

CITY DITCH FLUME STRUCTURES

Ryan Germeroth, Deputy Director
of Public Works & Utilities

Brent Soderlin, Director of Public
Works & Utilities

APRIL 22, 2025



OVERVIEW

History of City Ditch

Overview of City Ditch Project

Summary of Flume Assessments

Staff Recommendation

Upcoming Council Items

HISTORY OF CITY DITCH

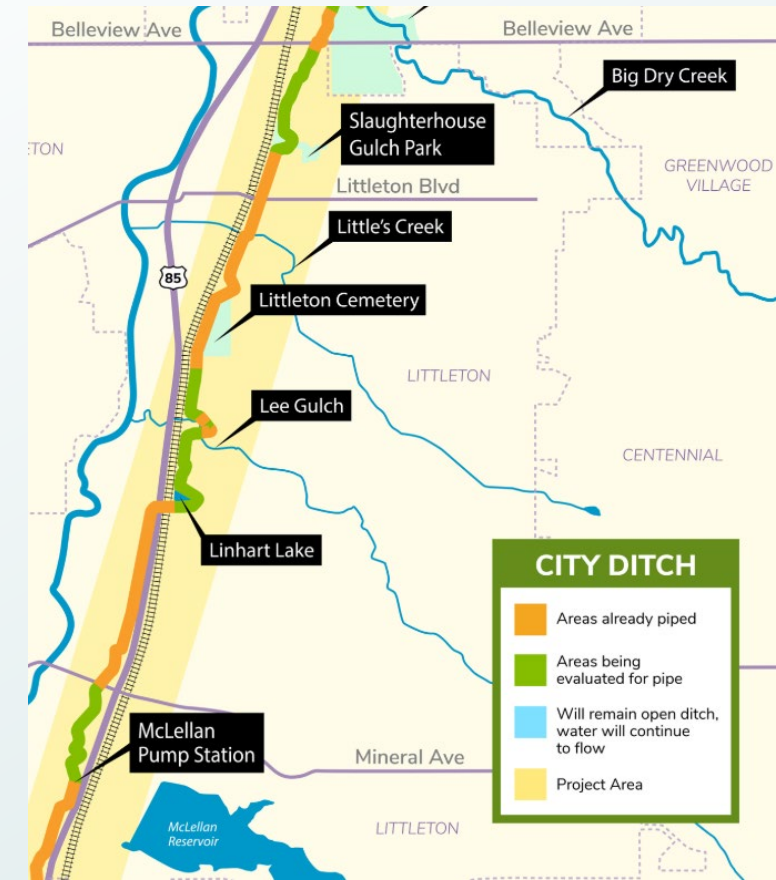


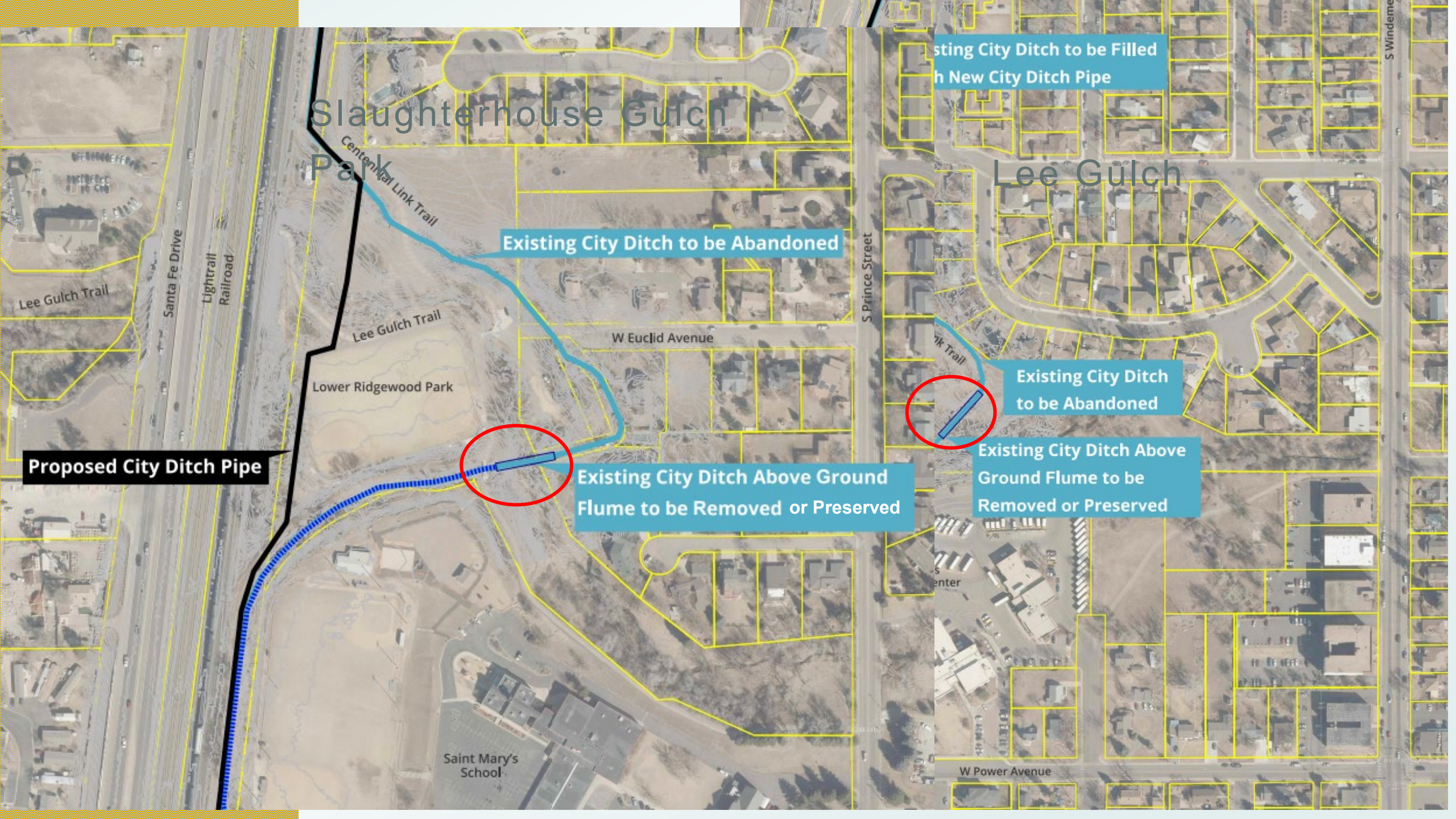
- Constructed between 1864 and 1867 by Capitol Hydraulic Company
- Provided irrigation for agriculture
- Ran 26 miles from confluence of Plum Creek & South Platte River to City Park in Denver
- Flume structures were built to cross creeks & gulches
- Initial flumes were likely wooden while current flumes likely built in mid-1940s



