Platte Canyon Water and Sanitation District

Capital Master Plan
2021 - 2030
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SECTION 1

MASTER PLAN DESCRIPTION

BACKGROUND

Platte Canyon Water and Sanitation District was organized in May 1959 to provide potable water distribution and wastewater collection and transmission services to properties located within the District boundaries. Since the formation of the District, over 77.5 miles of water mains, 75.6 miles of sanitary sewer mains, and one potable water pumping station have been installed by the District and private developers. The District now has responsibility for operation, maintenance, rehabilitation, and replacement of all these facilities.

The District first implemented an asset management program in 1986, which consisted of evaluating the assets to develop a systematic rehabilitation and replacement program. The program was substantially enhanced and updated in 2018 and 2019 by adding an evaluation of the criticality of each asset to the existing assessment. This criticality factor is based on age, type of material, number of failures, and observed condition of each asset. Using the new asset evaluation criteria, the selection and prioritization of capital projects is updated each year. The evaluation process and criteria used to determine which assets are in need of rehabilitation or replacement are described in a following section.

Present day replacement costs for assets owned and maintained by the District totals over $150 million. Although the majority of the District’s infrastructure remains within its expected useful life, electrolysis-caused corrosion as well as normal aging and deterioration of facilities have increased the need for the rehabilitation and replacement of District assets.

The oldest of the District’s assets were installed in 1958 and 46 percent were installed prior to 1974. These assets are now approaching the end of their useful life and are failing at an increasing rate. This Capital Master Plan provides a systematic process for scheduling and conducting these necessary system improvements in a timely and cost-effective manner.

PURPOSE

The purpose of this Plan is to itemize and schedule water and wastewater facility expansion, rehabilitation and replacement projects, and vehicle and equipment purchases. This Plan is intended to be a dynamic document. The proposed construction, rehabilitation, and replacement schedule will be reviewed annually and adjusted to reflect changes in development patterns, and infrastructure deterioration and failure. The Plan will be submitted to the Board of Directors for review and discussion in conjunction with the annual budget and ten-year financial plan.

The Plan enhances the accuracy and effectiveness of budgeting and cash flow analysis and enables the District to schedule expenditures and determine appropriate levels of capital reserves.
provides for long range planning of tax and service fee revenues, minimizing the potential for large fluctuations in tax and service fee rates. The program further allows for planning and scheduling system replacements and rehabilitations on a consistent basis to match proposed revenues.

The Plan provides a framework for the District to be proactive rather than reactive when dealing with asset replacement and rehabilitation needs. System modifications are prioritized so the facilities most in need of repair are replaced or rehabilitated in an appropriate timeframe. The goal is to minimize operation and repair expenses by avoiding costly unscheduled repair, replacement, and rehabilitation of deteriorating facilities. Most importantly, an aggressive capital rehabilitation and replacement program helps avoid system deterioration, disruption, and potential safety, health and property damage impacts.

For vehicle and equipment needs, the Plan provides for systematic replacement of the District's fleet and equipment. Replacements are scheduled to avoid large expenditures for equipment repairs, excessive down time of malfunctioning equipment, while balancing annual expenditures for replacements. The Plan allows for consideration of service life, manufacturers production lead time, and changing performance requirements for various vehicle and equipment assets.

In summary, the 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 2021-2030 Capital Master Plan includes $1,913,529 for capital projects and vehicles in 2021, and $18,231,691 during the ten-year period. This compares with the previous year’s projected expenditures of $1,706,279 and the ten-year projected expenditures of $18,194,786.

Water facility replacement projects account for 90 percent of the total proposed expenditures while purchases of vehicle and equipment account for the remaining 10 percent. The District’s extensive sanitary sewer video inspection and maintenance program has not revealed a need to schedule major rehabilitation or replacement of sewer system assets in the next ten years. However, the District has implemented a more intensive sewer rating program to provide a base line for monitoring the condition of the system over time.

The District’s Board of Directors adopted a revised Cash Reserve Policy in May 2019 that establishes criteria for establishing minimum cash reserves for operations, capital expenditures and debt service. The criteria for the capital reserve component are based on the greater of the projected capital expenses for the next five years, or a set percentage of the replacement cost of all District assets adjusted for depreciation. The suggested balance for each reserve component is calculated and presented to the Board during the annual budget and financial plan evaluation. The District’s goal is to maintain appropriate cash reserves to fund the levels of service for operations at established levels of service as well as rehabilitation and replacement of system assets as determined by the comprehensive Plan.
CRITERIA FOR RATING WATER AND SEWER MAIN REHABILITATION AND REPLACEMENT PROJECTS

Water

In 2020, the District implemented the Sedaru software platform for the capital planning process. This software has a CIP module that includes a robust approach based on a variety of factors, many of which the District was already using in its planning process. The new software continues the District’s goal of prioritizing the replacement of water mains over the ten-year planning horizon. The Sedaru platform expands upon the previously used analytical, objective rating process to include a more comprehensive assessment of all District-owned water mains that incorporates a wider range of factors.

This process includes the ability to automatically group multiple segments of pipe located along the same street as projects and rank them against each other. Co-located priority segments become one large project and those with higher priority segments are recommended for replacement on a more aggressive schedule. Previously, each pipe segment was evaluated on an individual basis, which resulted in a disjointed approach to full replacement of critical water mains in a specific roadway.

Performance Score (Likelihood of Failure)

To begin with, a performance score is calculated for each segment using known pipe characteristics including those listed in the following table.

<table>
<thead>
<tr>
<th>Age of pipe</th>
<th>The score assigned to each segment is based upon the following age ranges:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• 0-10 years old – 1 point</td>
</tr>
<tr>
<td></td>
<td>• 11-30 years old – 2 points</td>
</tr>
<tr>
<td></td>
<td>• 31-50 years old – 3 points</td>
</tr>
<tr>
<td></td>
<td>• 51-58 years old – 4 points</td>
</tr>
<tr>
<td></td>
<td>• 59 and older – 5 points</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of pipe</th>
<th>Each type of pipe is assigned a score, which is based on the likelihood of failure. A higher number means it is more likely for that pipe material to fail:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• cast iron (CIP) – 5 points</td>
</tr>
<tr>
<td></td>
<td>• ductile iron, asbestos-cement, steel – 3 points</td>
</tr>
<tr>
<td></td>
<td>• polyvinyl chloride (PVC) – 1 point</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of leaks</th>
<th>Each segment is assigned a score based on the number of failures on that segment:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• no failures – 0 points</td>
</tr>
<tr>
<td></td>
<td>• 1 failure – 3 points</td>
</tr>
<tr>
<td></td>
<td>• 2 failures – 4 points</td>
</tr>
<tr>
<td></td>
<td>• 3 or more failures – 5 points</td>
</tr>
</tbody>
</table>

An overall Performance score is then calculated for each segment with the pipe material weighted at 36% of the total points and the age of pipe and number of leaks equally weighted at 32% each.
Impact Score (Consequence of Failure)

Next, an impact score is calculated for each segment using two different factors. One factor is the condition rating determined by District staff in the past years. The other is the number of isolation valves required to shut down each segment.

