# Drainage System Replacement

**Replacement of existing drainage infrastructure at or nearing the end of useful service life.**

## Brief Description:
- **Project Name:** Drainage System Replacement
- **Brief Description:** Replacement of existing drainage infrastructure at or nearing the end of useful service life.

## Funding Source

<table>
<thead>
<tr>
<th>New/Additional Revenue Generated</th>
<th>Significant Ongoing Revenue Source</th>
<th>Small Ongoing Revenue Source</th>
<th>One-Time Revenue Source</th>
<th>No New/Additional Revenue Generated</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Legally Mandated</strong></td>
<td>Court Decision</td>
<td>Regulatory Requirement</td>
<td>Pending Legal Action</td>
<td>Potential Legal Action</td>
</tr>
</tbody>
</table>

## Public Health & Safety

| Existing Severe Hazard | Existing Minor Hazard | Potential Severe Hazard | Potential Minor Hazard | No Health or Safety Issue |

## Operating Budget Impact

| Decreases Operating and/or Personnel Costs | Minimal or No Impact on Operating and/or Personnel Costs | Slight Increase to Operating and/or Personnel Costs | Significant Increase to Operating and/or Personnel Costs |

## Environment and Sustainability

| Enhances Environment and/or Sustainability | Benefits Environment and/or Sustainability | No Environmental Impact | Minor or Negative Environmental Impact | Diminishes Environment |

## % Of Population Served

| 100% of Population Served by Project | Majority of Population Served | Approximately 50% of Population Served | Less than 50% of the Population Served |

## Preservation of Facility

| Loss of Facility Imminent without Project Completion | Additional Damage Likely without Project Completion | Project Constitutes Normal Major Maintenance | Project Constitutes Normal Minor Maintenance | New Facility/ No Safety Issue |

## Project Useful Life

| 20+ Years With Little/No Maintenance | 20+ Years With Normal Maintenance | 10-20 Years With Normal Maintenance | 5-9 Years with Normal Maintenance | 1-4 Years with Normal Maintenance |

## Conformity to Strategic Plans & Department Goals

| Critical to accomplishing Established Plans / Goals | Assists in Accomplishing Established Plans / Goals | Will Not Assist or Will Hinder Accomplishing Plans / Goals | Recommended by City Council | Recommended by Staff |

## Recreational or Aesthetic Value

| Major Value | Moderate Value | No Value | Possibly Detrimental |

## Estimated Frequency of Use

| Every Day | Several Times per Week | Several Times per Month | Once per Month or Less |

## Vision 2030 Guiding Principles Priority

| X (A) Safe and Reliable | (B) Economic Vitality and Community Amenities | (C) Public Safety |

## Category of Capital Expenditures

| Land Improvement | Building Improvement | Equipment | Vehicle | Technology | Infrastructure |

## Financial Impact - Expenses

<table>
<thead>
<tr>
<th>Life-To-Date</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
<th>2026</th>
<th>2027</th>
<th>2028</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Costs</td>
<td>538,786</td>
<td>734,380</td>
<td>754,439</td>
<td>798,246</td>
<td>846,323</td>
<td>872,180</td>
<td>899,329</td>
<td>927,835</td>
<td>957,767</td>
<td>-</td>
<td>7,329,285</td>
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<tr>
<td>On-Going Maintenance</td>
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<td>-</td>
</tr>
</tbody>
</table>

*Life-to-date includes any actual expenditures from start of project through July 2018 and estimates for the remainder of FY 2018*

## Basis for Project Cost Estimate

| Formal Proposal | Contractor/Engineer Estimate | State Purchasing Co-Op | X Staff Estimate |

## Financial Impact - Revenues

<table>
<thead>
<tr>
<th>Revenue Estimate</th>
<th>Life-To-Date</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
<th>2026</th>
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</tr>
</thead>
</table>

*Life-to-date includes any actual revenue generated from start of project through July 2018 and estimates for the remainder of FY 2018*
**Drainage System Replacement**

Tied to acct# 10-9011-91014. The Drainage System Replacement Program replaces the City’s existing Drainage Infrastructure that has reached or is nearing the end of useful service life. Failing to replace these various pipes, manholes, inlets, etc. would result in areas of the City not draining correctly which could potentially result in altered drainage flows with the possible outcome of localized flooding including the potential of flooding private properties and structures. Further, failure of a main beneath one of our streets could result in the failure of the street and the formation of a sinkhole. Success for this project would be measured by the replacement and extended life of the drainage infrastructure and continued operation that minimizes the risk of localized flooding.