CITY DITCH PROJECT

- Englewood Project to Pipe Open Ditch in Lee Gulch and Slaughterhouse Gulch Park
- Design Q3 2022 to Q1 2025
- Construction starting Q2 2025 (Slaughterhouse Gulch Only)
- Flume & Ditch Abandonment





Slaughterhouse Gulch Park

Lee Gulch

Proposed City Ditch Pipe

Existing City Ditch to be Abandoned

Existing City Ditch Above Ground
Flume to be Removed or Preserved

Existing City Ditch to be Filled
with New City Ditch Pipe

Existing City Ditch
to be Abandoned

Existing City Ditch Above
Ground Flume to be
Removed or Preserved

SUMMARY OF FLUME ASSESSMENTS

Lee Gulch

- Corroded / leaking deck
- Corroded steel supports
- Spalled / scaled concrete & missing anchors @ west abutment
- Exposed foundation @ Pier 5 (no undermining)
- Heavy vegetation growth

Slaughterhouse Gulch Park

- Corroded / leaking deck
- Corroded steel supports
- Spalled concrete & missing anchors @ north abutment
- Undermined pier support below truss (only 10% bearing capacity remains)
- Heavy vegetation growth

SUMMARY OF FLUME ASSESSMENTS



Lee Gulch

SUMMARY OF FLUME ASSESSMENTS



Slaughterhouse Gulch Park

COST SCENARIOS ANALYZED

- Costs to Repair in Place
- Costs to Maintain in Place (every 10 years)
- Costs to Remove & Relocate Part or Most of Flume
(relocation of abutment spans not included)

SUMMARY OF FLUME ASSESSMENTS - COSTS



Slaughterhouse Gulch Park

- Repair cost: \$303,600
- Maintenance cost: \$33,600 per year or \$335,600 every 10 years
- Remove / Relocate options:
(abutment spans not included)
 - Truss only: \$294,600
 - Nine Spans: \$636,600 (one span ~\$70,800)
 - Misc. items: \$148,400
 - Total: \$1,079,600

CONSIDERATIONS

- Costs to repair and maintain in place are high
- Concerns around safety and access to flumes if left in place
- Costs to relocate both flumes are even higher
- Any relocated structure would need to be secured for safety

STAFF RECOMMENDATION

- Due to costs and concerns around safety, recommendation is to remove the flumes with project
- Options – Slaughterhouse Gulch Flume:

Scenario		Slaughterhouse Gulch Flume		
		One time cost	Annual costs	Total 10-yr Cost
Option 1	Remove flume with Englewood project	\$0	\$0	\$0
Option 2	Repair & maintain flume in place	\$303,600	\$33,600	\$639,600
Option 3a	Relocate one flume span only	\$219,200	\$2,300	\$242,200
Option 3b	Relocate truss only	\$443,000	\$7,300	\$516,000
Option 3c	Relocate truss w/ three spans	\$655,400	\$14,200	\$797,400
Option 3d	Relocate full structure w/o abutments	\$1,079,600	\$30,700	\$1,386,600

UPCOMING COUNCIL ITEMS

- Resolutions planned for Council on June 3rd:
 - IGA with Englewood for project in Slaughterhouse Gulch
 - Includes tree reimbursement fee of \$216,500
 - Temporary and Permanent Easements
 - Includes temporary easements for construction
 - May include language on ditch bank restoration
 - Quit Claim Deed for Property Transfer
 - May include language on removal of flume structures