Condition Score: A condition score, which is defined as the result of a water main failing, is measured as the impact/significance on the distribution system, customers in the surrounding area, and the District. Every segment in the distribution system was reviewed by staff and given a CoF rating. This rating, which ranges from 1 to 5, increases as the impacts of the water main failure become more significant and costlier. Factors considered include:

- Number of units served – This is all customers served by that segment of water main, including residents, businesses, commercial entities, and municipal buildings.
- Number of critical customers or large businesses served – Critical customers include schools and universities, hospitals, assisted living facilities, senior centers, urgent care centers, fire stations, and other locations that provide a vital public service. Large businesses affected by a potential break include strip malls and shopping centers as well as stand-alone businesses.
- Cost to repair – The cost to repair will typically be between $6,000 and $10,000 (rated a 3 out of 5) but variances such as depth of the main, difficult access, and size of break can impact the rating.
- Time to repair – The time to repair will most typically be 4 to 6 hours (rated a 2 out of 5) but variables such as ease of access to the break area and/or complexity of the break are also considered.
- Other factors – Other factors can include environmental impacts (a flowing break near a river/lake), potential flooding of nearby customers property, a potential break on a major thoroughfare or the only road to an area or critical customer, potential impacts to critical customers (as noted above), or other circumstances that would make a break repair more difficult, costly, and/or impactful to customers.

Then in the Sedaru platform, additional granularity was added and points were assigned as follows for the condition score and the number of isolation valves:

<table>
<thead>
<tr>
<th>Condition Score</th>
<th>The score assigned to each segment is based upon the following ranges:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.0 to 1.7 – 1 point</td>
</tr>
<tr>
<td></td>
<td>1.8 to 2.5 – 2 points</td>
</tr>
<tr>
<td></td>
<td>2.6 to 2.9 – 3 points</td>
</tr>
<tr>
<td></td>
<td>3.0 to 3.5 – 4 points</td>
</tr>
<tr>
<td></td>
<td>3.6 or higher – 5 points</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of isolation valves</th>
<th>The score assigned to each segment is based upon the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 to 2 valve – 1 point</td>
</tr>
<tr>
<td></td>
<td>3 to 4 valves – 2 points</td>
</tr>
<tr>
<td></td>
<td>5 valves – 3 points</td>
</tr>
<tr>
<td></td>
<td>6 valves – 4 points</td>
</tr>
<tr>
<td></td>
<td>7 or more valves – 5 points</td>
</tr>
</tbody>
</table>
An overall Impact score is then calculated for each segment with the condition score weighted at 95% of the total points and the number of isolation valves weighted at 5%.

**Overall Score**

An overall score (based on a maximum of 100 points) is calculated for each segment as follows:

\[
\text{Overall Score} = \left( \text{Performance Score} \times 3 + \text{Impact Score} \right) \times 5
\]

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

<table>
<thead>
<tr>
<th>Age of pipe</th>
<th>5 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of pipe</td>
<td>5 points</td>
</tr>
<tr>
<td>Number of leaks</td>
<td>4 points</td>
</tr>
<tr>
<td>Performance Score = 5 x 0.32 + 5 x 0.36 + 4 x 0.32 = 4.68</td>
<td></td>
</tr>
</tbody>
</table>

| Condition rating | 3 points |
| # of Isolation Valves | 3 points |
| Impact Score = 3 x 0.95 + 3 x 0.05 = 3.0 |

Total Score (4.68 x 3 + 3.0) x 5 = 85.20

Using the Overall Score, the Sedaru software develops a ranking list of all the water mains in the distribution system. The top 200 most critical water mains were then grouped into projects based upon their location (i.e. all segments in the same street became one project) and combined Overall Score. This list became the starting point for the prioritization of the replacement and rehabilitation projects within the District.

The projects were initially assigned to years based upon the current industry standard of replacing 1% of pipes per year. That list and mapping of projects was then evaluated for several additional factors including project proximity and total annual cost. In some cases, projects were moved up or down on the replacement schedule to obtain budget and/or construction efficiencies.

**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 identified as a source of infiltration or exfiltration, are scheduled for rehabilitation or replacement within a three-year timeframe. Some 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.
SECTION 2

SUMMARY OF PROPOSED CAPITAL EXPENDITURES
FOR THE PERIOD 2021 - 2030

The annual asset rehabilitation and replacement evaluation process results in the addition and rescheduling of several capital projects from the previous ten-year capital plan. These fluctuations in project scheduling are expected due to the timing, type and number of water and sewer main failures, and the criticality of each asset determines the priority for rehabilitation or replacement. Those pipelines that provide critical service and exhibit continuing deterioration are prioritized while the pipelines that have a lower level of impact on service levels and do not show advanced deterioration are deprioritized.

Additional infrastructure improvements will be required beyond the current ten-year planning period, so a 30-year infrastructure rehabilitation and replacement plan is also prepared. This plan is used as a planning tool to reflect the long-range facility improvements and financial needs of the District. The long-term financial plan is updated annually and presented to the Board during the budget review process.

The Plan has been divided into water facility rehabilitation/replacement, water main replacement, sanitary sewer rehabilitation and replacement, and vehicle and equipment additions and replacements.

Water Facilities

The schedule for water facility projects is based on the process as explained in the criteria for replacement of assets section of this report. No facilities in the replacement/rehabilitation schedule are needed to expand capacity to serve new development. Existing District facilities are adequate to serve all anticipated development within the District’s ultimate service area.

Water Mains

Three water main replacement projects are scheduled for construction in 2021. All projects include replacement of cast iron pipe that has advanced levels of electrolysis-caused corrosion. 1,900 feet of 8-inch and 2,396 feet of 6-inch cast iron pipe will be replaced with PVC pipe. Two of the three projects are located within the Columbine Hills Subdivision, which contains some of the oldest water mains in the District. The pipe to be replaced was installed in 1960 and was not protected from corrosive soils as is the current practice. The third project is located in the Leawood Subdivision, which also has a substantial amount of older cast iron pipe. Combined, eight (8) breaks have occurred on these three water mains, including four that occurred in 2019. The projected construction cost for these projects in 2020 is $1,162,168 but will be budgeted at $1,394,608 to include a 20 percent contingency in the amount of $232,440.
The Plan proposes 30 additional water main replacement projects between 2022 and 2030, which represents the replacement of 37,013 feet of pipe. The type and size of the pipe scheduled for replacement between 2022 and 2030 is shown in Table 1 below.