The budget request amount was found by taking the amounts of all Storm assets that the City of Golden is responsible for (pipes, inlets, channels, etc.) then dividing by the useful life for that asset type to determine the amount of each asset that needs to be replaced annually. Those amounts were then multiplied by the average cost to replace to determine funding levels. The types of assets involved in the stormwater system are incredibly varied with respect to lifespan and cost. Adding the calculation for each is not practical. An example calculation is provided below along with the end result for each type of asset.

Total number of inlets, manholes, outfalls within the storm system is 1878. The average life for these assets is 60 years. Meaning that in order to maintain the system 31 of these assets should be replaced annually. \( \frac{1878}{60} = 31.3 \) or 31. The average cost of this asset type is roughly \$5,775.00. \( 31 \times \$5,775 = \$179,000.00 \).

The annual replacement costs for the other types of Storm assets were similarly calculated and the annual replacement costs are outlined below.

<table>
<thead>
<tr>
<th>Asset Type</th>
<th>Annual Replacement Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storm Pipe</td>
<td>$169,000.00</td>
</tr>
<tr>
<td>Storm Channel</td>
<td>$37,770.00</td>
</tr>
<tr>
<td>Storm Appurtenances</td>
<td>$179,000.00</td>
</tr>
</tbody>
</table>

Drainage System Replacement Annual Cost Total: \$367,510.00.

Future years indicate an assumed 5% increase in costs. It is anticipated that these funding needs can be met under the existing Drainage Fee structure and that an increase in fees is not needed. Given the end of the Drainage Fund Debt Service in 2019 it is anticipated that the Drainage System Replacement Fund could be utilized for larger scale culvert replacements, potential purchase of lands within floodplains, improvements to City owned park lands withing floodplains as well as other projects to help improve the natural function of floodplains. This would improve water quality, riparian ecosystems,...

**List any obstacles for implementation**

The obstacles to this program are the typical obstacles related to civil construction. Those being timing, prioritization, funding etc...

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**Finance Use Only**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Received by Finance Department</td>
<td></td>
</tr>
<tr>
<td>Reviewed by City Manager:</td>
<td></td>
</tr>
</tbody>
</table>
### Local Drainage Improvements

**Brief Description:**
This request is for funding to the Local Drainage Improvements Program which is responsible for making new additions to the Drainage System as opposed to replacement of existing infrastructure.

<table>
<thead>
<tr>
<th>Funding Source</th>
<th>Existing Grant Funds Identified for Project</th>
<th>Potential Grant Funds Identified</th>
<th>Funds Identified From Capital Project Fund</th>
<th>Funds Identified From Other Fund (Name)</th>
<th>No Identified Funding</th>
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<tr>
<td>New/Additional Revenue Generated</td>
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<tr>
<td>Public Health &amp; Safety</td>
<td>Existing Severe Hazard</td>
<td>Existing Minor Hazard</td>
<td>Potential Severe Hazard</td>
<td>Potential Minor Hazard</td>
<td>No Health or Safety Issue</td>
</tr>
<tr>
<td>Operating Budget Impact</td>
<td>Decreases Operating and/or Personnel Costs</td>
<td>Minimal or No Impact on Operating and/or Personnel Costs</td>
<td>Slight Increase to Operating and/or Personnel Costs</td>
<td>Significant Increase to Operating and/or Personnel Costs</td>
<td>X</td>
</tr>
<tr>
<td>Environment and Sustainability</td>
<td>Enhances Environment and/or Sustainability</td>
<td>Benefits Environment and/or Sustainability</td>
<td>No Environmental Impact</td>
<td>Minor or Negative Environmental Impact</td>
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</tr>
<tr>
<td>% Of Population Served</td>
<td>100% of Population Served by Project</td>
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<td>Project Useful Life</td>
<td>20+ Years With Little/No Maintenance</td>
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<td>Conformity to Strategic Plans &amp; Department Goals</td>
<td>Critical to accomplishing Established Plans / Goals</td>
<td>Assists in Accomplishing Established Plans / Goals</td>
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<td>Recommended by City Council</td>
<td>Recommended by Staff</td>
</tr>
<tr>
<td>Recreational or Aesthetic Value</td>
<td>Major Value</td>
<td>Moderate value</td>
<td>No Value</td>
<td>Possibly Detrimental</td>
<td></td>
</tr>
<tr>
<td>Estimated Frequency of Use</td>
<td>Every Day</td>
<td>Several Times per Week</td>
<td>Several Times per Month</td>
<td>Once per Month or Less</td>
<td></td>
</tr>
</tbody>
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**Vision 2030 Guiding Principles Priority** - (Choose One Best Fit)

- (A) Safe and Reliable
- (B) Economic Vitality and Community Amenities
- (C) Public Safety
- (D) Other

**Category of Capital Expenditures** - (Choose One Best Fit)

- Land Improvement
- Building Improvement
- Equipment
- Vehicle
- Technology
- Infrastructure

