



City of
Fort Collins

STRATEGIC TRAILS PLAN

E

APPENDIX E: Irrigation Ditch Compatibility Assessment Results



FINAL REPORT

IRRIGATION DITCH COMPATIBILITY



June- August, 2024 Logan Simpson conducted an irrigation ditch compatibility study to evaluate the feasibility of locating proposed trails along or across irrigation ditches. The purpose of this study is to:

- Develop better understanding among community members for the role and operational considerations of ditch companies operating within the Fort Collins' GMA, leading to increased transparency and communication.
- Identify potential constraints, opportunities, and other impacts where our current proposed trails cross or run adjacent to existing ditch alignments.
- Identify possible missed opportunities to pair trails with irrigation ditches whose boards (or directors) may be amenable to trail development.
- Cross reference case studies to identify potential solutions to ditch company coordination challenges or concerns about trails.

The study resulted in the production of four tools to help guide future implementation of trails along or across irrigation ditches within Fort Collins Growth Management Area:

1. Irrigation Ditch Company Evaluation Matrix
2. Irrigation Ditch Viability Map
3. Case Studies
4. Consolidated GIS Shapefile of all Ditches within the GMA

IRRIGATION DITCH COMPANY EVALUATION MATRIX

This analysis relied heavily on City relationships with irrigation companies. On July 11, 2024, the STP project team conducted a workshop with City water resource engineers and attorneys to understand key details of each ditch company operating in the City's GMA such as history of relationships with the City, representation on ditch company board, ownership share, and issues such as liability and maintenance in order to make a determination of compatibility for proposed trails. The results of the analysis are documented in the Irrigation Ditch Company Evaluation Matrix. The matrix includes all ditch companies operating within the GMA but focuses detailed analysis on the ditches that would be impacted by proposed trails.

IRRIGATION DITCH VIABILITY MAP

Results of the stakeholder analysis as documented in the Irrigation Ditch Company Evaluation Matrix, were mapped to produce the color-coded Irrigation Ditch Viability Map that visually conveys ditch company sentiment towards trail development for the ditches that are impacted by proposed trails. The colors assigned to each ditch signify the following:

- Green = company is likely agreeable to trail development
- Yellow = company may be agreeable to trail development
- Red = company is likely not agreeable to trail development

As implementation progresses, the Irrigation Ditch Compatibility Matrix and associated map, should be re-evaluated and updated regularly to reflect new opportunities or changes in ditch company sentiment towards trails.

CASE STUDIES CONCLUSIONS

Logan Simpson conducted case study research of six communities in Arizona, Colorado, and Texas exhibiting large-scale success in utilizing ditch corridors for public trail development. These communities have developed mutually beneficial relationships with ditch companies who are willing trail partners and could serve as valuable advisers to the City on future negotiations with ditch companies. Key conclusions from this research are summarized below.

KEY FINDINGS

- Focus trail development where the City might have greater influence from higher shareholder interest; work through existing City representatives on irrigation ditch company boards to coordinate with companies on potential trail development.
- Focus future trail development efforts along corridors that are identified as “likely agreeable to trail development” on the Irrigation Ditch Viability Map.
- Engage ditch company managers and boards in early discussions on potential trail development and determine how projects can be developed to provide shared benefits.
- Focus on ditch/trail corridors that connect community resources such as residential areas, retail hubs, community or recreation centers, parks, open spaces.
- As pre-development work commences on proposed trails, evaluate return on investment of opportunities to take on or share ditch maintenance responsibilities in exchange for constructing a trail within the ditch corridor.
- Prior to trail construction, develop formal agreements that address both trail development, management/maintenance, and the City’s added liability for the trail. Define parameters for development and use of trails that do not impact the ditch or canal’s original functions or the ability to maintain them.
- Establish agreed-upon design guidelines for the trail at the outset of negotiations with ditch companies.