<table>
<thead>
<tr>
<th>Size</th>
<th>Cast Iron Pipe</th>
<th>Asbestos Cement Pipe</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-inch</td>
<td>745 feet</td>
<td>0 feet</td>
</tr>
<tr>
<td>6-inch</td>
<td>17,316 feet</td>
<td>0 feet</td>
</tr>
<tr>
<td>8-inch</td>
<td>12,735 feet</td>
<td>3,208 feet</td>
</tr>
<tr>
<td>12-inch</td>
<td>5,514 feet</td>
<td>855 feet</td>
</tr>
<tr>
<td>16-inch</td>
<td>936 feet</td>
<td>0 feet</td>
</tr>
</tbody>
</table>

The projected replacement cost for the 30 replacement projects is $13,330,598. This includes the cost of construction and a 20 percent construction contingency for each project.

From 2022 to 2030, an additional $1,110,880 is budgeted for capital project engineering costs. These costs are projected at 10 percent of anticipated construction costs and may be partially budgeted in the year prior to when construction is planned. This allows the District to have projects designed and ready for bidding immediately prior to the beginning of the construction season.

Both construction (with contingency) and engineering costs are inflated at 2.46 percent per year.

In total, the water main replacement projects in the 2021-2030 Capital Master Plan include 41,309 feet of pipe proposed for replacement. This represents 10.4 percent of all water main assets owned by the District, which reflects a replacement rate of 1.04 percent per year. This rate aligns with the water sector best practice of replacing 1.00 percent of water main assets per year.

**Sanitary Sewers**

No sanitary sewer replacements have been scheduled for 2021.

No sewer replacement or rehabilitation projects are scheduled between 2021 and 2030.

**Vehicles & Equipment**

Vehicle and equipment replacements are projected at $391,397. These include replacement of a standard four-wheel drive pickup truck, the utility vehicle provided to the District Manager, and the sewer cleaner that was originally purchased in 2009.

Vehicle replacement costs for the period between 2021 and 2030 are projected to be $2,268,082, which is $482,656 more than the amount proposed in last year’s schedule. This is due to a significant value of vehicles and equipment scheduled for purchase in 2030. This can be seen in the detailed vehicle schedule included in Section 4. Note the costs in that section are shown in 2020 values and have been inflated at 2.46 percent per year in the following table.
Summary of All Capital Expenditures

The following table and chart summarize the annual proposed capital expenditures from 2021 through 2030 (including engineering costs budgeted in the year prior to construction).

Table 2

<table>
<thead>
<tr>
<th>Year</th>
<th>Water</th>
<th>Sewer</th>
<th>Vehicle/Equip</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>$1,522,132</td>
<td>$0</td>
<td>$391,397</td>
<td>$1,913,529</td>
</tr>
<tr>
<td>2022</td>
<td>$1,278,832</td>
<td>$0</td>
<td>$107,080</td>
<td>$1,385,912</td>
</tr>
<tr>
<td>2023</td>
<td>$724,157</td>
<td>$0</td>
<td>$100,034</td>
<td>$824,191</td>
</tr>
<tr>
<td>2024</td>
<td>$1,294,601</td>
<td>$0</td>
<td>$372,507</td>
<td>$1,667,108</td>
</tr>
<tr>
<td>2025</td>
<td>$1,698,202</td>
<td>$0</td>
<td>$0</td>
<td>$1,698,202</td>
</tr>
<tr>
<td>2026</td>
<td>$1,793,920</td>
<td>$0</td>
<td>$0</td>
<td>$1,793,920</td>
</tr>
<tr>
<td>2027</td>
<td>$2,313,316</td>
<td>$0</td>
<td>$599,834</td>
<td>$2,913,150</td>
</tr>
<tr>
<td>2028</td>
<td>$1,640,469</td>
<td>$0</td>
<td>$82,593</td>
<td>$1,723,062</td>
</tr>
<tr>
<td>2029</td>
<td>$1,845,193</td>
<td>$0</td>
<td>$102,048</td>
<td>$1,947,241</td>
</tr>
<tr>
<td>2030</td>
<td>$1,852,788</td>
<td>$0</td>
<td>$512,589</td>
<td>$2,365,377</td>
</tr>
<tr>
<td>TOTALS</td>
<td>$15,963,609</td>
<td>$0</td>
<td>$2,268,082</td>
<td>$18,231,691</td>
</tr>
</tbody>
</table>

![Bar chart showing capital expenditures from 2021 to 2030](chart.png)
SECTION 3

WATER DISTRIBUTION AND WASTEWATER COLLECTION FACILITY REHABILITATION AND REPLACEMENT PROJECTS SCHEDULED FOR 2021 - 2030
## 2021 Capital Improvement Projects

### Water

<table>
<thead>
<tr>
<th>Project</th>
<th>Subdivision</th>
<th>Location</th>
<th>Description</th>
<th>Pipe Age (yrs)</th>
<th>COST</th>
<th>Contingency (20%)</th>
<th>Engineering (Actual)*</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-1W</td>
<td>Columbine Hills</td>
<td>S. Depew Street between S. Platte Canyon Road and W. Canyon Trail</td>
<td>Replace 1,900 feet of 8-inch cast iron pipe with 8-inch PVC pipe; this project includes a culvert crossing</td>
<td>60</td>
<td>$621,457</td>
<td>$124,291</td>
<td>$73,453</td>
<td>$819,201</td>
</tr>
<tr>
<td>21-2W</td>
<td>Columbine Hills</td>
<td>W. Alder Way between S. Depew St. and W. Alder Ave.</td>
<td>Replace 700 feet of 6-inch cast iron pipe with 6-inch PVC pipe</td>
<td>60</td>
<td>$157,463</td>
<td>$31,493</td>
<td>$15,746</td>
<td>$204,702</td>
</tr>
<tr>
<td>21-3W</td>
<td>Leawood</td>
<td>S. Newland Cir. loop on W. Leawood Dr.</td>
<td>Replace 1,700 feet of 6-inch cast iron pipe with 6-inch PVC pipe</td>
<td>58</td>
<td>$383,248</td>
<td>$76,650</td>
<td>$38,325</td>
<td>$498,222</td>
</tr>
</tbody>
</table>

