

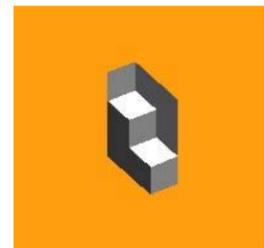
TWO RIVERS GREENWAY MASTER PLAN

PREPARED FOR THE
TOWN OF BASALT

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L O R I S

FINAL
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ATTACHMENTS
1. Two Rivers Master Plan - Vegetation Condition Analysis and Opportunities Report, Ellsperman Ecological Services, July 6, 2006.
2. Wildlife Resources Report - Two Rivers Roadscape, Wildlife Specialties, LLC., July 6, 2006.
3. Preliminary Geotechnical Recommendations, Two Rivers Roadscape Project, Basalt, Colorado, Yeh and Associates, Inc., July 11, 2006.
4. Cost Estimate Worksheets



SECTION 1

EXECUTIVE SUMMARY

Project Objective

The purpose of this Master Plan is to present the findings of a comprehensive planning effort conducted by Loris and Associates, Inc., The Greenway Team, and Dunnett Design, Inc. for the Town of Basalt, Colorado. The objective of the study was to provide recommendations to enhance the Two Rivers Road corridor from Midland Avenue west to State Highway (SH) 82 in Basalt. Construction of a trail along this corridor, preserving scenic character and wildlife, and enhancing other amenities such as river access for fishing and boating, are key elements of this Master Plan. This document presents the planning team's study findings and proposed options for consideration to move forward with the project. The actual strategy for implementation will depend on cost and other community considerations.



The planning design team facilitated three public meetings to gain input from residents about their desires and concerns for the corridor.

Background

This Master Plan is the culmination of a series of earlier studies of the Two Rivers Road corridor and the most recent activity conducted by the planning team and their subconsultants, which included careful examination of the corridor, consultation with key agency representatives, environmental studies, a geotechnical analysis, a series of three public open-house meetings facilitated by the planning team, and conceptual designs. Based on public input, the planning team established 10 guiding principles for shaping the development of this Master Plan. These principles are listed in Section 4.

The first public meeting provided general information about the project. The second meeting presented alternative general concepts. And, the third meeting presented a range of options along with graphical depictions of potential improvements. From this process, the planning team recommended five options and prepared cost estimates for each one. These options, listed briefly below, are represented graphically and described in detail in Section 4.

- Option A-1: 10-foot Multi-Use Trail the Entire Distance
- Option A-2: 10-foot Multi-Use Trail with Rock Stabilization Wall
- Option B: Mid-River Emma Trail Connection
- Option C: Basalt Riverwalk
- Option D: On-Street Bike Lanes/Pleasure Drive

There was a high level of support shown in the public meetings for the project, although opinions varied as to the extent and timing of proposed improvements. The following recommendations are based on the results of the public process and analysis.

Recommendations

The planning team recommends constructing the Two Rivers Greenway as a modified Option B to be completed in phases, starting at Midland Avenue at the east end of the study corridor and ultimately providing a continuous trail from downtown Basalt to the Aspen Junction Park & Ride facility at SH 82. These recommendations are further detailed in Section 6.

The **first phase**, to be implemented in 2008, consists of constructing a 10-foot wide hard surface trail, on-street bicycle lanes, parking, and roadway improvements along Two Rivers Road from Midland Avenue to Homestead Drive and includes a sidewalk on Homestead Drive. The Pitkin County recycling center would also be revamped in this phase.

The **second phase**, to be constructed in 2010, provides on-street bicycle lanes for both the east and west bound directions of Two Rivers Road between Homestead Drive and SH 82 and improves fishing access points along the corridor.

The **third phase**, to be constructed in 2013, provides the new Mid-River Park; constructs a 10-foot wide trail along the river corridor from Homestead Drive to Mid-River Park, and modifies the Aspen Junction Park & Ride facility by improving parking, creating a trailhead, and relocating the bus stop to SH 82.

The **fourth phase**, which is optional due to potential conflicts with the Town's conservancy easement on the river, and could be implemented in 2015, provides for construction of a Mid-River Bridge and Boardwalk over the Roaring Fork River that will connect Two Rivers Road with the Emma Trail on the south side of SH 82. This option requires additional design effort so that environmental impacts are minimized. It also requires additional community outreach to ensure that consensus for its implementation is achieved.

The **fifth phase**, potentially implemented in 2020, completes the Two Rivers Greenway by constructing a 3-foot to 5-foot wide soft-surface path from Mid-River Park to SH 82, installs rockfall mitigation mesh at Emma Curve, and constructs the Mt. Sopris Overlook.



SECTION 2

BACKGROUND

History of the Corridor Planning Efforts

The intent of this Master Plan is to provide the Town of Basalt with a comprehensive plan for developing the Two Rivers Road corridor between Midland Avenue and the western intersection of Two Rivers Road with SH 82 (2.1 miles).

This road corridor was originally SH 82. The Colorado Department of Transportation (CDOT) recently granted it to the Town of Basalt following the completion of the SH 82 bypass. The corridor is one of three entrances to Basalt from SH 82. It is surrounded mostly by very low-density private lands, Colorado Division of Wildlife property, and is adjacent to the Roaring Fork River. Because of these existing conditions, the Town considers the corridor as an important public attribute and an area for potential transportation and recreational enhancement. To best utilize the road corridor in this capacity, a comprehensive study was conducted to determine the optimal approach to placing future public improvements.

This section summarizes the following studies and reports that have been prepared to date in anticipation of the development of the Two Rivers Greenway Master Plan. These documents were consulted throughout development of the Two Rivers Greenway Master Plan to ensure consistency and compatibility.

- 1999 Basalt Master Plan
- Opinion of Existing Road and Drainage Conditions, Aug. 2001
- Roaring Fork River Stewardship Master Plan, 2002
- Town of Basalt West Two Rivers Road Trail Feasibility Study, July 2004
- Roaring Fork River Stabilization Preliminary Design Reach II, March 2005 (Draft)

Consistent with the history of this ongoing effort is the community's expressed desire to preserve and protect the corridor's scenic attributes while enhancing its recreational and educational qualities. This includes improving river access, traffic calming, providing a safe and efficient trail along the corridor, and improving conditions for both motorized and non-motorized use.

1999 Basalt Master Plan

The *Town of Basalt Master Plan*, completed in 1999, updated and superseded all previous master plans for the community. Serving as the principal guiding document in the development review process for the Town, this plan includes a section devoted to future parks, transportation improvements and trails. Section 7 addresses the Town's wishes to improve its natural setting as a river town, preserve important and sensitive riparian environments, and take greater advantage of the rivers for public use and recreation. The plan recommends that a detailed master plan be prepared for the riverfront and open space system, especially the "core area" between the confluence of the Roaring Fork and Frying Pan Rivers and extending to the western town limits of East Basalt. The *Two Rivers Greenway Master Plan* builds on conceptualization of those priorities as embodied in the 1999 master plan.

Opinion of Existing Road and Drainage Conditions

Sopris Engineering, LLC prepared an assessment of the existing road and drainage conditions in August 2001. The report concluded that the conditions of asphalt, guardrails, and drainage ditches throughout the project area were poor (Asphalt resurfacing has occurred since the report was written). The steep bank along the north side of Two Rivers Road for more than 3,000 feet east (from the Basalt-Willits Trail connection past Emma Curve) remains an erosion concern. This area is identified as a rock-fall mitigation area on the Two Rivers Greenway Master Plan exhibits in Section 4. The drainage ditches, culverts, and eroding slopes require ongoing maintenance. The maintenance effort requires repairs to the culverts, cleaning of the roadside ditch, and scaling of the loose rocks and boulders from the hillside.

Roaring Fork River Stewardship Master Plan

This plan addressed, as required in the Town's overall Master Plan, a plan for river management and improvements. The Two Rivers Greenway project is most directly related to the report's recommendations for the "Downstream of Basalt" section as summarized in the following table and copied directly from the Stewardship Master Plan Executive Summary.

Issue/Concern	Recommendation
Prime areas of riparian and wildlife.	Preserve aesthetic and wildlife values. Restore and enhance wetlands and riparian areas.
Little-to-no designated parking areas for easy river access.	Improve. Maintain both fisherman access points and parking areas.
Lack of maintenance of footpaths has caused erosion on riverbanks.	Investigate trail/access/parking opportunities while maintaining riparian habitat.
Lack of established boat ramp causing erosion to banks.	Restore boat ramp downstream of town.
Lack of trails and bridges provides for no established route for pedestrians.	Install trails and bridges at appropriate locations.



Town of Basalt West Two Rivers Road Trail Feasibility Study

Newland Project Resources, Inc. prepared the *Town of Basalt West Two Rivers Road Trail Feasibility Study* in July 2004. The study investigated the following alternatives:

- Separate Paved Trail with One-way Roadway
- Separate Paved Trail with Two-way Roadway
- Paved Bike Lanes with Separate Soft-surface Trail

The study recommended a “separate paved trail with two-way roadway.” This option is further addressed in the recommendations for Options A and B of this Master Plan.



The Roaring Fork River is an important asset of this project that will be enhanced throughout.

Roaring Fork River Stabilization Preliminary Design Reach II (Draft)

McLaughlin Rincon prepared this report in March 2005 (As of the date of this master plan, the draft report has not been approved). It identifies a plan to stabilize the Roaring Fork River through Basalt to the Wastewater Treatment Plant. The report identifies various stream bank stabilization types and locations. The Two Rivers Greenway is located in Sub-reaches C and D of the River Stabilization Plan. The recommendations for these reaches follow:

Sub-reach C: (Spring Creek Confluence to Midland Avenue Bridge)

- Construct invert and bank stabilization improvements to achieve dynamically stable and roughened invert sections.
- Install buried confinement and transverse stabilization improvements to prevent lateral river movement.
- Modify the Midland Avenue Bridge to provide additional capacity and install a pedestrian underpass.
- Grade over bank areas to be developed as Town Parks or Open Space.
- Improve river access with trail connection through Basalt Riverfront Park.

Sub-reach D: (Wastewater Treatment Plant to 300-feet downstream of the Midland Avenue Bridge)

- Align and grade channel to increase stream power to minimize aggradation potential.
- Construct invert and bank stabilization improvements to achieve a dynamically stable invert and protect existing infrastructure.
- Preserve historic vegetation as a natural buffer.

Current Planning Efforts

Loris and Associates was contracted by the Town of Basalt to provide this Master Plan for the “Two Rivers Roadscape” as the project was originally entitled. As the prime consultant, Loris and Associates was assisted by the Greenway Team for specific trail master-planning expertise and Dunnett Design, Inc. for landscape design and planning. Other subconsultants included Ellsperman Ecologic Services; Wildlife Specialties, LLC; and Yeh and Associates, Inc.

This planning effort began with a site walkthrough by the entire design team on June 5, 2006. After the site visit, an Open House Informational Meeting (Public Meeting #1) was held at the Basalt Town Hall. The purpose of this meeting was to inform the public about the project and to obtain input on critical issues.

The team then incorporated comments from the initial public meeting into basic concepts to use as a starting point for a Design Charrette Open House (Public Meeting #2) on July 13, 2006. Design concepts were presented at this meeting and then refined with input from attendees. These concepts were then refined into five plan options with numerous cross sections and plan details to describe the intended design options. Cost estimates were also prepared for each option. These options were presented for final input at an Open House Meeting (Public meeting #3) on August 10, 2006.

This Two Rivers Greenway Master Plan document was prepared based on input from the August 10, 2006 meeting and additional analysis of the planning team.



SECTION 3

EXISTING RESOURCE INVENTORY

Roadway

The existing 2.1-mile stretch of Two Rivers Road, between Midland Avenue and SH 82 (at Emma), is classified as a Non-Rural Arterial (NR-C) and has an Average Daily Traffic (ADT) count of 4,698. CDOT deeded the roadway to the Town of Basalt in 2003 after the completion of the present SH 82 Bypass. The speed limit on Two Rivers Road is currently posted at 45 mph from SH 82 to Homestead Drive. The speed limit is 25 mph from Homestead Drive through town.

Two Rivers Road serves as a connection between East Basalt and West Basalt. The road is also used to bypass traffic on SH 82 when traveling to town from the west and out of town from the east. Two Rivers Road is used by motorists to avoid the roundabout at Emma Road and Basalt Avenue, which is perceived to add travel time to arriving into Basalt. Even though the speed limit on Two Rivers Road is posted at 45 mph and 25 mph, respectively, most vehicles are traveling faster than the speed limit. This further increases the perceived advantage of using Two Rivers Road as an alternative to SH 82.

In addition to vehicular traffic, moderate bicycle usage was noted on Two Rivers Road. The bicyclists consist of recreational riders and commuters. It was also observed while walking the corridor during the planning process that there is fairly constant traffic throughout the day including buses, larger pick-up trucks, and recreational vehicles. This leaves little room along the edge of the pavement for bicyclists or pedestrians and creates an unpleasant and apparently unsafe condition.

The pavement width varies between 25 feet and 26 feet through the entire corridor. The traveled lanes are striped between 12 feet wide at the west end and 10 feet wide at the east end. The asphalt pavement appears to be in good condition throughout the corridor.

Topography and Soil Stability

The basic topography along Two Rivers Road is that of an embankment on the north (uphill) side and a steep drop-off on the south side of the roadway. These embankments typically appear to be stable except for an area toward the west end where rockfall frequently occurs from the uphill slope. Very steep slopes predominate the downhill side of the roadway. The roadside ditches within the rock-fall area require continual maintenance to remove fallen rock and provide ditch capacity.



Two Rivers Road and an informal fishing parking area.

Roaring Fork River

This reach of the Roaring Fork River is designated a Gold Medal Fish Stream. The Frying Pan River, which joins the Roaring Fork River at a confluence in downtown Basalt, approximately 600 feet east of Midland Avenue, has enjoyed Gold Medal status for many years.



Rafting is one of several recreational uses of the Roaring Fork River along Two Rivers Road.

Conservation and enhancement of the riparian habitat along the Roaring Fork River is a primary objective for this corridor. The corridor invites fishing, hiking, and boating activities along its entire length, though access is currently poor in many places especially in the westerly reach of the study area. There are approximately seven informal fishing-access parking areas located along the roadway. These undeveloped parking areas occur where the grading is flat and wide enough to accommodate parking. There are also two popular boat put-in points along the corridor: one in Old Pond Park and one just upstream of a drop structure that spans the river opposite the Wastewater Treatment Plant.



Public Transit

The Aspen Junction Park & Ride facility is located at the west end of Two Rivers Road near the SH 82 intersection. The Roaring Fork Transportation Authority (RFTA) express and local routes stop at Aspen Junction and then utilize Two Rivers Road to pick up passengers in Basalt for both up- and down-valley routes. Bus stops are located in Basalt at the corner of Two Rivers Road and Midland Avenue. From there, buses travel to SH 82 via Basalt Avenue. Another major bus stop is located on SH 82 near the intersection of Basalt Avenue. Buses run approximately every 30 minutes along this route.



Aspen Junction at the west end of Two Rivers Road is a primary RFTA Park & Ride facility serving the Basalt community.

Members of the design team met with RFTA staff to discuss the bus routes and their impact on this project. RFTA informed the team that a plan to remove express buses from Two Rivers Road was already in the works with the development of Bus Rapid Transit on SH 82. This plan would require the modification of stops along SH 82, including the elimination of Aspen Junction as an express stop.

Eliminating local routes from Two Rivers Road could be accomplished by relocating the Aspen Junction stop to SH 82, just south of the traffic signal at Two Rivers Road. Local buses would enter Basalt from SH 82 on Midland Avenue. The bus stops on Two Rivers Road at Midland Avenue could remain, but this would pose bus turn-around challenges. An apparently attractive alternative for the bus stop locations would be in the parking area on Two Rivers Road, just west of the Frying Pan River. This would eliminate several parking spaces at this location, but others would be gained at the removed bus stop at Midland Avenue and Two Rivers Road. Buses would then travel eastbound on East Two Rivers Road to access SH 82. An additional local stop could be added at the mixed-use Riverside Plaza.



Frequent bus traffic on Two Rivers Road must coexist with automobiles, bicycles, and pedestrians.

Trails

Except for those in Old Pond Park, there are no designated trail routes on Two Rivers Road. However, this corridor is considered to be an important potential link in connecting East and West Basalt. The Emma Trail, connecting Basalt with Emma, is located on the south side of the Roaring Fork River, north of SH 82. The Basalt-Willits Trail and Pedestrian Bridge (to be constructed in 2007) will connect the Emma Trail with the north side of the Roaring Fork River near the Aspen Junction RFTA Park & Ride (Refer to Option A). From here, there is an existing trail underpass beneath the SH 82 Bridge at Willits Lane that connects Two Rivers Road to the Willits Trail. This underpass and the Willits Trail deserve additional attention and upgrading, which could be included in a future study or design effort.



The trail underpass at SH 82 connects Two Rivers Road with the Willits Trail.



Recycle Center

A Pitkin County regional recycling collection center is located at the intersection of Two Rivers Road and Midland Spur. The recycle center is currently undeveloped with four large recycling containers situated in an unorganized manner along the shoulder of Two Rivers Road. The Town of Basalt is currently developing a plan to modify the recycling center to make it more easily accessible and less unsightly. A conceptual site plan for a new recycling center with six bays (one bay is allocated for container pick-up and drop-off) is included in Section 4.



Redevelopment of the recycling center will improve the visual character of the corridor and improve safety along Two Rivers Road.

Old Pond Park

Old Pond Park, located between Two Rivers Road and the Roaring Fork River between Midland Avenue and Homestead Drive, was created in 2005 when the Town of Basalt purchased neglected floodplain land. The 8-plus acre park contains crusher fine trails, benches, interpretation, and a manual boat put-in location (no vehicular/trailer access). The main trail from the park travels westward along the river to a new timber cable-stayed bridge that crosses the creek and ends at Two Rivers Road, approximately 20 feet east of the intersection with Homestead Drive. The park has become a huge success, attracting both residents and non-residents alike.

As a part of the acquisition of Old Pond Park, the Town retained the flexibility to keep or develop the land along SH 82. A portion was sold to the Roaring Fork Conservancy, and the remaining area could be sold to developers, another non-profit entity, or retained by the Town for public use.



Recent development of Old Pond Park, at the east end of Two Rivers Road, provided the critical first step in transforming the road into a greenway.

Roaring Fork Conservancy

The Roaring Fork Conservancy owns the 0.4-acre parcel on Two Rivers Road west of Old Pond Park. The conservancy intends to construct a River Center on this site that will focus on the river watershed. The conservancy planners have indicated a desire for pedestrian and bicycle access to the new nature center as well as adequate parking for staff and visitors including school groups that may arrive by bus. The conservancy also has a strong interest in the entire corridor for both conservation and interpretive purposes.



The future home of the Roaring Fork Conservancy will add considerable traffic to the east end of the Two Rivers Greenway.



Lake Christine

Lake Christine is a small reservoir located north of Two Rivers Road and west of Homestead Drive. A day-use parking area is provided for visitors. The Colorado Division of Wildlife has plans to reconstruct the Lake Christine Dam in 2007. The dam reconstruction will take a portion of the Two Rivers Road right-of-way. It may be possible to include the dam as a feature of the Two Rivers Greenway project. There may also be an opportunity to construct trail access points from the Homestead Drive intersection to the east and west sides of the lake. The eastern trail connection would originate from the Homestead Drive intersection, extend up the hill, and connect to the lake. This trail would continue around the lake and run west to link the trail with Mid-River Park. These two trail access points would provide convenient pedestrian access for fishing and other recreation enjoyment of the lake.



Lake Christine Dam will be constructed and may provide an opportunity for an area of special interest.

Plant and Habitat Resources

The roadway and river corridor from the Frying Pan confluence to SH 82 is exceptionally scenic and contains many native and non-native plant species. Ellsperman Ecological Services performed a visual assessment of the plant and habitat resources within the Two Rivers Greenway corridor. This assessment provided a *Vegetation Condition Analysis* of both sides of the roadway as they may be affected by trail and roadway construction. The report is provided as Attachment 1. The following summary is taken from the report:

- Vegetation community condition improves the further downstream (or westerly) one travels along the corridor from downtown Basalt.
- There are a number of examples of intact, mixed canopy riparian vegetation communities that are in excellent condition.
- There are a number of examples of specific areas that could be enhanced by vegetation restoration.
- Noxious vegetation was extensive and sampled in every single location within the corridor.
- Private land areas within the riparian zones of the corridor tended to have vegetation communities that were in the best condition.
- Although analyzed, no threatened or endangered species were sampled within the corridor.

These observations were utilized to locate the proposed improvements in a manner that would provide the least amount of impact to high and medium quality vegetative zones.

Wildlife Resources

The Two Rivers Road corridor contains many wildlife species. The corridor is situated in a primary migration path between the Pitkin County Emma Open Space Parcel, the Colorado Department of Wildlife preserve (to the south), and the Lake Christine State Wildlife Area (to the north). Wildlife Specialties, LLC performed a cursory study of the area. This report is provided as Attachment 2. The report is summarized in the following key points:

- An access management plan that incorporates impact mitigation to wildlife should be developed.
- Conduct additional studies to establish required buffers for great blue heron nests.
- Conduct studies for other sensitive species such as yellow-billed cuckoo, eagles, and other raptors to determine potential impacts.
- Allow for continued movement of big game throughout the corridor by limiting wall and railing heights to 42 inches. Game movement corridors should be identified through additional studies.
- Increase motorists' ability to see wildlife and provide education on wildlife movement to help reduce vehicle/animal collisions.
- The plant, habitat and wildlife recommendations were adhered to throughout the planning process.



Blue Heron are among the native habitat in the Roaring Fork Valley.



SECTION 4

MASTER PLAN DEVELOPMENT

This Master Plan evolved from careful consideration of previous corridor studies, the needs and desires of the community, the character of the corridor, conforming with guiding principles, and cost and phasing considerations. An overarching guideline is to provide a high quality and safe outdoor experience while preserving and enhancing the natural features of the corridor.

Cost, feasibility, and logical phasing also shaped the Plan. The planning process led to a series of five options that are described in this section. During the coming years, the Town of Basalt may pursue some of these options as phases, which can be implemented as user demand and available funding dictates. Other components may not be built if the Town of Basalt determines these to be less in conformance with the overall corridor vision and guiding principles.



The planning design team walked the entire corridor area together to gather information and share ideas for creating the Two Rivers Greenway.

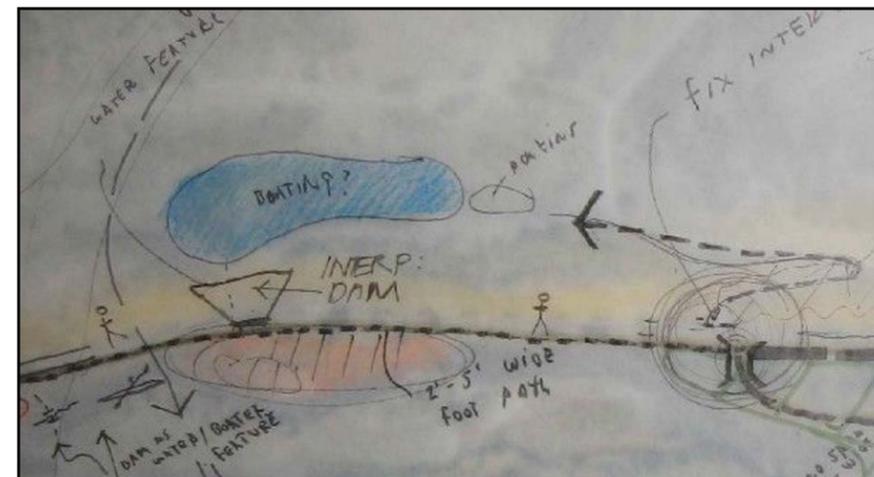
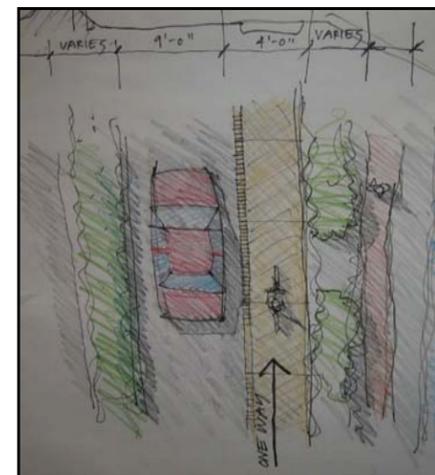
Guiding Principles

The project planners and stakeholders agreed to the following guiding principals for shaping this Plan:

Two Rivers Greenway Master Plan Guiding Principles	
1.	Respect private property rights: Be a good neighbor!
2.	Preserve and enhance sensitive riparian and aquatic resources.
3.	Offer a safe and enjoyable trail experience with state-of-the-art design standards appropriate to the area.
4.	Provide a safe, scenic, dual-directional road corridor (including on-road bike use). Accommodate public transit demand either on corridor or elsewhere.
5.	Plan to be affordable to build and maintain.
6.	Promote connectivity of west and east Basalt offering viable alternative transportation.
7.	Enhance diverse passive recreational/educational activities including American Disabilities Act (ADA) accessible multiple non-motorized trail uses and river access.
8.	Promote quality tourism/economic benefits to the community as a result of the improvements to the corridor.
9.	Promote adjacent public lands/parks and regional trail links.
10.	Reflect and be consistent with previous studies and existing policies and plans.



The planning design team narrowed the options into five viable solutions for completing the greenway, which were presented to the community during public meetings.



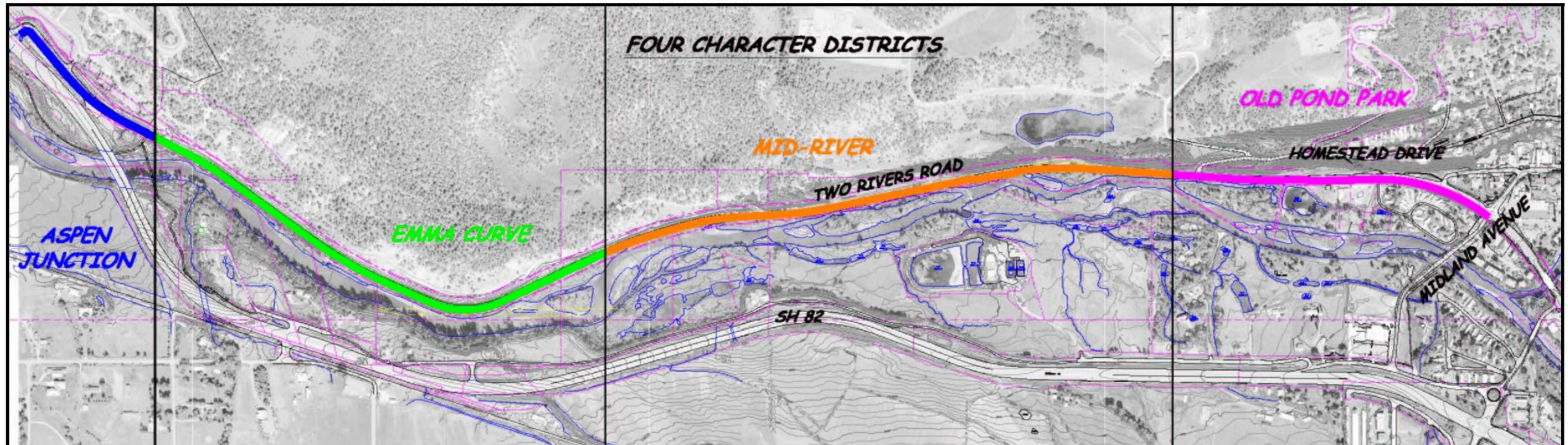


Corridor Vision and Character Considerations

It was evident from the public process that members of the Basalt community place a high value on this corridor as a multi-use resource. First and foremost is a desire to preserve and enhance the scenic and tranquil character of the river as a unique community treasure. Coupled with this desire is a high value on protecting wildlife, natural habitats, and the ecological structure of sensitive areas. Alternatively, the community expressed a strong desire to expand the accessibility of the corridor for outdoor recreation including: bicycling, walking, boating, fishing, and other “passive” non-motorized sports. Equally important was maintaining the corridor as a “scenic drive” – an alternative link for motorists. The public consensus has indicated an overall vision of the corridor – and the associated lands adjacent to it – as a type of “central park” for Basalt. In addition to recreation, the park should provide solace with attractive views, natural landscapes, a “park drive” with pull-offs, access points, and environmental interpretation.

For planning and analysis purposes, the overall river corridor can be separated into four distinct “character districts”.

1. **Old Pond Park** extends from Midland Avenue to Homestead Drive on the “edge” of the urban center. This segment would be more urban in character while preserving the natural wooded environment of the river channel and banks. Site-appropriate landscaping should be added to enhance a park-like setting.
2. **Mid-River** will have a more natural and wild feel to it with rustic designs and traditional rural character. This district extends from Homestead Drive to the pull-off area just east of Emma Curve.
3. **Emma Curve** will have the most remote and undeveloped feel with particular attention to preserving natural areas. Emma Curve extends from the pull-off just east of the curve to the CDOT sand storage facility.
4. **Aspen Junction** will feature the restoration of a previously disturbed and largely barren parking/maintenance location into a new featured area, though the character would still be rural mountain and rustic. This area extends from the CDOT sand storage facility to the intersection with SH 82.





Features and Amenities

This Master Plan envisions a series of features and amenities – including activity “hubs” and smaller “sites” linked together by both a greenway trail and a “park drive”. Elements of the plan include:

Recycling Center Upgrade

This project involves the reconfiguration of the existing recycling facility to improve access, appearance, and efficiency. The facility would be located at the intersection of Two Rivers Road and Midland Spur and will highlight the importance of green technology and recycling (see graphic depiction on right). The proposed recycle center would be constructed with a green roof, and the southern elevation of the structure could be blended into the surrounding grade to soften the structure’s street edge. Interpretive signage is proposed highlighting the structure’s green roof, the benefits of recycling and the importance of wetlands, which exist on the site. Photovoltaic panels could also be installed to generate electricity for the center.

Confluence Park & Riverwalk

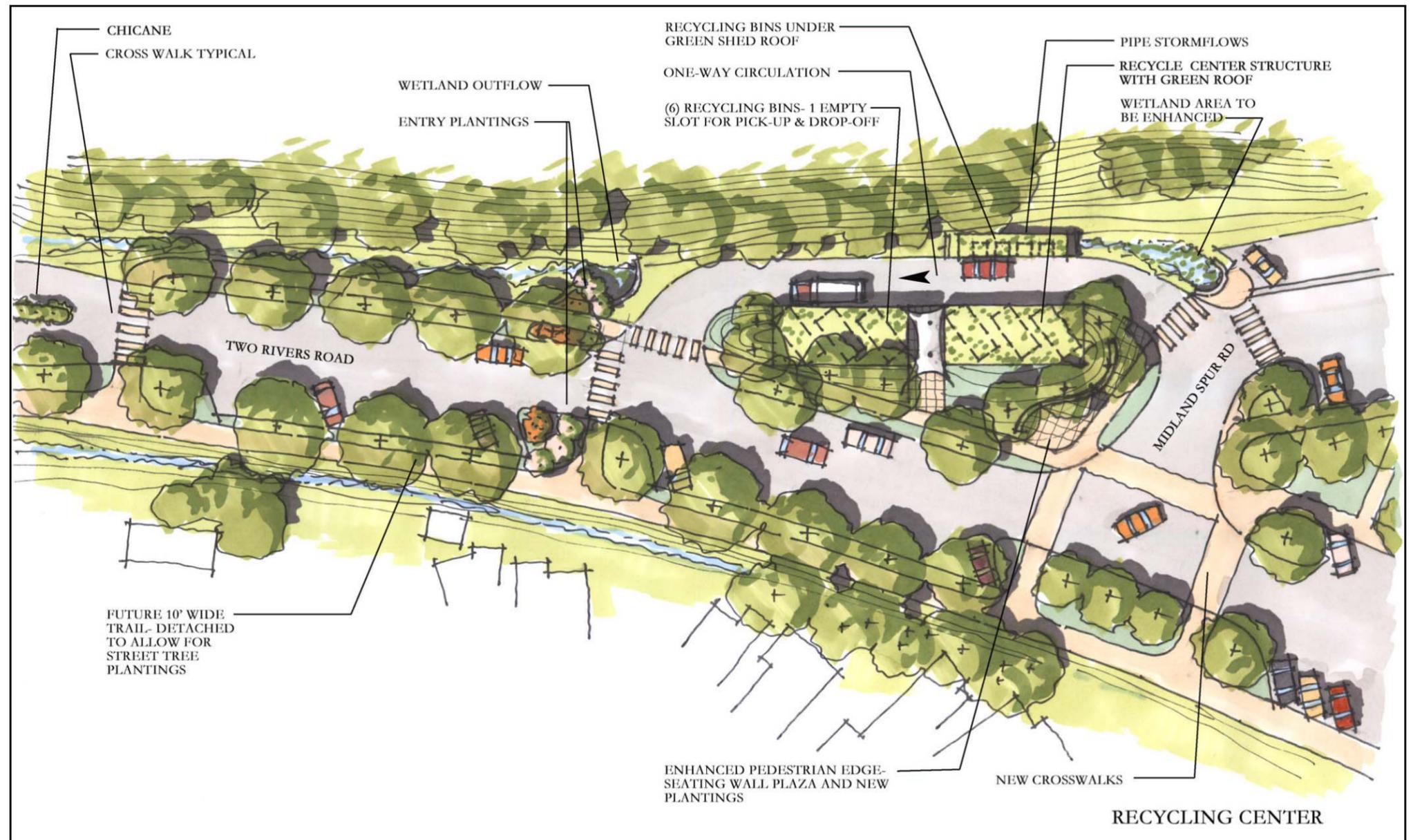
A new 1.2-acre gateway park could be located at the confluence of the Roaring Fork and Frying Pan Rivers using the land the Town purchased. This park, improved with a pedestrian bridge over the Frying Pan River, could include fishing access, and other passive use features, and it could serve as a major hub and anchor for the greenway.

The Riverwalk would consist of a landscaped pedestrian and bicycle way along the bank of the river – flanked by town center site appropriate businesses. The Riverwalk would extend from the confluence of the rivers to Old Pond Park.

The Confluence Park and Riverwalk, although important elements of the river corridor’s development and the Two Rivers Greenway, are dependent on other activities such as future development between the Frying Pan River and Old Pond Park. At this time, the park and Riverwalk are considered optional and to be “Development Dependent”.

The term “Development Dependent” is applied to improvements that are outside the scope of the Two Rivers Greenway Master Plan, but could enhance connectivity between the Two Rivers Greenway and other nearby amenities and destinations, either current or planned. Improvements labeled “Development Dependent” could be made a

requirement of developers as their properties are developed, but they could also be implemented by the Town or other entities as funds become available. They are included in this plan to use as a guide in future planning.





Old Pond Park/Roaring Fork Conservancy

This significant hub will be located at the western edge of downtown Basalt. This segment will be a more formal park with ponds, riparian landscape, picnicking, and will provide for a major environmental interpretive destination attraction. The proposed Roaring Fork Conservancy Center will be the cornerstone of this venue, featuring environmental interpretation both outdoors and indoors. It will be a valley-wide destination and a major “anchor” to the greenway.

Roadway improvements will also be an important aspect of this eastern end of the Two Rivers Greenway. The roadway will be widened to include bicycle lanes in both directions, with parallel parking in the westbound direction and pull-in parking in the eastbound direction.



The new pedestrian bridge connecting Old Pond Park to Homestead Drive helps to establish the identity of the corridor.

Lake Christine Dam Water Feature

The Lake Christine Dam is scheduled to be reconstructed in 2007. As a part of that construction, it may be feasible to construct a special “water feature” that highlights the dam, possibly creating a rest stop and picnic area at the new outfall structure. The exact nature of this feature should be established after construction of the dam.



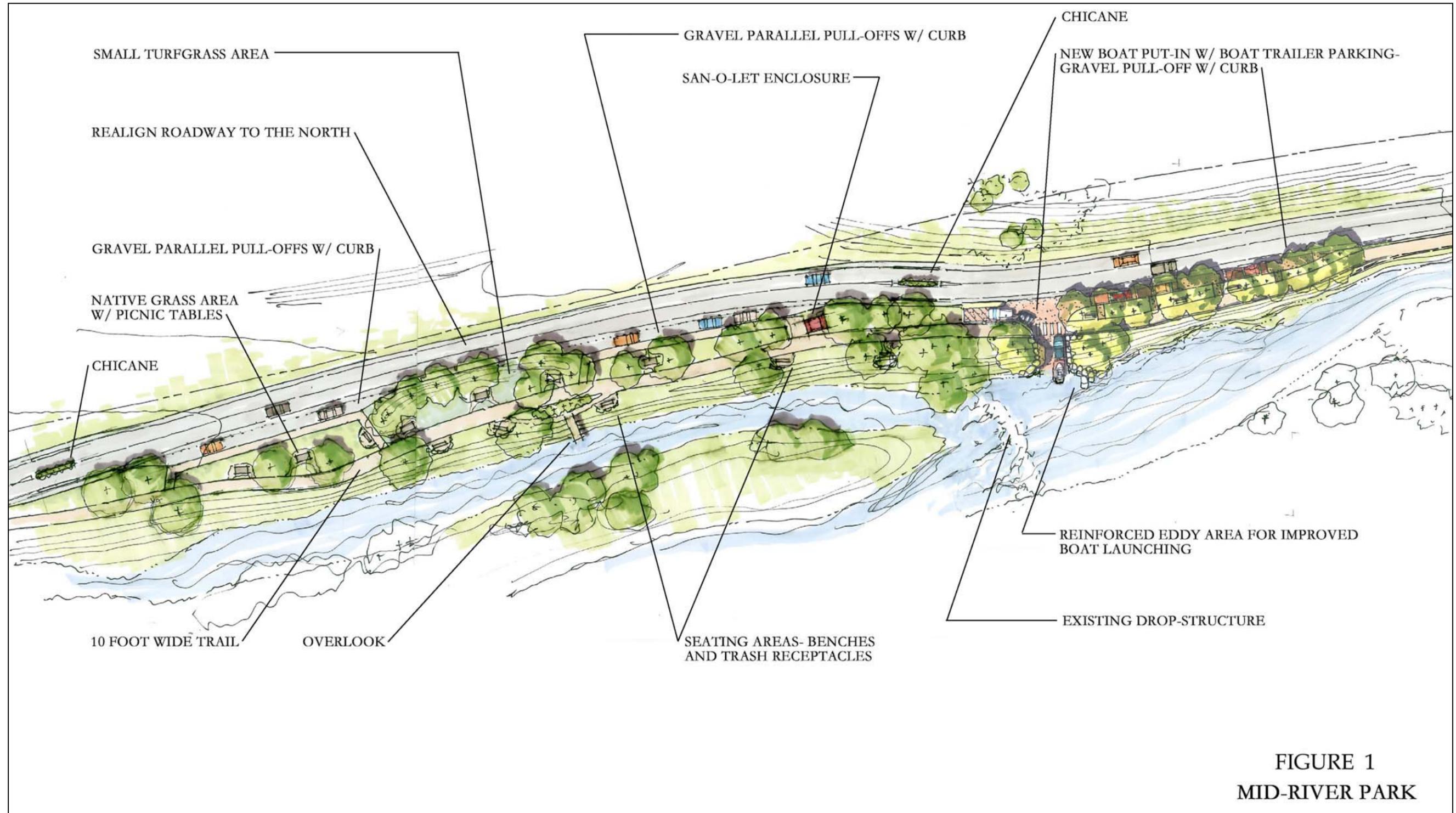
Old Pond Park and the new Roaring Fork Conservancy center will anchor the east end of the greenway.

