe in W. Portland Dr. between S. Sheridan Blvd. and W. Rowland Ave. with 1,100 feet of 6-inch, C-900, class 150 PVC pipe (Normandy Estates Subdivision) (\$121,697)

September 2009

Project CIP 09-1W

Replaced 483 feet of 16-inch cast iron pipe in W. Leawood Dr. between S. Sheridan Blvd. and S. Benton Wy. with 483 feet of 12-inch, C-900, class 150 PVC pipe (Leawood Subdivision) (\$110,988)

September 2009

Project CIP 09-2W

Replaced 500 feet of 6-inch asbestos-cement pipe in W. Ottawa Pl. between S. Webster St. and the end of the cul-de-sac with 500 feet of 6-inch, C-900, class 150 PVC pipe (Columbine West Subdivision) (\$81,472)

September 2008

Project CIP 08-1W

Replaced 695 feet of 8-inch asbestos-cement pipe with 695 feet of 8-inch, C-900, class 150 PVC pipe in S. Depew St. between W. Coal Mine Ave. and W. Ontario Ave. (Normandy Estates Subdivision) (\$103,668)

September 2008

Project CIP 08-2W

Replaced 796 feet of 6-inch cast iron pipe with 796 feet of 6-inch, C-900, class 150 PVC pipe in Dutch Creek Dr. between Meadowlark Ln. and Glenridge Dr. (Columbine Heights Subdivision) (\$119,561)

September 2008

Project CIP 08-3W

Replaced 1,215 feet of 6-inch cast iron pipe with 1,215 feet of 6-inch, C-900, class 150 PVC pipe in W. Hinsdale Cir. between S. Platte Canyon Dr. (south intersection) and S. Platte Canyon Dr. (north intersection) (Columbine Manor Subdivision) (\$127,867)

October 2007

Project CIP 07-1W

Replaced 660 feet of 6-inch cast iron pipe with 660 feet of 6-inch, C-900, class 150 PVC pipe in W. Chestnut Ave. between W. Elmhurst Ave. and W. Elmhurst Dr. (\$72,126)

October 2007

Project CIP 07-2W

Replaced 752 feet of 6-inch cast iron pipe with 752 feet of 6-inch, C-900, class 150 PVC pipe in S. Ingalls St. between W. Rowland Pl. and W. Geddes Pl. (\$97,508)

September 2007

Project CIP 07-2S

Installed 186 feet of 30-inch PVC pipe from the inlet to the Platte River Lift Station to the Roxborough Water and Sanitation District interceptor sewer. (\$60,000 est.)

September 2007

Project CIP 07-1S

CIPP lined 180 feet of 8-inch vitrified clay pipe (VCP) in W. Chestnut Ave. between manholes 71.97 to 71.93 (Columbine Hills Subdivision). 497 feet of 8-inch VCP in W. Glasgow Ave. between manholes 33.5.2 to 33.5 (Columbine Knolls Subdivision) and 551 feet of 8-inch VCP in W. Geddes Ave. between manholes 33.4.2 to 33.4.4 (Columbine Knolls Subdivision) (\$33,450)

October 2006

Project CIP 06-1W

Replaced 1,065 feet of 16-inch cast iron pipe with 1,065 feet of 16-inch, class 235 PVC pipe in S. Webster St. between W. Glasgow Pl. and W. Frost Dr. and 180 feet of 6-inch cast iron pipe with 6-inch, C900, class 150, PVC pipe in W. Geddes Cir. East of S. Webster St. (\$262,823)

October 2006

Project CIP 06-2W

Replaced 1,521 feet of 6-inch cast iron pipe in S. Depew Wy. Between S. Depew St. and W. Canyon Trail with 1,521 feet of 6-inch C900, class 150, PVC pipe. (\$215,509)

July 2006

Project CIP 6-1S

Rehabilitated with cured-in-place method of rehabilitation 3,600 feet of 8-inch vitrified clay pipe in W. Rowland Ave. between S. Gray Ct. and S. Sheridan Blvd. and in S. Sheridan Blvd. between W. Rowland Ave. and W. Ottawa Ave. (\$103,669)

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 Subdivision). (\$57,216)

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 Subdivision). (\$207,715)

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 Subdivision). (\$208,382)

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 Subdivision). (\$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)

<u>August 2000</u>	Project 00-1S 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)
<u>December 1999</u>	Project 99-3S Installed ultrasonic sewage flow meter at Platte Canyon Sewage Lift Station. (\$16,924)
<u>December 1999</u>	Project 99-2S Rehabilitated manholes OF51, OF52, OF53, OF54 and OF55 on the District's outfall sewer main. (\$12,055)
<u>September 1999</u>	Project 99-1S Rehabilitated 2,392 feet of 24-inch concrete sewer main between manholes OF34 and OF39 using a cured in place rehabilitation process. (\$178,043)
<u>September 1999</u>	Project 99-3W Installed eight 6-inch gate valves at various locations. (\$24,009)
<u>September 1999</u>	Project 99-1W 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)
<u>September 1999</u>	Project 99-2W Replaced 10-inch pressure reducing valve and vault on W. Hinsdale Dr. at S. Webster St. (\$53,340)
<u>November 1998</u>	Project 98-2S Rehabilitated manholes OF30 through OF33 and OF61 through OF64 on the District's outfall sewer main (eight manholes). (\$11,025)
<u>November 1998</u>	Project 98-1S <ol style="list-style-type: none"> 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)
<u>October 1998</u>	Project 98-1W 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)