* the actual engineering costs are based on a contract w. RG & Associates executed in August 2020

### Sewer

No projects scheduled.
PROJECT C.I.P. 21-1W
S. DEPEW ST. WATER MAIN REPLACEMENT
PROJECT C.I.P. 21-2W
W. ALDER WAY WATER MAIN REPLACEMENT
PROJECT C.I.P. 21-3W
S. NEWLAND CIR. WATER MAIN REPLACEMENT
## 2022 Capital Improvement Projects

### Water

<table>
<thead>
<tr>
<th>Project</th>
<th>Subdivision</th>
<th>Location</th>
<th>Description</th>
<th>Pipe Age (yrs)</th>
<th>COST Construction</th>
<th>Contingency (20%)</th>
<th>Engineering (10%)</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>22-1W</td>
<td>Columbine Hills</td>
<td>W. Elmhurst Ave. from S. Depew Street to S. Lamar Street</td>
<td>Replace 2,306 feet of 6-inch cast iron pipe with 12-inch PVC pipe; diameter was upsized by DW staff</td>
<td>60</td>
<td>$726,981</td>
<td>$145,396</td>
<td>$72,698</td>
<td>$945,076</td>
</tr>
<tr>
<td>22-2W</td>
<td>Columbine Hills</td>
<td>W. Chestnut Drive from W. Elmhurst Ave to S.Kendall Court plus S. Kendall Court from W. Chestnut Drive to W. Elmhurst Drive</td>
<td>Replace 1,110 feet of 6-inch cast iron pipe with 6-inch PVC pipe</td>
<td>60</td>
<td>$256,729</td>
<td>$51,346</td>
<td>$25,673</td>
<td>$333,748</td>
</tr>
</tbody>
</table>

### Sewer

No projects scheduled.
PROJECT C.I.P. 22-1W
W. ELMHURST AVE. WATER MAIN REPLACEMENT
2023 Capital Improvement Projects

Water

<table>
<thead>
<tr>
<th>Project</th>
<th>Subdivision</th>
<th>Location</th>
<th>Description</th>
<th>Pipe Age (yrs)</th>
<th>COST</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23-1W</td>
<td>Columbine Hills</td>
<td>S. Depew Street from W. Ken Caryl Ave to W. Canyon Trail</td>
<td>Replace 1,785 feet of 8-inch cast iron pipe with 8-inch PVC pipe</td>
<td>58, 61</td>
<td>$461,406</td>
<td>$92,281</td>
<td>$46,141</td>
</tr>
<tr>
<td>23-2W</td>
<td>Columbine Hills</td>
<td>W. Caryl Place from S. Depew Way to S. Ames Way</td>
<td>Replace 404 feet of 6-inch cast iron pipe with 6-inch PVC pipe</td>
<td>61</td>
<td>$95,637</td>
<td>$19,127</td>
<td>$9,564</td>
</tr>
</tbody>
</table>

Sewer

No projects scheduled.
PROJECT C.I.P. 23-1W
S. DEPEW ST. WATER MAIN REPLACEMENT
PROJECT C.I.P. 23-2W
W. CARYL PL. WATER MAIN REPLACEMENT
# 2024 Capital Improvement Projects

## Water

<table>
<thead>
<tr>
<th>Project</th>
<th>Subdivision</th>
<th>Location</th>
<th>Description</th>
<th>Pipe Age (yrs)</th>
<th>COST</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Construction</td>
<td>Contingency (20%)</td>
<td>Engineering (10%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24-1W</td>
<td>Normandy Estates</td>
<td>S. Depew Street from W. Ontario Ave to W. Plymouth Drive</td>
<td>Replace 902 feet of 8-inch cast iron pipe with 8-inch PVC pipe</td>
<td>47, 62</td>
<td>$238,795</td>
<td>$47,759</td>
<td>$23,879</td>
<td></td>
<td></td>
<td>$310,433</td>
</tr>
<tr>
<td>24-2W</td>
<td>Leawood</td>
<td>S. Lamar Dr. from W. Leawood Drive to S. Marshall Court</td>
<td>Replace 1,013 feet of 6-inch cast iron pipe with 6-inch PVC pipe</td>
<td>52</td>
<td>$245,766</td>
<td>$49,153</td>
<td>$24,577</td>
<td></td>
<td></td>
<td>$319,496</td>
</tr>
<tr>
<td>24-3W</td>
<td>Leawood</td>
<td>S. Marshall Place from W. Leawood Drive to S. Marshall Court</td>
<td>Replace 1,931 feet of 8-inch cast iron pipe with 8-inch PVC pipe</td>
<td>52</td>
<td>$511,285</td>
<td>$102,257</td>
<td>$51,129</td>
<td></td>
<td></td>
<td>$664,671</td>
</tr>
</tbody>
</table>

## Sewer

No projects scheduled.
PROJECT C.I.P. 24-1W
S. DEPEW ST. WATER MAIN REPLACEMENT
PROJECT C.I.P. 24-2W
S. LAMAR DR. WATER MAIN REPLACEMENT
PROJECT C.I.P. 24-3W
S. MARSHALL DR. WATER MAIN REPLACEMENT
# 2025 Capital Improvement Projects

## Water

<table>
<thead>
<tr>
<th>Project</th>
<th>Subdivision</th>
<th>Location</th>
<th>Description</th>
<th>Pipe Age (yrs)</th>
<th>Construction</th>
<th>Contingency (20%)</th>
<th>Engineering (10%)</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-1W</td>
<td>Bow Mar South</td>
<td>S. Laurel Place from S. Snowberry Drive to W. Bowles Ave.</td>
<td>Replace 758 feet of 6-inch cast iron pipe with 6-inch PVC pipe</td>
<td>57</td>
<td>$188,369</td>
<td>$37,674</td>
<td>$18,837</td>
<td>$244,880</td>
</tr>
<tr>
<td>25-2W</td>
<td>Bow Mar South</td>
<td>S. Snowberry Drive from S. Laurel Place to W. Bowles Ave.</td>
<td>Replace 797 feet of 6-inch cast iron pipe with 8-inch PVC pipe; diameter was upsized by DW staff</td>
<td>57</td>
<td>$216,179</td>
<td>$43,236</td>
<td>$21,618</td>
<td>$281,032</td>
</tr>
<tr>
<td>25-3W</td>
<td>Bow Mar South</td>
<td>Marigold Lane from Blue Sage Drive to S. Sumac Lane</td>
<td>Replace 1,028 feet of 6-inch cast iron pipe with 6-inch PVC pipe</td>
<td>58</td>
<td>$255,571</td>
<td>$51,114</td>
<td>$25,557</td>
<td>$332,243</td>
</tr>
<tr>
<td>25-4W</td>
<td>Bow Mar South</td>
<td>Blue Sage Drive from W. Berry Ave to Tule Lake Drive</td>
<td>Replace 1,906 feet of 12-inch cast iron pipe with 12-inch PVC pipe</td>
<td>61</td>
<td>$646,182</td>
<td>$129,236</td>
<td>$64,618</td>
<td>$840,037</td>
</tr>
</tbody>
</table>