Lake Christine Trail Link/Loop

This segment will consist of a trail loop along Homestead Drive that links to Lake Christine. There also may be a trail connection from the west side of the lake, which would connect to Mid-River Park. These trail links might be more primitive paths suitable for pedestrians and single-track type bicycles.

Mid-River Park

This new 2-acre passive park and access point will be created in the mid-section of the corridor (See Figure 1). It will be created by relocating the existing road inland and re-grading the landscape toward the Roaring Fork River. The area will feature boating and fishing access, picnicking, wildlife viewing, restroom facilities (chemical toilet enclosure) and parking.





Boat Launch

The existing boat launch is located immediately upstream of an existing rapids created by a drop structure. This feature makes putting boats in the water difficult. The boat launch will be relocated slightly upstream of its existing location with a jetty to calm the put-in location. A concrete ramp will be provided and parking/drop-off/pick-up improved to facilitate a larger number of boats.



Small attractive, but difficult to maneuver, rapid is located just downstream of the existing boat launch.

Mid-River Bridge and Wetlands Boardwalk (Optional)

This new river crossing and deck will span the river just downstream of Mid-River Park. It will consist of a clear-span bridge over the river, and a low-impact, recycled, plastic timber boardwalk that crosses the eastern edge of the riparian and wetland area located west of the Wastewater Treatment Plant. The crossing will highlight and showcase the existing wildlife area with overlooks from the elevated deck crossing, blinds, and interpretive displays. This crossing will also serve as a connection to the existing Emma Trail, thus facilitating a continuous trail link between the east and westerly districts of Basalt.

If built, this bridge and boardwalk should be constructed using methods that minimize impacts to the wetlands and should be designed to discourage users from venturing off the bridge and walkway.



A low-impact Mid-River Boardwalk would be similar to this boardwalk that is part of the valley's *East of Aspen Trail*. This boardwalk would be built in addition to a pedestrian bridge that spans over the river.

Pull-Offs/Put-Ins

These amenities consist of strategically located sites for access along the route for fishing, boating, and enjoying the river. These places will include informal parking for 5-10 cars and a rest area for walkers and bicyclists, as well as interpretive and way-finding signage as appropriate. Some sites may include benches, picnicking facilities, and possibly a shelter. These pull-offs could also be used as local bus stops.

Overlooks

These strategically placed overlooks will serve as pleasant places to stop and rest along the trail that offer spectacular views such as Mt. Sopris. These locations could be placed in combination with pull-off/put-in spots, or as stand-alone amenities. Amenities could include rustic benches, interpretive/informational displays, and bike racks. Some could feature the action of water such as the boulder drop structure at Mid-River Park or possibly the Lake Christine outflow.

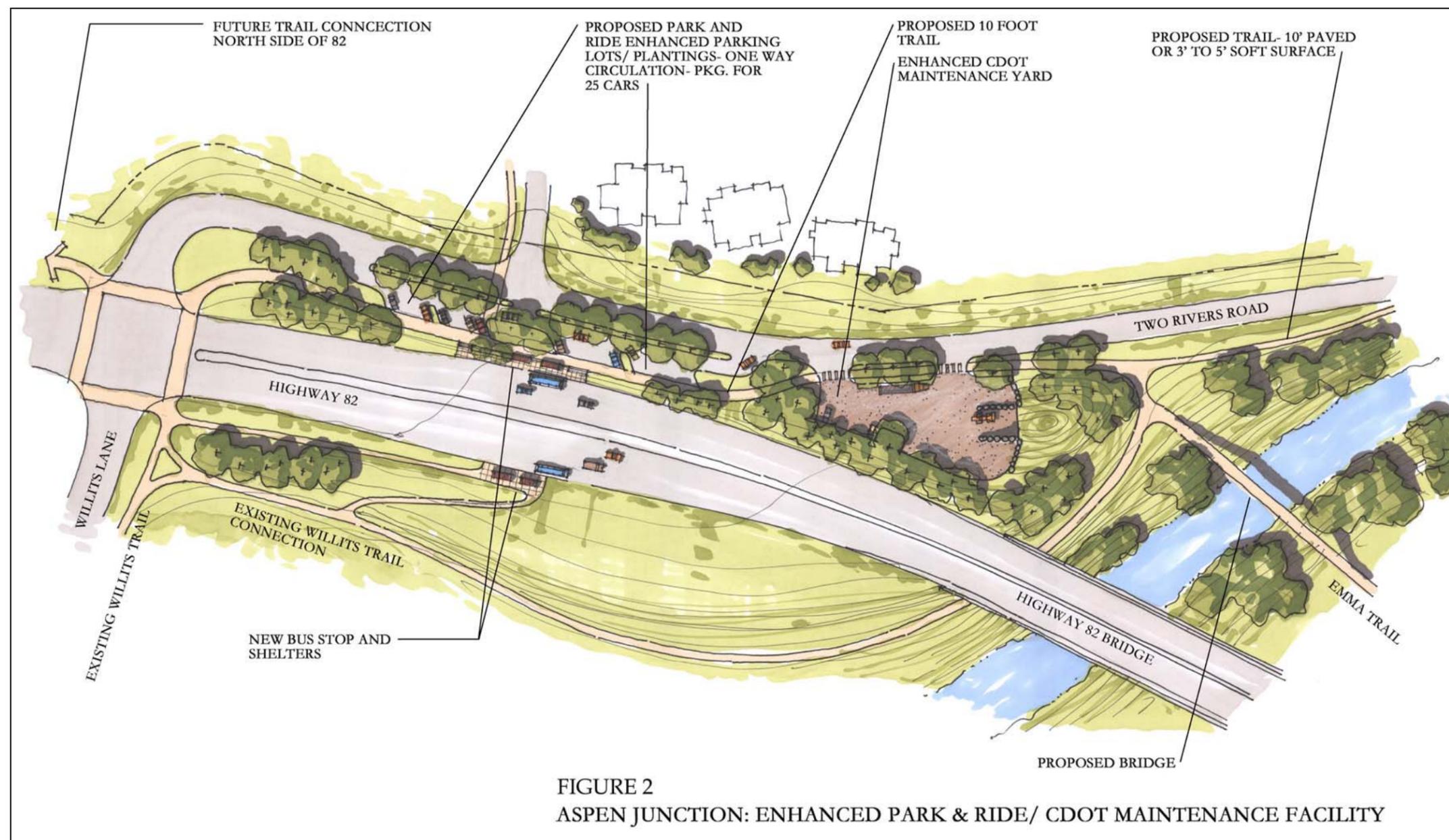


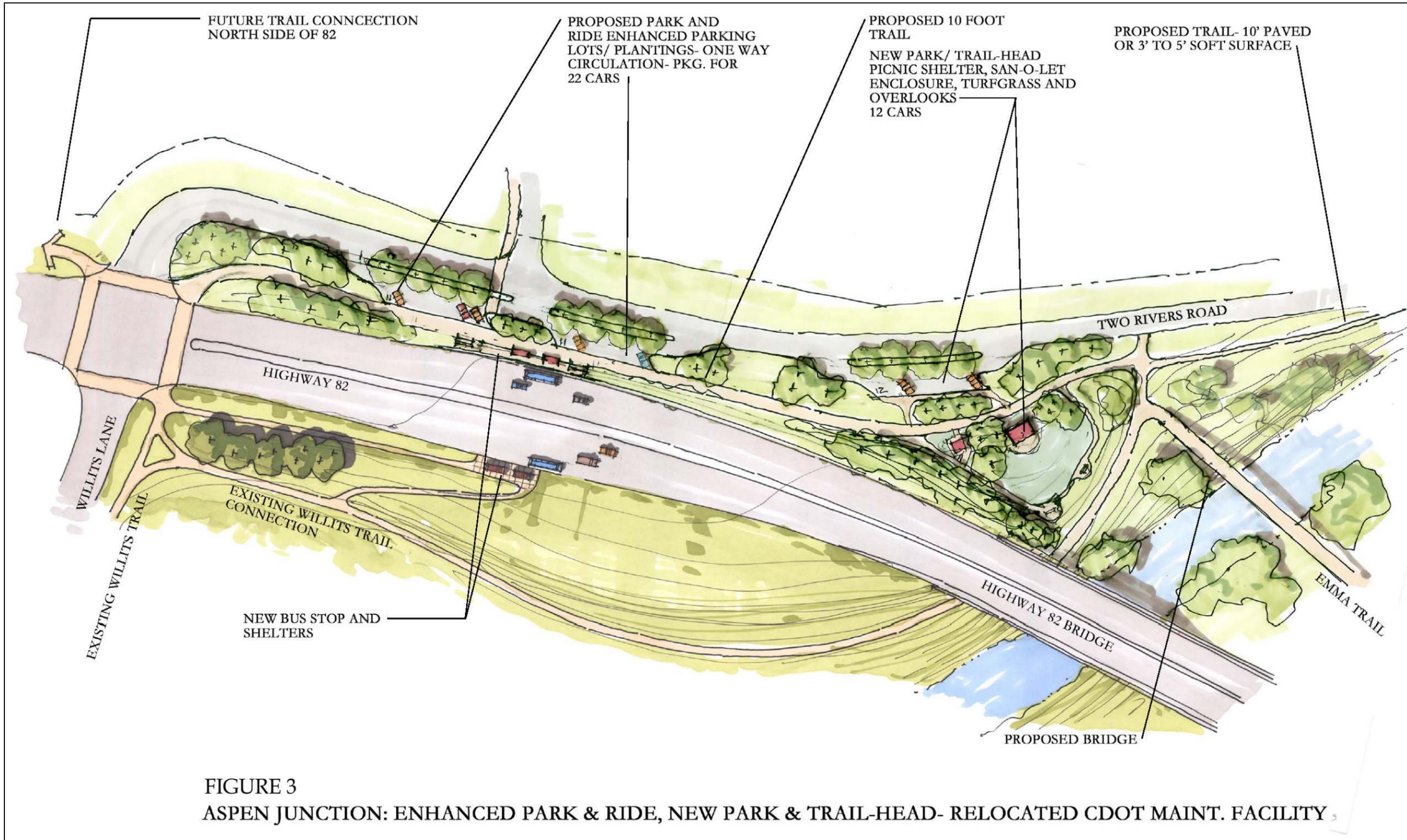
River or Mt. Sopris overlook concept.



Aspen Junction Park/Trailhead

This area will form the western hub of the corridor located at the junction of Two Rivers Road and SH 82 (see Figure 2). It will be a shared-use trailhead, RFTA Park & Ride location, and CDOT sand storage facility. The site will include regionally adapted landscaping, a picnic facility, trailhead parking, a new pedestrian bridge, informal boater put-in/take out and other passive recreational functions. The CDOT sand storage facility could potentially be relocated to another site to provide additional room for parking and trailhead amenities (see Figure 3).







Trail and Road Components

The proposed Two Rivers Greenway includes three key circulation elements that will be used in various combinations along the length of the planning area. They will unify and afford access to the corridor and its amenities. Descriptions of these elements are provided below:



The existing roadway cross-section provides for many trail use options.

Non-Motorized Path – Two types of non-motorized trails are envisioned. The first is a *Shared-Use Path*, which is typically a 10-foot-wide trail that accommodates pedestrians, bicyclists, wheelchairs, equestrians, and other non-motorized uses. (The trail may narrow to 8-foot wide for relatively short distances where conditions dictate and traffic volumes are lower). The trail may be constructed with either a concrete or asphalt surface or a granular stone (crusher fines) surface depending on local field conditions and community preferences. If “road” bicycles are accommodated then this trail should meet the most current guidelines of the American Association of State Highway and Transportation Officials’ (AASHTO) *Guide to the Development of Bicycle Facilities* and or other adopted local standards.

The second type is a *Primitive Path* or “Hiking Trail”. This trail may consist of natural (dirt) surface designed to accommodate a range of

uses. Optimally, the trail tread is 5-foot-wide to accommodate a mixture of uses with a minimum width of 3 feet. In some instances, the tread may narrow to 2.5-feet for short distances where conditions indicate. See *Designing Sidewalks and Trails for Access, Best Practices Design Guide Part II* (U.S. Department of Transportation publication No. FHWA-EP-01-027) for accessibility guidelines. Though this type of trail is pedestrian-oriented, it may accommodate “hybrid” or “mountain bikes” as a



Example of shared-use paved trail.



Example of shared-use crusher fine trail.

“single track” facility depending on community desires and other management and safety considerations. If bikes are permitted, signage should indicate that the “primitive trail” is not intended for higher speed bicycling. The Town of Basalt should consult with the International Mountain Biking Association (IMBA) regarding questions of design and management considerations.

On-Street Bicycling Facilities – These improvements will promote a more enjoyable and, ideally, safer bicycling experience for riders who prefer to use the paved road. Probable uses include: road, touring, hybrid, and mountain bikes. Three types of conditions may facilitate on-street bicycling. The first is a *Designated Bicycle Lane* that is typically 4-foot wide delineated by a 6-inch-wide painted stripe, or bike lane markers on the pavement.



Example of delineated bike lane.

The second type is a *Shared Lane* system where bikes and autos utilize the same lane with no delineation striping. This condition assumes lower traffic speeds, such that bicycles can occupy the center of the lane traveling at speeds at which auto traffic is not impeded or encouraged to attempt to pass bicyclists. Share-the-road yellow caution signage should be provided per the *Manual of Uniform Traffic Control Devices* (MUTCD). Other speed reduction devices such as chicanes and speed bumps are also utilized.



In the third concept, a wider paved auto lane is provided that allows motor vehicles to “comfortably” pass bicyclists, but there is no bike lane delineation. Share-the-road signage should be provided. In all of the above cases, designs must conform to the most current AASTHO *Guide to the Development of Bicycle Facilities*.

Pleasure Drive and Access Points – In this scenario, the roadway is envisioned as a scenic “park drive” (not a higher speed and volume parkway) designed for the pleasure of motorists. The pavement is configured and signed to promote slower speeds and accommodate frequent stopping at designated access points. The access points are strategically located to accommodate enjoyment of the river for fishing, boating, roadside picnicking, and scenic views. The access points are rustic (typically gravel rather than paved surfaces) and may include: parking for a modest number of automobiles, including access per ADA requirements; benches and tables; interpretive displays and overlooks; and possibly a weather shelter.

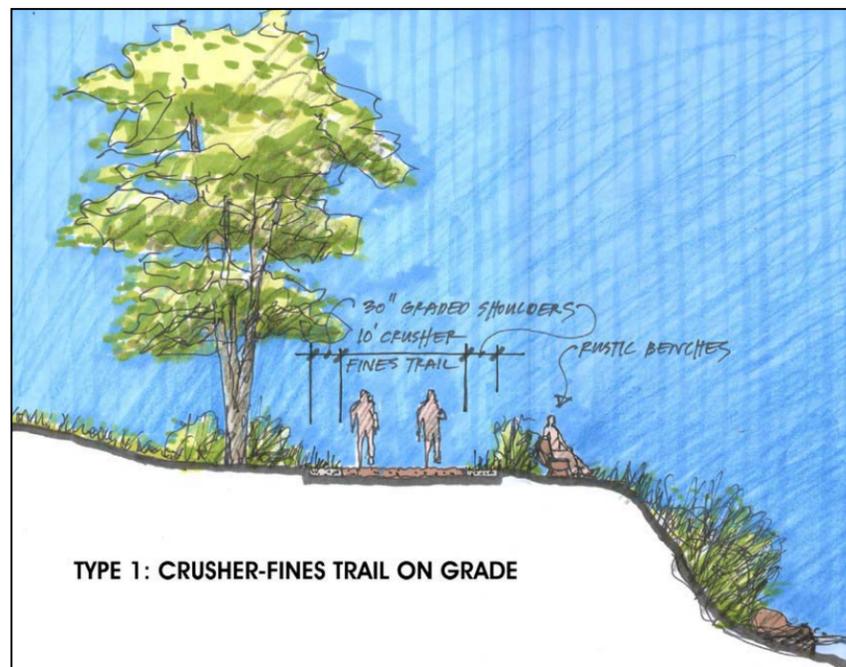


Cemetery Lane in Aspen is an example of a low-speed road with shared on-street bike lanes.

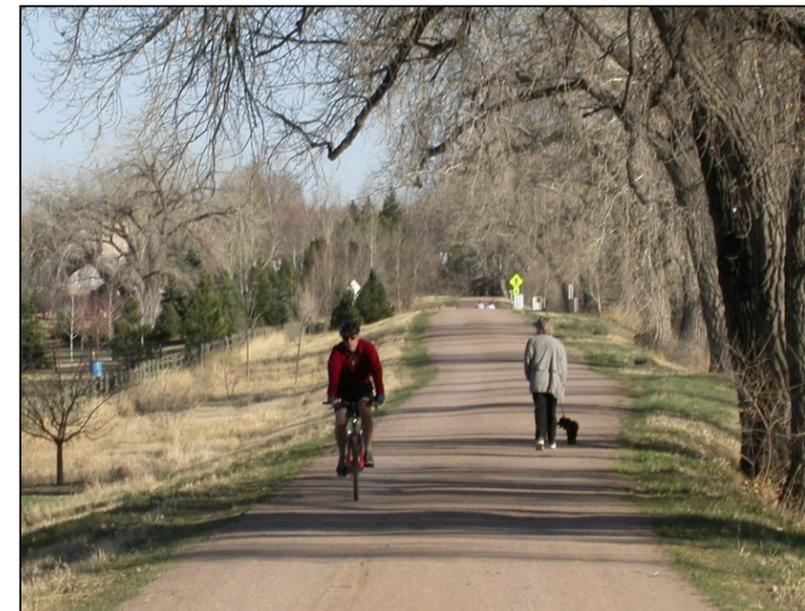
Components and Cross-Sections

A number of components enable the proposed circulation systems. These are depicted in cross-sections or illustrative concepts that reflect typical solutions applicable to the respective field conditions encountered. The cross-sections also facilitate cost estimating.

Type 1: Crusher-fine on grade 10-foot-wide Paved Trail – This is a full-width multi-use trail. However, the surface consists of compacted crushed rock. The surface is less costly than pavement and presents a more natural appearance, is easier on walkers and joggers, and promotes slower bicycle speeds for a more relaxed environment. This type of surface accommodates most uses with the exception of most roller-skating. The surface is less stable in areas subject to significant erosive forces or flooding and will require more maintenance than pavement.

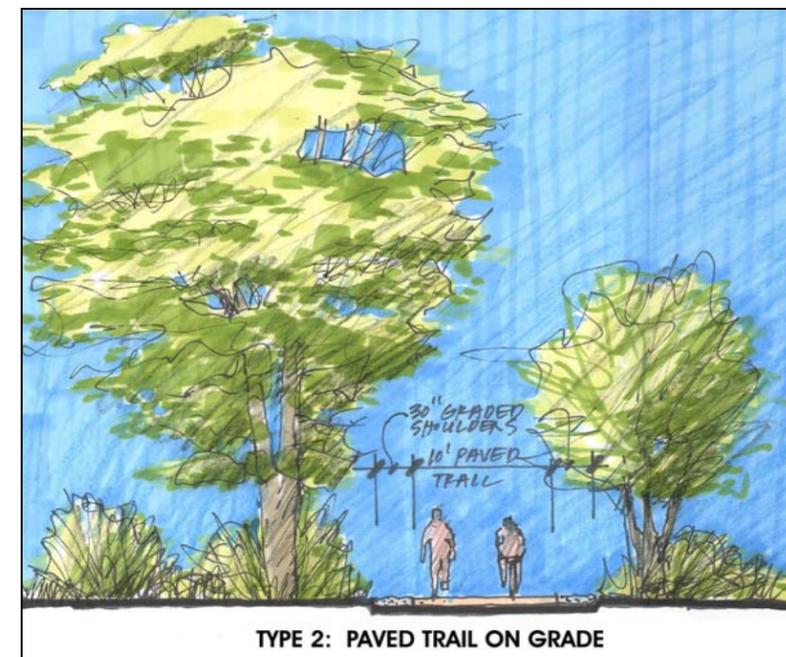


Crusher fines trail on grade will be utilized in low-use areas near Confluence Park.



Example of crusher fine path on grade.

Type 2: 10-foot-wide Paved Trail on Grade – The surface may consist of asphalt or concrete, and the concrete may be colored for a more natural appearance. There are also resin and polymer products in use that create a surface with wearing properties similar to more



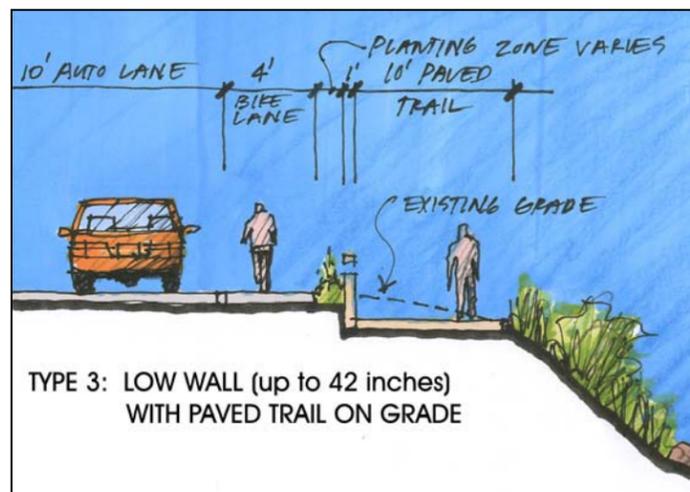


traditional pavement. The surface is more durable and typically requires less remedial maintenance, but is more urban in appearance and tends to promote higher bicycle speeds.

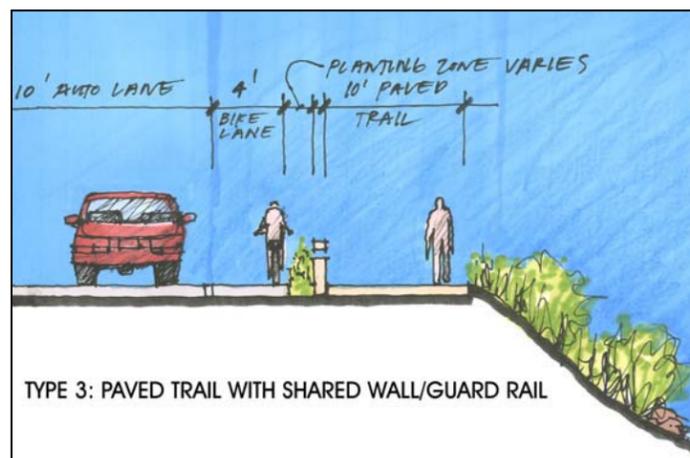


Example of paved path on grade.

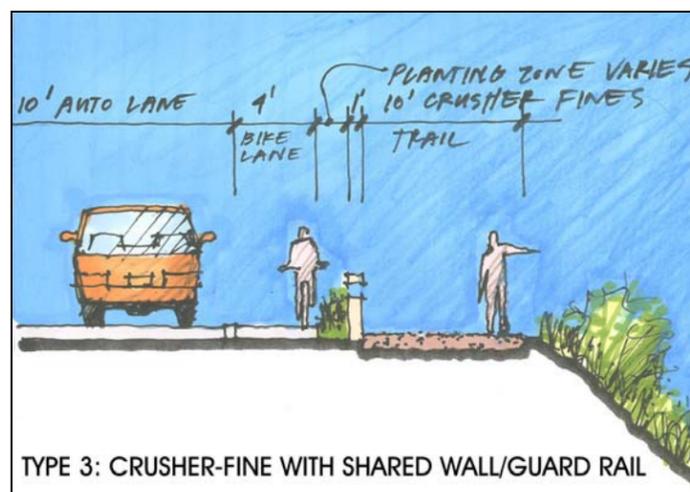
Type 3: Low wall (up to 42 inches) with Paved (or Crusher Fine) Trail on Grade – In conditions with less steep cross slopes, retaining walls and/or safety railing may be required. The wall may be structurally integrated with the path if concrete is used, or it could be free standing. Concrete, hand placed concrete block, stacked (and possibly grouted) rock, or timbers are options for walls. Typically, walls less than 42 inches in height will not impede wildlife movement and may not require safety railings.



TYPE 3: LOW WALL (up to 42 inches)
WITH PAVED TRAIL ON GRADE

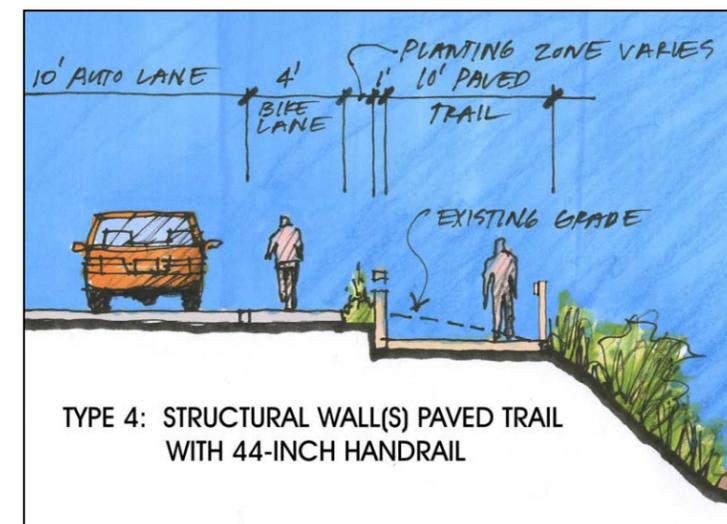


TYPE 3: PAVED TRAIL WITH SHARED WALL/GUARD RAIL



TYPE 3: CRUSHER-FINE WITH SHARED WALL/GUARD RAIL

Type 4: Structural wall with paved trail on grade with 44-inch handrail – Very steep slopes may require wall heights of 5 feet or more. In some cases, the wall height might be split on both sides of the trail. These walls will require engineering and safety railings. Concrete, blocks, timber, rock, and other materials may be used. Walls higher than 42 inches will impede wildlife movement. A minimum 42-inch handrail, (44-inch preferred), will be required where hazards are present and a 54-inch rail may be required where there are higher drop offs. Hand railing should conform to both local and national standards including AASHTO and the Occupational Safety and Health Administration's (OSHA) guidelines.



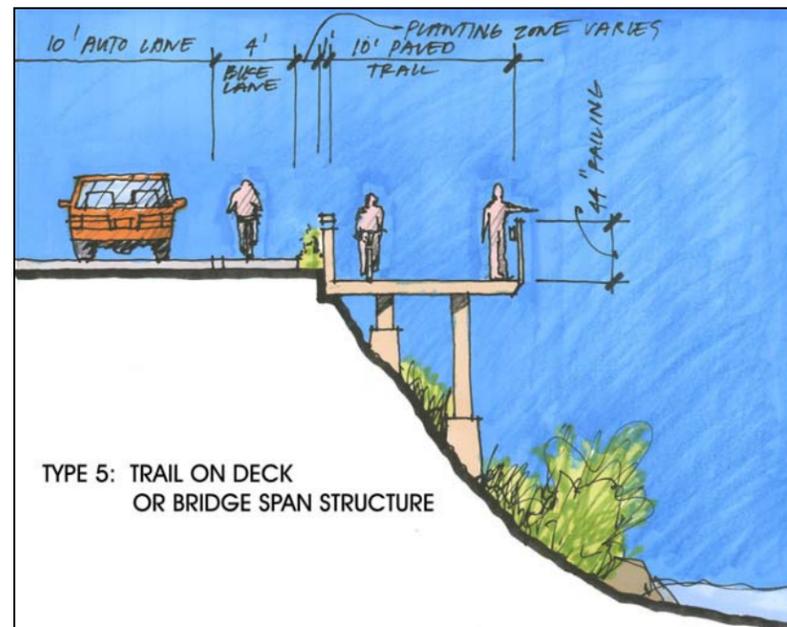
TYPE 4: STRUCTURAL WALL(S) PAVED TRAIL
WITH 44-INCH HANDRAIL



The Highlands Trail in Aspen is an example of Structural Wall/Guardrail Combination.



Type 5: Trail on deck or bridge span structure – Bridge spans may be pre-fabricated steel, pre-cast, or cast-in-place structures – typically enhanced with a concrete deck surface. Wood or recycled plastic decking may be used over wetlands or other sensitive terrain. These decks may rest on pin-foundation systems, pre-cast helix piers, or other systems. Potentially, volunteers can construct wood or plastic decking. Decking should be a minimum 10-foot wide with appropriate safety hand railing where hazardous drops exist.



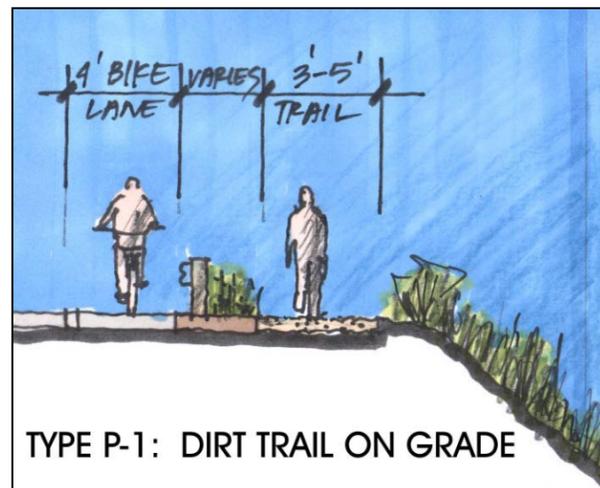
TYPE 5: TRAIL ON DECK OR BRIDGE SPAN STRUCTURE



Photographer: Robb Williamson

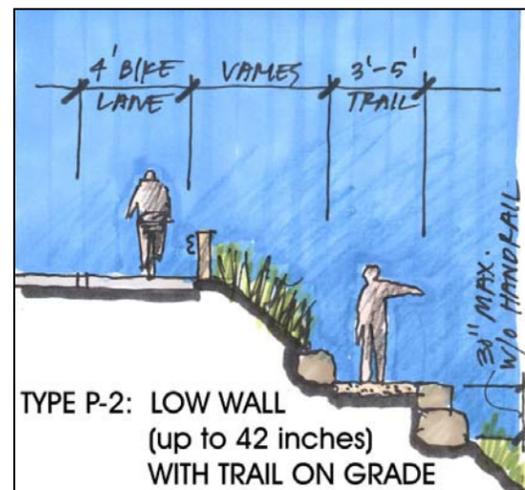
Phase II of Cemetery Lane in Aspen is an example of a similar trail on deck that would be used for portions of the Two Rivers Greenway.

Type P-1: Dirt trail on grade – This is a basic trail on grade with a graded dirt surface (granular stone, resin hardened material, or stabilized soil may be used), and vegetation is cleared to accommodate the planned uses. The primary use is pedestrian traffic, though equestrians and mountain bikes may use the trail depending on community management objectives. Tread width is optimally 5 feet though it may be narrower (3 feet) as field conditions and cost considerations dictate.

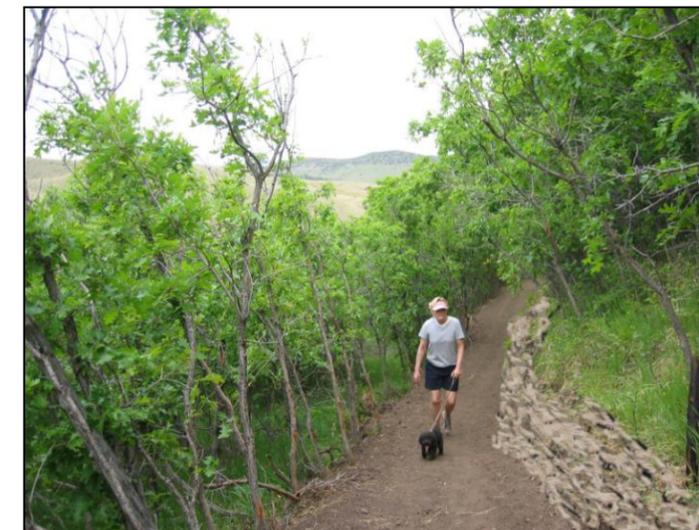


TYPE P-1: DIRT TRAIL ON GRADE

Type P-2: Low wall (up to 42 inches) with trail on grade – The same trail tread as Type P-1, but with a low retaining wall where cross slope conditions dictate. The wall may be stacked rock, timbers, concrete, or concrete block with stacked rock preferred for a more rustic appearance.

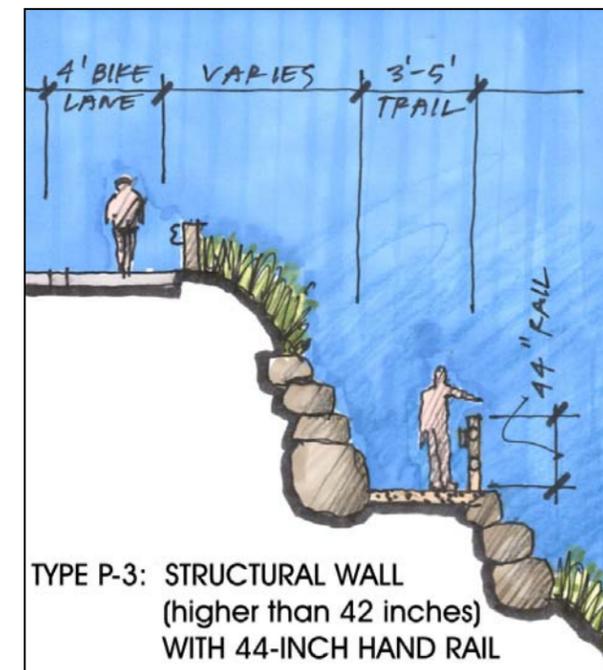


TYPE P-2: LOW WALL (up to 42 inches) WITH TRAIL ON GRADE



Example of primitive trail with low wall.

Type P-3: Structural wall (higher than 42 inches) with trail on grade w/44-inch handrail – The same trail tread as Types P-1 and P-2, but with a higher retaining wall where cross slope conditions dictate. The wall may be rock, timbers, concrete, or concrete block.



TYPE P-3: STRUCTURAL WALL (higher than 42 inches) WITH 44-INCH HAND RAIL



Discussion of Lane Widths

Two Rivers Road has been designated a *Non-Rural Arterial* in the Town of Basalt’s master plan. Traffic counts, completed in April and August of 2006 by the Town of Basalt, indicate *average daily traffic* (ADT) counts of 4,737 vehicles. Morning peak counts are 382 vehicles per hour (VPH) and the afternoon peak is 441 VPH. The posted speed limit is 25 mph closer to downtown and 45 mph farther out. To accommodate auto traffic (not necessarily autos and bikes together), AASHTO recommends a 10 to 12-foot lane width for Non-Rural Arterial roadways. In highly restricted areas, 10-foot lanes are acceptable and shoulders are desirable. Since this portion of the roadway is highly restricted, and historical lane widths have been 10 to 11-foot, 10-foot lanes are considered acceptable for auto use with the addition of 3-foot minimum shoulders or bike lanes on either side. Nine-foot lanes could be used in extremely constricted areas where vehicular speeds are low; however, these should be avoided on Two Rivers Road.



Traffic on Two Rivers Road near Emma Curve.

In all of the plan alternatives presented, retaining on-road bicycle use is included. To best accomplish this goal, and promote a more pleasant and safer bicycle experience, a number of improvements are discussed.

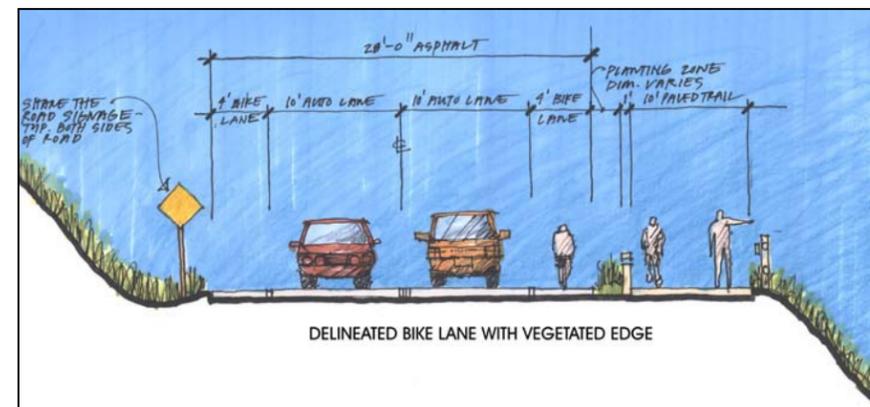
The first option is a designated bike lane. The recommended minimum designated bike lane width per AASHTO is 4 feet.