GIS DATA

Logan Simpson consolidated four data sets from different sources including the Natural Areas Department, City hydrology data, and the Water Resources Department to produce a single, definitive data source for water conveyance structures including ditches, canals, laterals, inlets, and outlets operating in Fort Collins GMA. During data consolidation and reconciliation, Logan Simpson corrected naming inconsistencies with guidance from City Water Resources engineers and attorneys.

CASE STUDIES

IRRIGATION DITCH AND CANAL-ADJACENT TRAILS

SALT RIVER PROJECT (SRP) TRAILS SYSTEM, CITY OF PHOENIX, AZ

Notable because the SRP offers funding to trails and conservation projects in addition to their partnerships with municipalities.

In the City of Phoenix, a 50-year agreement has led to many miles of recreational and canal management areas with full public access along the Salt River Project (SRP) Canal system. The SRP trail system originated with the estimated 150-mile system of the Hohokam canals which served as irrigation in Salt River Valley over 1500 years ago— the largest prehistoric irrigation project in North America. ([HOHOKAM IRRIGATION CANALS Pueblo Grande Museum](#)).

The SRP canal system today serves as a municipal utility function as well as a recreational one, as it provides electricity for the Valley of the Sun. The SRP partners closely with the community by distributing funding to local nonprofits for trails projects, sponsoring annual trail bike races, and are generally partnered with community organizations to give back to land management and conservation. All recreational activities of non-motorized vehicles are allowed, including fishing in the canals as well as fee-based special events such as festivals and educational gatherings. The partnership between the SRP and Maricopa County and other municipalities throughout the region have led to a unique system along over 80 miles of canal trails while still delivering water to more than 2.5 million residents in the region through the same canal system. (SRP: [Water Recreation](#))

The SRP today is an essential attraction, guiding its users through the City of Phoenix through public art, parks and open spaces, neighborhoods, and into trail-facing local businesses. The Grand Canalscape project completed in February 2020 is a 10 to 12 foot wide concrete paved trail along the SRP-operated canal. The project was developed through a partnership between the City of Phoenix, SRP, and the US DOT Federal Highway Administration through a TIGER Grant. ([City of Phoenix, Grand Canalscape](#))



BROWNSVILLE, TX: PASEO DE LA RESACA TRAILS

This trail system is unique due to the public recreational access to the water while connecting residential and other trails in their system, and provision of essential flood and stormwater management.

Opened in 2000, the Paseo de la Resaca Trails system weaves along *resacas*, former channelized waterways of the Rio Grande which serve as both stormwater retention and irrigation. The trails follow the resacas over bridges, through waterside parks, and connect surrounding residential neighborhoods with 128 acres of parkland including marinas, playgrounds, 4.1 miles of resacas, 7 miles of paved trails, and the Brownsville Events Center. Resacas in the area typically share mixed ownership wherein the water within the channel is owned by the State of Texas, while the riverbed is privately owned by individual landowners. The State of Texas then authorizes water use by local public agencies so that the waterways of Resacas are publicly owned and managed at a local level, allowing public recreational use of the waterways. The city has constructed trails along the resacas that it owns or has partnered with Cameron County Drainage to develop public trails.

The Paseo de la Resaca trails system serves as a connection of residential areas to natural landscapes, recreational access to water, and system connected to other local trails that is accessible to all.



DENVER, COLORADO: HIGH LINE CANAL

Notable because of the direct and extensive leadership of a conservancy group dedicated to the canal trail which in its efforts aligns the many regional interests with public support.

The 71-mile long High Line Canal connects Denver area residents to the agricultural history of Colorado while still operating to provide water during seasonal flows.

The canal is owned and operated by Denver Water who has long partnered with non-profit group High Line Canal Conservancy to manage the long-term vision and planning for the canal and the trail. Denver Water began to lease the land around the canal starting in 1970 to surrounding municipalities to be used for pedestrian, equestrian, and cycling among other recreation activities ([History Colorado](#)). Over time, the management and maintenance of the canal has been distributed between seven agencies with recreation use agreements. These agencies are generally parks departments, trails organizations, and recreation districts which operate in the areas along the canal. ([High Line Canal Conservancy](#))



CITY OF WESTMINSTER, CO: FARMERS HIGH LINE CANAL TRAIL

Notable because it was constructed by the ditch companies over time. Today, the City of Westminster is a shareholder in the companies that own and maintain the ditches.