## Sewer

No projects scheduled.
PROJECT C.I.P. 25-1W
S. LAUREL PL. WATER MAIN REPLACEMENT
PROJECT C.I.P. 25-2W
S. SNOWBERRY DR. WATER MAIN REPLACEMENT
PROJECT C.I.P. 25-3W
MARIGOLD LN. WATER MAIN REPLACEMENT
PROJECT C.I.P. 25-4W
BLUE SAGE DR. WATER MAIN REPLACEMENT
## 2026 Capital Improvement Projects

### Water

<table>
<thead>
<tr>
<th>Project</th>
<th>Subdivision</th>
<th>Location</th>
<th>Description</th>
<th>Pipe Age (yrs)</th>
<th>Construction</th>
<th>Contingency (20%)</th>
<th>Engineering (10%)</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>26-1W</td>
<td>Columbine Knolls</td>
<td>W. Rowland Place from S. Kendall Blvd. to S. Depew Street</td>
<td>Replace 1,192 feet of 8-inch cast iron pipe with 12-inch PVC pipe; diameter was upsized by DW staff</td>
<td>53</td>
<td>$414,231</td>
<td>$82,846</td>
<td>$41,423</td>
<td>$538,500</td>
</tr>
<tr>
<td>26-2W</td>
<td>Columbine Knolls</td>
<td>W. Roxbury Place from S. Kendall Blvd. to S. Ingalls Way</td>
<td>Replace 961 feet of 6-inch cast iron pipe with 6-inch PVC pipe</td>
<td>53</td>
<td>$244,824</td>
<td>$48,965</td>
<td>$24,482</td>
<td>$318,271</td>
</tr>
<tr>
<td>26-3W</td>
<td>Columbine Knolls</td>
<td>W. Portland Ave. from S. Marshall Street to S. Lamar Street</td>
<td>Replace 373 feet of 8-inch cast iron pipe with 8-inch PVC pipe</td>
<td>57</td>
<td>$103,589</td>
<td>$20,718</td>
<td>$10,359</td>
<td>$134,665</td>
</tr>
<tr>
<td>26-4W</td>
<td>Columbine Knolls</td>
<td>S. Chase Ct. from S. Rowland Place to W. Geddes Place</td>
<td>Replace 1,088 feet of 8-inch cast iron pipe with 8-inch PVC pipe</td>
<td>52</td>
<td>$302,300</td>
<td>$60,460</td>
<td>$30,230</td>
<td>$392,990</td>
</tr>
<tr>
<td>26-5W</td>
<td>Columbine Knolls</td>
<td>S. Marshall St. from W. Portland Ave. to W. Roxbury Place</td>
<td>Replace 1,133 feet of 8-inch cast iron pipe with 8-inch PVC pipe</td>
<td>57</td>
<td>$314,993</td>
<td>$62,999</td>
<td>$31,499</td>
<td>$409,491</td>
</tr>
</tbody>
</table>

### Sewer

No projects scheduled.
PROJECT C.I.P. 26-1W
W. ROWLAND PL. WATER MAIN REPLACEMENT

PROPOSED
COMPLETED
PROJECT C.I.P. 26-3W
W. PORTLAND AVE. WATER MAIN REPLACEMENT
PROJECT C.I.P. 26-4W
S. CHASE CT. WATER MAIN REPLACEMENT
PROJECT C.I.P. 26-5W
S. MARSHALL ST. WATER MAIN REPLACEMENT
## 2027 Capital Improvement Projects

### Water

<table>
<thead>
<tr>
<th>Project</th>
<th>Subdivision</th>
<th>Location</th>
<th>Description</th>
<th>Pipe Age (yrs)</th>
<th>Construction</th>
<th>Contingency (20%)</th>
<th>Engineering (10%)</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>27-1W</td>
<td>Columbine Knolls</td>
<td>S. Lamar Street from W. Coal Mine Ave. to S. Kendall Blvd.</td>
<td>Replace 3,305 feet of 12-inch cast iron pipe with 12-inch PVC pipe</td>
<td>57</td>
<td>$1,176,613</td>
<td>$235,323</td>
<td>$117,661</td>
<td>$1,529,597</td>
</tr>
<tr>
<td>27-2W</td>
<td>Leawood</td>
<td>W. Burgandy Drive loop off W. Brittany Place</td>
<td>Replace 857 feet of 6-inch cast iron pipe with 6-inch PVC pipe</td>
<td>58</td>
<td>$223,634</td>
<td>$44,727</td>
<td>$22,363</td>
<td>$290,724</td>
</tr>
<tr>
<td>27-3W</td>
<td>Columbine Hills</td>
<td>W. Chestnut Drive from S. Lamar Court to S. Kendall Blvd.</td>
<td>Replace 1,453 feet of 6-inch cast iron pipe with 6-inch PVC pipe</td>
<td>49</td>
<td>$379,222</td>
<td>$75,844</td>
<td>$37,922</td>
<td>$492,989</td>
</tr>
</tbody>
</table>

### Sewer

No projects scheduled.
PROJECT C.I.P. 27-2W
W. BURGANDY DR. WATER MAIN REPLACEMENT
PROJECT C.I.P. 27-3W
W. CHESTNUT AVE. WATER MAIN REPLACEMENT