Where 4 feet is not feasible, or where no bicycle lanes are designated, the shoulder can be used by bicycles, but should not be signed or striped as such unless at least 4 feet of width is available. In this instance, a minimum 12-foot wide lane is recommended per AASHTO where bicycles will be present, with 14 feet preferred (not including the gutter pan). Closer to developed areas, there should be a curb and gutter and/or other “traffic calming measures” such as chicanes, speed tables, and a no-passing regulation to slow traffic. Share-the-road signage and other bicycle safety signs and marking per the MUTCD as described previously should be provided at frequent intervals and especially at points of limited visibility and intersections.

Given the constraints of the steep embankment walls and riverbanks, a 12 to 14-foot lane width may not be a practical option along significant reaches of the corridor. Note that autos and bikes sharing a narrow lane is not addressed in the AASHTO *Guide to the Design of Bicycle Facilities*, and it does not offer a design benchmark for the viability of such a solution. Therefore, no guarantee of optimal bicycle safety can be provided nor can it be assumed that the suggested speed limits will be optimally safe.

Under any of the scenarios presented, speed limits should be reduced to 25 mph by both signage and road design between downtown Basalt and the east end of Mid-River Park, and to 35 mph between Mid-River Park and the SH 82 intersection. Depending on the final development between Mid-River Park and Emma Curve, the speed limit here could also be reduced to 25 mph. Shared roadway planning should address potential hazards such as drainage grates, joints, rumble strips and potholes.

R-1 Bike Lane – This lane is a minimal 4-foot wide designated shoulder on each side of the road. Bicycle travel is limited to one direction only – the same as the auto traffic – in each bike lane. The lane may be delineated with a 6-inch-wide solid white painted stripe and with bicycle symbols painted in the pavement. The words “bike lane” are also painted in the lane. The width of the bike lane may vary to 5 feet where traffic is heavier, the grade is steeper, or there are objects such as a guardrail or curb present. Where delineated parking is present the lane should be 5-feet wide between the designated parking area and the traffic lane. Share-the-Road caution signage should also be placed at appropriate intervals especially at intersections and leading in to curves or grades where visibility may be restricted. The asphalt surface of the bike lane may be painted an appropriate color that contrasts the vehicle lane surface for both aesthetic and designation purposes.



An important aspect of all of the roadway options is the inclusion of a vegetated area between the bike lanes and trail or structural wall. The purpose of the strip is to soften the boundary between the road and wall. The strip should be at least 2-feet wide for minimal planting, and it should be 6-feet wide where feasible. In many locations, the vegetated strip will push the trail toward the river, thus increasing the volume of retaining wall and adding costs. The width of the strip should vary to create an undulating, organic border. The vegetated area should be planted with native grasses, bushes, and perennials that do not require irrigation and are tolerant of de-icing products and other contaminants associated with roadways.



Example of trail and bike lane side by side.



Example of trail next to road with landscape strip.



Example of bike lane with parking – bike lane delineated.

R-2 Parking Lane – Additional parking will be constructed near downtown Basalt at Old Pond Park and at various access locations along the corridor. The combined bike lane (4-foot wide) and parking width should be a minimum of 11-foot-wide. The width should be increased up to 13-feet where parking turnover is substantial.

R-3 Chicane and Gateways – A chicane is a narrowing and/or deflection of the road lane using a center island necking down the road width using curbs or other delineators. The objective is to slow traffic substantially. Chicanes may also be used to create attractive gateways using landscape, art, or other means. Chicanes can designate entry to special activity zones such as a park area or area where the character of the corridors changes, for example from urban to rural. Generally, chicanes run for less than 100 feet along a road corridor, though in some instances narrow lanes with curbing may be used for longer distances to reduce traffic speeds. In all instances, lanes or lane and combined curb pan should be wide enough to safely accommodate emergency vehicles.



Example of a chicane.

R-4 Speed Table – A speed table is a rise in the pavement surface that encourages drivers to slow down. Speed tables, in contrast to speed bumps, are broader and create a gentler warning effect and allowing emergency vehicles to traverse them with relative ease. Warning signs per the MUTCD alert motorists and cyclists of the speed table. Speed tables may be tapered on either side to allow smooth bicycle passage.



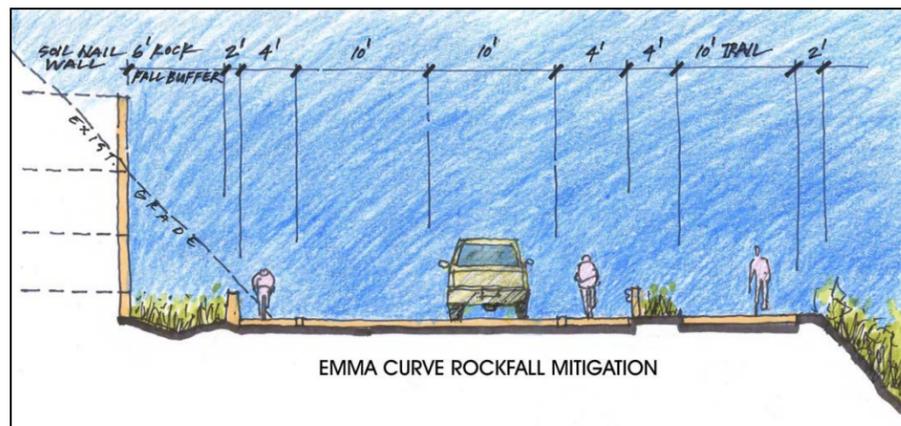
Example of speed table.

R-5 Relocate Road – In some instances, the entire road may be shifted to create more space along the riverbank for park uses, access points, or the trail.

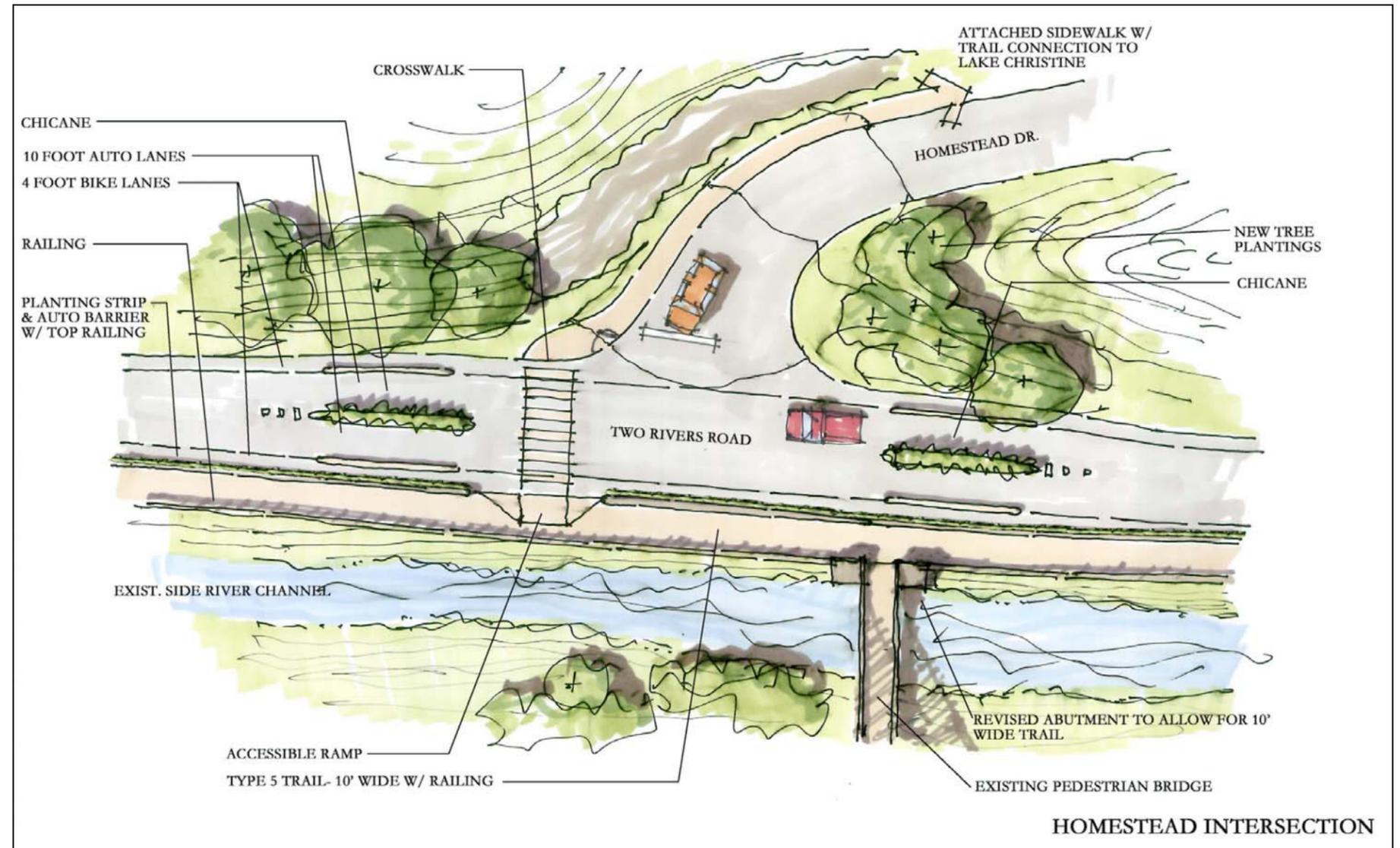


R-6 Rock Mesh – Rock mesh is a metal fabric covering of steep and unstable slopes to reduce the risk of rocks and debris from falling on the travel lanes. Although effective in providing rock-fall mitigation, the metal fabric is often considered as being an unaesthetic alternative.

R-7 Rock Control Wall – A rock control wall typically consists of a concrete wall (or other appropriate material) used to reduce the risk of rock and debris from falling onto the travel lanes.



Intersections – Certain intersections, particularly at Homestead Drive, are recommended for modification to promote slower traffic speeds and better interface of pedestrians, bicycles, and automobiles.





Parking on Street (Parallel and head-in/angle) – The plan drawings in this document depict both parallel and pull-in parking. The use of either will depend on the room available and the number of parking spaces required. This determination will be made during design.

Signage – Various types of signage are recommended along the corridor. These include: regulatory/safety signage, directional/informational signage, and interpretive displays. All signage should be designed for durability and ease of maintenance and replacement. Simple, context appropriate materials should be used that fit the more rustic/rural mountain community character of the corridor. Signage should be placed at key locations along the corridor, but not be too frequent or overbearing. Signs should have a continuity of design and should reinforce the design aesthetic of other features throughout the corridor. Designing the project signs in a thoughtful and creative manner will bring a high level of quality to the project and provide an overall identity to the entire project corridor.

All regulatory/safety signage and pavement markings should conform to the *Manual of Uniform Traffic Control Devices* MUTCD and the *AASHTO Guide to the Development of Bicycle Facilities* with respect to size, shape, color, and placement. Directional signage can include distance signs, park and access point entry signs, mile markers along the road and the trail, route maps, and destination signs. Interpretive displays could consist of wayside graphic depictions, text, artifacts, and sculpture.

Wildlife Crossings – There have been many wildlife related accidents along Two Rivers Road. If an at-grade crossing with signage, traffic calming, and lower speeds for wildlife is not feasible, then a wildlife underpass may be a suitable option to help reduce accidents and conflicts. A wildlife crossing may also be necessary for trail options with retaining walls or railings over 43 inches high. The openness ratio (Openness Ratio = Width x Height/Length) is a factor in encouraging wildlife to use the crossing. An openness ratio of 2.0 or greater is recommended for a wildlife crossing. When utilized by mule deer, 2.65 is the minimum openness ratio and should be greater if used by elk (CDOT & FHWA, May 2006). Most underpasses utilized by elk or deer have a height of 12 to 14 feet. The length is dictated by the roadway section and therefore will define the underpass width. For this project we anticipate a width of 22 feet based on length of 100 feet, height of 12 feet and an Openness Ratio of 2.65.

Because of the sensitivity of this matter, we recommend performing additional wildlife studies in the design phase of work. These studies will provide additional insight into the location and layout of wildlife crossings, if needed.

See *Southern Rockies Ecosystem Project, 2006. Linkage Assessment Methodology, Linking Colorado's Landscapes Phase II Report*. Denver, CO.

See also CDOT & FHWA. May 2006. *Final Environmental Impact Statement/ Final Section 4(f) Evaluation from Durango to Bayfield, La Plata County, Colorado*. Colorado Department of Transportation and Federal Highway Administration. Denver, CO.



Example of a wildlife underpass: This state highway in Florida was elevated to allow bears and other animals to safely cross beneath the road. Photo courtesy of U.S. Highway Administration website.



Alignment and Development Options Considered

Under all of the potential scenarios presented, this Master Plan envisions the creation of access points and river amenities such as boat landings and angler access. In addition, each scenario envisions the development-dependent new pedestrian crossing of the Roaring Fork River at Old Pond Park and creating a new loop trail via the south side of the river and the existing Emma Trail. The Plan also envisions the creation of improved street and parking from Midland Avenue to Old Pond Park, new or improved parks, rest areas and overlooks at the confluence of the rivers, Old Pond Park, Mid-River Park, Aspen Junction, and other opportune sites along the corridor. To link the corridor and its destinations together, the planning team considered five options. In part, these options can be considered alternatives. However, some of the elements of each can also be considered combinable as part of a phased approach. The options include:

- A-1: 10-foot Multi-Use Trail the Entire Distance
- A-2: 10-foot Multi-Use Trail the Entire Distance with Rock Stabilization Wall
- B: Mid-River Emma Trail Connection
- C: Basalt Riverwalk
- D: On-Street Bike Lanes/Pleasure Drive Improvements

Not included in the Two Rivers Greenway, but eluded to in this Master Plan, is a trail from the confluence of the Frying Pan River and Roaring Fork River, to Old Pond Park. Also included in this section is an Upper River Bridge crossing of the Roaring Fork River that creates a short loop to the Emma Trail and the proposed library site. These segments are dependent on future private sector and/or public works construction in this area and are therefore not directly included in Two Rivers Greenway Master Plan phasing and cost estimates.

Option A-1: Multi-Use Trail the Entire Distance

This approach envisions constructing a separate 10-foot wide shared-use trail the entire 2-mile length of the corridor from Midland Avenue to the western terminus of the study area at the intersection with SH 82. Due to a tightly confined space between the road and the riverbank, a major portion of this trail would be constructed either on a suspended deck or by using retaining walls. Hand railing would be required for much of the length. Depending on community desires, portions of this trail could use a crushed rock surface or alternatively be paved using either asphalt or concrete. Structural sections such as bridges and retaining walls adjacent to the road would have a concrete surface.

Advantages of this approach would be the creation of a totally separate continuous trail experience along the edge of the river for the entire length of the corridor, thus affording a more pleasant trail experience.

Disadvantages include substantial cost and the imposition of extensive structure on the visual character of the riverbank. Impacts on wildlife habitat and circulation are also potentially unfavorable; however, providing wildlife underpasses, being mindful of wildlife concerns during the construction, and using phased construction can help to mitigate this.

Option A-2: Multi-Use Trail the Entire Distance with Rock Stabilization

This option is the same as Option A-1; however, construction of the trail is facilitated by stabilizing the steep bluffs on the opposite side of the road in the Emma Curve area with a concrete retaining wall instead of wire mesh, allowing segments of the road to be moved away from the riverbank that in turn allows more of the trail to be constructed on grade or with lower retaining walls.

Advantages, in addition to those described in Option A-1, include the improved stabilization of the bluffs, which will lessen the hazards of rock and debris falling onto the road and possibly less of a structural trail in places.

Disadvantages, in addition to those described in Option A-1, include substantial cost and the imposition of extensive structure on the visual character of the bluffs above the road.



Option B: Mid-River Emma Trail Connection

Under this approach a 10-foot-wide multi-use trail would be constructed along the north bank of the river from Midland Avenue to a point approximately mid-way in the corridor (proposed Mid-River Park). At this point, there are alternative approaches. One would be to have the trail cross the river on a pedestrian span and then follow an elevated timber or recycled plastic deck to join the existing Emma Trail, thus creating a continuous trail running the length of the corridor. The proposed deck will include overlooks and interpretive displays that showcase the wetlands and riparian lands that have been set aside for preservation to the west of the Wastewater Treatment Plant. However, there are strong community concerns about potential adverse environmental impacts of this option. Accordingly, pursuing this alternative requires careful investigation of the site and alignment possibilities to be sure that sensitive areas are not adversely impacted. Alternatively, funds permitting, and if the community desires, a 3-foot to 5-foot-wide pedestrian trail could continue along the north bank of the river from Mid-River Park to Aspen Junction. In pursuit of this approach upgrades and improvements to the existing Emma Trail are encouraged where needed.

Advantages of this approach include the creation of a totally separate continuous trail experience along the edge of the river to the Mid River crossing and then along the existing Emma Trail. (Assumes a crossing can be created at or near the Wastewater Plant with no significant adverse environmental impact.) This approach is also substantially less costly and has a much reduced visual and ecological and wildlife impact on the river corridor west of Mid River Park, than a full width multi-use trail along the entire length of the corridor. This approach also offers a variety of loops and trail experiences as well as reduced maintenance costs by sharing portions of the existing Emma Trail.

Disadvantages include the cost and the imposition of structure on the character of the riverbank east of Mid-River Park and potential adverse impact on wetlands and the riparian preserve lands south of the river. In addition, construction of this trail segment may not be in the spirit of the Town of Basalt's conservation easement in this area. Because this option is sensitive in nature, effort must be made to minimize impact (through site specific design including ecological and aesthetic analyses and

construction sensitivity) and achieve consensus prior to implementation.

Option C: Basalt Riverwalk

This approach is essentially a scaled-back version of the previous approaches and could also be considered a first phase in the implementation of any of the above options. A 10-foot-wide trail and appropriate landscaping would be created along the north bank of the Roaring Fork River from its confluence with the Frying Pan River to Old Pond Park. Depending on community desire the trail surface could be paved or of granular stone. This trail could easily be integrated into a shorter loop via the proposed Upper River Pedestrian Bridge crossing the river near Old Pond Park and connecting to the Emma Trail. The plan would also include a concrete trail to Homestead Drive and a continuation of a 3 to 5-foot-wide foot trail along the remainder of the length of the north bank of the river to Aspen Junction.

Advantages, in addition to a lower cost, include the preservation and enhancement of the more urban reach of the Roaring Fork riverbank from the confluence of the rivers to Old Pond Park creating, in effect, a continuous riverfront park. There would be minimal wildlife impact. Building this segment early on in the process may promote the implementation of the remainder of the trail system.

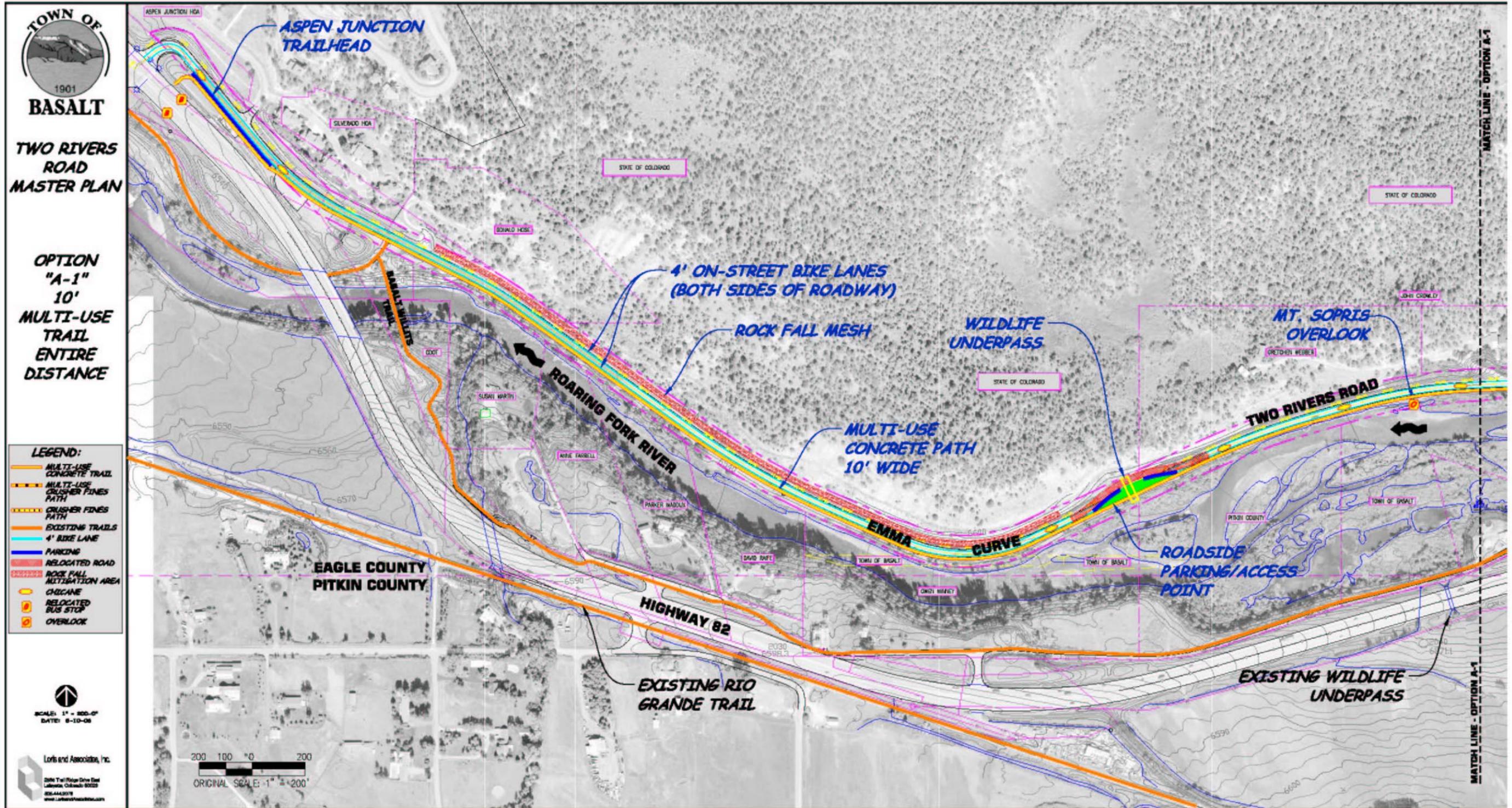
Disadvantages are that only a small reach of the corridor would have multi-use trail accessibility though additional trail could be built at a later time as funding permits.

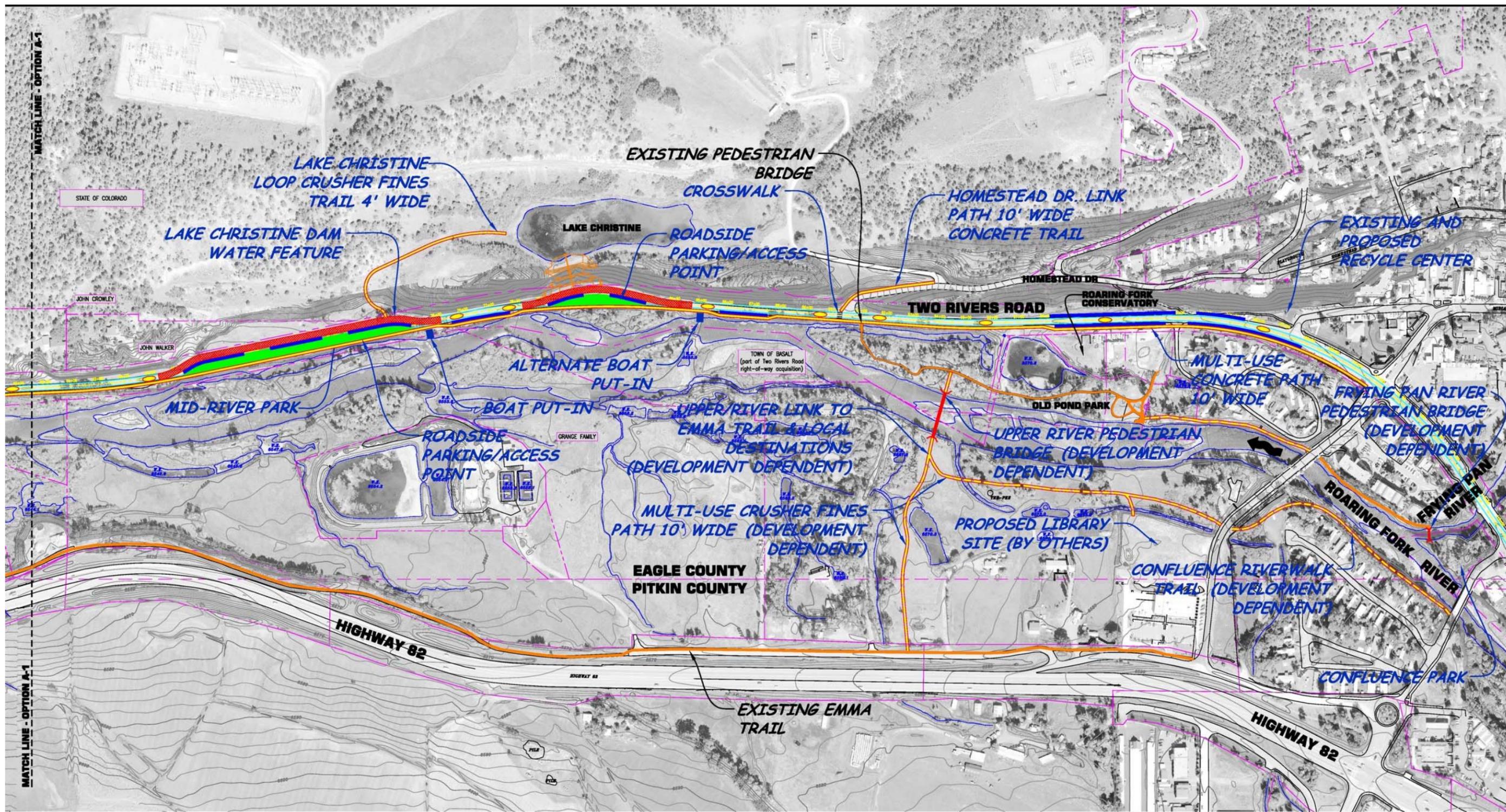
Option D: On-Street Bike/Pleasure Drive Improvements

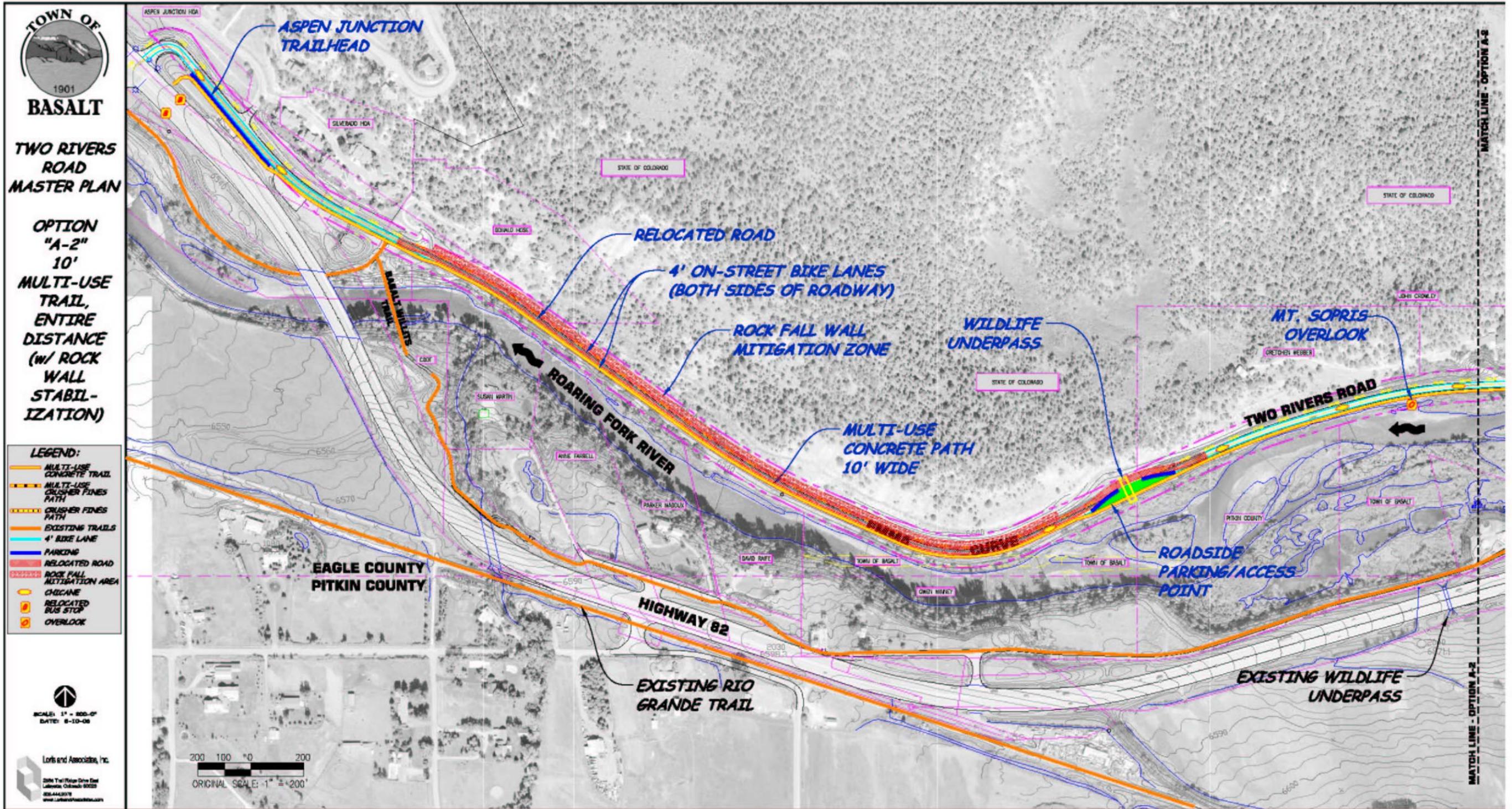
This scenario pursues improved conditions along the roadway to facilitate a safer, more pleasant bicycle experience for cyclists using the road and a more park-like driving experience for motorists. Recommended improvements include widening the traffic lanes to create on-street bike lanes, add traffic calming improvements such as chicanes and speed tables, and providing safety/courtesy signage as previously described in this section.

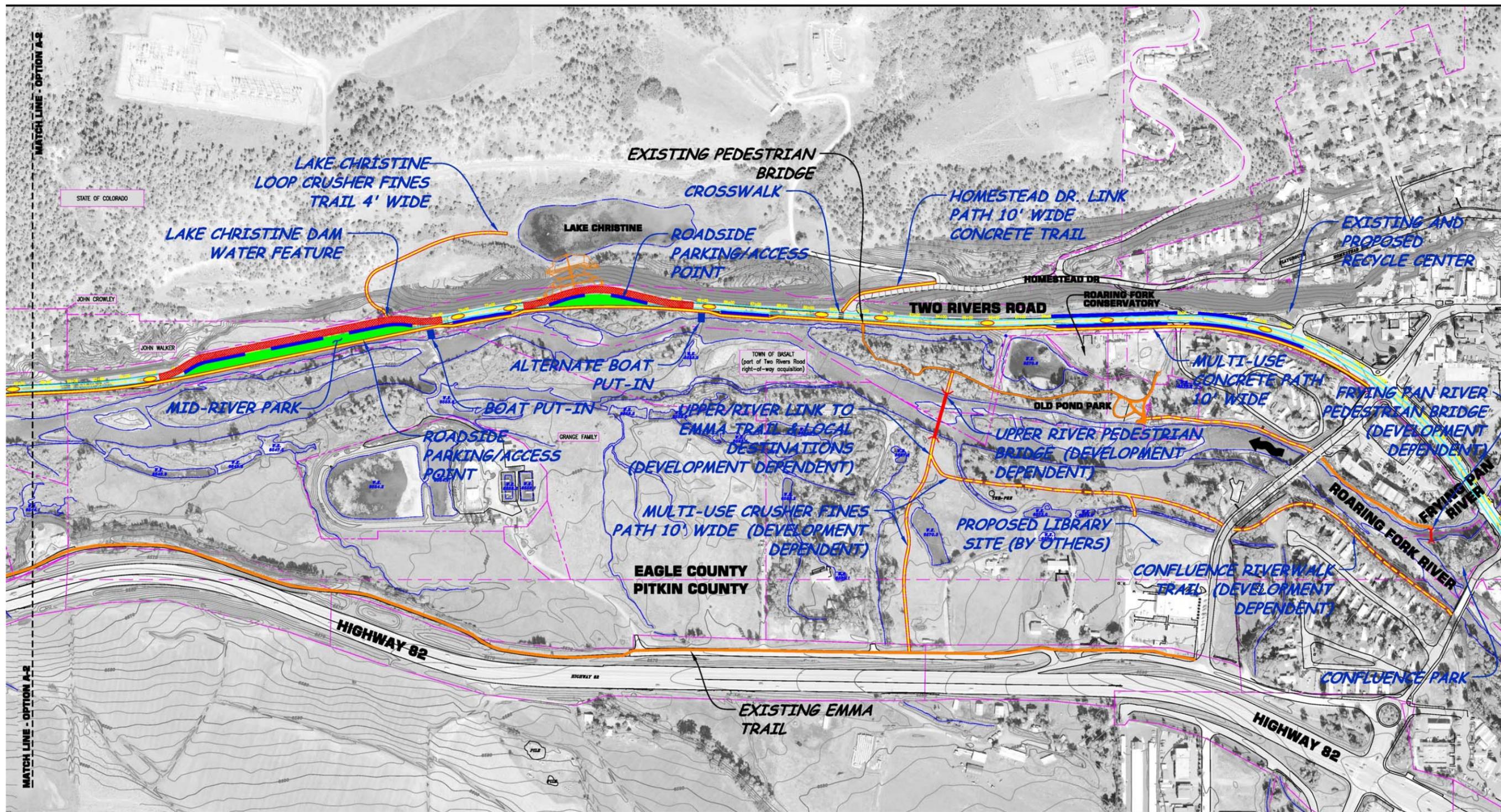
Advantages include the lowest cost, most likely the quickest implementation, and improved safety and enjoyment of the road as a "park" drive. This option has the least amount of environmental impact as well.

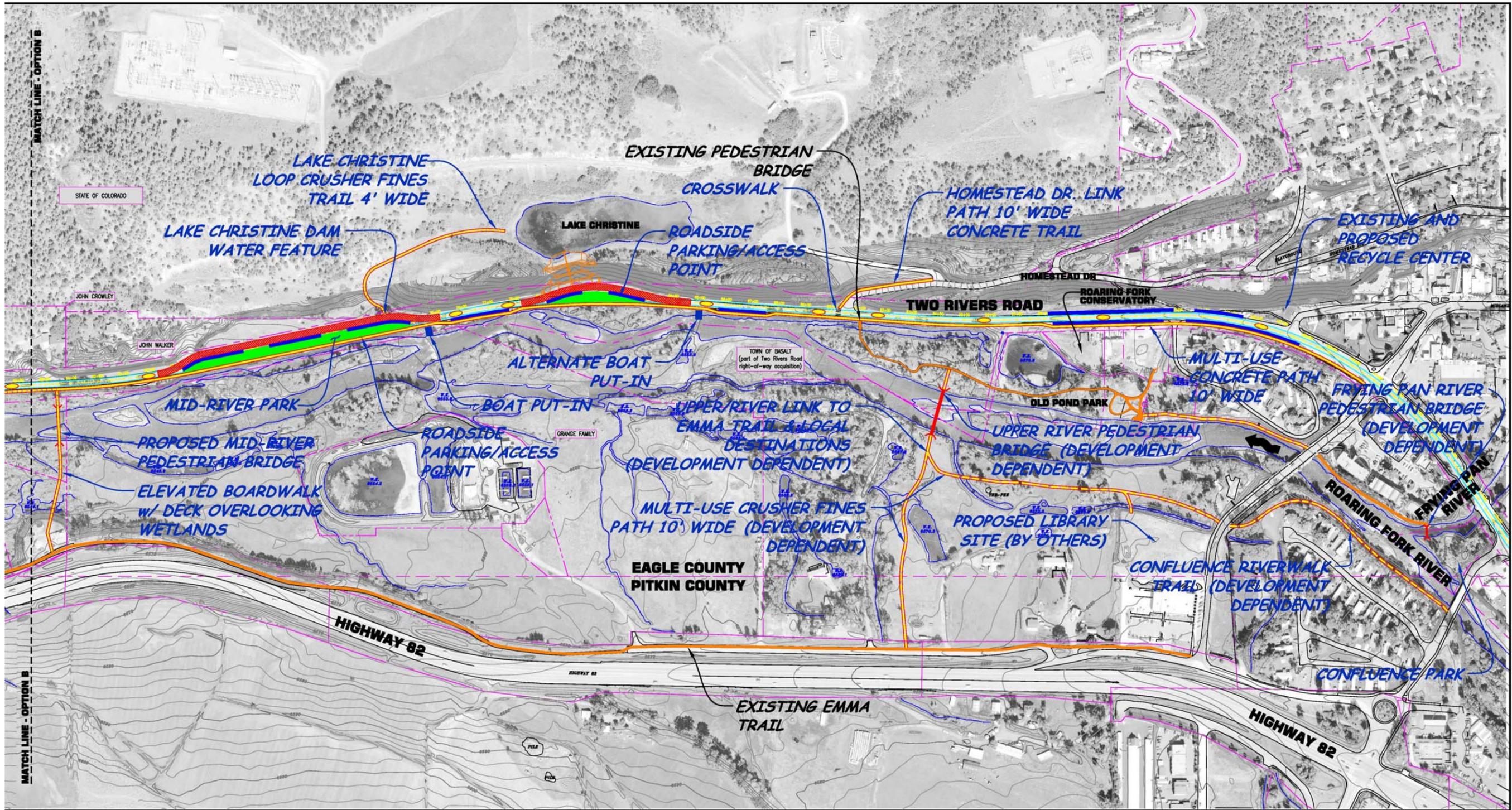
Disadvantages include the lack of accommodation for pedestrians, equestrians, and other non-motorized uses except for on-road biking. This option would be more difficult to secure outside funding without the trail improvements.