### Financial Impact - Expenses

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<tr>
<th>Life-To-Date*</th>
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</thead>
<tbody>
<tr>
<td>Project Costs</td>
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<td>100,000</td>
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<tr>
<td>On-Going Maintenance</td>
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</tr>
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**Basis for Project Cost Estimate**

- Formal Proposal
- Contractor/Engineer Estimate
- State Purchasing Co-Op
- Staff Estimate

### Financial Impact - Revenues

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The City Drainage System is comprised of storm sewer mains, inlets, ponds, major drainage ways (Tucker Gulch, Kennys Run, Lena Gulch, etc...). The purpose of the drainage system is to convey runoff from rain events downhill through the City in a manner that minimizes flooding issues and maximizes water quality. Localized issues with the Drainage System (storm pipes, inlets, drainage ways, etc...) are identified regularly. Issues such as low points in the gutter that do not drain or lack of adequate collection via inlets. The Local Drainage Improvement Program addresses these issues through the installation of new infrastructure. For example the addition of pipes and inlets to address an area that does not adequately drain and causes issues such as standing water and icing in the cold months. Or addition of a sidewalk chase to collect and safely convey a roof drain underneath a sidewalk to prevent icing and slip issues. This program adds storm infrastructure which will increase future maintenance needs but does not alter existing maintenance budgets. In some instances, not providing the drainage improvements could increase the maintenance costs of other assets, such as sidewalks or asphalt streets, if the assets are subjected to standing water or ice freeze/thaw conditions. Specifically identified for projects in 2019 are addition of a type R inlet on Ruby Drive at Iowa and piping to connect to the area storm system in order to prevent runoff from bypassing the detention and WQ pond for the development. Additionally installation of an inlet and piping at the west end of Capital Drive to improve an issue with impounded water that is getting onto private property from the ROW.

Standard issues associated with civil construction such as funding, timing, etc... Additionally, the unknown and variable nature of Stormwater issues make it difficult to anticipate, plan, and budget for a reasonable response to said issues.

List any obstacles for implementation
# Lena Gulch Improvements

**Brief Description:**
Improvements to Lena Gulch from Heritage to C470

### Funding Source
- Existing Grant Funds Identified for Project
- Potential Grant Funds Identified
- Funds Identified From Capital Project Fund
- Funds Identified From Other Fund (Name)
- No Identified Funding

### New/Additional Revenue Generated
- Significant Ongoing Revenue Source
- Small Ongoing Revenue Source
- One-Time Revenue Generated
- No New/Additional Revenue Generated

### Legally Mandated
- Court Decision
- Regulatory Requirement
- Pending Legal Action
- Potential Legal Action
- Normal Liability

### Public Health & Safety
- Existing Severe Hazard
- Existing Minor Hazard
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- Potential Minor Hazard
- No Health or Safety Issue

### Operating Budget Impact
- Decreases Operating and/or Personnel Costs
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### Environment and Sustainability
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### % Of Population Served
- 100% of Population Served by Project
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### Preservation of Facility
- Loss of Facility Imminent without Project Completion
- Additional Damage Likely without Project Completion
- Project Constitutes Normal Major Maintenance
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- New Facility/ No Safety Issue

### Project Useful Life
- 20+ Years With Little/No Maintenance
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### Conformity to Strategic Plans & Department Goals
- Critical to accomplishing Established Plans / Goals
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- Recommended by City Council
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### Recreational or Aesthetic Value
- Major Value
- Moderate value
- No Value
- Possibly Detrimental

### Estimated Frequency of Use
- Every Day
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### Vision 2030 Guiding Principles Priority - (Choose One Best Fit)
- X (A) Safe and Reliable Public Infrastructure
- (B) Economic Vitality and Community Amenities that Improve Quality of Life
- (C) Public Safety
- (D) Other

### Category of Capital Expenditures - (Choose One Best Fit)
- Land Improvement
- Building Improvement
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- Vehicle
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- Infrastructure

### Financial Impact - Expenses

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<tbody>
<tr>
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- Staff Estimate

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</tr>
</thead>
<tbody>
<tr>
<td>Revenue Estimate</td>
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</tbody>
</table>
This request acts as a placeholder for a future project that may become possible if the City acquires the remaining parcel of land currently owned by the Bachman Family. It is unclear if there is much potential for that to occur at this point. However, if the City did acquire the land, then a project to improve the channel, potentially reduce downstream flood flows, replace the culvert underneath Zeta Street, and improve the natural riparian function would make sense. It is anticipated that this would be an Urban Drainage partnered project and we would share the cost.

The obstacles to this program are the typical obstacles related to civil construction. Those being timing, prioritization, funding etc... Additionally, given the uncertainty of the City acquiring the necessary land makes this project difficult to plan and budget for.