PROPOSED

COMPLETED
# 2028 Capital Improvement Projects

## Water

<table>
<thead>
<tr>
<th>Project</th>
<th>Subdivision</th>
<th>Location</th>
<th>Description</th>
<th>Pipe Age (yrs)</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Construction Contingency Engineering TOTAL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(20%) (10%)</td>
</tr>
<tr>
<td>28-1W</td>
<td>Columbine West</td>
<td>W. Glasow Pl. cul-de-sac off W. Hinsdale Drive</td>
<td>Replace 351 feet of 4-inch cast iron pipe with 4-inch PVC pipe</td>
<td>48</td>
<td>$85,264 $17,053 $8,526 $110,843</td>
</tr>
<tr>
<td>28-2W</td>
<td>Normandy Estates</td>
<td>S. Depew St. from W. Plymouth Drive to W. Rowland Ave.</td>
<td>Replace 970 feet of 6-inch cast iron pipe with 8-inch PVC pipe; diameter was upsized by DW staff; replace 302 feet of 8-inch asbestos cement pipe with 8-inch PVC pipe</td>
<td>51, 62</td>
<td>$371,166 $74,233 $37,117 $482,516</td>
</tr>
<tr>
<td>28-3W</td>
<td>Normandy Estates</td>
<td>W. Plymouth Dr. from S. Gray Court to S. Depew Street</td>
<td>Replace 1,271 feet of 8-inch cast iron pipe with 8-inch PVC pipe</td>
<td>46</td>
<td>$370,973 $74,195 $37,097 $482,265</td>
</tr>
<tr>
<td>28-4W</td>
<td>Normandy Estates</td>
<td>W. Ontario Ave. from S. Depew Street to S. Sheridan Blvd.</td>
<td>Replace 1,160 feet of 8-inch cast iron pipe with 8-inch PVC pipe</td>
<td>62</td>
<td>$338,623 $67,725 $33,862 $440,210</td>
</tr>
<tr>
<td>28-5W</td>
<td>Normandy Estates</td>
<td>W. Ontario Circle cul-de-sac off W. Ontario Ave.</td>
<td>Replace 394 feet of 4-inch cast iron pipe with 4-inch PVC pipe</td>
<td>62</td>
<td>$95,873 $19,175 $9,587 $124,635</td>
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</tbody>
</table>

## Sewer

No projects scheduled.
PROJECT C.I.P. 28-1W
W. GLASGOW PL. WATER MAIN REPLACEMENT
PROJECT C.I.P. 28-2W
S. DEPEW ST. WATER MAIN REPLACEMENT
PROJECT C.I.P. 28-3W
W. PLYMOUTH DR. WATER MAIN REPLACEMENT
PROJECT C.I.P. 28-5W
W. ONTARIO CIR. WATER MAIN REPLACEMENT
## 2029 Capital Improvement Projects

### Water

<table>
<thead>
<tr>
<th>Project</th>
<th>Subdivision</th>
<th>Location</th>
<th>Description</th>
<th>Pipe Age (yrs)</th>
<th>Cost</th>
<th>Contingency (20%)</th>
<th>Engineering (10%)</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>29-1W</td>
<td>Normandy Estates</td>
<td>W. Rowland Ave. from S. Kendall Blvd. to S. Depew Street</td>
<td>Replace 1,216 feet of 6-inch cast iron pipe with 6-inch PVC pipe</td>
<td>46, 57</td>
<td>$333,260</td>
<td>$66,652</td>
<td>$33,326</td>
<td>$433,238</td>
</tr>
<tr>
<td>29-2W</td>
<td>N/A</td>
<td>W. Coal Mine Ave. from S. Marshall Street to S. Depew Street</td>
<td>Replace 2,906 feet of 8-inch asbestos cement pipe with 12-inch PVC pipe; diameter was upsized by DW staff</td>
<td>56</td>
<td>$1,086,116</td>
<td>$217,223</td>
<td>$108,612</td>
<td>$1,411,951</td>
</tr>
</tbody>
</table>

### Sewer

No projects scheduled.
PROJECT C.I.P. 29-1W
W. ROWLAND AVE. WATER MAIN REPLACEMENT
## 2030 Capital Improvement Projects

### Water

<table>
<thead>
<tr>
<th>Project</th>
<th>Subdivision</th>
<th>Location</th>
<th>Description</th>
<th>Pipe Age (yrs)</th>
<th>Construction</th>
<th>Contingency (20%)</th>
<th>Engineering (10%)</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-1W</td>
<td>Columbine West</td>
<td>Webster St. from W. Coal Mine Ave. to W. Glasgow Place</td>
<td>Replace 902 feet of 8-inch cast iron pipe with 8-inch PVC pipe</td>
<td>49</td>
<td>$406,062</td>
<td>$81,212</td>
<td>$40,606</td>
<td>$527,881</td>
</tr>
<tr>
<td>30-2W</td>
<td>Columbine Knolls</td>
<td>S. Kendall Blvd. from W. Rowland Place to W. Fremont Drive</td>
<td>Replace 1,013 feet of 6-inch cast iron pipe with 6-inch PVC pipe</td>
<td>49, 52</td>
<td>$443,785</td>
<td>$88,757</td>
<td>$44,379</td>
<td>$576,921</td>
</tr>
<tr>
<td>30-3W</td>
<td>Columbine Knolls</td>
<td>W. Rowland Ave. from S. Marshall Street to S. Lamar Street</td>
<td>Replace 1,013 feet of 6-inch cast iron pipe with 6-inch PVC pipe</td>
<td>57</td>
<td>$196,980</td>
<td>$39,396</td>
<td>$19,698</td>
<td>$256,074</td>
</tr>
<tr>
<td>30-4W</td>
<td>Columbine Knolls</td>
<td>W. Roxbury Pl. from S. Marshall Street to S. Kendall Blvd.</td>
<td>Replace 1,931 feet of 8-inch cast iron pipe with 8-inch PVC pipe</td>
<td>57</td>
<td>$378,389</td>
<td>$75,678</td>
<td>$37,839</td>
<td>$491,906</td>
</tr>
</tbody>
</table>

### Sewer

No projects scheduled.
PROJECT C.I.P. 30-1W
WEBSTER ST. WATER MAIN REPLACEMENT
PROJECT C.I.P. 30-2W
S. KENDALL BLVD. WATER MAIN REPLACEMENT
PROJECT C.I.P. 30-3W

W. ROWLAND AVE. WATER MAIN REPLACEMENT
SECTION 4

VEHICLE AND EQUIPMENT SCHEDULE
2021 - 2030
VEHICLE AND EQUIPMENT SCHEDULE*

2021

4WD pickup
(Replaces 2013 Ford pickup) ($38,000)

Utility Vehicle
(Replaces 2014 Ford Explorer) ($44,000)

Sewer cleaner
(Replaces 2009 Seca unit) ($300,000)  $ 382,000

2022

4WD pickup
(Replaces 2014 Ford [1] pickup) ($38,000)

Trailer mounted Valve Operator
(Replaces 2014 Hurco) ($26,000)