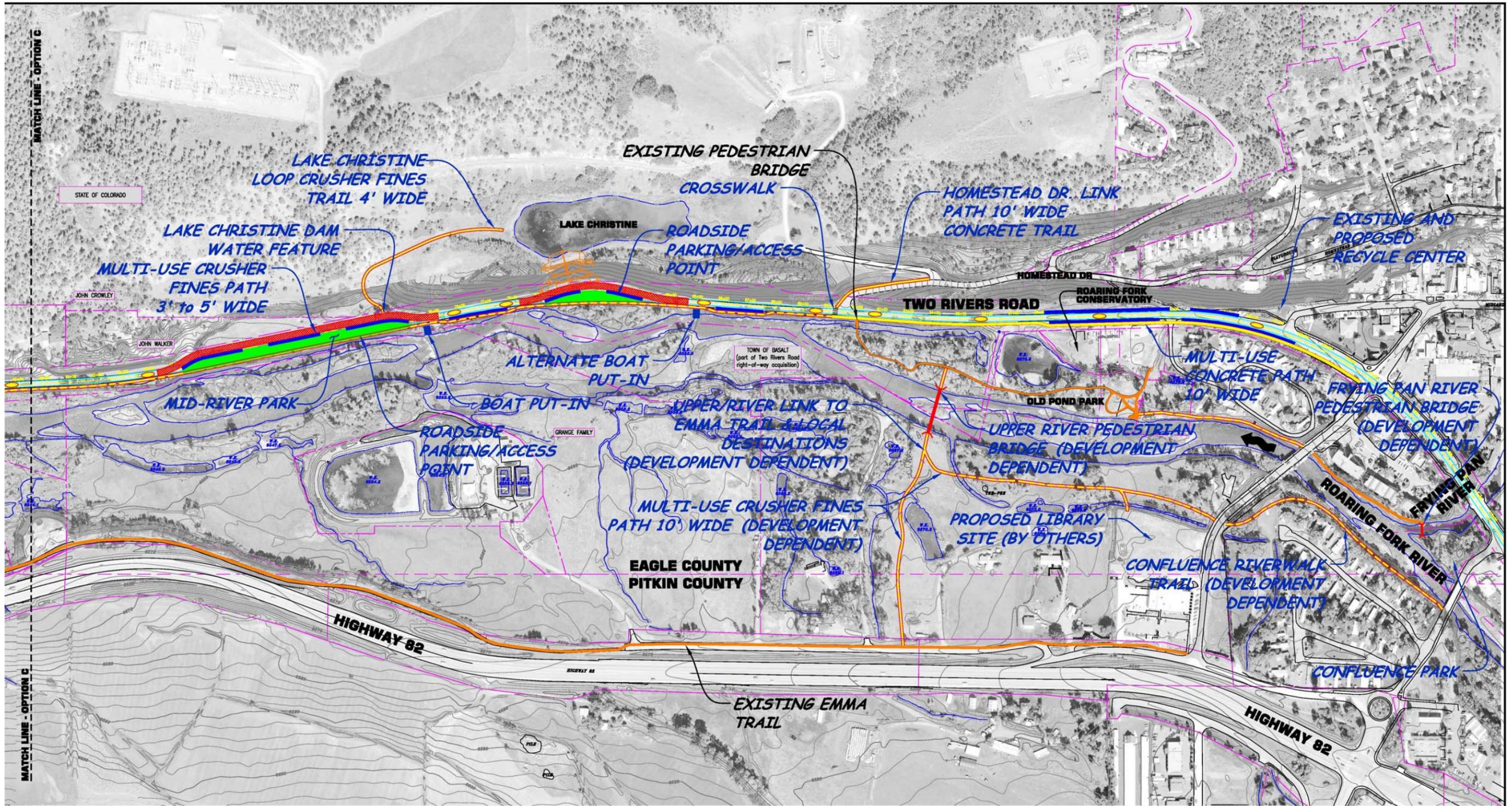


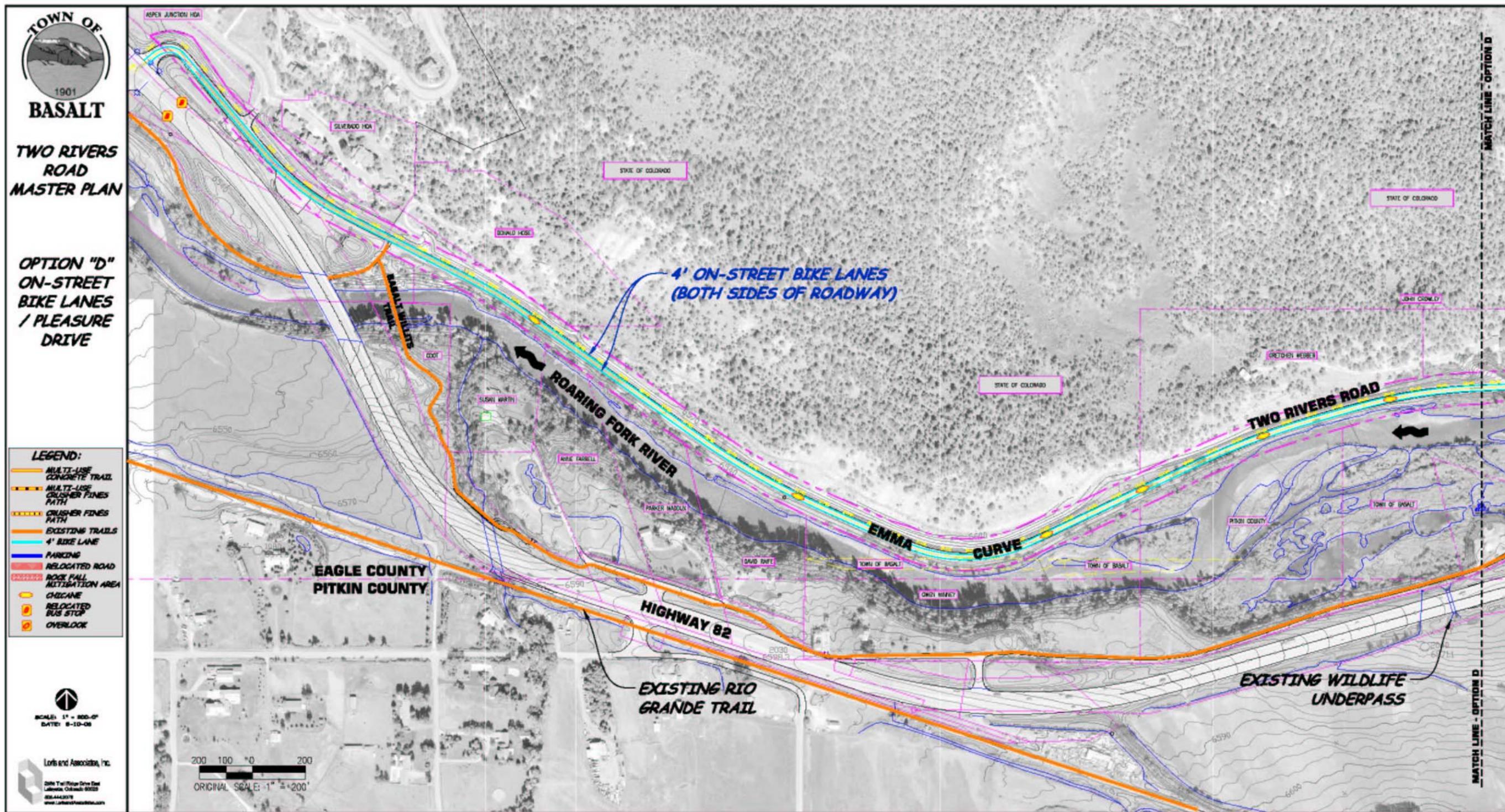














Comparative Evaluation of the Options

The Evaluation Table compares the various options identified in the planning process with respect to benefits, challenges, and cost considerations. This process helped lead to reveal the preferred option described in the text that follows.

Evaluation Table: Two Rivers Greenway, Downtown Basalt to Aspen Junction				
Alternative	Trail Experience	Resource & Wildlife Conservation	Connectivity	Feasibility
A-1 Multi-Use Trail: 10' wide entire length	Continuous multi-use trail entire way to enjoy river.	Impacts riverbank and some sensitive areas/Visual impact of structures. Blocks wildlife movement most.	Strong--links entire corridor directly and ties Basalt communities together.	Very expensive to construct and costly to maintain. May take many years to complete.
A-2 Multi-Use Trail: 10' wide entire length (with Rockfall Mitigation Wall)	Continuous multi-use trail entire way to enjoy river.	Impacts riverbank and some sensitive areas/Visual impact of structures. Blocks wildlife movement most.	Strong--links entire corridor directly and ties Basalt communities together.	Very expensive to construct and costly to maintain. May take many years to complete.
B Mid-River Emma Trail Connection	Exciting visual and interpretive experience on the proposed deck crossing.	Less impact on riverbank west of proposed crossing. Impacts of bridge and deck construction on riparian and wetland areas. May not be in the spirit of existing conservation easements. Lessened barrier to wildlife.	Less direct link to Aspen Junction but forms a continuous trail none-the-less and a loop using the existing Emma Trail route.	More feasible though project will be costly and may need to be built in phases. Adding a foot path the remainder of the distance to Aspen Junction will be very costly.
C Basalt Riverwalk	Provides public access to the river through the urban portion of town and offers dramatic views of confluence and riverfront as well as the more bucolic Old Pond Park area.	If properly designed can promote the preservation of the urban portion of the waterfront. Should be careful planning to minimize impacts on Old Pond areas. Almost no blockage of wildlife movement.	Would only link to Old Pond Park and Homestead Road Area. Would not complete a loop though an intermediate smaller loop could be created with the easterly portion of the Emma Trail.	More feasible since the length is shorter and could be the first phase in a more extensive trail system in the future.
D On-Street Bike/Pleasure Drive Improvements	Would be less pleasant with auto noise and fumes. (There is presently significant vehicle traffic on the road. Does not support walking or other uses besides biking though some bicyclists prefer the higher speed on road experience. Could create a more pleasant drive to some motorists but some may object to the slower speeds.	Least amount of resource impact with more attractive roadway though slight impact from roadwork process. Minimum wildlife impact.	Minimal trail connectivity but would enhance bike connectivity somewhat.	Lower cost.



SECTION 5

COSTS AND FUNDING OPTIONS

Summary of Cost Estimates

The table to the right summarizes the estimated 2006 construction costs for the four segments of each of the five options. Detailed cost spreadsheets for each of the five options are included as Attachment 4.

The following costs are estimated for the various options. These initial estimates are based on current design and construction costs and should serve as a helpful gauge for planning, budgeting, phasing, and fundraising. It should be noted that the estimates are without the benefit of actual site engineering, so they are approximate and should not be considered precise.

Summary of Estimated 2006 Costs By Segment						
Option A-1 Multi-Use Trail the Entire Distance						
Segment	10' Multi-Use Trail	3' to 5' Pedestrian Path	Road Improvements	Amenities	Segment Total w/Road Imp	Segment Total w/o Road Imp
Old Pond Park	\$ 2,693,000	\$ -	\$ 1,346,000	\$ 780,000	\$ 4,819,000	\$ 3,473,000
Mid-River	\$ 5,406,000	\$ -	\$ 2,722,000	\$ 990,000	\$ 9,118,000	\$ 6,396,000
Emma Curve	\$ 4,414,000	\$ -	\$ 2,160,000	\$ 630,000	\$ 7,204,000	\$ 5,044,000
Aspen Junction	\$ 429,000	\$ -	\$ 576,000	\$ 600,000	\$ 1,605,000	\$ 1,029,000
Grand Totals:	\$ 12,942,000	\$ -	\$ 6,804,000	\$ 3,000,000	\$ 22,746,000	\$ 15,942,000
Option A-2 Multi-Use Trail the Entire Distance with Rock Stabilization						
Segment	10' Multi-Use Trail	3' to 5' Pedestrian Path	Road Improvements	Amenities	Segment Total w/Road Imp	Segment Total w/o Road Imp
Old Pond Park	\$ 2,693,000	\$ -	\$ 1,346,000	\$ 780,000	\$ 4,819,000	\$ 3,473,000
Mid-River	\$ 5,406,000	\$ -	\$ 2,722,000	\$ 990,000	\$ 9,118,000	\$ 6,396,000
Emma Curve	\$ 596,000	\$ -	\$ 8,156,000	\$ 630,000	\$ 9,382,000	\$ 1,226,000
Aspen Junction	\$ 429,000	\$ -	\$ 576,000	\$ 600,000	\$ 1,605,000	\$ 1,029,000
Grand Totals:	\$ 9,124,000	\$ -	\$ 12,800,000	\$ 3,000,000	\$ 24,924,000	\$ 12,124,000
Option B Mid-River Emma Trail Connection						
Segment	10' Multi-Use Trail	3' to 5' Pedestrian Path	Road Improvements	Amenities	Segment Total w/Road Imp	Segment Total w/o Road Imp
Old Pond Park	\$ 2,693,000	\$ -	\$ 1,346,000	\$ 780,000	\$ 4,819,000	\$ 3,473,000
Mid-River	\$ 2,613,000	\$ 735,000	\$ 2,722,000	\$ 1,890,000	\$ 7,960,000	\$ 5,238,000
Emma Curve	\$ -	\$ 1,589,000	\$ 2,160,000	\$ 630,000	\$ 4,379,000	\$ 2,219,000
Aspen Junction	\$ 72,000	\$ 149,000	\$ 576,000	\$ 600,000	\$ 1,397,000	\$ 821,000
Grand Totals:	\$ 5,378,000	\$ 2,473,000	\$ 6,804,000	\$ 3,900,000	\$ 18,555,000	\$ 11,751,000
Option C Basalt Riverwalk						
Segment	10' Multi-Use Trail	3' to 5' Pedestrian Path	Road Improvements	Amenities	Segment Total w/Road Imp	Segment Total w/o Road Imp
Old Pond Park	\$ 2,693,000	\$ -	\$ 1,346,000	\$ 780,000	\$ 4,819,000	\$ 3,473,000
Mid-River	\$ -	\$ 2,031,000	\$ 2,722,000	\$ 990,000	\$ 5,743,000	\$ 3,021,000
Emma Curve	\$ -	\$ 1,589,000	\$ 2,160,000	\$ 630,000	\$ 4,379,000	\$ 2,219,000
Aspen Junction	\$ 72,000	\$ 149,000	\$ 576,000	\$ 600,000	\$ 1,397,000	\$ 821,000
Grand Totals:	\$ 2,765,000	\$ 3,769,000	\$ 6,804,000	\$ 3,000,000	\$ 16,338,000	\$ 9,534,000
Option D On-Street Bike Lanes/Pleasure Drive						
Segment	10' Multi-Use Trail	3' to 5' Pedestrian Path	Road Improvements	Amenities	Segment Total w/Road Imp	Segment Total w/o Road Imp
Old Pond Park	\$ 2,693,000	\$ -	\$ 1,275,000	\$ 780,000	\$ 4,748,000	\$ 3,473,000
Mid-River	\$ -	\$ -	\$ 1,215,000	\$ -	\$ 1,215,000	\$ -
Emma Curve	\$ -	\$ -	\$ 932,000	\$ -	\$ 932,000	\$ -
Aspen Junction	\$ -	\$ -	\$ 360,000	\$ -	\$ 360,000	\$ -
Grand Totals:	\$ 2,693,000	\$ -	\$ 3,782,000	\$ 780,000	\$ 7,255,000	\$ 3,473,000



Preferred Option

Based on the comments from the public meetings, the recommendations of the planning team, and the Town of Basalt staff, a phased approach based on a synthesis of the five options presented is recommended. Specifically, the following phases are offered, with an approximate year of completion in parenthesis. Phasing plans are attached following this page. The construction costs are based on a 15 percent yearly rate of inflation through 2011 and five percent yearly inflation thereafter.

PHASE 1

Estimated Year Constructed: 2008

Estimated Construction Cost: \$6,427,000

- Construct the eastern portion of Option A (all options), the 10-foot-wide hard surface trail, on-street bike lanes, parking, and roadway improvements from Midland Avenue to Homestead Drive.
- Construct the new Pitkin County Recycling Center.
- Construct the Homestead Drive sidewalk improvement.
- Construct Two Rivers Road Greenway gateway signage at both the east and west ends of the corridor.

PHASE 2

Estimated Year Constructed: 2010

Estimated Construction Cost: \$5,910,000

- Construct on-street bike lanes (all Options) from Homestead Drive on the east to SH 82 on the west.
- Improve fishing parking access points with their roadway relocations and chicanes.
- Reduce the speed limit to 25 mph at these access areas and 35 mph throughout the remainder of the corridor.

PHASE 3

Estimated Year Constructed: 2013

Estimated Construction Cost: \$10,567,000

- Construct Mid-River Park with parking areas and boat launch.
- Construct the 10-foot-wide hard surface trail to Mid-River Park (Options A and B).
- Construct the Lake Christine Pedestrian Loop (4-foot-wide soft surface path).
- Construct the Lake Christine Dam feature.
- Reduce the speed limit to 25 mph from Homestead Drive to Emma Curve.
- Modify the Aspen Junction bus stop by improving parking, creating a trailhead, and relocating the RFTA bus stop to SH 82.

PHASE 4 (Optional)

Estimated Year Constructed: 2015

Estimated Construction Cost: \$2,201,000

- Construct the Option B Mid-River Bridge and boardwalk across the river to connect to the Emma Trail. The acceptability of this option must be weighed due to the nature of existing conservation easements and environmental constraints.

PHASE 5

Estimated Year Constructed: 2020

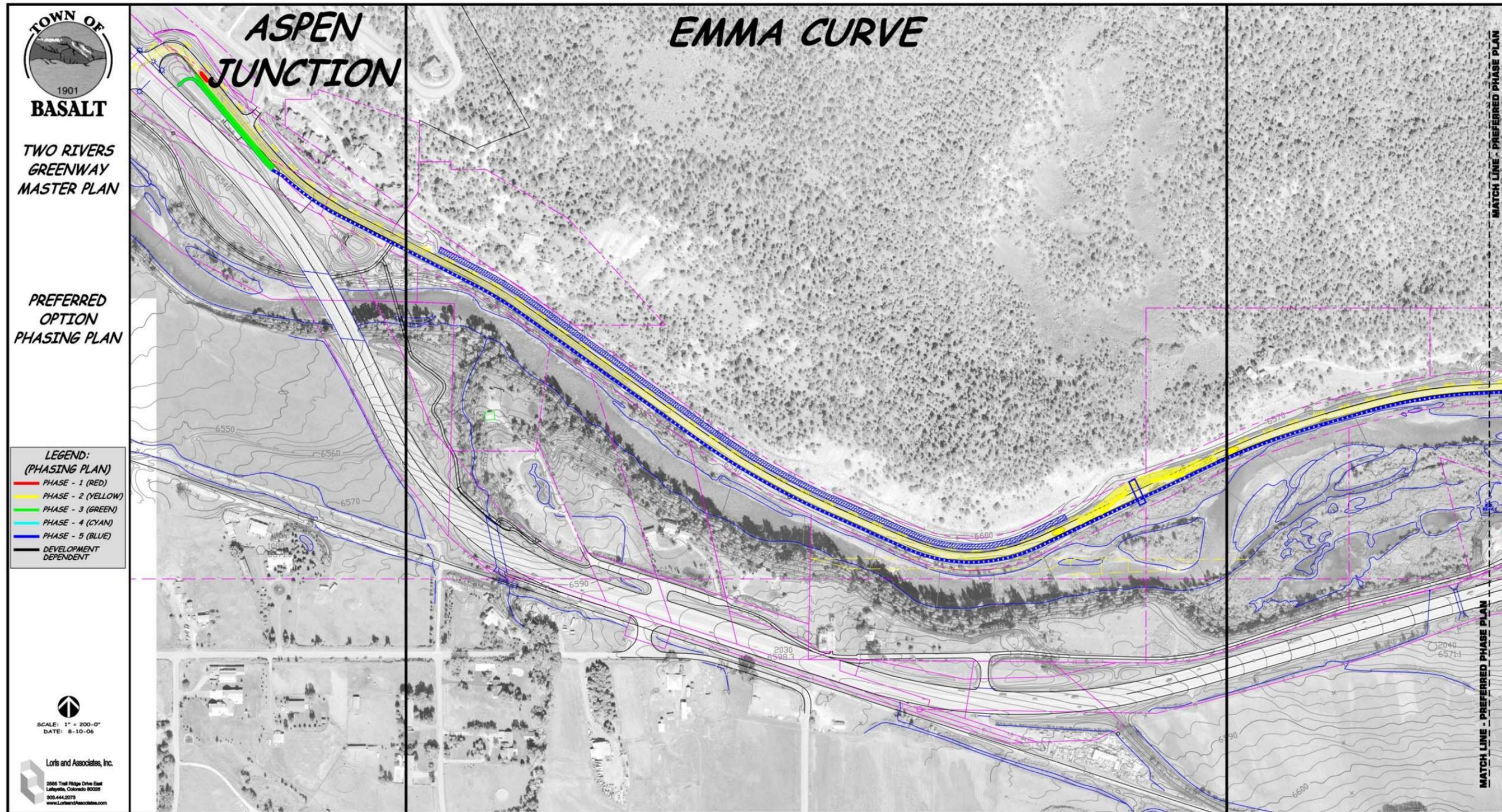
Estimated Construction Cost: \$14,257,000

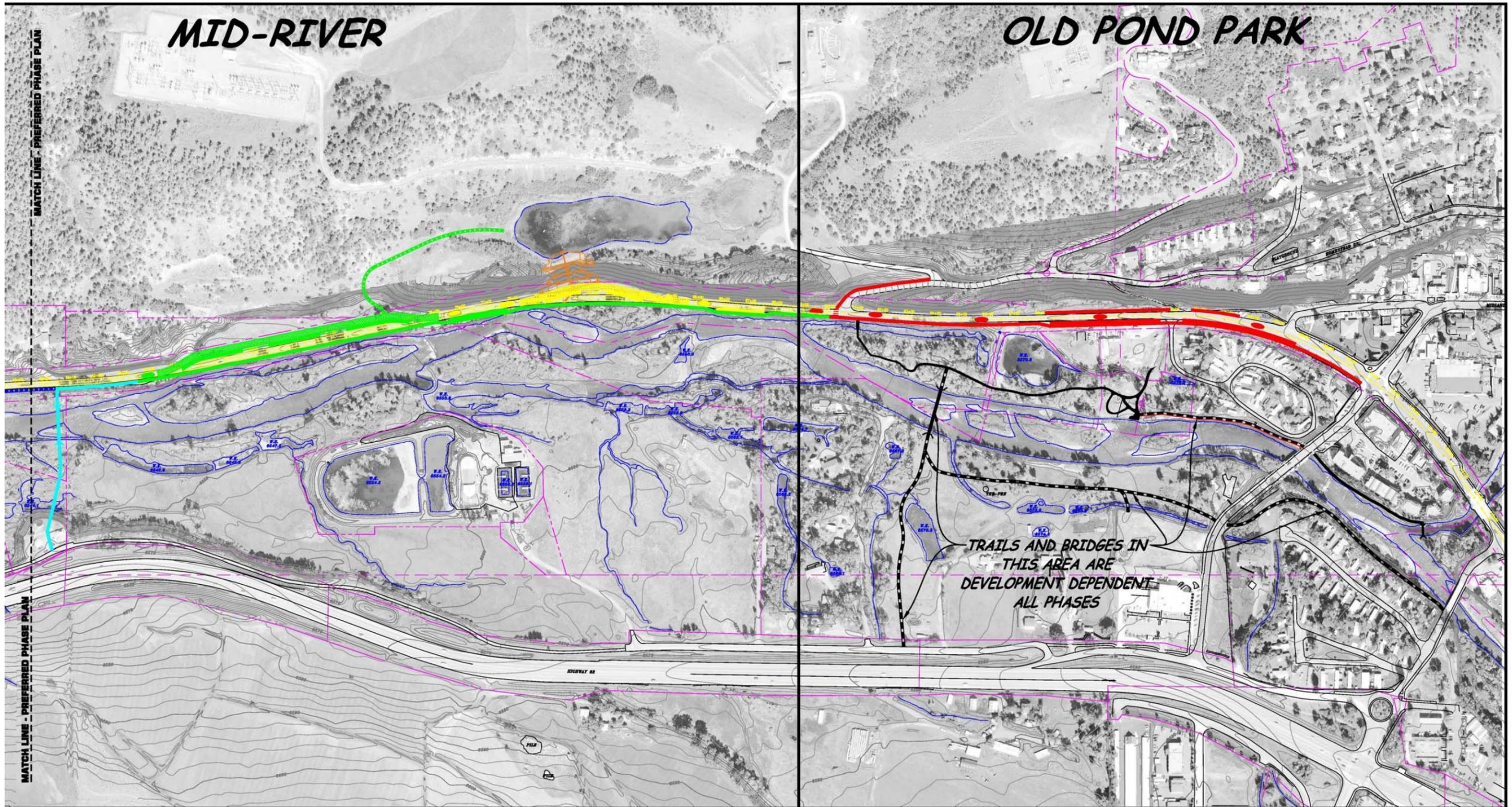
- Construct the soft surface path from Mid-River Park to SH 82 (Options B and C).
- Install rockfall mitigation mesh at Emma Curve.
- Construct the Mt. Sopris Overlook.
- Construct the wildlife crossing at Emma Curve (Evaluate if this should be performed in an earlier phase.)

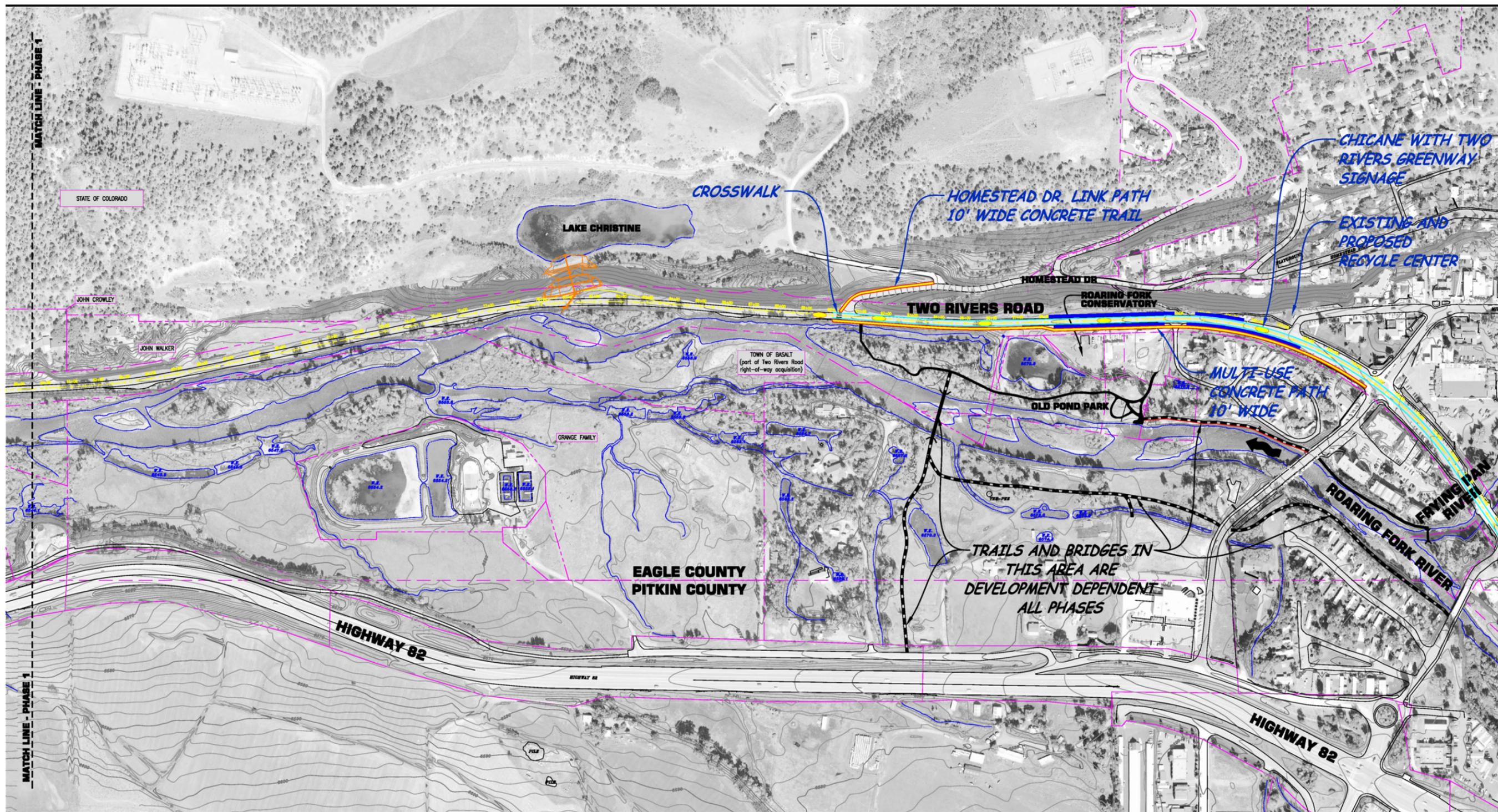
Development Dependent Construction

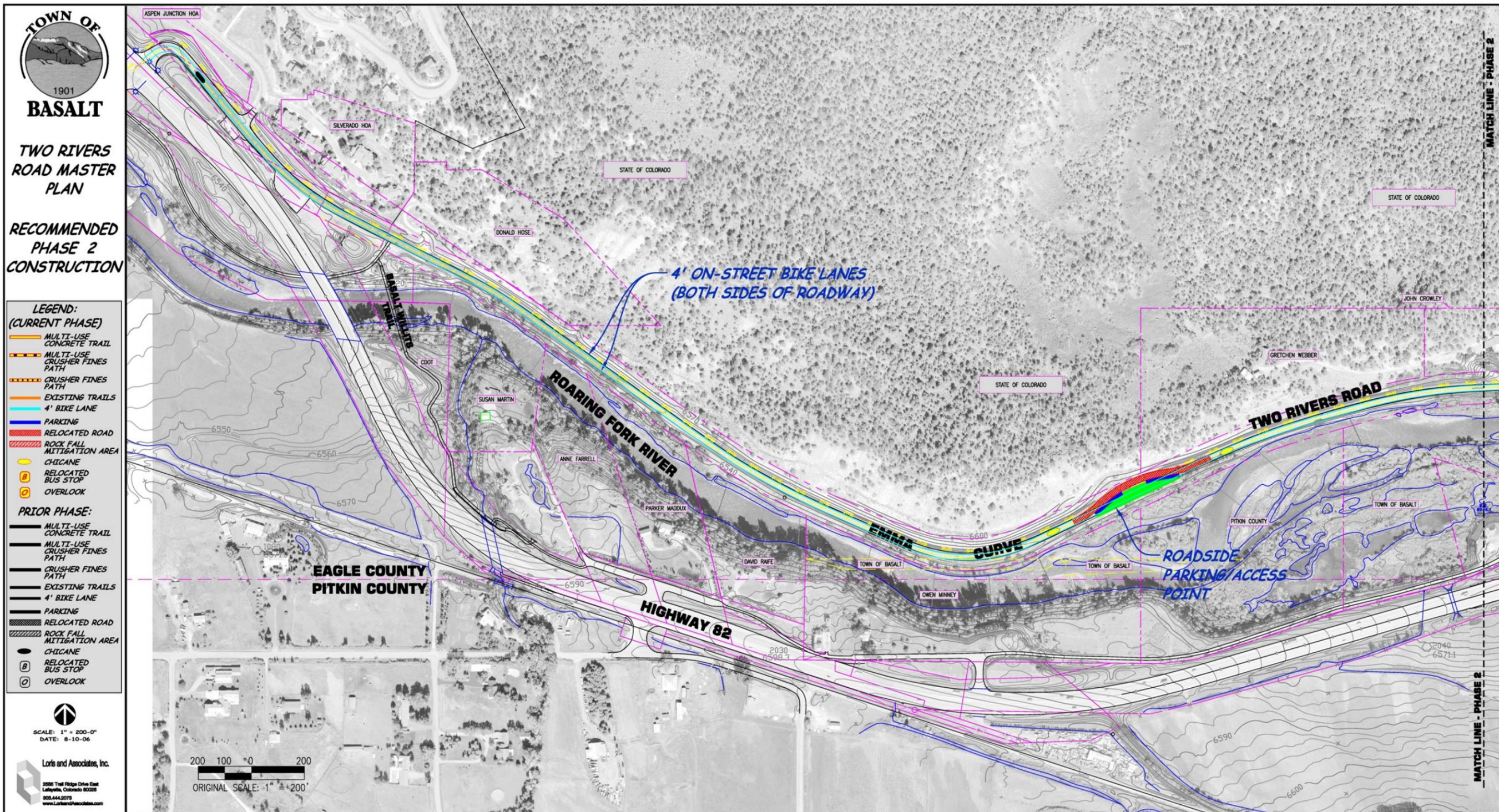
The following aspects of the new riverfront development, which are not specifically a part of the Two Rivers Greenway Master Plan, will most likely be constructed as adjacent development or other public investment.

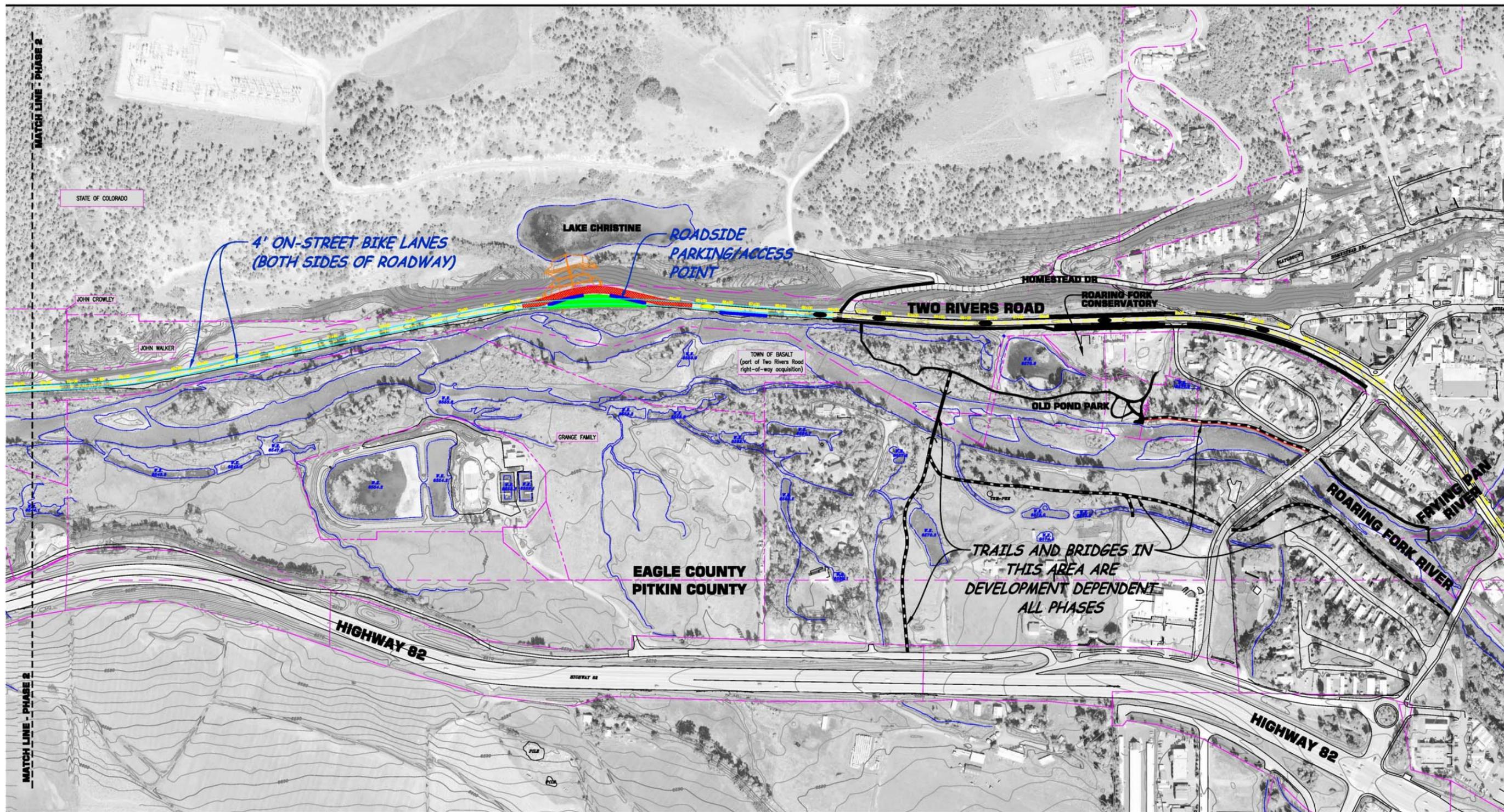
- Construct Riverwalk from Confluence Park to Old Pond Park (Option C).
- Construct the Upper River Bridge and trail crossing the Roaring Fork River and connecting Old Pond Park to the proposed library and the Emma Trail.