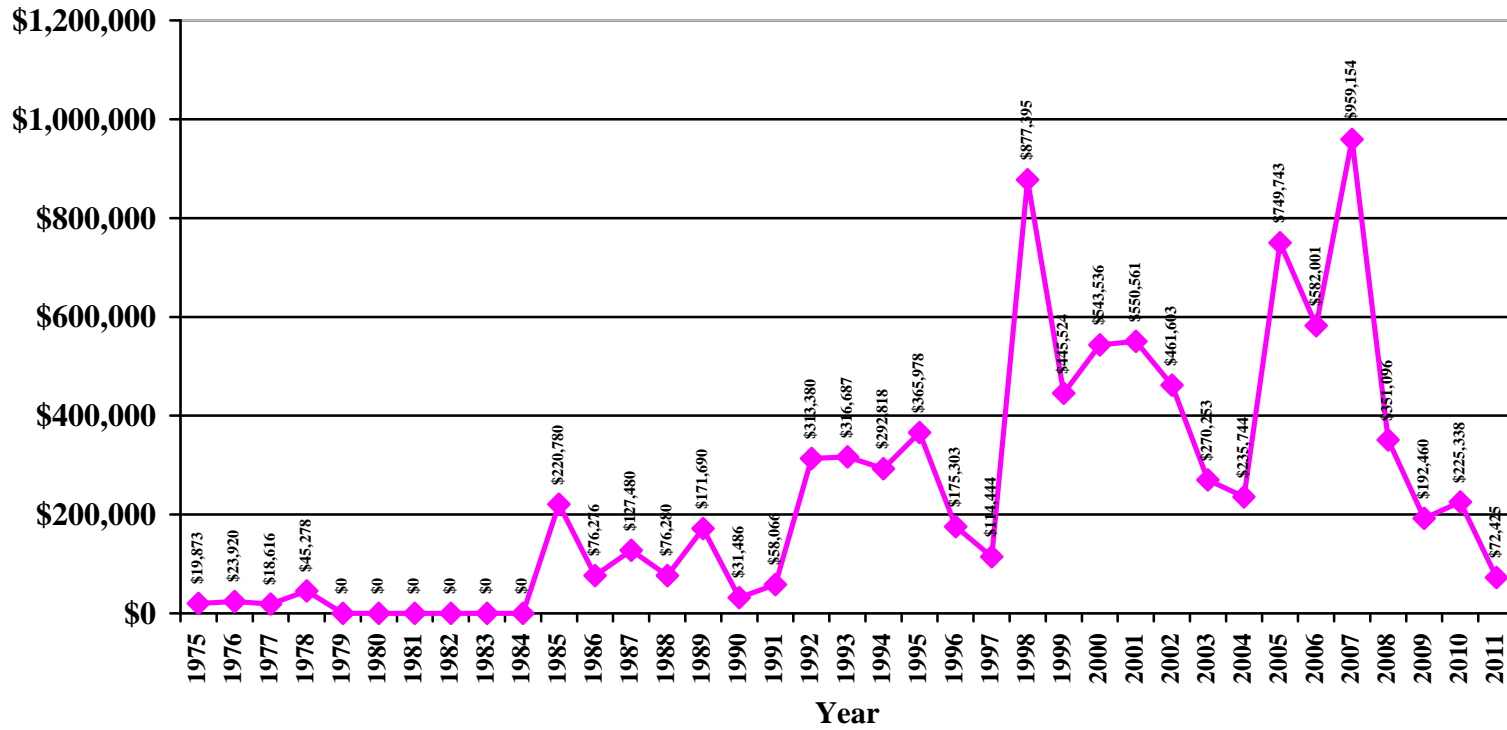
December 1978

Project CIP 78-2W

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

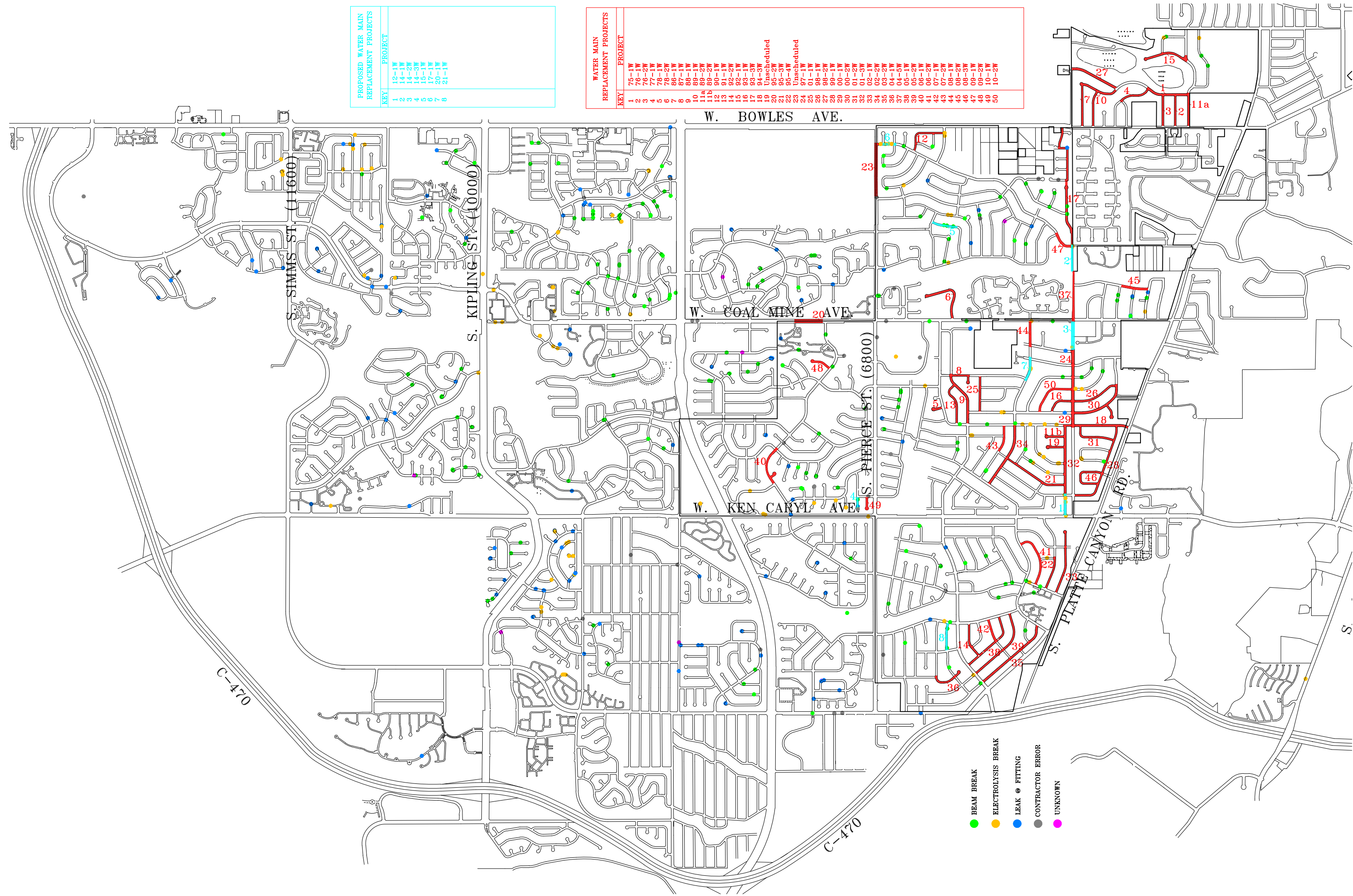
- December 1978** **Project CIP 78-1W**
Replaced 305 feet of six inch water pipe in W. Rowland Cir., west of S. Lamar St. (Columbine Knolls Subdivision). (\$11,496)
- April 1977** **Project 77-1W**
Replaced 817 feet of six inch water pipe in Snowberry Dr. (Bow Mar South Subdivision). (\$18,616)
- April 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



PROPOSED WATER MAIN REPLACEMENT PROJECTS	
KEY	PROJECT
1	12-1W
2	14-1W
3	14-2W
4	14-3W
5	15-1W
6	17-1W
7	20-1W
8	21-1W

WATER MAIN REPLACEMENT PROJECTS	
KEY	PROJECT
1	75-1W
2	76-1W
3	76-2W
4	77-1W
5	78-1W
6	78-2W
7	85-1W
8	86-1W
9	86-2W
10	88-1W
11a	89-2W
11b	89-2W
12	90-1W
13	91-1W
14	92-2W
15	92-1W
16	93-1W
17	93-3W
18	94-3W
19	Unscheduled
20	95-2W
21	95-3W
22	95-4W
23	Unscheduled
24	97-1W
25	01-1W
26	96-1W
27	96-2W
28	99-1W
29	00-1W
30	00-2W
31	01-2W
32	01-3W
33	02-1W
34	02-2W
35	03-2W
36	04-1W
37	04-5W
38	05-1W
39	05-2W
40	06-1W
41	06-2W
42	07-1W
43	07-2W
44	08-1W
45	08-2W
46	08-3W
47	09-1W
48	09-2W
49	10-1W
50	10-2W

- BEAM BREAK
- ELECTROLYSIS BREAK
- LEAK @ FITTING
- CONTRACTOR ERROR
- UNKNOWN