4WD pickup
(Replaces 2014 Ford [2] pickup) ($38,000)  $ 102,000

2023

4WD pickup
(Replaces 2015 pickup) ($38,000)

Combination Valve/Vacuum Operator
(Replaces 2016 Hurco) ($55,000)  $ 93,000

2024

4WD pickup
(Replaces 2016 pickup) ($38,000)

Video Inspection Unit
(Replaces 2012 Cues unit) ($300,000)  $ 338,000

2025

No purchases scheduled

2026

No purchases scheduled
2027
4WD pickup
(Replaces 2019 pickup) ($38,000)

Trailer-Mounted Arrow Board
(Replaces 2019 Arrow Board) ($8,000)

Combination Sewer Cleaner/Vac Unit
(Replaces 2015 VacCon Unit) ($460,000) $506,000

2028
4WD Pickup
(Replaces 2020 Pickup) ($38,000)

Trailer Mounted Message Board
(Replaces 2020 Message Board) ($30,000) $68,000

2029
4WD Pickup
(Replaces 2021 Pickup) ($38,000)

Utility Vehicle
(Replaces 2021 Utility Vehicle) (44,000) $ 82,000

2030
4WD Pickup
(Replaces 2022 Pickup (1)) ($38,000)

4WD Pickup
(Replaces 2022 Pickup (2)) ($38,000)

Television Unit
(Replaces 2018 Cues Unit) ($300,000)

Trailer-Mounted Valve Operator
(Replaces 2014 Hurco Unit) ($26,000) $402,000
SECTION 5

COMPLETED CAPITAL CONSTRUCTION PROJECTS
COMPLETED CAPITAL CONSTRUCTION PROJECTS

**September 2020**

**Project CIP 20-1W**
Replaced 1,311 feet of 6-inch cast iron pipe with 1,311 feet of 6-inch PVC pipe in W. Geddes Ave. between S. Sheridan Ct. and S. Chase Ct. in the Columbine Knolls and Grove Subdivision ($279,733 est.)

**Project CIP 20-2W**
Replaced 1,107 feet of 8-inch cast iron pipe with 1,107 feet of 12-inch PVC pipe in S. Kendall Blvd. between W. Alder Ave. and W. Monticello Ave. in the Columbine Hills Subdivision ($315,098 est.)

**Project CIP 20-3W**
Replaced 465 feet of 6-inch cast iron pipe with 465 feet of 8-inch PVC pipe in W. Alder Ave. between S. Kendall Blvd. and S. Jay Dr. in the Columbine Hills Subdivision ($107,171 est.)

**Project CIP 20-4W**
Replaced 900 feet of 6-inch cast iron pipe with 900 feet of 8-inch PVC pipe in W. Canyon Trail between S. Depew St. and S. Sheridan Ct. in the Columbine Hills Subdivision ($203,954 est.)

**Project CIP 20-5W**
Replaced 1,005 feet of 6-inch cast iron pipe with 1,005 feet of 8-inch PVC pipe in W. Canyon Ave. between S. Depew St. and W. Canyon Dr. in the Columbine Hills Subdivision ($266,577 est.)

**September 2019**

**Project CIP 19-1W**
Replaced 1,058 feet of 8-inch cast iron pipe with 1,058 feet of 8-inch PVC pipe in S. Jay Ct. between W. Bowles Ave. and W. Leawood Dr. in the Leawood Subdivision ($235,134)

**Project CIP 19-4W**
Replaced 2,319 feet of 8-inch cast iron pipe with 2,319 feet of PVC pipe in W. Leawood Dr. between S. Pierce St. and W. Fair Dr. in the Leawood Subdivision ($701,658)

**Project CIP 19-2W**
Replaced 732 feet of 6-inch cast iron pipe with 732 feet of PVC pipe in S. Jay Dr. between W. Elmhurst Ave. and W. Monticello Ave. in the Columbine Hills Subdivision ($170,404)

**Project CIP 19-3W**
Replaced 1,255 feet of 8-inch cast iron pipe with 1,255 feet of 8-inch PVC pipe in W. Rowland Pl. between S. Depew St. and S. Sheridan Ct. in the Columbine Knolls Subdivision ($293,085)

**Project CIP 19-1S**
Replaced 293 feet of 16-inch polyethylene pipe with 293 feet of PVC pipe in S. Sheridan Blvd. at W. Fair Dr. in the Leawood Subdivision ($180,350)
October 2018  Project – Not Numbered
Scott J. Morse Pump Station fencing, parking, and storage facilities ($199,005)

October 2018  Project CIP 18-1W
Replaced 210 feet of 16-inch steel pipe with 210 feet of 12-inch PVC pipe in S. Sheridan Blvd. between W. Ontario Ave. and S. Yates Ct. ($199,005 est.)

August 2018  Project CIP 18-3W
Replaced 1,378 feet of 6-inch cast iron pipe with 1,378 feet of PVC pipe in W. Geddes Cir. west of S. Sheridan Blvd. in the Columbine Manor Subdivision ($282,754)

July 2018  Project CIP 18-1S
SpectraShield lined five manholes on 16-inch sewer main in S. Sheridan Blvd. between 6159 and 6249 S. Sheridan Blvd. ($8,950)

October 2017  Projects CIP 17-1S, CIP 17-2S, and CIP 17-3S
CIPP lined 7,339 feet of 8-inch and 1,431 feet of 10-inch concrete sewer pipe in S. Depew St., W. Ontario Ave., W. Ontario Cir., S. Sheridan Blvd., W. Plymouth Dr., S. Gray Ct., W. Portland Dr., W. Quarles Dr. and lined 39 concrete manholes. (Normandy Estates Subdivision) ($356,297)

October 2017  Project CIP 17-3W
Replaced pressure reducing valve and piping at W. Frost Dr. and S. Webster St. (Columbine West Subdivision) ($32,210)

September 2017  Project CIP 17-2W
Replaced 1,946 feet of 6-inch cast iron pipe with 1,946 feet of PVC pipe in Morning Glory Ln. between Blue Sage Dr. and W. Berry Ave. (Bow Mar South Subdivision) ($213,537)

July 2017  Project CIP 17-1W
Replaced 994 feet of 6-inch cast iron pipe with 994 feet of 6-inch PVC pipe in W. Canyon Dr. between S. Depew St. and W. Canyon Ave. (Columbine Hills Subdivision) ($159,173)

June 2017  Project CIP 16-1W
Replaced inlet discharge interior piping, pumps, motors and control system components at Scott J. Morse Pump Station (Columbine Hills Subdivision) ($1,241,782)