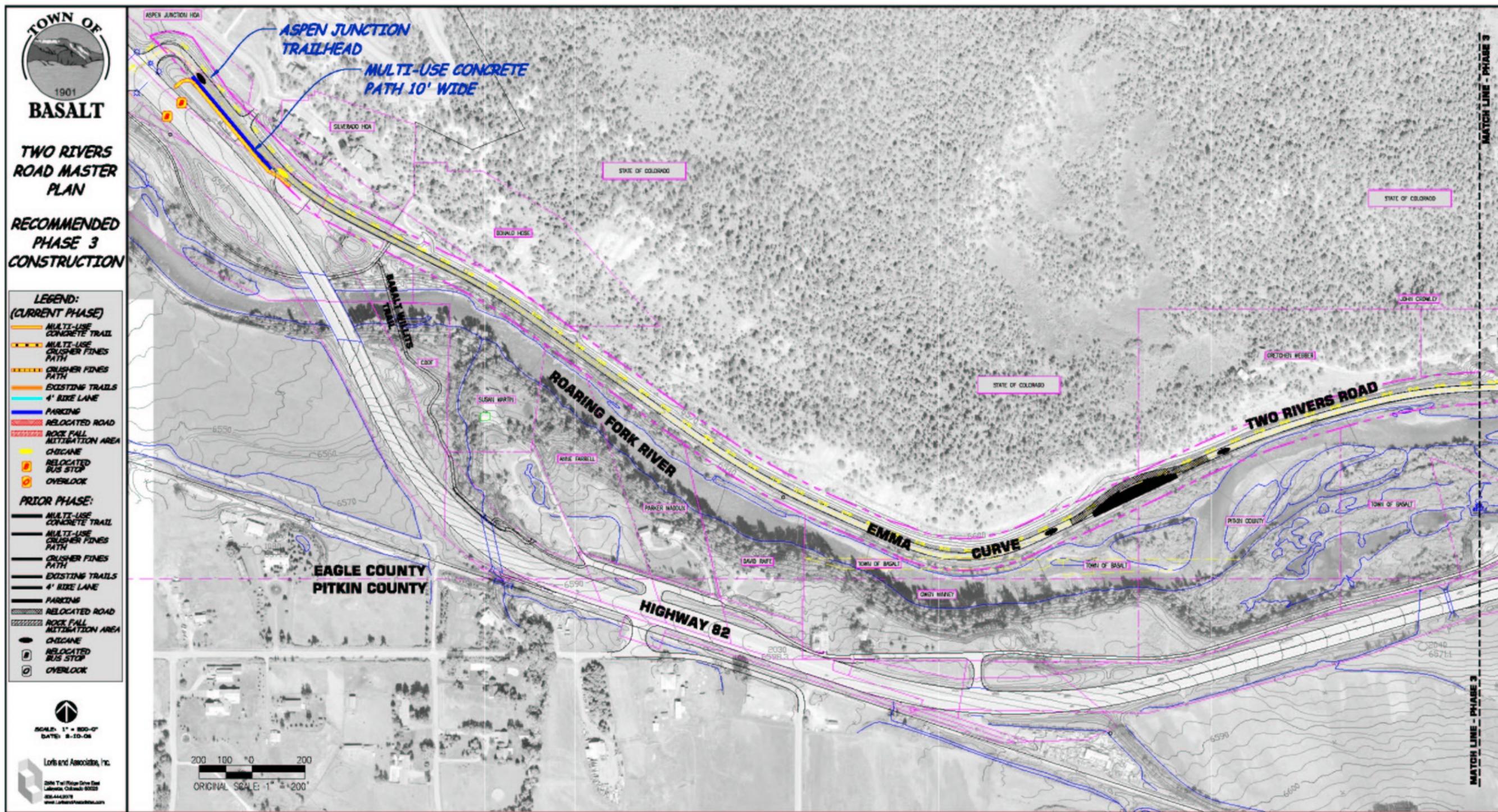


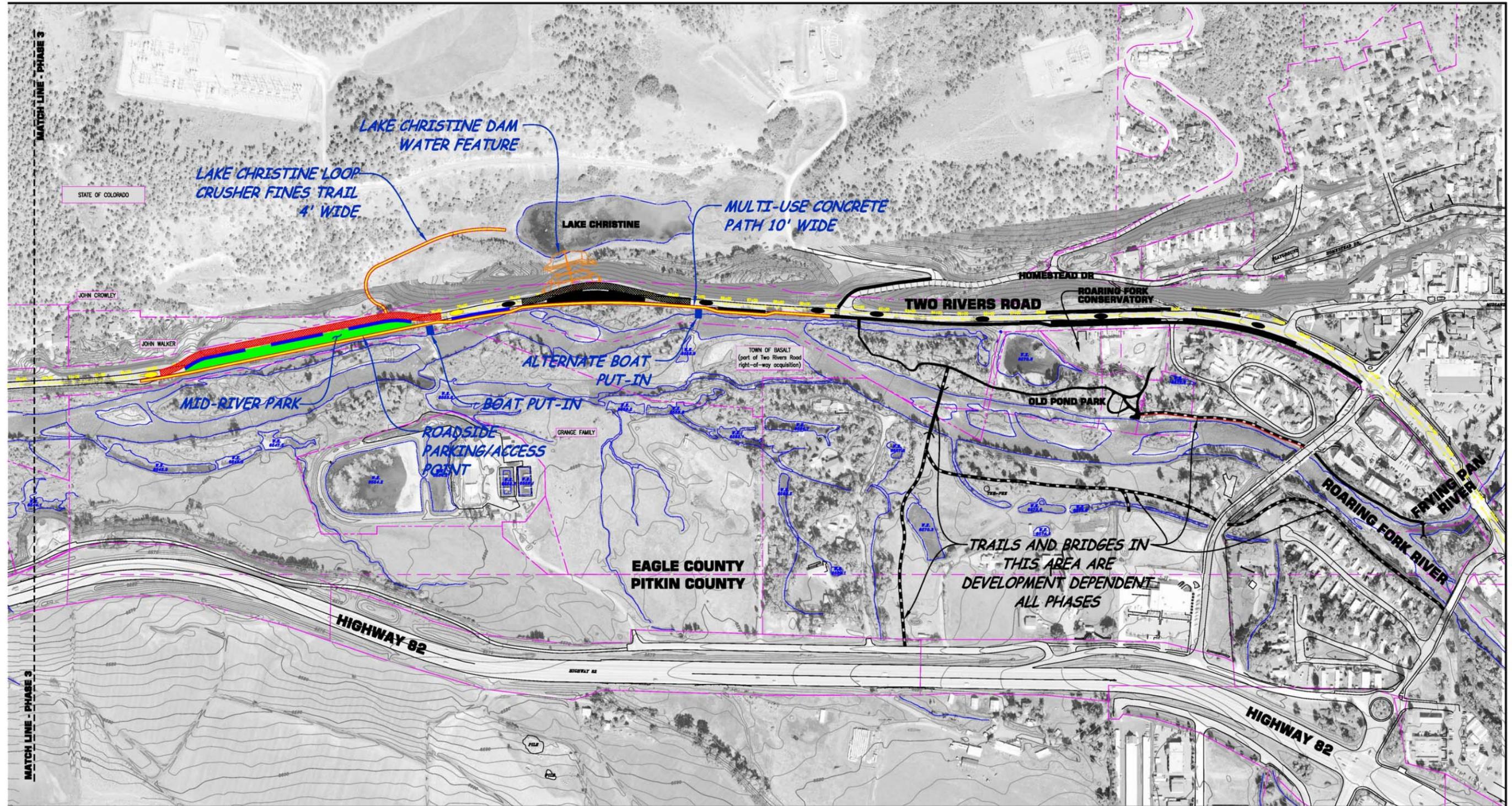


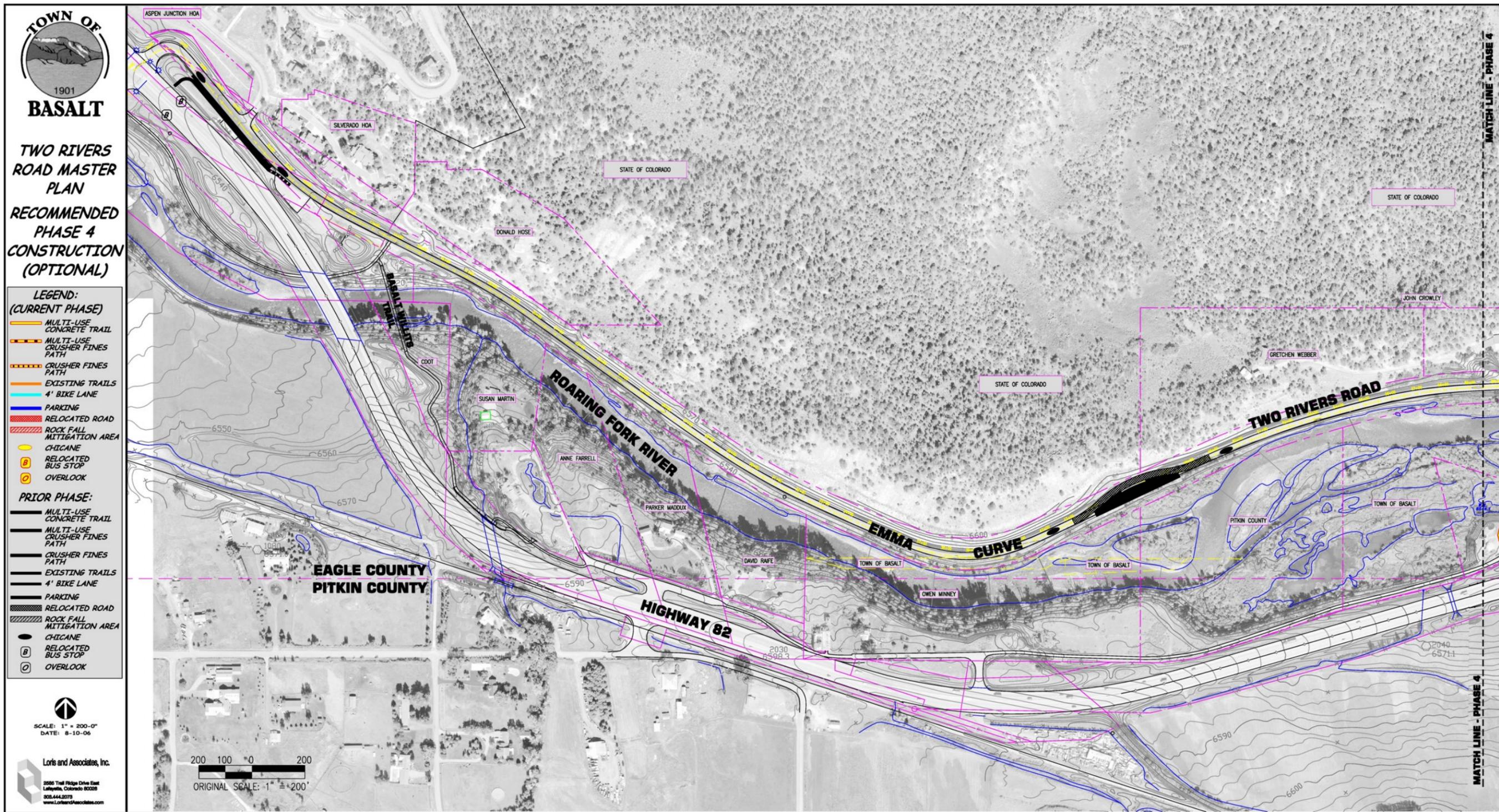


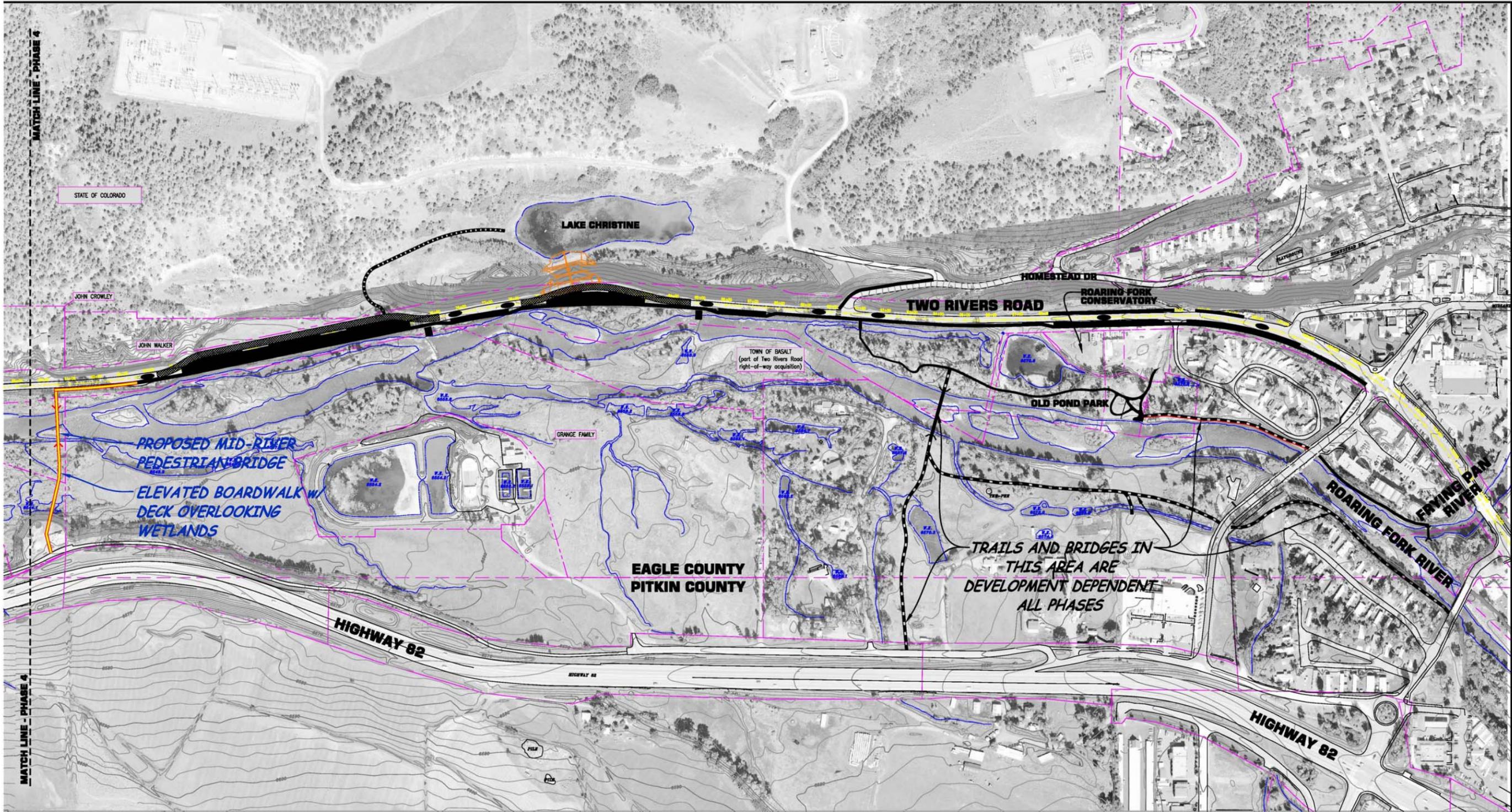


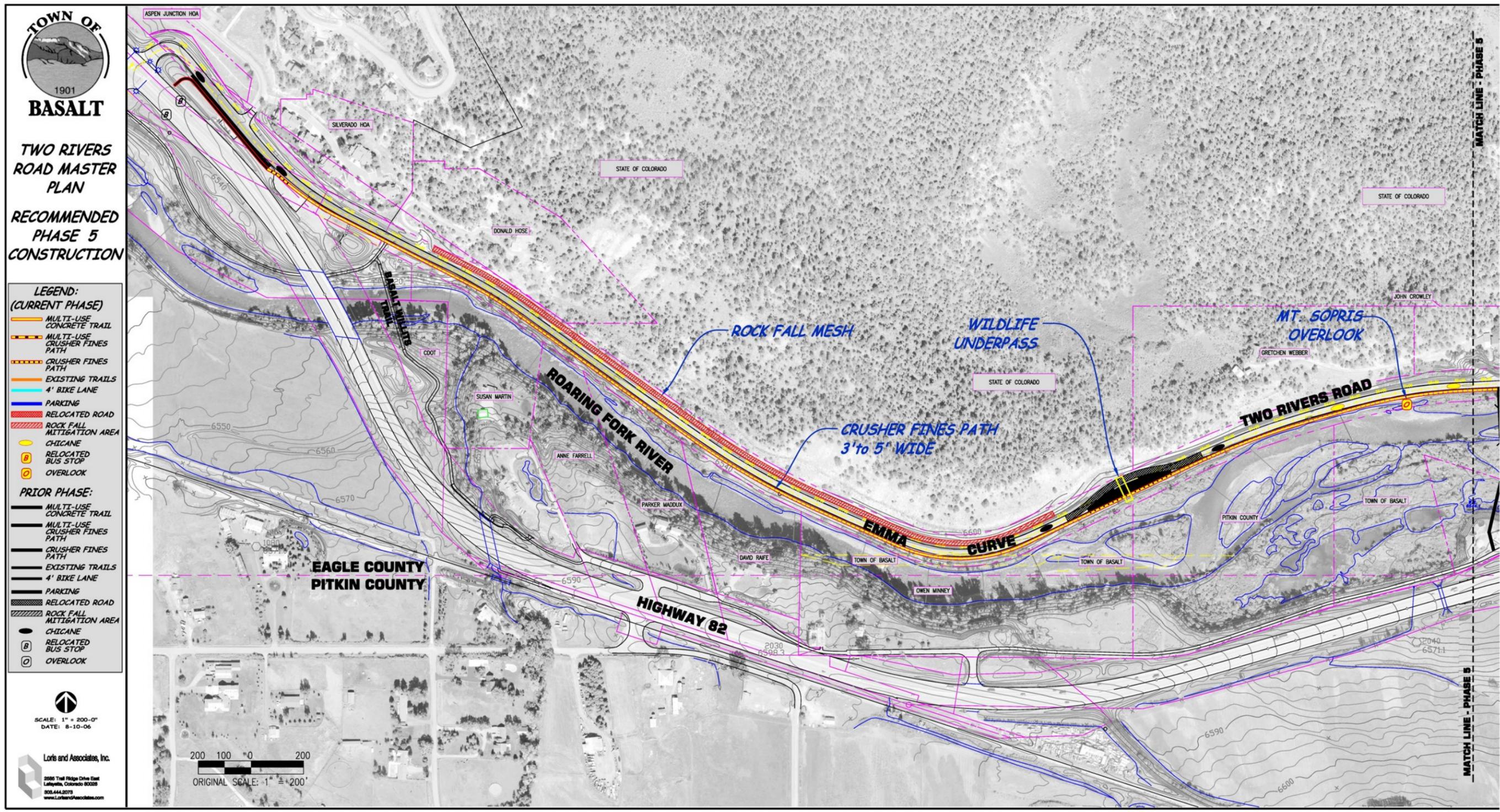


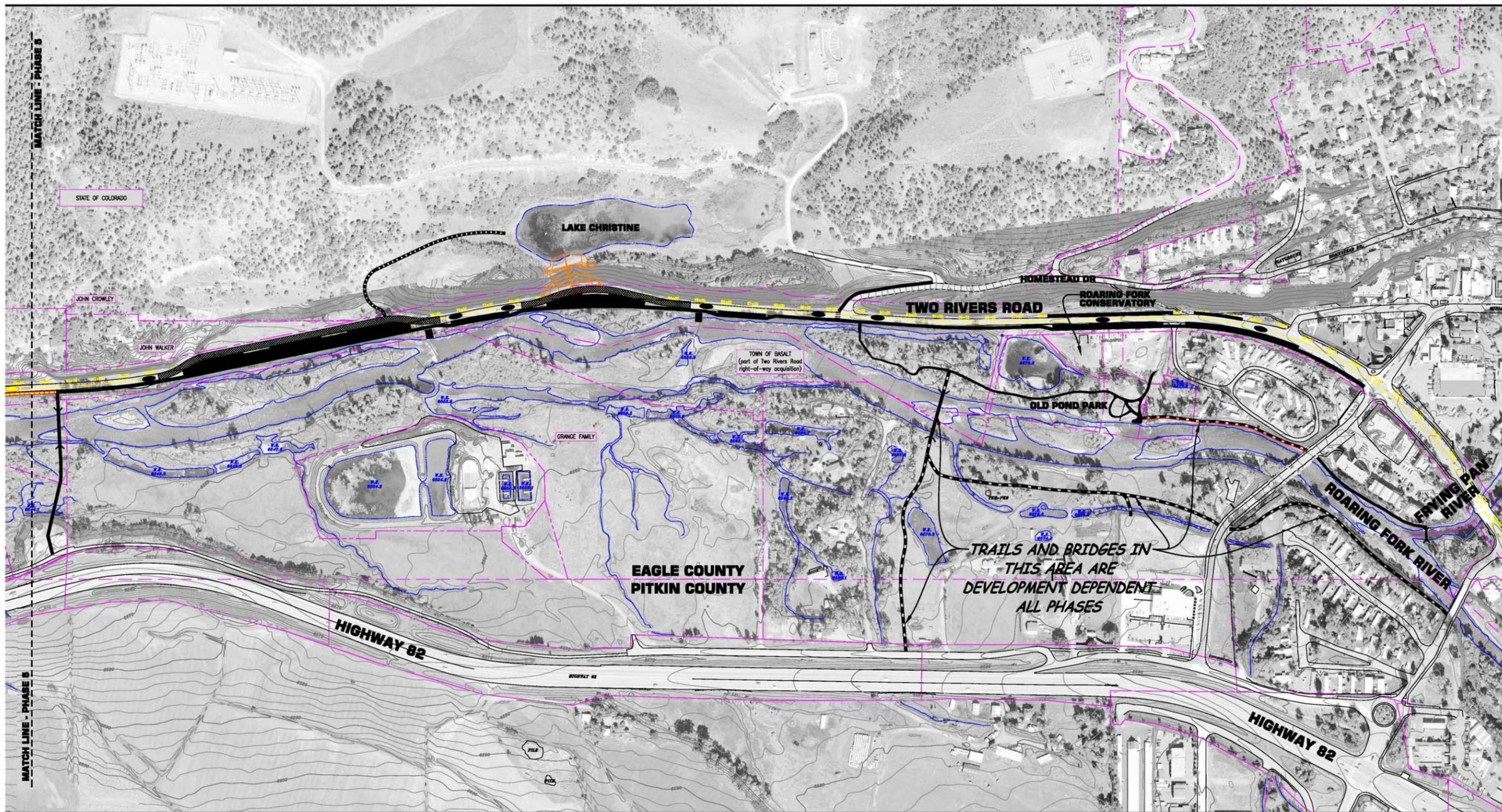














Potential Funding Sources

There are a number of available resources that could apply to this effort. Following is a list of potential funding sources and policy measures. This list should not be interpreted as all-inclusive, since new programs appear while others are reduced or phased out. These include:

Local Funds

- Open Space and Trails Programs – Eagle and Pitkin Counties
- Bond Issue
- Sales Tax
- Lodging Tax
- Property Taxes
- Development Impact Fees and Excise Taxes
- County and Regional Funds
- Real Estate Transfer Assessment (RETA)

State Funds

- GOCO – The Great Outdoors Colorado – Trails and Large Scale Project Programs
- Fishing is Fun – Colorado Division of Wildlife
- Energy Impact Funds

Federal Funds

- Land and Water Conservation Fund (LWCF via State Parks)
- Transportation Enhancement Program
- 2002 Farm Security and Rural Investment Act
- National Scenic Byways Program

Volunteer and Youth Programs

- Volunteers for Outdoors Colorado
- Roaring Fork Outdoor Volunteers
- Roaring Fork Conservancy

In-kind Resources

- City, County, or Donated Labor and Equipment
- Corrections Labor

Private Sector Grants

- Philanthropic Funds
- Corporate Contributions
- Entrepreneurial Partnerships with Land Developers

Policies and Regulatory Measures

- Setback Provisions/Riparian Buffer Zones/ESA Regulations
- Subdivision Regulations
- Floodplain Ordinances
- Watershed Protection and Storm Drainage Impact Fees
- Clean Water Act – Section 404
- National Flood Insurance Program/FEMA Requirements
- Donation/Bargain Sale/Tax Incentives
- Easement, License, or Revocable Permits for Rights-of-Way

In planning and budgeting the project, it is helpful to have as realistic an estimate as possible of potential and likely funding sources. To that end, the following table represents a “best probable guess” of the scale of funds that could be available based on past history of funding similar projects in the region and the input of Town of Basalt staff, the planning team, and others familiar with the area.

Overview of Potential Funding Over Next Five Years

Local Public Funds:	\$ 3,000,000
State Funds (GOCO, Legacy, DOW, CDOT):	3,000,000
Federal Public Funds (LWCF, TEA):	1,000,000
Foundations:	250,000
Corporations:	100,000
Individuals:	100,000
Volunteers, Youth and Local In-Kind:	250,000
Total:	\$ 7,700,000



SECTION 6

NEXT STEPS

In any project of this nature, the first step is to have an inspiring vision in place and a practical “road map” toward achieving that vision. This Master Plan accomplishes the first major step. It can become, not just a plan, but also a plan of action. The improvements and funding goals are ambitious, but not beyond the capability of the community to achieve. This next task is to move forward step by logical step.

The first order of business is to put a structure of community leadership – staff, elected officials, advocates – in place to spearhead the effort. The next step is to identify specific projects that can be built working from the priority list presented in Section 5 of this Plan. This list can be further divided into a specific roster of projects with completion dates. To that end, several criteria for selecting and prioritizing projects include:

- Identified By the Community and Stakeholders as Highest Priority
- Broadest Range of Community and User Benefits
- High Visibility and Demonstrates the Concept and Mission of the Plan
- Provides a Vital Regional Linkage Opportunity
- Provides a Vital Resource Preservation Opportunity
- Helps Form the Spine of the Larger System or Network
- Ties In With Multiple Objectives (i.e., Drainage & Transportation)
- Land or Financial Resources Available or Potentially Available Soon
- Can Be Completed Within a 2-5 Year Time Frame
- Opportunity May Be Lost If Not Pursued Now

Follow-through is key to maintaining the credibility and thereby the success of the project. Adopting and adhering to a roster of projects with a history of demonstrated progress – building logical and meaningful segments each year – would do much to promote long-term continuity and ultimately realization of the vision.



Two Rivers Master Plan

Vegetation Condition Analysis and Corridor Opportunities Report



ELLSPERMAN ECOLOGICAL SERVICES
295 ESCALANTE ROAD
CARBONDALE, COLORADO 81623
704-0522

Two Rivers Master Plan Vegetation Condition Analysis and Corridor Opportunities Report

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- 1.4 Dominant Plant Communities
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- 2.1 Vegetation Condition Analysis Description

Section 3 *Corridor Opportunities and Observations*

- 3.1 Description of Corridor Opportunities and Observations

Appendix *Photographs*



Two Rivers Master Plan Vegetation Condition Analysis and Corridor Opportunities Report

Section 1: *Introduction*

1.1 Two Rivers Master Plan Project Introduction

The Two Rivers Road Corridor, an important gateway to the Town of Basalt, Colorado, has many functions for visitors and citizens alike. These functions, including transportation and recreation, are currently being analyzed and documented in the Two Rivers Master Plan Process, which will serve as a blueprint for future improvements within the road corridor. In order to provide important information and to provide the best plan possible, ecological values within the Two Rivers Corridor have been assessed and documented. The *Vegetation Condition Analysis and Trail Opportunities Report* is one portion of the documentation of these ecological values focusing specifically on the condition of the vegetation within this corridor.

1.2 Project Area Location

The Two Rivers Road Project Area includes a wide corridor connecting State Highway 82 at the intersection of Two Rivers Road with Midland Avenue within the Town of Basalt. This 2.1 mile corridor is a central connection to Basalt and includes the Roaring Fork River and associated riparian zone, a well maintained and well traveled road surface, utility connections, dispersed parking, private driveway connections, public facilities, and businesses. The corridor varies considerably in width, in some areas as narrow as 1000 feet and in some locations as wide as 3200 feet.

1.3 Project Area Vegetation General Condition Discussion

As one travels the Two Rivers Road Corridor in any direction, it is easy to witness the fact that this important area has been heavily used for over a century. This heavy use, when coupled with the dynamic river morphology of the Roaring Fork River, has had a profound effect on the vegetation communities found within the project area. Road building, intensive agricultural uses, natural

resource extraction, river course armoring, ditch construction, and other impacts have degraded the riparian vegetation and upland vegetation communities over the years. These communities are resilient and many areas have made significant recoveries, however, the entire stretch still faces the challenges of years of degradation as a whole.

At an average elevation of 6,500 feet, the Two Rivers Corridor is found at a transition zone between a number of significant plant communities. Two Rivers Road bisects the dominant plant communities within the corridor and the two main areas can be characterized as "riparian" or "river" areas and "upland" areas.

1.4 Dominant Plant Communities

The riparian areas of the corridor, those found almost exclusively on the river side of Two Rivers Road include the dominant plant community of Narrowleaf Cottonwood (*Populus angustifolia*)/Douglas Fir (*Pseudotsuga menziesii*) Overstory, Red Osier Dogwood (*Cornus stolonifera*)/River Birch (*Betula occidentalis*) Understory. This riparian plant community association is the dominant community in the middle portions of the Roaring Fork River in the valley, and examples can be found throughout the mid-Roaring Fork River areas and lower Fryingpan River areas.

The upland areas of the corridor, those found almost exclusively on the portions above the river and on the opposite side of Two Rivers Road include three different individual dominant plant community associations. Each of these associations is in close relationship with Pinyon Pine (*Pinus edulis*) as the dominant overstory. Intensive human activity has significantly degraded these upland areas and there are only a few examples of intact upland plant communities not completely dominated by noxious vegetation in these areas, mostly adjacent to Lake Christine Wildlife Area.

An important category of plant communities analyzed and sampled within the Two Rivers Road Corridor includes the "wetland" designation. Wetlands, defined as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support vegetation typically adapted for life in these conditions, are very important within the Roaring Fork Valley. Wetland communities make up a small percentage of land mass within the valley, however, almost 85% of wildlife use these communities at some stage in their life. Although an extensive area of wetland vegetation communities was identified, with the exception of two small areas noted specifically on the



analysis, all of these areas were directly adjacent to the river channel. No proposed improvements will have a direct affect on wetland designated vegetation communities within the project area.

1.5 General Condition Description

The attached vegetation analysis specifically breaks each region in the Two Rivers Corridor into detailed condition categories, however, in general terms, the overall plant community health in the riparian areas of the Two Rivers Corridor can be described as "good", while the upland areas within the Two Rivers Corridor can be described as "poor". Other broad observations include the following:

- Vegetation community condition improves the farther one travels down the corridor away from Basalt, with communities generally being in poor condition adjacent to the urban center and then becoming markedly better as one travels away from these areas.
- Within the corridor, there are a number of examples of intact, mixed canopy riparian vegetation communities which are in excellent condition.
- Within the corridor, there are a number of examples of specific areas which could be provided vegetation restoration. These areas have high potential for improvement in the short and long term.
- Noxious vegetation was extensive and sampled in every single location within the Two Rivers Corridor. Noxious vegetation was noted to be a significant limiting factor in the re-establishment of many vegetation communities within the Corridor.
- Private Land areas tended to have vegetation communities which were in the best condition within the riparian zones of the Corridor. In the upland zones, the opposite was true with the private land areas being the most degraded.
- Although analyzed, no threatened or endangered plant species were sampled within the Corridor. It is important to note that without more extensive transect sampling, it is impossible to say if any of these plants exist within the project area.

Section 2: *Vegetation Condition Analysis*

2.1 Vegetation Condition Analysis Description

In order to provide site specific condition analysis, a review of the condition of major vegetation communities for the entire corridor was provided (Please see attached *Two Rivers Road Master Plan Project Corridor Vegetational Condition Analysis*). The analysis utilized the following categorization of the communities within the Corridor:

1) High Quality Riparian Vegetation Condition HQR

This condition category defined riparian vegetation communities with an excellent representation of native plant diversity within this zone, including an intact riparian overstory/understory complex, a high percentage of native plants, and a lower percentage of non-native plants.

2) Medium Quality Riparian Vegetation Condition MQR

This condition category defined riparian vegetation communities with a moderate representation of native plant diversity within this zone, including a moderately intact riparian overstory/understory complex and a medium percentage of native plants and non-native plants.

3) Low Quality Riparian Vegetation Condition LQR

This condition category defined riparian vegetation communities with a poor representation of native plant diversity within this zone, including a riparian overstory/understory complex that is not intact, a low percentage of native plants, and a high percentage of non-native plants.

4) Wetland Vegetation Areas WVA

This condition category defines designated wetland areas.

5) High Quality Upland Vegetation Condition HQU

This condition category defined upland vegetation communities with an excellent representation of native plant diversity within this zone, including an



intact overstory/understory complex, a high percentage of native plants, and a lower percentage of non-native plants.

6) Medium Quality Upland Vegetation Condition MQU

This condition category defined upland vegetation communities with a moderate representation of native plant diversity within this zone, including a moderately intact overstory/understory complex and a medium percentage of native plants and non-native plants.

7) Low Quality Upland Vegetation Condition LQU

This condition category defined upland vegetation communities with a poor representation of native plant diversity within this zone, including an overstory/understory complex that is not intact, a low percentage of native plants, and a high percentage of non-native plants.

Section 3: *Trail Opportunities and Observations*

3.1 Trail Opportunity and Observation Discussion

During the review process of the vegetation community analysis, a number of corridor opportunities were identified. These potential opportunities, listed below, are prospective inclusions into the planning process which might make any projects in the corridor more successful:

1) Restoration

Any project which is planned or initiated within the corridor should include some degree of restoration planning for the natural resource values of the Corridor. Natural resource restoration will provide long term sustainability to the corridor and project goals should include this sustainability.

2) Interpretation of Vegetation and Wildlife Values

Intact riparian vegetation and wildlife communities are extremely important on many levels and the Corridor includes opportunities for interpretation of these values in many locations.

3) Limited Use Areas

Although likely unpopular for some stakeholders, as the population and the uses grow within the Corridor, an analysis should possibly be done which shows the effect of protecting some of the highest quality riparian habitat.

4) Non-Native Trees

Although non-native herbaceous vegetation has established a strong foothold within the Corridor, non-native woody vegetation is just beginning to become established. The time to begin a protection and eradication plan for these woody species is early on in the planning stages of the Corridor. Siberian Elm (*Ulmus parvifolia*) and Russian Olive (*Eleagnus angustifolia*) were two noted species identified in the analysis which only are found in small numbers within the Corridor. These could easily be eradicated quickly, however, if allowed to persist they will likely destroy the riparian character within ten years.



FIGURE 1 VIEW OF TYPICAL NON-NATIVE VEGETATION COMMUNITY ADJACENT TO STEEP ROAD CUT SLOPES



FIGURE 2 VIEW OF TYPICAL IMPACTS TO RIPARIAN VEGETATION ADJACENT TO RECREATION ZONES IN THE CORRIDOR



FIGURE 3 VIEW OF TYPICAL INTACT MOSTLY NATIVE WILLOW COMMUNITY WITHIN ISLAND COMPLEX



FIGURE 4 VIEW OF TYPICAL OXBOW RIPARIAN VEGETATION COMMUNITY WITH NATIVE AND NON-NATIVE VEGETATION



FIGURE 5 VIEW OF DEAD NARROWLEAF COTTONWOOD TREES IMPORTANT TO WILDLIFE HABITAT IN CORRIDOR



FIGURE 6 TYPICAL VIEW OF NON-NATIVE VEGETATION WHICH IS EXTENSIVE IN THE PROJECT CORRIDOR





FIGURE 7 VIEW OF A STAND OF GAMBEL OAK (*QUERCUS GAMBELLI*) AND SERVICEBERRY (*AMELANCHIER ALNIFOLIA*) WHICH ARE FOUND EXTENSIVELY IN CORRIDOR



FIGURE 8 VIEW OF HIGHLY DEGRADED VEGETATION WITHIN THE PROJECT CORRIDOR



FIGURE 9 VIEW OF DEGRADED VEGETATION UNDERSTORY WITHIN OLD POND PARK PORTION OF PROJECT CORRIDOR



11

FIGURE 10 VIEW OF TYPICAL HIGH QUALITY ISLAND VEGETATION COMMUNITY WITHIN PROJECT CORRIDOR



FIGURE 11 VIEW OF TYPICAL VEGETATION COMMUNITY ADJACENT TO RIVER BRAID. NOTE SIGNIFICANT NON-NATIVE HERBACEOUS UNDERSTORY.