The Farmers' High Line Canal trail winds 10.3 miles through the City of Westminster along one of the primary functioning irrigation ditches supplying the City's water. First segments were constructed in the mid-19th century by the Arapahoe Ditch Company and later segments by the Golden City and Arapahoe Ditch Company. The scenic trail connects open space, parks, recreation centers, residential, and retail areas.

Westminster is a shareholder in multiple ditch companies in the area, including the Farmers' High Line Canal & Reservoir Company who owns and operates the canal. ([City of Westminster News](#))



MARANA, AZ: CAP TRAIL

Notable because trail design guidelines and development policy were established at the time of canal construction as a plan to incorporate trails from the very beginning. These guidelines laid out a clear path for trail development.

The Central Arizona Project (CAP) Trail system provides non-motorized recreation between multiple jurisdictions from Tucson through Northern Phoenix and onward

northwest through La Paz County. The Central Arizona Water Conservation District (CAWCD) is quasi-governmental entity with a publicly elected board that manages the Central Arizona Project (CAP), a 336-mile-long canal system which delivers water to more than 80% of Arizona's population through aqueducts, tunnels, pumping plants, and pipelines. While much of the trail system along the CAP canals is still conceptual, a segment along North Phoenix and North from Marana are constructed and an additional 17-mile strip is under construction.



Because CAP is not legally authorized to build or maintain the trail along the canals, partnerships and cooperation with municipal, county, and tribal agencies are essential to constructing and sponsoring trail development. Guidelines on trail construction along with the facilitation of recreation agreements between the U.S. Bureau of Reclamation and city or county sponsors allow CAP to guide the development of a uniform trail system along the canal's length. With extensive guidelines established by the CAWCD Board to pave the way for trail construction along the existing canal system, the CAP trail exemplifies how an established trail policy can ease trail development. With construction of the CAP trail beginning in 1973, these policies have specified uniform parameters for trail design and construction, including locating the trail outside of CAP's security fence initially installed 10-20 feet inset from the CAP property line, reducing liability and operational security concerns. Public use is allowed for non-motorized wheeled vehicles, hiking, horses, and biking among other uses. This set of policies enables CAP to help promote trail development by working with private developers and public entities to approve trail design, contribute to landscaping in advance of trail agreements, and involve planning departments in permitting additional trail width or setbacks on new developments to allow for proper grading, drainage, and landscaping between built developments and the trail. ([CAP Trail](#))

CASE STUDY CONCLUSIONS

- Collaborative partnerships between ditch companies and governmental bodies including cities, counties, and recreation districts generally have success in trail development and management along canals and ditches
- Establishing design guidelines for an entire trail system along a ditch or canal facilitates straightforward, standardized trail development
- Prioritize trail development along ditches and canals where City has a shareholder interest and greater influence
- Canal trail systems are most successful for users when geographically focused on connecting community resources, including residential areas, retail hubs, community or recreation centers, parks, and open spaces
- Successful partnerships define parameters for development, maintenance, and use of trails that does not impact the canal's original functions such as provision of water for agriculture and irrigation, potable drinking water, electricity production, recreational water access, and stormwater retention.

City of Fort Collins

STRATEGIC

TRAILS PLAN

A graphic featuring a stylized map of Fort Collins with a blue dashed line representing a trail route. In the top left, there is a circular inset showing a silhouette of a person walking a dog on a trail, with a city skyline and a setting or rising sun in the background. To the right of the map, the text 'City of Fort Collins' is written in a serif font, followed by 'STRATEGIC' in a smaller, sans-serif font, and 'TRAILS PLAN' in a large, bold, sans-serif font. Below the text, there is a circular compass rose with a black arrow pointing upwards and the letter 'N' below it, indicating North.