September 2016  Project CIP 16-2W
Replaced 180 feet of 6-inch cast iron pipe in W. Portland Dr. between W. Ottawa Ave. and S. Sheridan Blvd. with 180 feet of 6-inch C-900, class 150 PVC pipe. (Normandy Estates) ($29,420)

August 2016  Project CIP 16-1S
CIPP lined 3,383 feet of 8-inch concrete pipe, lined 14 concrete manholes and reestablished 40 service connections in W. Rowland Ave., S. Normandy Cir., W. Quarles Dr. and S. Windsor St. (Normandy Estates) ($129,981)
September 2015  Project CIP 15-1S
CIPP lined 3,383 feet of 8-inch concrete pipe, lined 14 concrete manholes and reestablished 40 service connections in W. Rowland Ave., S. Normandy Cir., W. Quarles Dr. and S. Windsor St. (Normandy Estates) ($135,225)

September 2014  Project CIP 14-1W
Replaced 1,560 feet of 6-inch cast iron pipe in S. Chase Wy. Between W. Rowland Pl. and S. Sheridan Ct. with 1,560 feet of 6-inch C-900, class 150 PVC (Columbine Knolls Subdivision) ($251,896)

September 2014  Project CIP 14-1S
CIPP lined 1814 feet of 8-inch concrete pipe, lined 9 manholes, and reestablished 17 sewer service taps in Robincrest Ln. and Meadowlark Ln. north of Coal Mine Ave. (Columbine Heights Subdivision) ($123,938)

September 2013  Project CIP 13-1W
Replaced 325 feet of 4-inch cast iron pipe with 325 feet of 4-inch C-900, class 150 PVC pipe in S. Quay Ct. between W. Hinsdale Pl. and end of cul-de-sac (Columbine West Subdivision) ($62,164)

September 2013  Project CIP 13-2W
Replaced 775 feet of 6-inch cast iron pipe with 775 feet of 8-inch C-900, class 150, PVC pipe in S. Jay Dr. between W. Monticello Ave. and W. Elmhurst Dr. (Columbine Hills Subdivision) ($116,244)

September 2012  Project CIP 12-1W
Replaced 523 feet of 6-inch cast iron pipe with 523 feet of 6-inch C900 class 150 PVC pipe in S. Sheridan Ct. between W. Ken Caryl Ave. and W. Hinsdale Ave. (Columbine Knolls Subdivision) ($88,872)

September 2012  Project CIP 12-1S
CIPP lined 1,313 feet of 21-inch and 4,803 feet of 18-inch concrete pipe and 27 concrete manholes on the Raccoon Creek Interceptor Sewer ($429,565)

October 2011  Project CIP 11-1S
Replaced 50 feet of 24-inch concrete sewer pipe with 24-inch, PVC sewer pipe in W. Bowles Ave., between Platte Canyon Rd. and Middlefield Ln. ($68,652)

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)

**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, C-900, 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 C-900, 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, C-900, 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, C-900, 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)

**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, C-900, 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 C-900, 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 C-900, 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. Caryll 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)

**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)

**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)

**August 2000**

**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)

**December 1999**

**Project 99-3S**
Installed ultrasonic sewage flow meter at Platte Canyon Sewage Lift Station. ($16,924)

**Project 99-2S**
Rehabilitated manholes OF51, OF52, OF53, OF54 and OF55 on the District’s outfall sewer main. ($12,055)

**September 1999**

**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)
September 1999  Project 99-3W
Installed eight 6-inch gate valves at various locations.  ($24,009)

September 1999  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)

September 1999  Project 99-2W
Replaced 10-inch pressure reducing valve and vault on W. Hinsdale Dr. at S. Webster St.  ($53,340)

November 1998  Project 98-2S
Rehabilitated manholes OF30 through OF33 and OF61 through OF64 on the District’s outfall sewer main (eight manholes).  ($11,025)

November 1998  Project 98-1S
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)

October 1998  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 C-900, 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 C-900, 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, C-900, 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)
<table>
<thead>
<tr>
<th>Date</th>
<th>Project CIP</th>
<th>Details</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 1990</td>
<td>90-1W</td>
<td>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).</td>
<td>$60,949</td>
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<tr>
<td>August 1989</td>
<td>89-2W</td>
<td>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)</td>
<td>$96,200</td>
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<td></td>
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<td>b) Replaced 450 feet of 6 inch cast iron pipe in W. Roxbury Pl. west of S. Sheridan Blvd. (Columbine Grove Subdivision).</td>
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<tr>
<td>July 1989</td>
<td>89-1W</td>
<td>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)</td>
<td>$75,490</td>
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<tr>
<td>December 1988</td>
<td>88-2S</td>
<td>Replaced manhole 40 on District Outfall Sewer Main in Platte Canyon Road.</td>
<td>$2,500</td>
</tr>
<tr>
<td>June 1988</td>
<td>88-1S</td>
<td>Slipped 200 feet of 24 inch concrete sewer between manholes 33 and 34 in Platte Canyon Rd. at Dutch Creek.</td>
<td>$13,616</td>
</tr>
<tr>
<td>June 1988</td>
<td>88-1W</td>
<td>Replaced 1250 feet of 6 inch water main in S. Kendall Blvd. between S. Kendall Ct. and W. Rowland Pl.</td>
<td>$60,164</td>
</tr>
<tr>
<td>September 1987</td>
<td>87-1W</td>
<td>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.</td>
<td>$57,672</td>
</tr>
<tr>
<td>September 1987</td>
<td>87-1S</td>
<td>Replaced 1,470 feet of 8 inch sanitary sewer in W. Bowles Ave. between Platte Canyon Rd. and Blue Sage Dr.</td>
<td>$69,808</td>
</tr>
<tr>
<td>July 1986</td>
<td>86-1W</td>
<td>Replaced 1,800 feet of eight inch water pipe in Shasta Circle (Bow Mar Subdivision).</td>
<td>$76,276</td>
</tr>
<tr>
<td>September 1985</td>
<td>85-1S</td>
<td>Slipped 694 feet of 18 inch sewer, 3,064 feet of 21 inch sewer, and 1,604 feet of 24 inch sewer.</td>
<td>$220,780</td>
</tr>
<tr>
<td>December 1978</td>
<td>78-2W</td>
<td>Replaced 1,450 feet of six inch water pipe in Summit Dr. and Jay Dr. (Columbine Estates Subdivision).</td>
<td>$33,782</td>
</tr>
<tr>
<td>December 1978</td>
<td>78-1W</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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)
SECTION 6

CAPITAL IMPROVEMENT PROJECT MAP