FIGURE 12 VIEW OF A YOUNG SIBERIAN ELM (*ULMUS PARVIFOLIA*) WITHIN THE PROJECT AREA



12



FIGURE 16 TYPICAL VIEW OF HIGH QUALITY AND FUNCTIONAL RIPARIAN VEGETATION WITHIN PROJECT AREA



FIGURE 17 TYPICAL VIEW OF HEALTHY MATURE OVERSTORY INCLUDING WILDLIFE SNAGS IN PROJECT AREA



FIGURE 18 FLY FISHERMAN ALONG TYPICAL STRETCH WITHIN PROJECT AREA



FIGURE 19 NARROWLEAF COTTONWOOD GROWING FROM LEAKAGE FROM LAKE CHRISTINE



FIGURE 20 TYPICAL VIEW OF UP SLOPE PORTION OF PROJECT ADJACENT TO TWO RIVERS ROAD



FIGURE 21 VIEW OF DEGRADED AREAS ON THE UPSLOPE PORTION OF PROJECT AREA INCLUDING EXTENSIVE NOXIOUS VEGETATION





TWO RIVERS ROAD MASTER PLAN

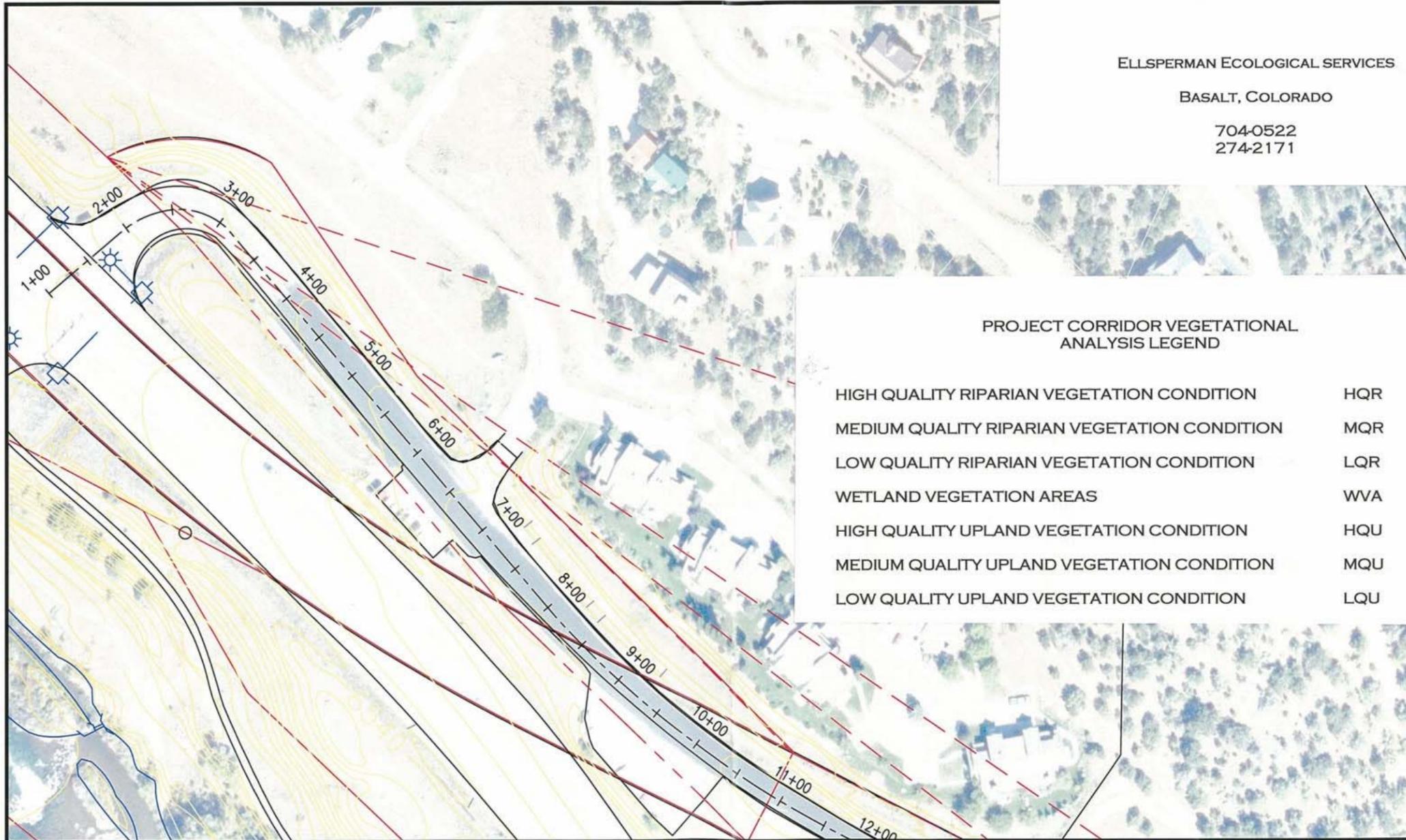
PANEL 1 (west)

TWO RIVERS ROAD MASTER PLAN PROJECT CORRIDOR VEGETATIONAL CONDITION ANALYSIS

ELLSPERMAN ECOLOGICAL SERVICES

BASALT, COLORADO

704-0522
274-2171



PROJECT CORRIDOR VEGETATIONAL ANALYSIS LEGEND

HIGH QUALITY RIPARIAN VEGETATION CONDITION	HQR
MEDIUM QUALITY RIPARIAN VEGETATION CONDITION	MQR
LOW QUALITY RIPARIAN VEGETATION CONDITION	LQR
WETLAND VEGETATION AREAS	WVA
HIGH QUALITY UPLAND VEGETATION CONDITION	HQU
MEDIUM QUALITY UPLAND VEGETATION CONDITION	MQU
LOW QUALITY UPLAND VEGETATION CONDITION	LQU



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303-444-2073

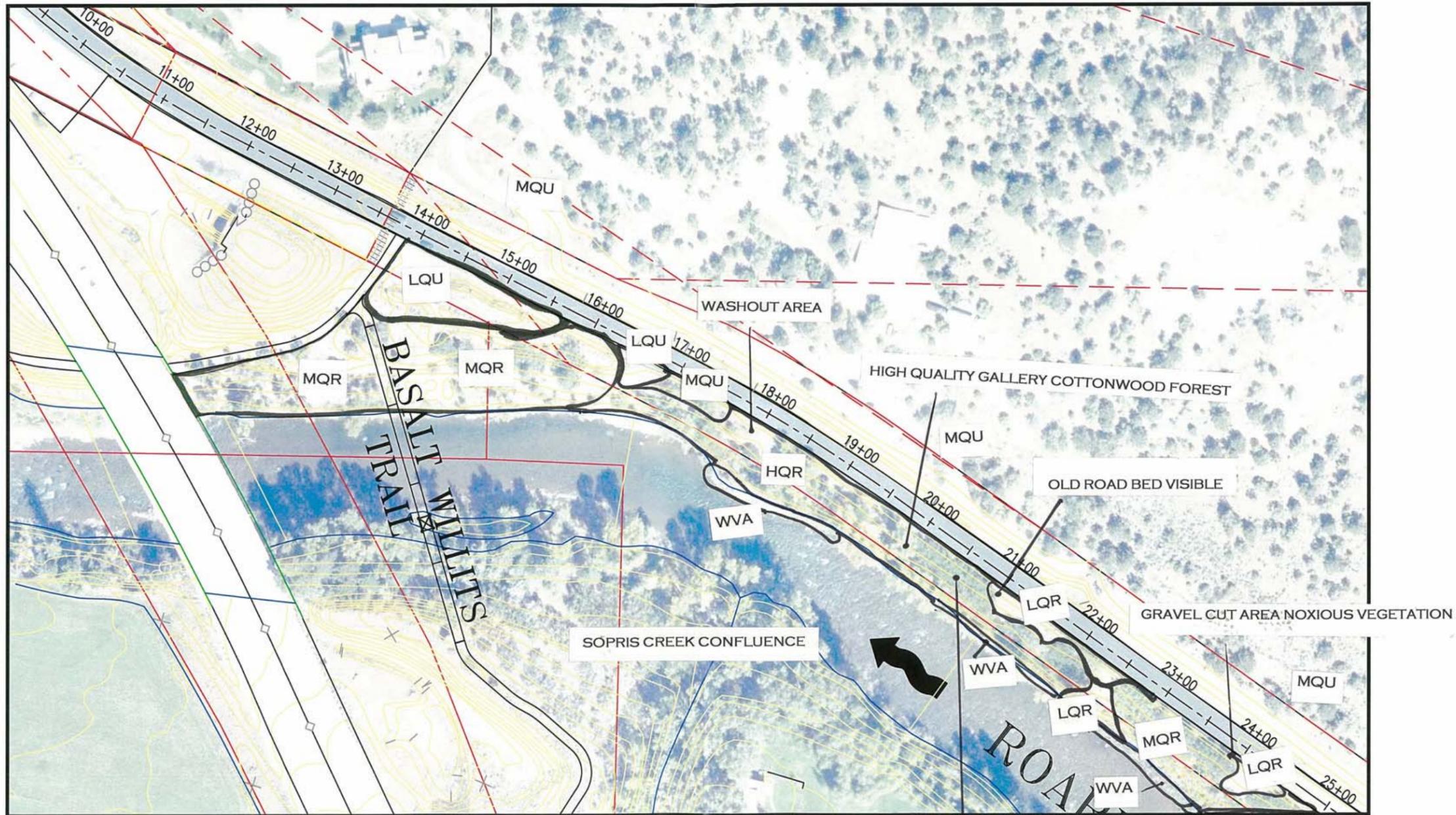
SHEET 1

SCALE: 1" = 100'-0"

DATE: 06-19-06



TWO RIVERS ROAD MASTER PLAN PANEL 2

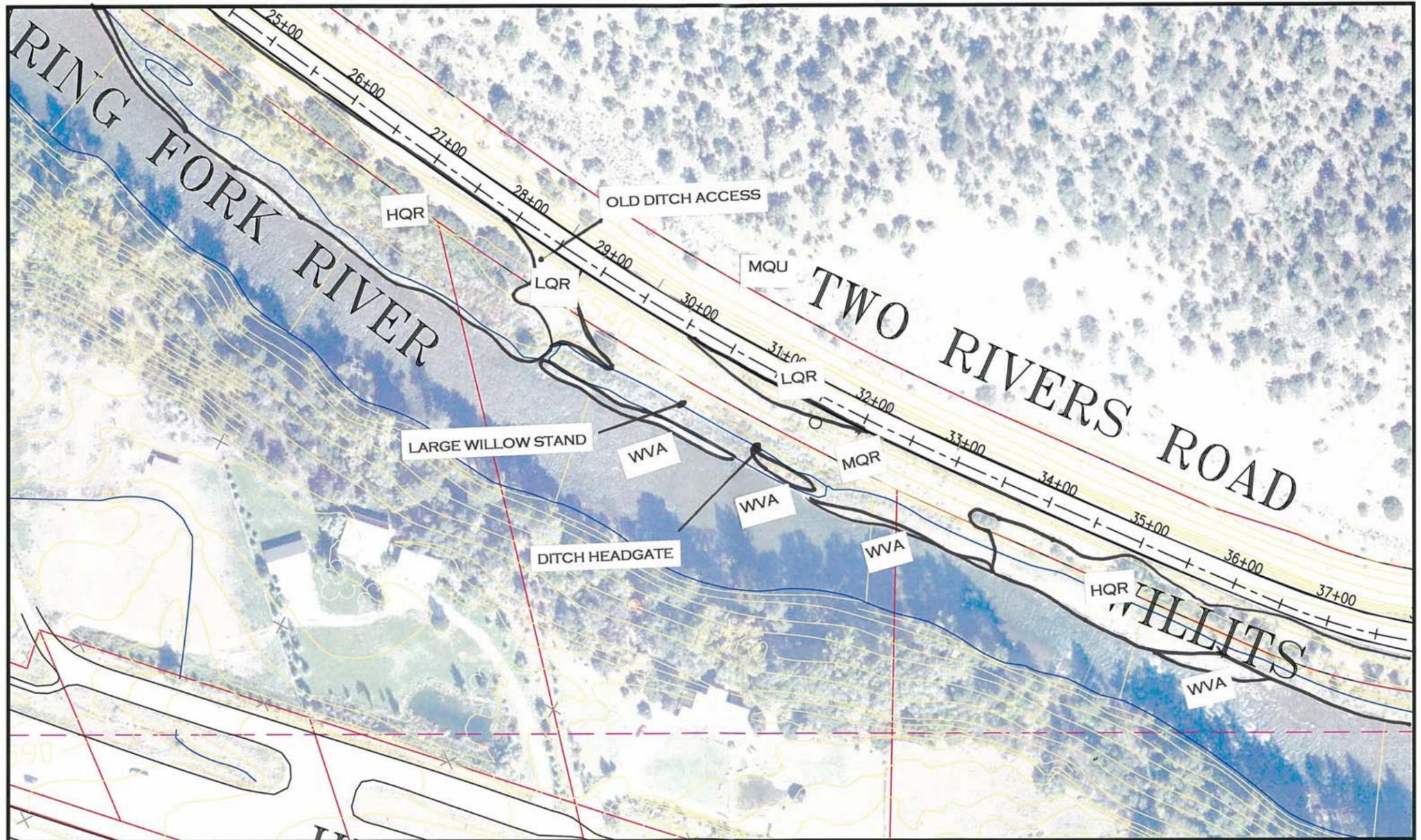


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NARROWLEAF COTTONWOOD GAMBEL OAK OVERSTORY AREA **SHEET 2**
 SCALE: 1" = 100'-0"
 DATE: 06-19-06



TWO RIVERS ROAD MASTER PLAN PANEL 3

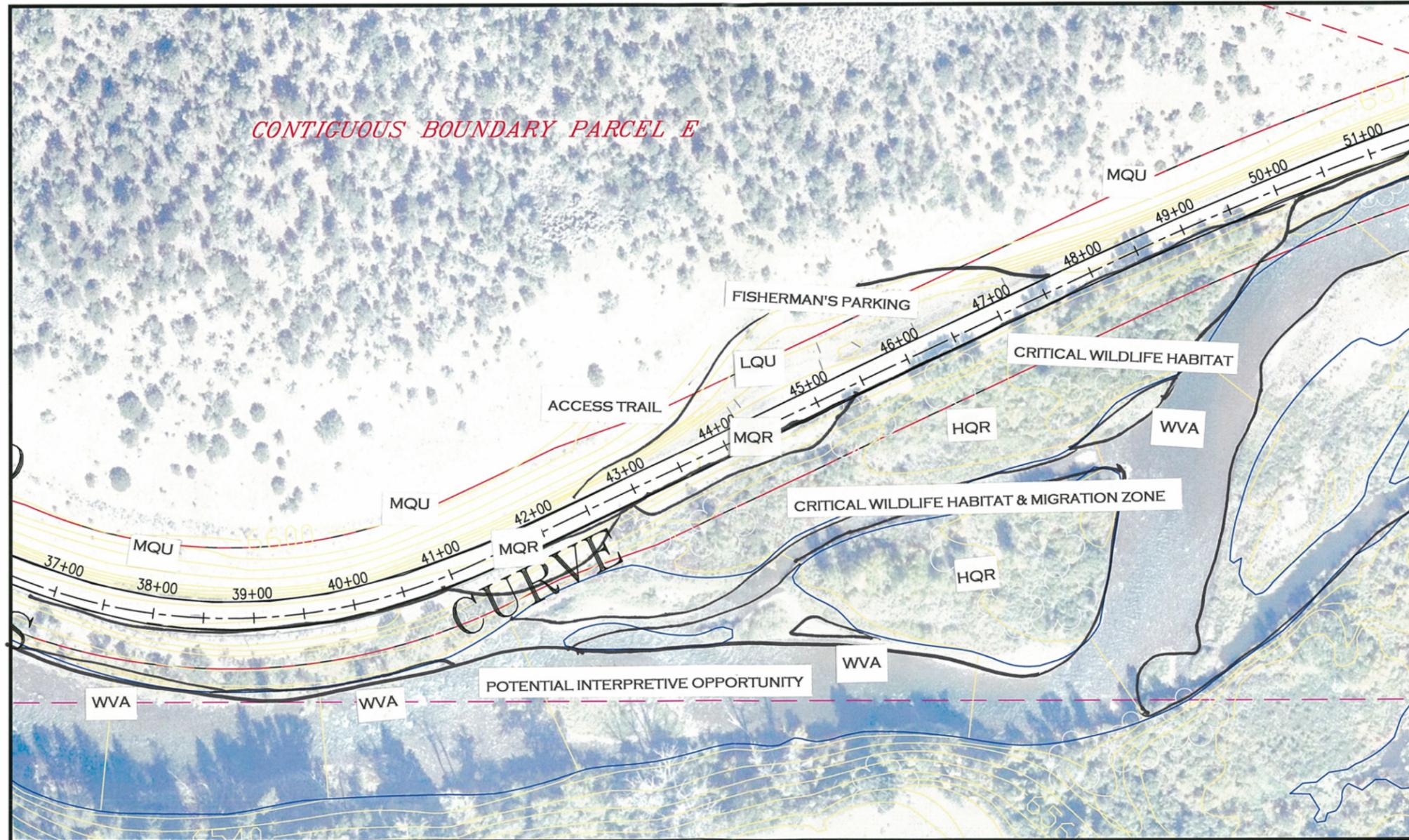


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SHEET 3
 SCALE: 1" = 100'-0"
 DATE: 06-19-06



TWO RIVERS ROAD MASTER PLAN PANEL 4

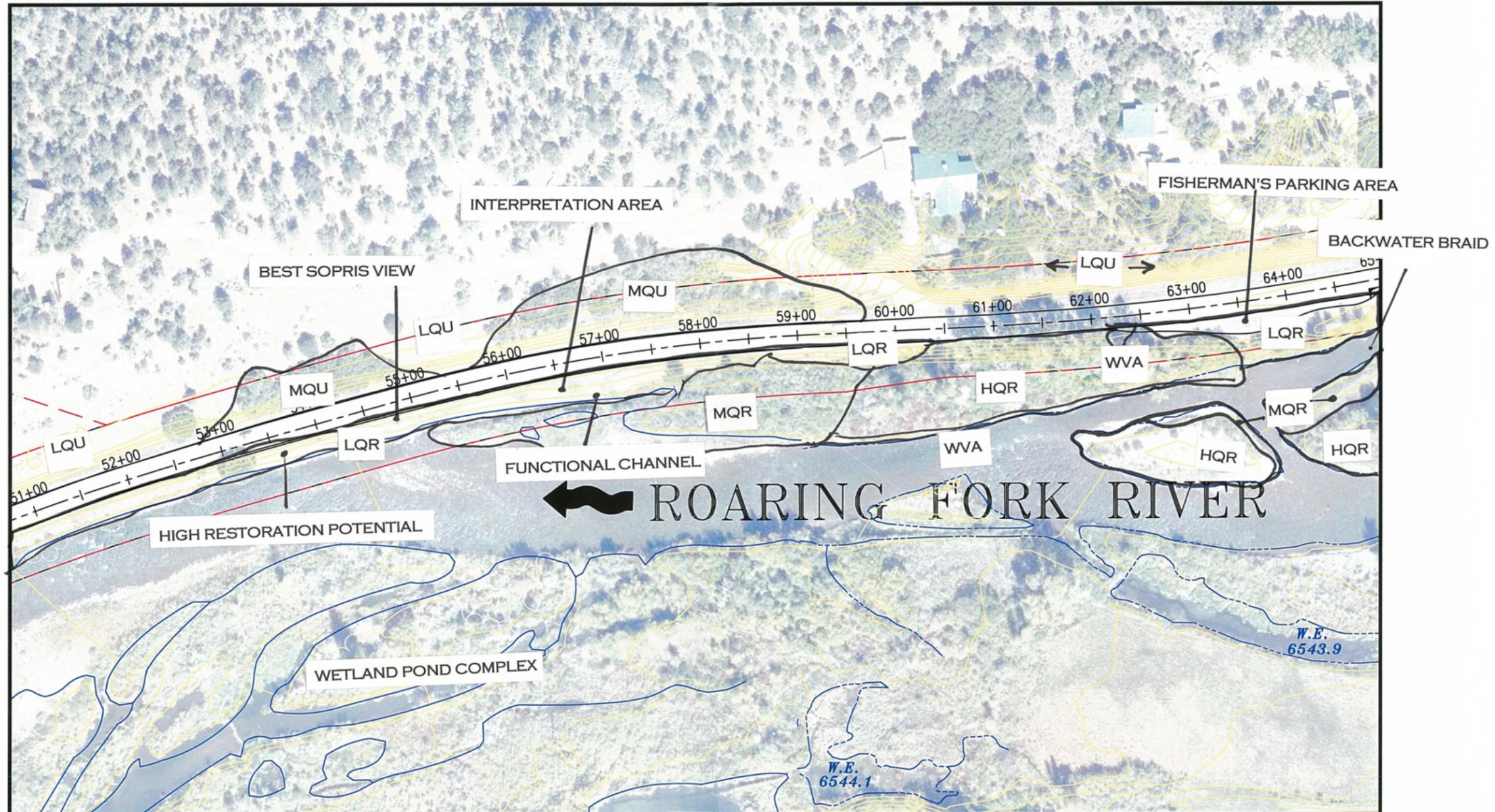


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SHEET 4
 SCALE: 1" = 100'-0"
 DATE: 06-19-06



TWO RIVERS ROAD MASTER PLAN PANEL 5

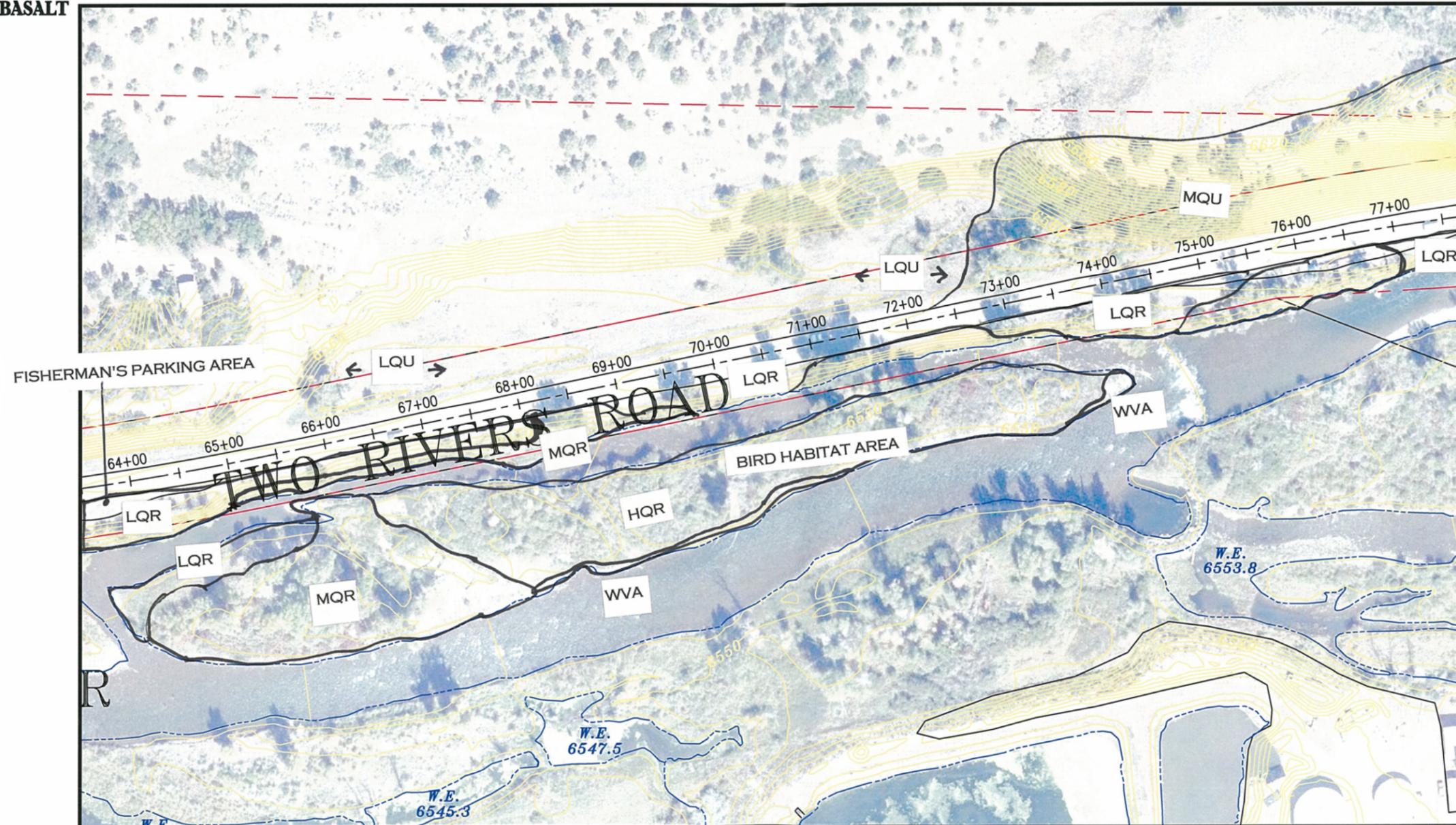


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 **SHEET 5**
SCALE: 1" = 100'-0"
DATE: 06-19-06



TWO RIVERS ROAD MASTER PLAN PANEL 6

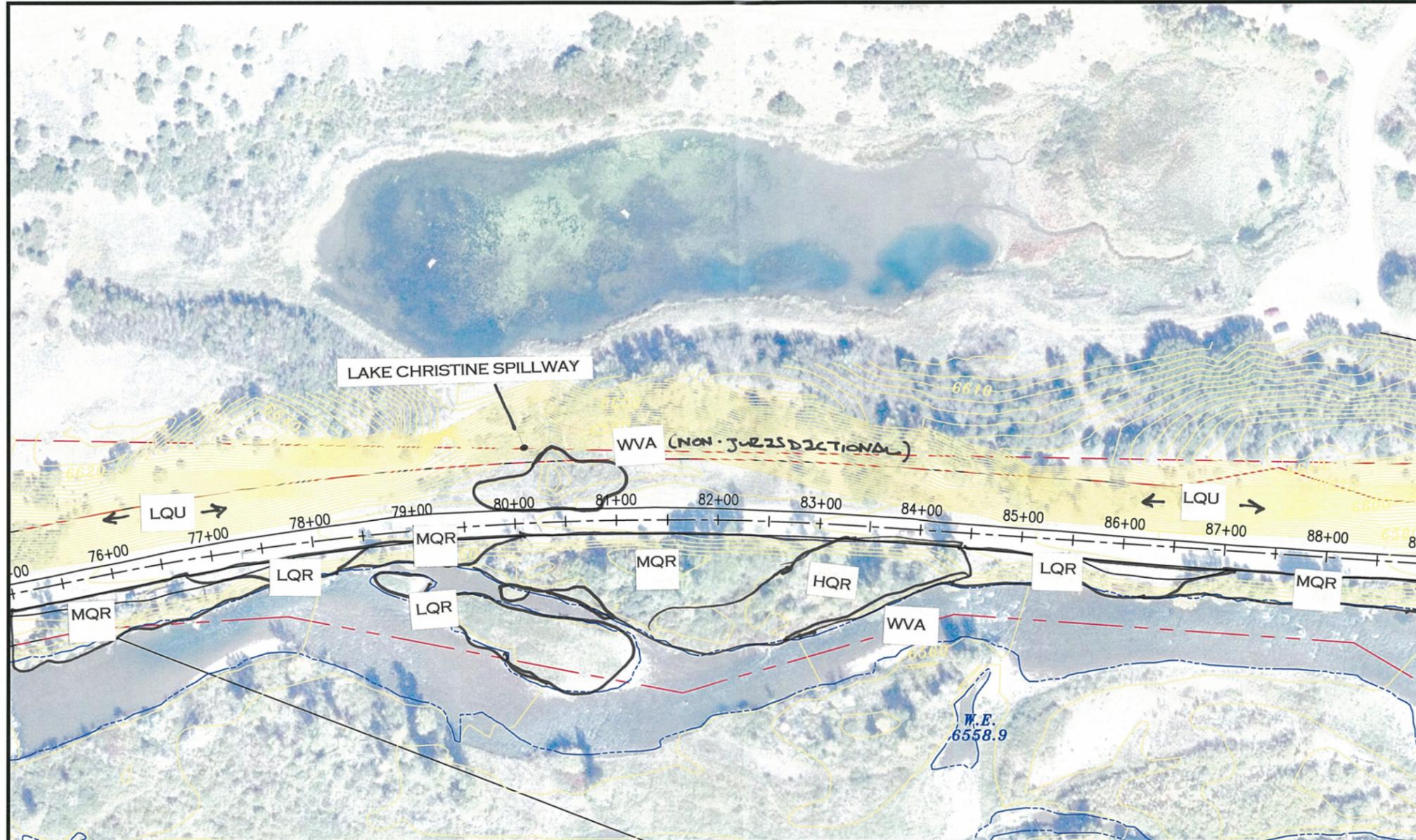


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 **SHEET 6**
 SCALE: 1" = 100'-0"
 DATE: 06-19-06



TWO RIVERS ROAD MASTER PLAN PANEL 7

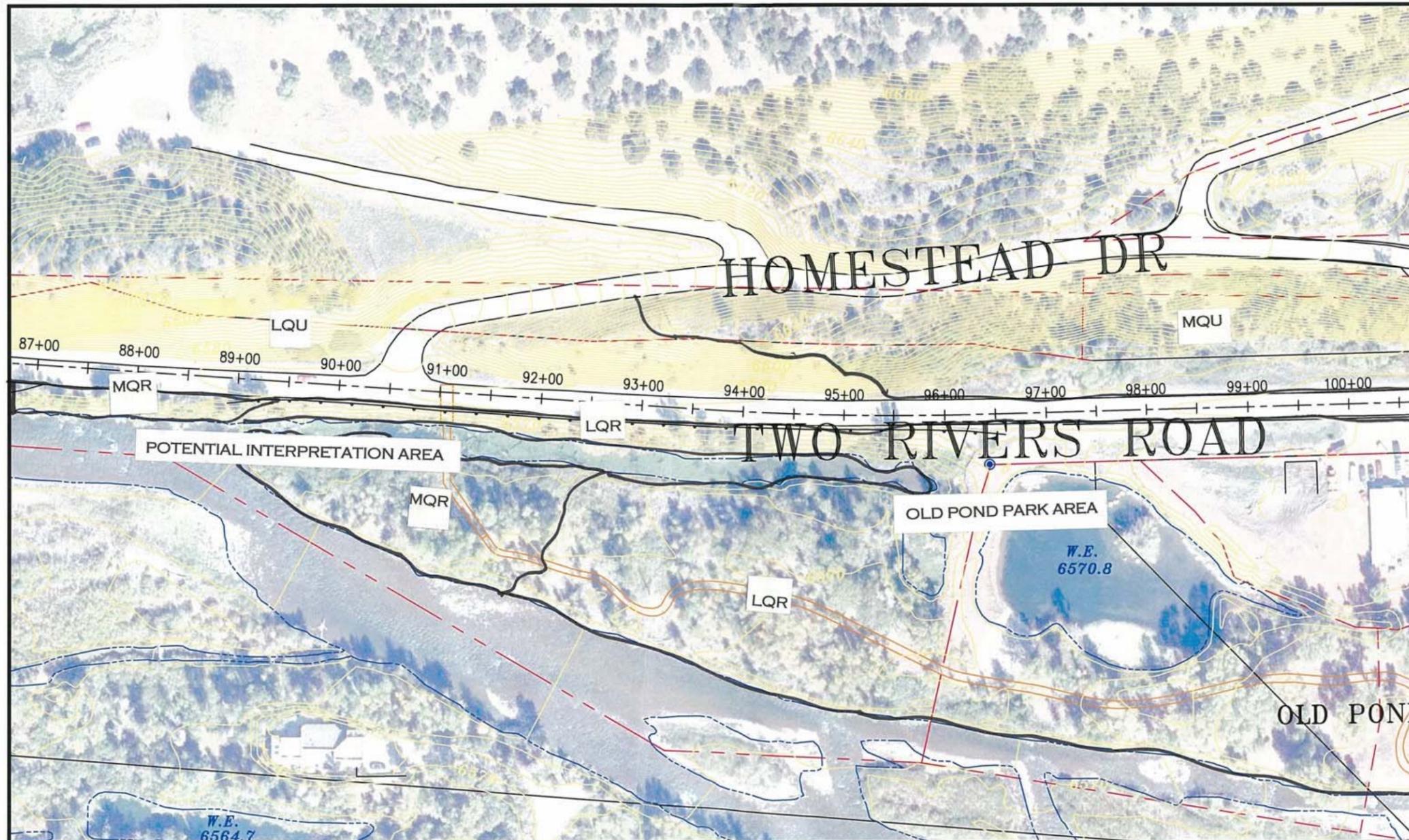


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 **SHEET 7**
 SCALE: 1" = 100'-0"
 DATE: 06-19-06



TWO RIVERS ROAD MASTER PLAN PANEL 8

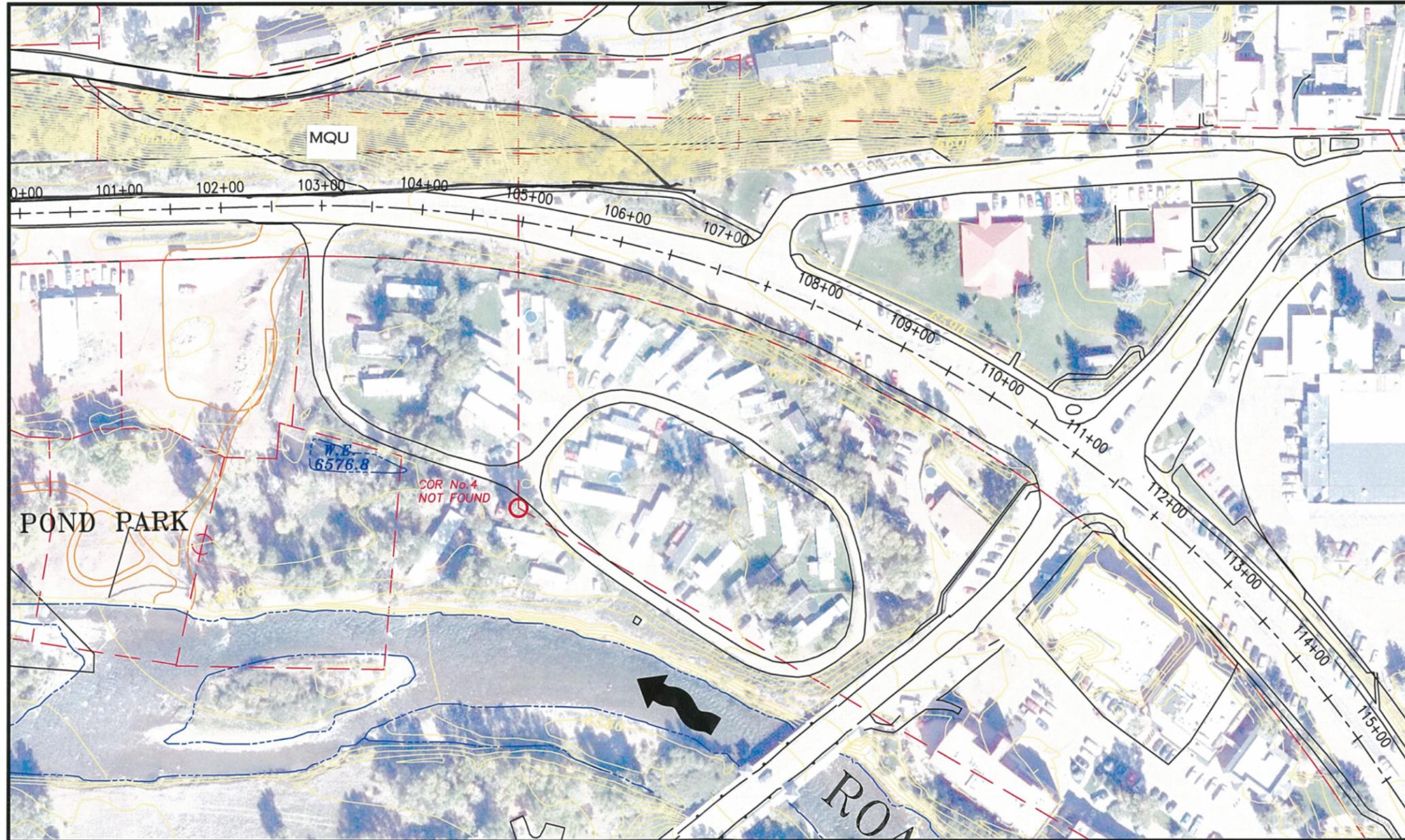


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SHEET 8
 SCALE: 1" = 100'-0"
 DATE: 06-19-06



TWO RIVERS ROAD MASTER PLAN PANEL 9 (east)



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SHEET 9
 SCALE: 1" = 100'-0"
 DATE: 06-19-06



Wildlife Specialties, L.L.C.

"Practical, scientifically-based applications for wildlife and ecological studies benefiting all clients"



July 6, 2006

Mr. Peter Loris
Loris and Associates, Inc.
2585 Trail Ridge Drive East
Lafayette, Colorado
80026

RE: Two Rivers Roadscape

Dear Mr. Loris,

The project site located on Two Rivers Road between Midland Avenue and the western intersection of Two Rivers Road with State Highway 82 was visited for field review on Wednesday 27 June 2006. The habitat along these 2.1 miles of Two Rivers Road differs; the side away from the river is generally more xeric and comprised of plant species adapted to a dry environment while the side along the Roaring Fork River is riparian. The Roaring Fork River, including the entirety of the project limits, is classified by the Colorado Wildlife Commission as a 'Gold Medal' stream. A 'Gold Medal' stream is one which is of the highest quality aquatic habitat (only 127 miles of stream in Colorado are 'Gold Medal' out of greater than 900 miles of stream within the State).

The proposed improvements to Two Rivers Road will occur in an existing transportation corridor with existing disturbance including recreation. No one area within the project limits has ecological components that are of greater concern or importance than others. Wildlife within the corridor would not be negatively impacted significantly above what currently exists by the implementation of this project; most species living within the project limits have habituated to existing habitat alteration and human encroachment. Construction timing restrictions may be necessary to protect wildlife during critical times of the year (e.g. colonial nesting birds) if these sensitive species occur near the project within species specific 'buffer' distances. No habitats critical to wildlife during critical times of the year were identified during field review of the project limits.

The addition of the Basalt Willits trail principally runs parallel to Highway 82, therefore not significantly adding to the impediment Highway 82 poses to wildlife movement. The trail does encroach on riparian habitat; recreational activities associated with this encroachment may be detrimental to sensitive avian species (e.g. raptors, herons, songbirds) and other wildlife. Management of recreational access locations to the Roaring Fork River will be necessary to minimize the impacts of recreation on wildlife. Impacts to the Roaring Fork River fishery through an increase in access and use will need additional management consideration.

PO Box 1231, Lyons, CO 80540 phone: 303.710.1286 fax: 303.479.9754
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A review of the February 2005 U.S. Fish and Wildlife Service (USFWS) list by Colorado County of federally protected or candidate species for protection showed that the project area contains habitat that could be used by the bald eagle (*Haliaeetus leucocephalus*) and the yellow-billed cuckoo (*Coccyzus americanus*). Additionally, native fish species of the Colorado River system could be impacted by activities associated with the proposed project (water depletions, sedimentation, etc.). Habitat associated with the bald eagle is likely used for foraging and nesting; bald eagles, which reside within and near the project area, have habituated to traffic and recreation within the project limits. Nesting habitat for the yellow-billed cuckoo does exist within the project limits; presence/absence surveys prior to construction are warranted. Any water depletions associated with this project would require coordination with the USFWS to protect native fish species.

The project area lies within the greater Roaring Fork Valley, an area identified as an important wildlife movement corridor and big game winter range. Excluding the eastern and western terminus of the project limits, the entire project area is used by wildlife as a movement corridor between important habitats. Specific locations where wildlife movement tends to be elevated over other areas do exist within the project limits. Wildlife movement is mostly seasonal and based on severity of weather and usable forage and cover, though some resident wildlife do use the project area within their home range. Different habitats that meet the needs of wildlife exist on the north side of the project area at the Christine State Wildlife Area; Bureau of Land Management lands exist on the south side, across Highway 82. Big game winter concentration areas exist to the west and south of the project area.

To address some of the preceding concerns, the following recommendations are provided:

- Develop an access management plan that incorporates impact mitigation to wildlife. This would be a combined effort of groups concerned (pro and con) with the Two Rivers Road project. Inclusive in this management plan would be an access management/fisheries management plan developed with the cooperation of the Colorado Division of Wildlife (CDOW).
- Because great blue herons (*Ardea herodias*), "Switch or abandon nest sites periodically (Kingery 1998)", conduct nest surveys in the spring of 2007 prior to the start of construction activities and yearly through the completion of the project. Any colonies would be mapped using GPS technology, around which a buffer will be established in which no surface disturbance, beyond historical, can occur. The size of this buffer will be determined with the cooperation of the CDOW.

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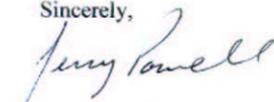
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- Conduct surveys for other sensitive species, including yellow-billed cuckoo, raptors, and Neotropical migrant species in spring 2007 prior to the start of construction activities and yearly through the completion of the project.
- Storm water runoff and erosion control Best Management Practices are necessary to protect the Roaring Fork River. A Storm Water Management Plan will be necessary that specifically addresses potential impacts to the Roaring Fork River and how these will be limited.
- To allow for the continued movement of big game through the project area, retaining walls, guard rails and other impediments must be kept to a minimum. Maintain and further refine the limits of the existing wildlife movement corridors and identify key components of these areas that should not be altered as a result of this project. Refinement may be possible through animal/vehicle collision reporting or carcass removal by the local transportation authority, if this data exists.
- Retaining walls should not exceed 42 inches in height; in areas where retaining walls will need to be higher they will need to be 'stair stepped' to allow for wildlife to negotiate them if necessary.
- Increasing the motorist's ability to see wildlife approaching the road through the use of 'view corridors' can help to reduce animal/vehicle collisions. Additionally, public education of wildlife movement and use of the general area would help motorists to be more aware of wildlife along the roadway.

Through the implementation of these suggestions, impacts to wildlife can be managed so that this project can reduce associated negative impacts to wildlife. If you have additional questions please contact me at 303-710-1286.

Sincerely,



Jerry Powell

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Fax: (970) 384-1501

July 11, 2006

Project No. 26-125

Loris and Associates
2585 Trailridge Drive East
Lafayette, Colorado 80026

Attn: Mr. Peter Loris, P.E.

Subject: Preliminary Geotechnical Recommendations, Two Rivers Roadscape Project,
Basalt, Colorado.

Dear Mr. Loris,

As you requested, we are providing preliminary geotechnical recommendations and our opinions for preliminary cost estimation of a pedestrian trail along Two Rivers Road in Basalt, Colorado. We were provided with a site plan of the existing road alignment. The plans did not indicate a proposed trail alignment or indicate anticipate vertical and horizontal separation from the roadway. We understand that the total platform width will be on the order of 30 to 40 feet. We also assumed realignment of the existing roadway is not planned.

The following is a discussion of general geotechnical related issues pertaining to design and construction of the trail. The discussion is based on cursory site reconnaissance. A geotechnical investigation should be performed to provide more site specific recommendations.

In general, the materials observed along the alignment consist of alluvial sand, gravel and cobble. Some areas have a higher portion of fine soils and are clayey and silty with basalt boulders to 3 feet in diameter. These materials are generally favorable from a geotechnical standpoint. We anticipate allowable soil pressures of 2,000 to 4,000 psf for foundation design. We believe cut slopes would likely be stable at a grade of 2H:1V or flatter. Site specific slope stability analyses should be performed to determine recommended slope configurations on a case-by-case basis. The following are general observations and opinions of possible geotechnical issues regarding trail placement on the uphill side or riverside of Two Rivers Road.

Stations 0+00 to 16+00

Construction of the trail on either the uphill or riverside of Two Rivers Road appeared to have minor geological constraints. Mild slopes on the uphill side and wide shoulders on the downhill side appear to provide sufficient space for a trail alignment.

Stations 16+00 to 44+00

Trail placement on the uphill side of this section of roadway would likely require significant cut walls. Cut walls throughout the project would likely consist of a soil nail system. Wall heights will vary depending on desired trail width. We anticipate cut heights of greater than 20 feet. A slope mesh system may be required above cut walls to mitigate rockfall onto the trail. Additional mitigation of exposed cut slopes above walls may also include additional layback to a

Two Rivers Roadscape Project

Project No. 26-125

stable configuration. The hillside ditch width varies throughout this section and may provide rock fall mitigation, snow storage and drainage.

Trail placement on the riverside of the roadway would likely require construction of a fill wall system (MSE or concrete cantilever). Fill wall heights could be greater than 10 feet. The slope below the road is very steep with grades greater than 100% and several retaining structures as well as near vertical soil slopes. The downhill side of the road becomes less steep above Station 26+50 with slope gradients of 60% to 70%. Temporary excavation support may be required to maintain two-way traffic during construction.

Stations 44+00 to 48+00

Construction of the trail on the uphill side of the roadway appeared to have minor geological constraints. Mild slopes on the uphill side appear to provide sufficient space for a trail alignment.

Trail placement on the riverside of the roadway would likely require construction of an MSE or concrete cantilever wall system. Walls heights would likely be minor (about 6 feet or less).

Stations 48+00 to 60+00

Trail placement on the uphill side of this section of roadway would likely require significant cut walls and/or rockfall mitigation for cut slopes. Wall heights will vary depending on desired trail width. We anticipate cut heights of greater than 15 feet. A slope mesh system may be required above cut walls to mitigate rockfall onto the trail below Station 50+00.

Trail placement on the riverside of the roadway would likely require construction of an MSE or concrete cantilever wall system. Existing road grade is approximately 15 to 20 feet above ordinary high water. The close proximity of the river may require scour mitigation during flood level flows for the base of the MSE or concrete walls. For scour mitigation, deep foundations may be required for MSE and concrete walls along this section of the trail.

Stations 60+00 to 74+00

Trail construction along the uphill side of this section of roadway appeared to have minor geological constraints. Relatively flat slopes along the uphill side would likely require minor grading for the trail alignment.

Trail construction along the riverside of the roadway would likely be more difficult. This area is characterized by narrow sections and wider pullout areas. Trail placement would likely require construction of an MSE or concrete cantilever wall system at the constrained areas. Very steep slopes between Stations 65+00 to 73+00 may require additional wall embedment or a deep foundation system. The close proximity of the river may require scour mitigation during flood level flows for the base of the MSE or concrete walls.

Stations 74+00 to 79+00

Trail placement on the uphill side of this section of roadway would likely require significant cut walls and/or rockfall mitigation for cut slopes above walls. We anticipate cut heights of greater than 20 feet. A slope mesh system may be required above cut walls to



Two Rivers Roadscape Project

Project No. 26-125

mitigate rockfall hazards. Trail placement on the riverside of the roadway is relatively favorable. Wide shoulders in this area would likely allow construction of a trail with minor site development.

Stations 79+00 to 84+00

Trail placement on the uphill side of this section of roadway would likely require small fill sections. Overflow from the lake to the north creates a wet condition on both sides of the roadway. Soft soil mitigation may be necessary in this area.

Trail placement on the riverside of the roadway would likely require construction of an MSE or concrete cantilever wall system in some areas. Wall heights of less than 10 feet are anticipated. Steep slopes along this section may require additional wall embedment or a deep foundation system. The close proximity of the river may require scour mitigation during flood level flows for MSE or concrete wall foundations.

Stations 84+00 to 96+00

Except in a few areas, trail placement on the uphill side of this section of roadway would likely require significant cut walls and/or rockfall mitigation for cut slopes above walls. We anticipate cut heights of greater than 20 feet. A slope mesh system may also be required above cut walls to mitigate potential rockfall onto the trail.

Trail placement on the riverside of the roadway is relatively favorable. Wide shoulders in this area would likely allow construction of a trail with minor site grading below Station 89+00. Stations 89+00 to 96+00 will likely require an MSE or concrete cantilever wall system as well as in some areas below Station 89+00. The close proximity of the river may require scour mitigation during flood level flows for the base of the MSE or concrete walls. Excavation below river level would be difficult to attain scour depth. Deep foundations may be required for MSE and concrete walls along this section of the trail.

Stations 96+00 to East Project Limits

Construction of the trail on either the uphill or riverside of Two Rivers Road appeared to have minor geological constraints. Mild slopes on the uphill side and wide shoulders on the downhill side appear to provide sufficient space for a trail alignment.

The previous discussions are general observations and our opinions based on our experience with similar projects. The information presented is for cost estimation and general trail alignment design and should not be used for shoring system, hazard mitigation, retaining wall and/or pavement designs.

Please call if you have any questions.

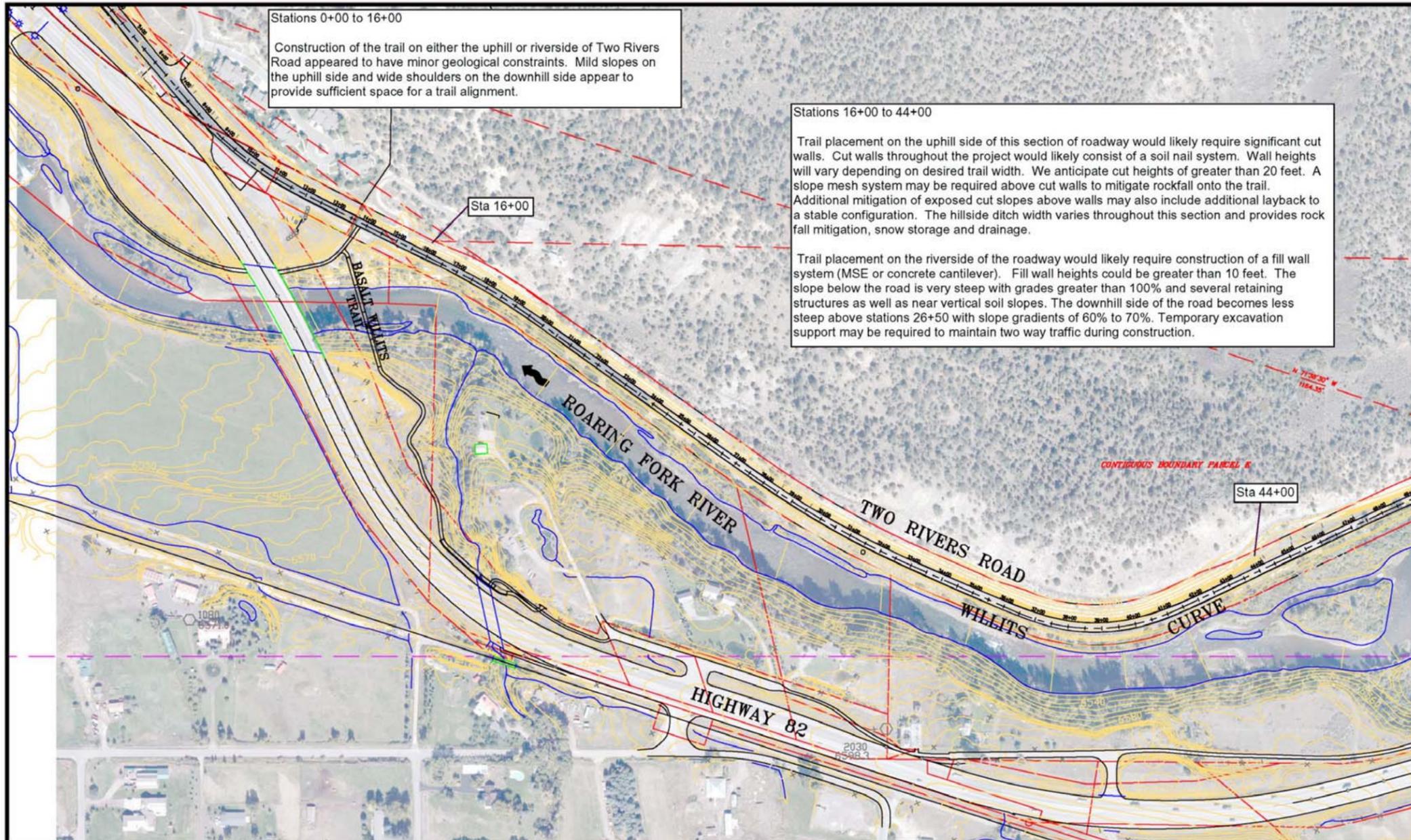
YEH AND ASSOCIATES, INC.


Richard D. Johnson, P.E.
Senior Geotechnical Engineer





TWO RIVERS ROAD MASTER PLAN SECTION 1 (west)

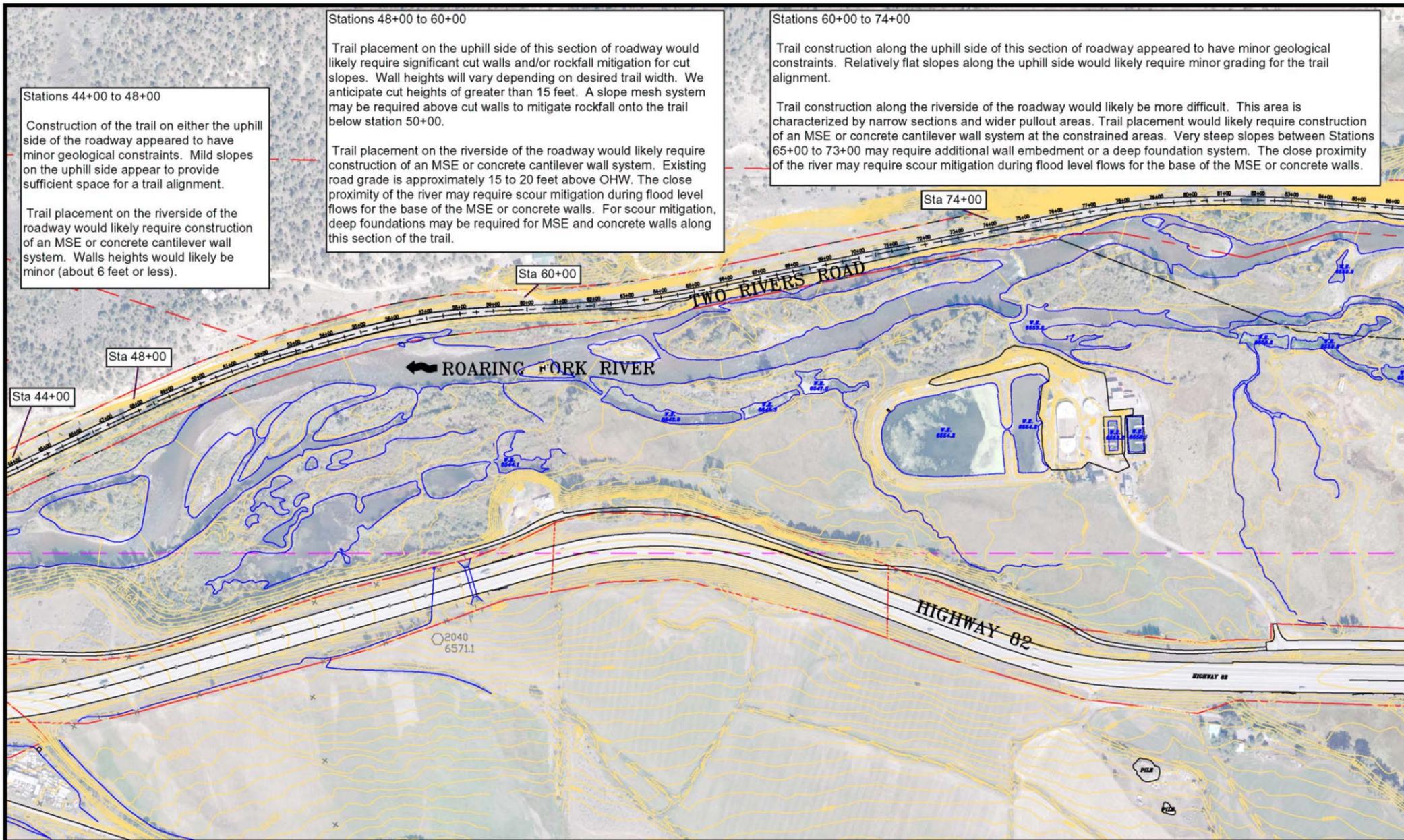


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5775 Flatiron Place
Suite 207
Boulder, Colorado 80501
303.444.2073

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TWO RIVERS ROAD MASTER PLAN SECTION 2

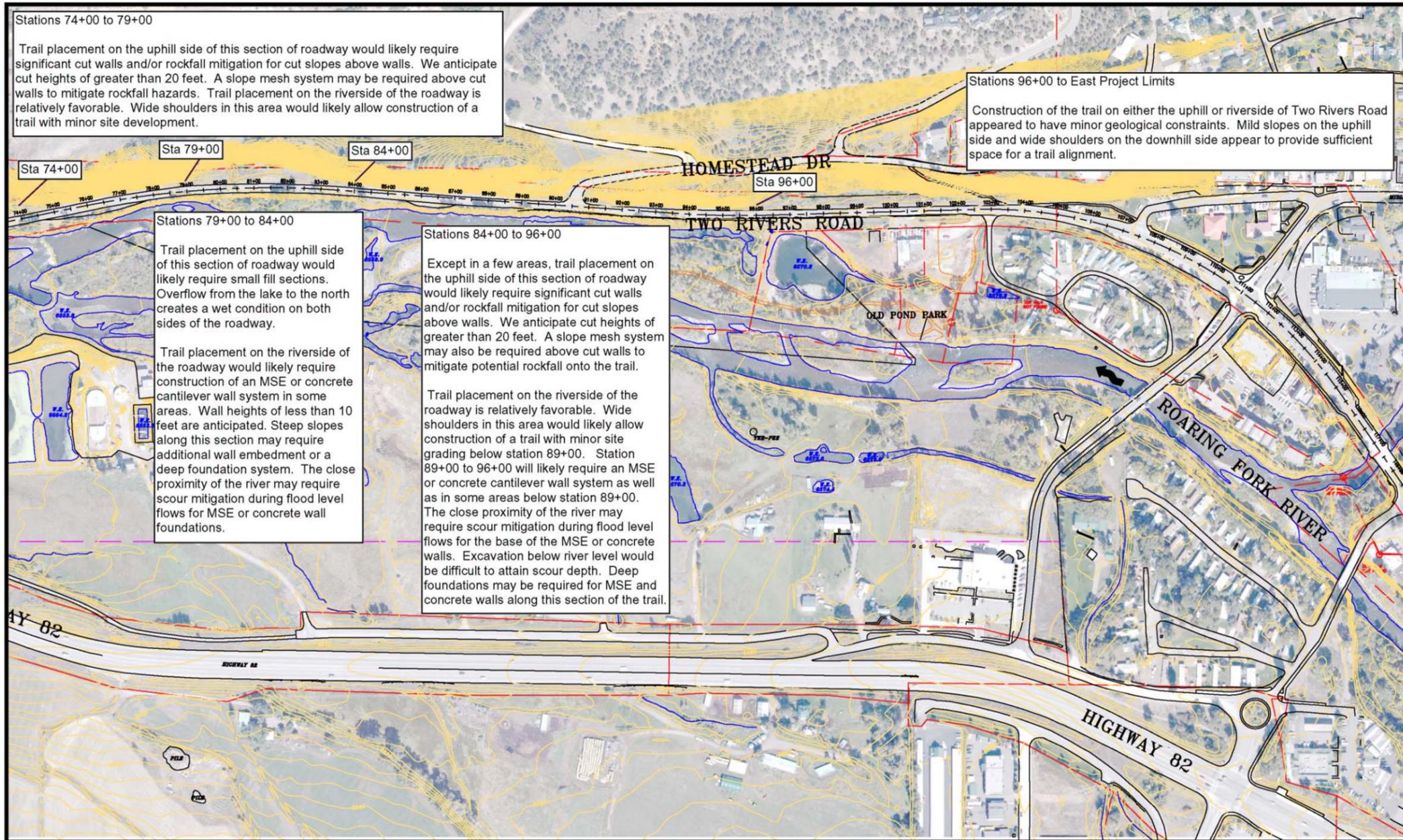


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SHEET 2
 SCALE: 1" = 300'-0"
 DATE: 06-16-06



TWO RIVERS ROAD MASTER PLAN SECTION 3 (east)



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 Suite 207
 Boulder, Colorado 80501
 303.444.2073

SHEET 3
 SCALE: 1" = 300'-0"
 DATE: 06-16-06



Option A-1 Multi-Use Trail the Entire Distance

In providing opinions of probable construction cost, the Client understands that Loris and Associates has no control over costs of the price of labor, equipment or materials, or over the Contractor's method of pricing, and that the opinions of probably construction costs provided herein are to be made on the basis of our qualifications and experience. Loris and Associates makes no warranty, expressed or implied, as to the accuracy of such opinions as compared to bid or actual costs.

Segments	Unit Cost	Quantity	Const.	Adm/Eng@ 20%	Total
1. Old Pond Park					
Right of Way	\$ -	0	n/a	\$ -	\$ -
10'-Wide Multi-Use Trail (per lf)					
Type 1	\$ 120	0	\$ -	\$ -	\$ -
Type 2	\$ 160	0	\$ -	\$ -	\$ -
Type 3	\$ 550	0	\$ -	\$ -	\$ -
Type 4	\$ 1,020	2200	\$ 2,244,000	\$ 448,800	\$ 2,692,800
Type 5	\$ 1,600	0	\$ -	\$ -	\$ -
Sub-Total Multi-Use Trail:					\$ 2,692,800
3' to 5' Pedestrian Path (per lf)					
Type P-1	\$ 40	0	\$ -	\$ -	\$ -
Type P-2	\$ 320	0	\$ -	\$ -	\$ -
Type P-3	\$ 680	0	\$ -	\$ -	\$ -
Sub-Total Pedestrian Path:					\$ -
Total Basic Trail:					\$ 2,692,800
Road Improvements					
R-1 Basic Bike Lane (Each Side of Road)	\$ 200	1900	\$ 380,000	\$ 76,000	\$ 456,000
R-2 Parking Lane	\$ 160	3200	\$ 512,000	\$ 102,400	\$ 614,400
R-3 Chicane	\$ 34,000	5	\$ 170,000	\$ 34,000	\$ 204,000
R-4 Speed Table (per each)	\$ 59,000	1	\$ 59,000	\$ 11,800	\$ 70,800
R-5 Relocate Road	\$ 540	0	\$ -	\$ -	\$ -
R-6 Rock Mesh	\$ 210	0	\$ -	\$ -	\$ -
R-7 Rock Control Wall	\$ 1,640	0	\$ -	\$ -	\$ -
Total Road Improvements:		0			\$ 1,345,200
Features & Amenities					
Recycle Center	\$ 600,000	1	\$ 600,000	\$ 120,000	\$ 720,000
Confluence Riverwalk Trail (Developer Dependent)	\$ -	1	\$ -	\$ -	\$ -
Upper River Pedestrian Bridge (Developer Dependent)	\$ -	1	\$ -	\$ -	\$ -
Roaring Fork Conservancy (By Others)	\$ -	1	\$ -	\$ -	\$ -
Homestead Drive Link	\$ 50,000	1	\$ 50,000	\$ 10,000	\$ 60,000
Total Amenity Package:					\$ 780,000
Total Road & Trail:					\$ 4,038,000
Total Road, Trail & Amenities:					\$ 4,818,000
2. Mid-River					
Right of Way	\$ -	0	n/a	\$ -	\$ -
10'-Wide Multi-Use Trail (per lf)					
Type 1	\$ 120	0	\$ -	\$ -	\$ -
Type 2	\$ 160	2200	\$ 352,000	\$ 70,400	\$ 422,400
Type 3	\$ 550	700	\$ 385,000	\$ 77,000	\$ 462,000
Type 4	\$ 1,020	400	\$ 408,000	\$ 81,600	\$ 489,600
Type 5	\$ 1,600	2100	\$ 3,360,000	\$ 672,000	\$ 4,032,000
Sub-Total Multi-Use Trail:					\$ 5,406,000
3' to 5' Pedestrian Path (per lf)					
Type P-1	\$ 40	0	\$ -	\$ -	\$ -
Type P-2	\$ 320	0	\$ -	\$ -	\$ -
Type P-3	\$ 680	0	\$ -	\$ -	\$ -
Sub-Total Pedestrian Path:					\$ -
Total Basic Trail:					\$ 5,406,000
Road Improvements					
R-1 Basic Bike Lane	\$ 200	3700	\$ 740,000	\$ 148,000	\$ 888,000
R-2 Parking Lane	\$ 160	2200	\$ 352,000	\$ 70,400	\$ 422,400
R-3 Chicane	\$ 34,000	6	\$ 204,000	\$ 40,800	\$ 244,800
R-4 Speed Table (per each)	\$ 59,000	0	\$ -	\$ -	\$ -
R-5 Relocate Road	\$ 540	1800	\$ 972,000	\$ 194,400	\$ 1,166,400
R-6 Rock Mesh	\$ 210	0	\$ -	\$ -	\$ -
R-7 Rock Control Wall	\$ 1,640	0	\$ -	\$ -	\$ -
Total Road Improvements:		0			\$ 2,721,600
Features & Amenities					
Lake Christine Loop (LS)	\$ 50,000	1	\$ 50,000	\$ 10,000	\$ 60,000
Lake Christine Dam Water Feature (LS)	\$ 50,000	1	\$ 50,000	\$ 10,000	\$ 60,000
Roadside Parking/ Access Point (per each)	\$ 25,000	2	\$ 50,000	\$ 10,000	\$ 60,000
Mid River Park (LS)	\$ 500,000	1	\$ 500,000	\$ 100,000	\$ 600,000
Boat Put-In (per each)	\$ 100,000	1	\$ 100,000	\$ 20,000	\$ 120,000
Mt. Sopris Overlook (LS)	\$ 75,000	1	\$ 75,000	\$ 15,000	\$ 90,000
Total Amenity Package:					\$ 990,000
Total Road & Trail:					\$ 8,127,600
Total Road, Trail & Amenities:					\$ 9,117,600

Option A-1 Multi-Use Trail the Entire Distance

3. Emma Curve					
Right of Way	\$ -	0	n/a	\$ -	\$ -
10'-Wide Multi-Use Trail (per lf)					
Type 1	\$ 120	0	\$ -	\$ -	\$ -
Type 2	\$ 160	0	\$ -	\$ -	\$ -
Type 3	\$ 550	1000	\$ 550,000	\$ 110,000	\$ 660,000
Type 4	\$ 1,020	400	\$ 408,000	\$ 81,600	\$ 489,600
Type 5	\$ 1,600	1700	\$ 2,720,000	\$ 544,000	\$ 3,264,000
Sub-Total Multi-Use Trail:					\$ 4,413,600
3' to 5' Pedestrian Path (per lf)					
Type P-1	\$ 40	0	\$ -	\$ -	\$ -
Type P-2	\$ 320	0	\$ -	\$ -	\$ -
Type P-3	\$ 680	0	\$ -	\$ -	\$ -
Sub-Total Pedestrian Path:					\$ -
Total Basic Trail:					\$ 4,413,600
Road Improvements					
R-1 Basic Bike Lane	\$ 200	3200	\$ 640,000	\$ 128,000	\$ 768,000
R-2 Parking Lane	\$ 160	600	\$ 96,000	\$ 19,200	\$ 115,200
R-3 Chicane	\$ 34,000	2	\$ 68,000	\$ 13,600	\$ 81,600
R-4 Speed Table (per each)	\$ 59,000	0	\$ -	\$ -	\$ -
R-5 Relocate Road	\$ 540	600	\$ 324,000	\$ 64,800	\$ 388,800
R-6 Rock Mesh	\$ 210	3200	\$ 672,000	\$ 134,400	\$ 806,400
R-7 Rock Control Wall	\$ 1,640	0	\$ -	\$ -	\$ -
Total Road Improvements:		0			\$ 2,160,000
Features & Amenities					
Roadside Parking/ Access Point (per each)	\$ 25,000	1	\$ 25,000	\$ 5,000	\$ 30,000
Wildlife Underpass (per each)	\$ 500,000	1	\$ 500,000	\$ 100,000	\$ 600,000
Total Amenity Package:					\$ 630,000
Total Road & Trail:					\$ 6,573,600
Total Road, Trail & Amenities:					\$ 7,203,600
4. Aspen Junction					
Right of Way	\$ -	0	n/a	\$ -	\$ -
10'-Wide Multi-Use Trail (per lf)					
Type 1	\$ 120	0	\$ -	\$ -	\$ -
Type 2	\$ 160	1200	\$ 192,000	\$ 38,400	\$ 230,400
Type 3	\$ 550	300	\$ 165,000	\$ 33,000	\$ 198,000
Type 4	\$ 1,020	0	\$ -	\$ -	\$ -
Type 5	\$ 1,600	0	\$ -	\$ -	\$ -
Sub-Total Multi-Use Trail:					\$ 428,400
3' to 5' Pedestrian Path (per lf)					
Type P-1	\$ 40	0	\$ -	\$ -	\$ -
Type P-2	\$ 320	0	\$ -	\$ -	\$ -
Type P-3	\$ 680	0	\$ -	\$ -	\$ -
Sub-Total Pedestrian Path:					\$ -
Total Basic Trail:					\$ 428,400
Road Improvements					
R-1 Basic Bike Lane	\$ 200	1500	\$ 300,000	\$ 60,000	\$ 360,000
R-2 Parking Lane	\$ 160	700	\$ 112,000	\$ 22,400	\$ 134,400
R-3 Chicane	\$ 34,000	2	\$ 68,000	\$ 13,600	\$ 81,600
R-4 Speed Table (per each)	\$ 59,000	0	\$ -	\$ -	\$ -
R-5 Relocate Road	\$ 540	0	\$ -	\$ -	\$ -
R-6 Rock Mesh	\$ 210	0	\$ -	\$ -	\$ -
R-7 Rock Control Wall	\$ 1,640	0	\$ -	\$ -	\$ -
Total Road Improvements:		0			\$ 576,000
Features & Amenities					
Aspen Junction Trailhead	\$ 500,000	1	\$ 500,000	\$ 100,000	\$ 600,000
Total Amenity Package:					\$ 600,000
Total Road & Trail:					\$ 1,004,400
Total Road, Trail & Amenities:					\$ 1,604,400
Grand Total All Segments:					
	\$ 12,940,800		\$ 6,802,800	\$ 3,000,000	\$ 22,743,600
Total w/o Road Improvements:					
	\$ 12,940,800		\$ -	\$ 3,000,000	\$ 15,940,800



Option A-2 Multi-use Trail the Entire Distance with Rock Stabilization

In providing opinions of probable construction cost, the Client understands that Loris and Associates has no control over costs of the price of labor, equipment or materials, or over the Contractor's method of pricing, and that the opinions of probable construction costs provided herein are to be made on the basis of our qualifications and experience. Loris and Associates makes no warranty, expressed or implied, as to the accuracy of such opinions as compared to bid or actual costs.

Segments	Unit Cost	Quantity	Const.	Adm/Eng@ 20%	Total
1. Old Pond Park					
Right of Way	\$ -	0	n/a	\$ -	\$ -
10'-Wide Multi-Use Trail (per lf)					
Type 1	\$ 120	0	\$ -	\$ -	\$ -
Type 2	\$ 160	0	\$ -	\$ -	\$ -
Type 3	\$ 550	0	\$ -	\$ -	\$ -
Type 4	\$ 1,020	2200	\$ 2,244,000	\$ 448,800	\$ 2,692,800
Type 5	\$ 1,600	0	\$ -	\$ -	\$ -
Sub-Total Multi-Use Trail:					\$ 2,692,800
3' to 5' Pedestrian Path (per lf)					
Type P-1	\$ 40	0	\$ -	\$ -	\$ -
Type P-2	\$ 320	0	\$ -	\$ -	\$ -
Type P-3	\$ 680	0	\$ -	\$ -	\$ -
Sub-Total Pedestrian Path:					\$ -
Total Basic Trail:					\$ 2,692,800
Road Improvements					
R-1 Basic Bike Lane	\$ 200	1900	\$ 380,000	\$ 76,000	\$ 456,000
R-2 Bike and Parking Lane	\$ 160	3200	\$ 512,000	\$ 102,400	\$ 614,400
R-3 Chicane	\$ 34,000	5	\$ 170,000	\$ 34,000	\$ 204,000
R-4 Speed Table (per each)	\$ 59,000	1	\$ 59,000	\$ 11,800	\$ 70,800
R-5 Relocate Road	\$ 540	0	\$ -	\$ -	\$ -
R-6 Rock Mesh	\$ 210	0	\$ -	\$ -	\$ -
R-7 Rock Control Wall	\$ 1,640	0	\$ -	\$ -	\$ -
Total Road Improvements:					\$ 1,345,200
Features & Amenities					
Recycle Center	\$ 600,000	1	\$ 600,000	\$ 120,000	\$ 720,000
Confluence Riverwalk Trail (Developer Dependent)	\$ -	1	\$ -	\$ -	\$ -
Upper River Pedestrian Bridge (Developer Dependent)	\$ -	1	\$ -	\$ -	\$ -
Roaring Fork Conservancy (By Others)	\$ -	1	\$ -	\$ -	\$ -
Homestead Drive Link	\$ 50,000	1	\$ 50,000	\$ 10,000	\$ 60,000
Total Amenity Package:					\$ 780,000
Total Road & Trail :					\$ 4,038,000
Total Road, Trail & Amenities:					\$ 4,818,000
2. Mid-River					
Right of Way	\$ -	0	n/a	\$ -	\$ -
10'-Wide Multi-Use Trail (per lf)					
Type 1	\$ 120	0	\$ -	\$ -	\$ -
Type 2	\$ 160	2200	\$ 352,000	\$ 70,400	\$ 422,400
Type 3	\$ 550	700	\$ 385,000	\$ 77,000	\$ 462,000
Type 4	\$ 1,020	400	\$ 408,000	\$ 81,600	\$ 489,600
Type 5	\$ 1,600	2100	\$ 3,360,000	\$ 672,000	\$ 4,032,000
Sub-Total Multi-Use Trail:					\$ 5,406,000
3' to 5' Pedestrian Path (per lf)					
Type P-1	\$ 40	0	\$ -	\$ -	\$ -
Type P-2	\$ 320	0	\$ -	\$ -	\$ -
Type P-3	\$ 680	0	\$ -	\$ -	\$ -
Sub-Total Pedestrian Path:					\$ -
Total Basic Trail:					\$ 5,406,000
Road Improvements					
R-1 Basic Bike Lane	\$ 200	3700	\$ 740,000	\$ 148,000	\$ 888,000
R-2 Bike and Parking Lane	\$ 160	2200	\$ 352,000	\$ 70,400	\$ 422,400
R-3 Chicane	\$ 34,000	6	\$ 204,000	\$ 40,800	\$ 244,800
R-4 Speed Table (per each)	\$ 59,000	0	\$ -	\$ -	\$ -
R-5 Relocate Road	\$ 540	1800	\$ 972,000	\$ 194,400	\$ 1,166,400
R-6 Rock Mesh	\$ 210	0	\$ -	\$ -	\$ -
R-7 Rock Control Wall	\$ 1,640	0	\$ -	\$ -	\$ -
Total Road Improvements:					\$ 2,721,600
Features & Amenities					
Lake Christine Loop (LS)	\$ 50,000	1	\$ 50,000	\$ 10,000	\$ 60,000
Lake Christine Dam Water Feature (LS)	\$ 50,000	1	\$ 50,000	\$ 10,000	\$ 60,000
Roadside Parking/ Access Point (per each)	\$ 25,000	2	\$ 50,000	\$ 10,000	\$ 60,000
Mid River Park (LS)	\$ 500,000	1	\$ 500,000	\$ 100,000	\$ 600,000
Boat Put-In (per each)	\$ 100,000	1	\$ 100,000	\$ 20,000	\$ 120,000
Mt. Sopris Overlook (LS)	\$ 75,000	1	\$ 75,000	\$ 15,000	\$ 90,000
Total Amenity Package:					\$ 990,000
Total Road & Trail:					\$ 8,127,600
Total Road, Trail & Amenities:					\$ 9,117,600

Option A-2 Multi-use Trail the Entire Distance with Rock Stabilization

3. Emma Curve					
Right of Way	\$ -	0	n/a	\$ -	\$ -
10'-Wide Multi-Use Trail (per lf)					
Type 1	\$ 120	0	\$ -	\$ -	\$ -
Type 2	\$ 160	3100	\$ 496,000	\$ 99,200	\$ 595,200
Type 3	\$ 550	0	\$ -	\$ -	\$ -
Type 4	\$ 1,020	0	\$ -	\$ -	\$ -
Type 5	\$ 1,600	0	\$ -	\$ -	\$ -
Sub-Total Multi-Use Trail:					\$ 595,200
3' to 5' Pedestrian Path (per lf)					
Type P-1	\$ 40	0	\$ -	\$ -	\$ -
Type P-2	\$ 320	0	\$ -	\$ -	\$ -
Type P-3	\$ 680	0	\$ -	\$ -	\$ -
Sub-Total Pedestrian Path:					\$ -
Total Basic Trail:					\$ 595,200
Road Improvements					
R-1 Basic Bike Lane	\$ 200	3200	\$ 640,000	\$ 128,000	\$ 768,000
R-2 Bike and Parking Lane	\$ 160	600	\$ 96,000	\$ 19,200	\$ 115,200
R-3 Chicane	\$ 34,000	2	\$ 68,000	\$ 13,600	\$ 81,600
R-4 Speed Table (per each)	\$ 59,000	0	\$ -	\$ -	\$ -
R-5 Relocate Road	\$ 540	3200	\$ 1,728,000	\$ 345,600	\$ 2,073,600
R-6 Rock Mesh	\$ 210	0	\$ -	\$ -	\$ -
R-7 Rock Control Wall	\$ 1,640	2600	\$ 4,264,000	\$ 852,800	\$ 5,116,800
Total Road Improvements:					\$ 8,155,200
Features & Amenities					
Roadside Parking/ Access Point (per each)	\$ 25,000	1	\$ 25,000	\$ 5,000	\$ 30,000
Wildlife Underpass (per each)	\$ 500,000	1	\$ 500,000	\$ 100,000	\$ 600,000
Total Amenity Package:					\$ 630,000
Total Road & Trail :					\$ 8,750,400
Total Road, Trail & Amenities:					\$ 9,380,400
4. Aspen Junction					
Right of Way	\$ -	0	n/a	\$ -	\$ -
10'-Wide Multi-Use Trail (per lf)					
Type 1	\$ 120	0	\$ -	\$ -	\$ -
Type 2	\$ 160	1200	\$ 192,000	\$ 38,400	\$ 230,400
Type 3	\$ 550	300	\$ 165,000	\$ 33,000	\$ 198,000
Type 4	\$ 1,020	0	\$ -	\$ -	\$ -
Type 5	\$ 1,600	0	\$ -	\$ -	\$ -
Sub-Total Multi-Use Trail:					\$ 428,400
3' to 5' Pedestrian Path (per lf)					
Type P-1	\$ 40	0	\$ -	\$ -	\$ -
Type P-2	\$ 320	0	\$ -	\$ -	\$ -
Type P-3	\$ 680	0	\$ -	\$ -	\$ -
Sub-Total Pedestrian Path:					\$ -
Total Basic Trail:					\$ 428,400
Road Improvements					
R-1 Basic Bike Lane	\$ 200	1500	\$ 300,000	\$ 60,000	\$ 360,000
R-2 Bike and Parking Lane	\$ 160	700	\$ 112,000	\$ 22,400	\$ 134,400
R-3 Chicane	\$ 34,000	2	\$ 68,000	\$ 13,600	\$ 81,600
R-4 Speed Table (per each)	\$ 59,000	0	\$ -	\$ -	\$ -
R-5 Relocate Road	\$ 540	0	\$ -	\$ -	\$ -
R-6 Rock Mesh	\$ 210	0	\$ -	\$ -	\$ -
R-7 Rock Control Wall	\$ 1,640	0	\$ -	\$ -	\$ -
Total Road Improvements:					\$ 576,000
Features & Amenities					
Aspen Junction Park / Trailhead	\$ 500,000	1	\$ 500,000	\$ 100,000	\$ 600,000
Total Amenity Package:					\$ 600,000
Total Road & Trail :					\$ 1,004,400
Total Road, Trail & Amenities:					\$ 1,604,400
Grand Total All Segments:					
	Trail	Road	Amenities	All Items	
	\$ 9,122,400	\$ 12,798,000	\$ 3,000,000	\$ 24,920,400	
Total w/o Road Improvements:					
	\$ 9,122,400	-	\$ 3,000,000	\$ 12,122,400	



Option B Mid-River Emma Trail Connection

In providing opinions of probable construction cost, the Client understands that Loris and Associates has no control over costs of the price of labor, equipment or materials, or over the Contractor's method of pricing, and that the opinions of probable construction costs provided herein are to be made on the basis of our qualifications and experience. Loris and Associates makes no warranty, expressed or implied, as to the accuracy of such opinions as compared to bid or actual costs.

Segments	Unit Cost	Quantity	Const.	Adm/Eng@ 20%	Total
1. Old Pond Park					
Right of Way	\$ -	0	n/a	\$ -	\$ -
10'-Wide Multi-Use Trail (per lf)					
Type 1	\$ 120	0	\$ -	\$ -	\$ -
Type 2	\$ 160	0	\$ -	\$ -	\$ -
Type 3	\$ 550	0	\$ -	\$ -	\$ -
Type 4	\$ 1,020	2200	\$ 2,244,000	\$ 448,800	\$ 2,692,800
Type 5	\$ 1,600	0	\$ -	\$ -	\$ -
Sub-Total Multi-Use Trail:					\$ 2,692,800
3' to 5' Pedestrian Path (per lf)					
Type P-1	\$ 40	0	\$ -	\$ -	\$ -
Type P-2	\$ 320	0	\$ -	\$ -	\$ -
Type P-3	\$ 680	0	\$ -	\$ -	\$ -
Sub-Total Pedestrian Path:					\$ -
Total Basic Trail:					\$ 2,692,800
Road Improvements					
R-1 Basic Bike Lane	\$ 200	1900	\$ 380,000	\$ 76,000	\$ 456,000
R-2 Bike and Parking Lane	\$ 160	3200	\$ 512,000	\$ 102,400	\$ 614,400
R-3 Chicane	\$ 34,000	5	\$ 170,000	\$ 34,000	\$ 204,000
R-4 Speed Table (per each)	\$ 59,000	1	\$ 59,000	\$ 11,800	\$ 70,800
R-5 Relocate Road	\$ 540	0	\$ -	\$ -	\$ -
R-6 Rock Mesh	\$ 210	0	\$ -	\$ -	\$ -
R-7 Rock Control Wall	\$ 1,640	0	\$ -	\$ -	\$ -
Total Road Improvements:					\$ 1,345,200
Features & Amenities					
Recycle Center	\$ 600,000	1	\$ 600,000	\$ 120,000	\$ 720,000
Confluence Riverwalk Trail (Developer Dependent)	\$ -	1	\$ -	\$ -	\$ -
Upper River Pedestrian Bridge (Developer Dependent)	\$ -	1	\$ -	\$ -	\$ -
Roaring Fork Conservancy (By Others)	\$ -	1	\$ -	\$ -	\$ -
Homestead Drive Link	\$ 50,000	1	\$ 50,000	\$ 10,000	\$ 60,000
Total Amenity Package:					\$ 780,000
Total Road & Trail:					\$ 4,038,000
Total Road, Trail & Amenities:					\$ 4,818,000
2. Mid-River					
Right of Way	\$ -	0	n/a	\$ -	\$ -
10'-Wide Multi-Use Trail (per lf)					
Type 1	\$ 120	0	\$ -	\$ -	\$ -
Type 2	\$ 160	2200	\$ 352,000	\$ 70,400	\$ 422,400
Type 3	\$ 550	700	\$ 385,000	\$ 77,000	\$ 462,000
Type 4	\$ 1,020	0	\$ -	\$ -	\$ -
Type 5	\$ 1,600	900	\$ 1,440,000	\$ 288,000	\$ 1,728,000
Sub-Total Multi-Use Trail:					\$ 2,612,400
3' to 5' Pedestrian Path (per lf)					
Type P-1	\$ 40	0	\$ -	\$ -	\$ -
Type P-2	\$ 320	0	\$ -	\$ -	\$ -
Type P-3	\$ 680	900	\$ 612,000	\$ 122,400	\$ 734,400
Sub-Total Pedestrian Path:					\$ 734,400
Total Basic Trail:					\$ 3,346,800
Road Improvements					
R-1 Basic Bike Lane	\$ 200	3700	\$ 740,000	\$ 148,000	\$ 888,000
R-2 Bike and Parking Lane	\$ 160	2200	\$ 352,000	\$ 70,400	\$ 422,400
R-3 Chicane	\$ 34,000	6	\$ 204,000	\$ 40,800	\$ 244,800
R-4 Speed Table (per each)	\$ 59,000	0	\$ -	\$ -	\$ -
R-5 Relocate Road	\$ 540	1800	\$ 972,000	\$ 194,400	\$ 1,166,400
R-6 Rock Mesh	\$ 210	0	\$ -	\$ -	\$ -
R-7 Rock Control Wall	\$ 1,640	0	\$ -	\$ -	\$ -
Total Road Improvements:					\$ 2,721,600
Features & Amenities					
Lake Christine Loop (LS)	\$ 50,000	1	\$ 50,000	\$ 10,000	\$ 60,000
Lake Christine Dam Water Feature (LS)	\$ 50,000	1	\$ 50,000	\$ 10,000	\$ 60,000
Roadside Parking/ Access Point (per each)	\$ 25,000	2	\$ 50,000	\$ 10,000	\$ 60,000
Mid River Park (LS)	\$ 500,000	1	\$ 500,000	\$ 100,000	\$ 600,000
Boat Put-In (per each)	\$ 100,000	1	\$ 100,000	\$ 20,000	\$ 120,000
Mid-River Bridge & Boardwalk	\$ 750,000	1	\$ 750,000	\$ 150,000	\$ 900,000
Mt. Sopris Overlook (LS)	\$ 75,000	1	\$ 75,000	\$ 15,000	\$ 90,000
Total Amenity Package:					\$ 1,890,000
Total Road & Trail:					\$ 6,068,400
Total Road, Trail & Amenities:					\$ 7,958,400

Option B Mid-River Emma Trail Connection

3. Emma Curve					
Right of Way	\$ -	0	n/a	\$ -	\$ -
10'-Wide Multi-Use Trail (per lf)					
Type 1	\$ 120	0	\$ -	\$ -	\$ -
Type 2	\$ 160	0	\$ -	\$ -	\$ -
Type 3	\$ 550	0	\$ -	\$ -	\$ -
Type 4	\$ 1,020	0	\$ -	\$ -	\$ -
Type 5	\$ 1,600	0	\$ -	\$ -	\$ -
Sub-Total Multi-Use Trail:					\$ -
3' to 5' Pedestrian Path (per lf)					
Type P-1	\$ 40	1000	\$ 40,000	\$ 8,000	\$ 48,000
Type P-2	\$ 320	400	\$ 128,000	\$ 25,600	\$ 153,600
Type P-3	\$ 680	1700	\$ 1,156,000	\$ 231,200	\$ 1,387,200
Sub-Total Pedestrian Path:					\$ 1,588,800
Total Basic Trail:					\$ 1,588,800
Road Improvements					
R-1 Basic Bike Lane	\$ 200	3200	\$ 640,000	\$ 128,000	\$ 768,000
R-2 Bike and Parking Lane	\$ 160	600	\$ 96,000	\$ 19,200	\$ 115,200
R-3 Chicane	\$ 34,000	2	\$ 68,000	\$ 13,600	\$ 81,600
R-4 Speed Table (per each)	\$ 59,000	0	\$ -	\$ -	\$ -
R-5 Relocate Road	\$ 540	600	\$ 324,000	\$ 64,800	\$ 388,800
R-6 Rock Mesh	\$ 210	3200	\$ 672,000	\$ 134,400	\$ 806,400
R-7 Rock Control Wall	\$ 1,640	0	\$ -	\$ -	\$ -
Total Road Improvements:					\$ 2,160,000
Features & Amenities					
Roadside Parking/ Access Point (per each)	\$ 25,000	1	\$ 25,000	\$ 5,000	\$ 30,000
Wildlife Underpass (per each)	\$ 500,000	1	\$ 500,000	\$ 100,000	\$ 600,000
Total Amenity Package:					\$ 630,000
Total Road & Trail:					\$ 3,748,800
Total Road, Trail & Amenities:					\$ 4,378,800
4. Aspen Junction					
Right of Way	\$ -	0	n/a	\$ -	\$ -
10'-Wide Multi-Use Trail (per lf)					
Type 1	\$ 120	500	\$ 60,000	\$ 12,000	\$ 72,000
Type 2	\$ 160	0	\$ -	\$ -	\$ -
Type 3	\$ 550	0	\$ -	\$ -	\$ -
Type 4	\$ 1,020	0	\$ -	\$ -	\$ -
Type 5	\$ 1,600	0	\$ -	\$ -	\$ -
Sub-Total Multi-Use Trail:					\$ 72,000
3' to 5' Pedestrian Path (per lf)					
Type P-1	\$ 40	700	\$ 28,000	\$ 5,600	\$ 33,600
Type P-2	\$ 320	300	\$ 96,000	\$ 19,200	\$ 115,200
Type P-3	\$ 680	0	\$ -	\$ -	\$ -
Sub-Total Pedestrian Path:					\$ 148,800
Total Basic Trail:					\$ 220,800
Road Improvements					
R-1 Basic Bike Lane	\$ 200	1500	\$ 300,000	\$ 60,000	\$ 360,000
R-2 Bike and Parking Lane	\$ 160	700	\$ 112,000	\$ 22,400	\$ 134,400
R-3 Chicane	\$ 34,000	2	\$ 68,000	\$ 13,600	\$ 81,600
R-4 Speed Table (per each)	\$ 59,000	0	\$ -	\$ -	\$ -
R-5 Relocate Road	\$ 540	0	\$ -	\$ -	\$ -
R-6 Rock Mesh	\$ 210	0	\$ -	\$ -	\$ -
R-7 Rock Control Wall	\$ 1,640	0	\$ -	\$ -	\$ -
Total Road Improvements:					\$ 576,000
Features & Amenities					
Aspen Junction Park / Trailhead	\$ 500,000	1	\$ 500,000	\$ 100,000	\$ 600,000
Total Amenity Package:					\$ 600,000
Total Road & Trail:					\$ 796,800
Total Road, Trail & Amenities:					\$ 1,396,800
Grand Total All Segments:					
	Trail	Road	Amenities	All Items	
	\$ 7,849,200	\$ 6,802,800	\$ 3,900,000	\$ 18,552,000	
Total w/o Road Improvements:					
	\$ 7,849,200	-	\$ 3,900,000	\$ 11,749,200	



Option C - Basalt Riverwalk

In providing opinions of probable construction cost, the Client understands that Loris and Associates has no control over costs of the price of labor, equipment or materials, or over the Contractor's method of pricing, and that the opinions of probably construction costs provided herein are to be made on the basis of our qualifications and experience. Loris and Associates makes no warranty, expressed or implied, as to the accuracy of such opinions as compared to bid or actual costs.

Segments	Unit Cost	Quantity	Const.	Adm/Eng@ 20%	Total
1. Old Pond Park					
Right of Way	\$ -	0	n/a	\$ -	\$ -
10'-Wide Multi-Use Trail (per lf)					
Type 1	\$ 120	0	\$ -	\$ -	\$ -
Type 2	\$ 160	0	\$ -	\$ -	\$ -
Type 3	\$ 550	0	\$ -	\$ -	\$ -
Type 4	\$ 1,020	2200	\$ 2,244,000	\$ 448,800	\$ 2,692,800
Type 5	\$ 1,600	0	\$ -	\$ -	\$ -
Sub-Total Multi-Use Trail:					\$ 2,692,800
3' to 5' Pedestrian Path (per lf)					
Type P-1	\$ 40	0	\$ -	\$ -	\$ -
Type P-2	\$ 320	0	\$ -	\$ -	\$ -
Type P-3	\$ 680	0	\$ -	\$ -	\$ -
Sub-Total Pedestrian Path:					\$ -
Total Basic Trail:					\$ 2,692,800
Road Improvements					
R-1 Basic Bike Lane	\$ 200	1900	\$ 380,000	\$ 76,000	\$ 456,000
R-2 Bike and Parking Lane	\$ 160	3200	\$ 512,000	\$ 102,400	\$ 614,400
R-3 Chicane	\$ 34,000	5	\$ 170,000	\$ 34,000	\$ 204,000
R-4 Speed Table (per each)	\$ 59,000	1	\$ 59,000	\$ 11,800	\$ 70,800
R-5 Relocate Road	\$ 540	0	\$ -	\$ -	\$ -
R-6 Rock Mesh	\$ 210	0	\$ -	\$ -	\$ -
R-7 Rock Control Wall	\$ 1,640	0	\$ -	\$ -	\$ -
Total Road Improvements:					\$ 1,345,200
Features & Amenities					
Recycle Center	\$ 600,000	1	\$ 600,000	\$ 120,000	\$ 720,000
Confluence Riverwalk Trail (Developer Dependent)	\$ -	1	\$ -	\$ -	\$ -
Upper River Pedestrian Bridge (Developer Dependent)	\$ -	1	\$ -	\$ -	\$ -
Roaring Fork Conservancy (By Others)	\$ -	1	\$ -	\$ -	\$ -
Homestead Drive Link	\$ 50,000	1	\$ 50,000	\$ 10,000	\$ 60,000
Total Amenity Package:					\$ 780,000
Total Road & Trail :					\$ 4,038,000
Total Road, Trail & Amenities:					\$ 4,818,000
2. Mid-River					
Right of Way	\$ -	0	n/a	\$ -	\$ -
10'-Wide Multi-Use Trail (per lf)					
Type 1	\$ 120	0	\$ -	\$ -	\$ -
Type 2	\$ 160	0	\$ -	\$ -	\$ -
Type 3	\$ 550	0	\$ -	\$ -	\$ -
Type 4	\$ 1,020	0	\$ -	\$ -	\$ -
Type 5	\$ 1,600	0	\$ -	\$ -	\$ -
Sub-Total Multi-Use Trail:					\$ -
3' to 5' Pedestrian Path (per lf)					
Type P-1	\$ 40	1800	\$ 72,000	\$ 14,400	\$ 86,400
Type P-2	\$ 320	600	\$ 192,000	\$ 38,400	\$ 230,400
Type P-3	\$ 680	2100	\$ 1,428,000	\$ 285,600	\$ 1,713,600
Sub-Total Pedestrian Path:					\$ 2,030,400
Total Basic Trail:					\$ 2,030,400
Road Improvements					
R-1 Basic Bike Lane	\$ 200	3700	\$ 740,000	\$ 148,000	\$ 888,000
R-2 Bike and Parking Lane	\$ 160	2200	\$ 352,000	\$ 70,400	\$ 422,400
R-3 Chicane	\$ 34,000	6	\$ 204,000	\$ 40,800	\$ 244,800
R-4 Speed Table (per each)	\$ 59,000	0	\$ -	\$ -	\$ -
R-5 Relocate Road	\$ 540	1800	\$ 972,000	\$ 194,400	\$ 1,166,400
R-6 Rock Mesh	\$ 210	0	\$ -	\$ -	\$ -
R-7 Rock Control Wall	\$ 1,640	0	\$ -	\$ -	\$ -
Total Road Improvements:					\$ 2,721,600
Features & Amenities					
Lake Christine Loop (LS)	\$ 50,000	1	\$ 50,000	\$ 10,000	\$ 60,000
Lake Christine Dam Water Feature (LS)	\$ 50,000	1	\$ 50,000	\$ 10,000	\$ 60,000
Roadside Parking/ Access Point (per each)	\$ 25,000	2	\$ 50,000	\$ 10,000	\$ 60,000
Mid River Park (LS)	\$ 500,000	1	\$ 500,000	\$ 100,000	\$ 600,000
Boat Put-In (per each)	\$ 100,000	1	\$ 100,000	\$ 20,000	\$ 120,000
Mt. Sopris Overlook (LS)	\$ 75,000	1	\$ 75,000	\$ 15,000	\$ 90,000
Total Amenity Package:					\$ 990,000
Total Road & Trail :					\$ 4,752,000
Total Road, Trail & Amenities:					\$ 5,742,000

Option C - Basalt Riverwalk

3. Emma Curve					
Right of Way	\$ -	0	n/a	\$ -	\$ -
10'-Wide Multi-Use Trail (per lf)					
Type 1	\$ 120	0	\$ -	\$ -	\$ -
Type 2	\$ 160	0	\$ -	\$ -	\$ -
Type 3	\$ 550	0	\$ -	\$ -	\$ -
Type 4	\$ 1,020	0	\$ -	\$ -	\$ -
Type 5	\$ 1,600	0	\$ -	\$ -	\$ -
Sub-Total Multi-Use Trail:					\$ -
3' to 5' Pedestrian Path (per lf)					
Type P-1	\$ 40	1000	\$ 40,000	\$ 8,000	\$ 48,000
Type P-2	\$ 320	400	\$ 128,000	\$ 25,600	\$ 153,600
Type P-3	\$ 680	1700	\$ 1,156,000	\$ 231,200	\$ 1,387,200
Sub-Total Pedestrian Path:					\$ 1,588,800
Total Basic Trail:					\$ 1,588,800
Road Improvements					
R-1 Basic Bike Lane	\$ 200	3200	\$ 640,000	\$ 128,000	\$ 768,000
R-2 Bike and Parking Lane	\$ 160	600	\$ 96,000	\$ 19,200	\$ 115,200
R-3 Chicane	\$ 34,000	2	\$ 68,000	\$ 13,600	\$ 81,600
R-4 Speed Table (per each)	\$ 59,000	0	\$ -	\$ -	\$ -
R-5 Relocate Road	\$ 540	600	\$ 324,000	\$ 64,800	\$ 388,800
R-6 Rock Mesh	\$ 210	3200	\$ 672,000	\$ 134,400	\$ 806,400
R-7 Rock Control Wall	\$ 1,640	0	\$ -	\$ -	\$ -
Total Road Improvements:					\$ 2,160,000
Features & Amenities					
Roadside Parking/ Access Point (per each)	\$ 25,000	1	\$ 25,000	\$ 5,000	\$ 30,000
Wildlife Underpass (per each)	\$ 500,000	1	\$ 500,000	\$ 100,000	\$ 600,000
Total Amenity Package:					\$ 630,000
Total Road & Trail:					\$ 3,748,800
Total Road, Trail & Amenities:					\$ 4,378,800
4. Aspen Junction					
Right of Way	\$ -	0	n/a	\$ -	\$ -
10'-Wide Multi-Use Trail (per lf)					
Type 1	\$ 120	500	\$ 60,000	\$ 12,000	\$ 72,000
Type 2	\$ 160	0	\$ -	\$ -	\$ -
Type 3	\$ 550	0	\$ -	\$ -	\$ -
Type 4	\$ 1,020	0	\$ -	\$ -	\$ -
Type 5	\$ 1,600	0	\$ -	\$ -	\$ -
Sub-Total Multi-Use Trail:					\$ 72,000
3' to 5' Pedestrian Path (per lf)					
Type P-1	\$ 40	700	\$ 28,000	\$ 5,600	\$ 33,600
Type P-2	\$ 320	300	\$ 96,000	\$ 19,200	\$ 115,200
Type P-3	\$ 680	0	\$ -	\$ -	\$ -
Sub-Total Pedestrian Path:					\$ 148,800
Total Basic Trail:					\$ 220,800
Road Improvements					
R-1 Basic Bike Lane	\$ 200	1500	\$ 300,000	\$ 60,000	\$ 360,000
R-2 Bike and Parking Lane	\$ 160	700	\$ 112,000	\$ 22,400	\$ 134,400
R-3 Chicane	\$ 34,000	2	\$ 68,000	\$ 13,600	\$ 81,600
R-4 Speed Table (per each)	\$ 59,000	0	\$ -	\$ -	\$ -
R-5 Relocate Road	\$ 540	0	\$ -	\$ -	\$ -
R-6 Rock Mesh	\$ 210	0	\$ -	\$ -	\$ -
R-7 Rock Control Wall	\$ 1,640	0	\$ -	\$ -	\$ -
Total Road Improvements:					\$ 576,000
Features & Amenities					
Aspen Junction Park / Trailhead	\$ 500,000	1	\$ 500,000	\$ 100,000	\$ 600,000
Total Amenity Package:					\$ 600,000
Total Road & Trail:					\$ 796,800
Total Road, Trail & Amenities:					\$ 1,396,800
Grand Total All Segments:					
	Trail	Road	Amenities	All Items	
	\$ 6,532,800	\$ 6,802,800	\$ 3,000,000	\$ 16,335,600	
Total w/o Road Improvements:					
	\$ 6,532,800	-	\$ 3,000,000	\$ 9,532,800	



Option D On-street Bike Lanes / Pleasure Drive

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Segments	Unit Cost	Quantity	Const.	Adm/Eng@ 20%	Total
1. Old Pond Park					
Right of Way	\$ -	0	n/a	\$ -	\$ -
10'-Wide Multi-Use Trail (per lf)					
Type 1	\$ 120	0	\$ -	\$ -	\$ -
Type 2	\$ 160	0	\$ -	\$ -	\$ -
Type 3	\$ 550	0	\$ -	\$ -	\$ -
Type 4	\$ 1,020	2200	\$ 2,244,000	\$ 448,800	\$ 2,692,800
Type 5	\$ 1,600	0	\$ -	\$ -	\$ -
Sub-Total Multi-Use Trail:					\$2,692,800
3' to 5' Pedestrian Path (per lf)					
Type P-1	\$ 40	0	\$ -	\$ -	\$ -
Type P-2	\$ 320	0	\$ -	\$ -	\$ -
Type P-3	\$ 680	0	\$ -	\$ -	\$ -
Sub-Total Pedestrian Path:					\$ -
Total Basic Trail:					\$2,692,800
Road Improvements					
R-1 Basic Bike Lane	\$ 200	1900	\$ 380,000	\$ 76,000	\$ 456,000
R-2 Bike and Parking Lane	\$ 160	3200	\$ 512,000	\$ 102,400	\$ 614,400
R-3 Chicane	\$ 34,000	5	\$ 170,000	\$ 34,000	\$ 204,000
R-4 Speed Table (per each)	\$ 59,000	0	\$ -	\$ -	\$ -
R-5 Relocate Road	\$ 540	0	\$ -	\$ -	\$ -
R-6 Rock Mesh	\$ 210	0	\$ -	\$ -	\$ -
R-7 Rock Control Wall	\$ 1,640	0	\$ -	\$ -	\$ -
Total Road Improvements:					\$1,274,400
Features & Amenities					
Recycle Center	\$ 600,000	1	\$ 600,000	\$ 120,000	\$ 720,000
Confluence Riverwalk Trail (Developer Dependent)	\$ -	1	\$ -	\$ -	\$ -
Upper River Pedestrian Bridge (Developer Dependent)	\$ -	1	\$ -	\$ -	\$ -
Roaring Fork Conservancy (By Others)	\$ -	1	\$ -	\$ -	\$ -
Homestead Drive Link	\$ 50,000	1	\$ 50,000	\$ 10,000	\$ 60,000
Total Amenity Package:					\$ 780,000
Total Road & Trail:					\$3,967,200
Total Road, Trail & Amenities:					\$4,747,200
2. Mid-River					
Right of Way	\$ -	0	n/a	\$ -	\$ -
10'-Wide Multi-Use Trail (per lf)					
Type 1	\$ 120	0	\$ -	\$ -	\$ -
Type 2	\$ 160	0	\$ -	\$ -	\$ -
Type 3	\$ 550	0	\$ -	\$ -	\$ -
Type 4	\$ 1,020	0	\$ -	\$ -	\$ -
Type 5	\$ 1,600	0	\$ -	\$ -	\$ -
Sub-Total Multi-Use Trail:					\$ -
3' to 5' Pedestrian Path (per lf)					
Type P-1	\$ 40	0	\$ -	\$ -	\$ -
Type P-2	\$ 320	0	\$ -	\$ -	\$ -
Type P-3	\$ 680	0	\$ -	\$ -	\$ -
Sub-Total Pedestrian Path:					\$ -
Total Basic Trail:					\$ -
Road Improvements					
R-1 Basic Bike Lane	\$ 200	3700	\$ 740,000	\$ 148,000	\$ 888,000
R-2 Bike and Parking Lane	\$ 160	0	\$ -	\$ -	\$ -
R-3 Chicane	\$ 34,000	8	\$ 272,000	\$ 54,400	\$ 326,400
R-4 Speed Table (per each)	\$ 59,000	0	\$ -	\$ -	\$ -
R-5 Relocate Road	\$ 540	0	\$ -	\$ -	\$ -
R-6 Rock Mesh	\$ 210	0	\$ -	\$ -	\$ -
R-7 Rock Control Wall	\$ 1,640	0	\$ -	\$ -	\$ -
Total Road Improvements:					\$1,214,400
Features & Amenities					
Lake Christine Loop (LS)	\$ 50,000	0	\$ -	\$ -	\$ -
Lake Christine Dam Water Feature (LS)	\$ 50,000	0	\$ -	\$ -	\$ -
Roadside Parking/ Access Point (per each)	\$ 25,000	0	\$ -	\$ -	\$ -
Mid River Park (LS)	\$ 500,000	0	\$ -	\$ -	\$ -
Boat Put-In (per each)	\$ 100,000	0	\$ -	\$ -	\$ -
Mt. Sopris Overlook (LS)	\$ 75,000	0	\$ -	\$ -	\$ -
Total Amenity Package:					\$ -
Total Road & Trail:					\$1,214,400
Total Road, Trail & Amenities:					\$1,214,400

Option D On-street Bike Lanes / Pleasure Drive

3. Emma Curve					
Right of Way	\$ -	0	n/a	\$ -	\$ -
10'-Wide Multi-Use Trail (per lf)					
Type 1	\$ 120	0	\$ -	\$ -	\$ -
Type 2	\$ 160	0	\$ -	\$ -	\$ -
Type 3	\$ 550	0	\$ -	\$ -	\$ -
Type 4	\$ 1,020	0	\$ -	\$ -	\$ -
Type 5	\$ 1,600	0	\$ -	\$ -	\$ -
Sub-Total Multi-Use Trail:					\$ -
3' to 5' Pedestrian Path (per lf)					
Type P-1	\$ 40	0	\$ -	\$ -	\$ -
Type P-2	\$ 320	0	\$ -	\$ -	\$ -
Type P-3	\$ 680	0	\$ -	\$ -	\$ -
Sub-Total Pedestrian Path:					\$ -
Total Basic Trail:					\$ -
Road Improvements					
R-1 Basic Bike Lane	\$ 200	3200	\$ 640,000	\$ 128,000	\$ 768,000
R-2 Bike and Parking Lane	\$ 160	0	\$ -	\$ -	\$ -
R-3 Chicane	\$ 34,000	4	\$ 136,000	\$ 27,200	\$ 163,200
R-4 Speed Table (per each)	\$ 59,000	0	\$ -	\$ -	\$ -
R-5 Relocate Road	\$ 540	0	\$ -	\$ -	\$ -
R-6 Rock Mesh	\$ 210	0	\$ -	\$ -	\$ -
R-7 Rock Control Wall	\$ 1,640	0	\$ -	\$ -	\$ -
Total Road Improvements:					\$ 931,200
Features & Amenities					
Roadside Parking/ Access Point (per each)	\$ 25,000	0	\$ -	\$ -	\$ -
Wildlife Underpass (per each)	\$ 500,000	0	\$ -	\$ -	\$ -
Total Amenity Package:					\$ -
Total Road & Trail:					\$ 931,200
Total Road, Trail & Amenities:					\$ 931,200
4. Aspen Junction					
Right of Way	\$ -	0	n/a	\$ -	\$ -
10'-Wide Multi-Use Trail (per lf)					
Type 1	\$ 120	0	\$ -	\$ -	\$ -
Type 2	\$ 160	0	\$ -	\$ -	\$ -
Type 3	\$ 550	0	\$ -	\$ -	\$ -
Type 4	\$ 1,020	0	\$ -	\$ -	\$ -
Type 5	\$ 1,600	0	\$ -	\$ -	\$ -
Sub-Total Multi-Use Trail:					\$ -
3' to 5' Pedestrian Path (per lf)					
Type P-1	\$ 40	0	\$ -	\$ -	\$ -
Type P-2	\$ 320	0	\$ -	\$ -	\$ -
Type P-3	\$ 680	0	\$ -	\$ -	\$ -
Sub-Total Pedestrian Path:					\$ -
Total Basic Trail:					\$ -
Road Improvements					
R-1 Basic Bike Lane	\$ 200	1500	\$ 300,000	\$ 60,000	\$ 360,000
R-2 Bike and Parking Lane	\$ 160	0	\$ -	\$ -	\$ -
R-3 Chicane	\$ 34,000	0	\$ -	\$ -	\$ -
R-4 Speed Table (per each)	\$ 59,000	0	\$ -	\$ -	\$ -
R-5 Relocate Road	\$ 540	0	\$ -	\$ -	\$ -
R-6 Rock Mesh	\$ 210	0	\$ -	\$ -	\$ -
R-7 Rock Control Wall	\$ 1,640	0	\$ -	\$ -	\$ -
Total Road Improvements:					\$ 360,000
Features & Amenities					
Aspen Junction Park / Trailhead	\$ 500,000	0	\$ -	\$ -	\$ -
Total Amenity Package:					\$ -
Total Road & Trail:					\$ 360,000
Total Road, Trail & Amenities:					\$ 360,000
Grand Totals					
	Trail	Road	Amenities	All Items	
Grand Total All Segments:	\$ -	\$3,780,000	\$ 780,000	\$ 4,560,000	
Total w/o Road Improvements:	\$ -	-	\$ 780,000	\$ 780,000	



**TWO RIVERS GREENWAY
OPINION OF PROBABLE COST**

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SHARED USE PATH ALTERNATIVES														
ITEM	CONTRACT ITEM DESCRIPTION	UNIT	UNIT COST	TYPE 1		TYPE 2		TYPE 3		TYPE 4		TYPE 5		
				Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	
201	Clearing & Grubbing	SF	\$ 0.50	21	\$ 11	21	\$ 11	26	\$ 13	26	\$ 13	21	\$ 11	
203	Unclassified Excavation (CIP)	CY	\$ 35	1	\$ 35	1	\$ 35	0	\$ -	0	\$ -	0	\$ -	
203	Embankment Material (CIP)	CY	\$ 35	0	\$ -	0	\$ -	2	\$ 70	3	\$ 105	0	\$ -	
206	Structure Excavation	CY	\$ 40	0	\$ -	0	\$ -	0.1	\$ 4	1	\$ 40	1	\$ 40	
206	Structure Backfill	CY	\$ 60	0	\$ -	0	\$ -	0.1	\$ 6	1	\$ 60	1	\$ 60	
214	Landscaping	SF	\$ 3	5	\$ 15	5	\$ 15	5	\$ 15	5	\$ 15	5	\$ 15	
304	Crusher Fines Path (6-Inch)	SY	\$ 20	1.11	\$ 23	0	\$ -	0	\$ -	0	\$ -	0	\$ -	
506	Rock Retaining Wall	SF	\$ 30	0	\$ -	0	\$ -	0	\$ -	3	\$ 90	0	\$ -	
514	Pedestrian Railing (Steel)	LF	\$ 100	0	\$ -	0	\$ -	0	\$ -	1	\$ 100	1	\$ 100	
601	Bridge	SF	\$ 90	0	\$ -	0	\$ -	0	\$ -	0	\$ -	10	\$ 900	
601	Concrete Retaining Wall	CY	\$ 600	0	\$ -	0	\$ -	0.35	\$ 210	0.42	\$ 252	0	\$ -	
606	Guardrail (Special)	LF	\$ 100	0	\$ -	0	\$ -	1	\$ 100	1	\$ 100	1	\$ 100	
608	Paved Path	SF	\$ 5	0	\$ -	10	\$ 50	0	\$ -	0	\$ -	0	\$ -	
TOTAL OF BID ITEMS (A)					\$ 90		\$ 120		\$ 420		\$ 780		\$ 1,230	
Miscellaneous Items				30% of A	30%	\$ 30	30%	\$ 40	30%	\$ 130	30%	\$ 240	30%	\$ 370
TOTAL OF CONSTRUCTION BID ITEMS (B)					\$ 120		\$ 160		\$ 550		\$ 1,020		\$ 1,600	
Engineering and Administration				20% of B	20%	\$ 30	20%	\$ 40	20%	\$ 110	20%	\$ 210	20%	\$ 320
Future Constructin Increase				0% of B	0%	\$ -	0%	\$ -	0%	\$ -	0%	\$ -	0%	\$ -
TOTAL PROJECT OPINION OF COST / LF					\$ 150		\$ 200		\$ 660		\$ 1,230		\$ 1,920	

PEDESTRAIN TRAIL ALTERNATIVES										
ITEM	CONTRACT ITEM DESCRIPTION	UNIT	UNIT COST	TYPE P1		TYPE P2		TYPE P3		
				Quantity	Cost	Quantity	Cost	Quantity	Cost	
201	Clearing & Grubbing	SF	\$ 0.50	13	\$ 7	25	\$ 13	25	\$ 13	
203	Unclassified Excavation (CIP)	CY	\$ 35	0	\$ -	0	\$ -	0	\$ -	
203	Embankment Material (CIP)	CY	\$ 45	0	\$ -	2	\$ 90	2.5	\$ 113	
206	Structure Excavation	CY	\$ 45	0	\$ -	0	\$ -	0.5	\$ 23	
206	Structure Backfill	CY	\$ 60	0	\$ -	0	\$ -	0.5	\$ 30	
214	Landscaping	SF	\$ 1	5	\$ 5	5	\$ 5	5	\$ 5	
304	Crusher Fines Path (6-Inch)	SY	\$ 20	0.44	\$ 9	0.44	\$ 9	0.44	\$ 9	
506	Rock Retaining Wall	SF	\$ 40	0	\$ -	3.0	\$ 120	5	\$ 200	
514	Pedestrian Railing (Wood)	LF	\$ 25	0	\$ -	0	\$ -	1	\$ 25	
606	Guardrail (Special)	LF	\$ 100	0	\$ -	0	\$ -	1	\$ 100	
TOTAL OF BID ITEMS (A)					\$ 30		\$ 240		\$ 520	
Miscellaneous Items				30% of A	30%	\$ 10	30%	\$ 80	30%	\$ 160
TOTAL OF CONSTRUCTION BID ITEMS (B)					\$ 40		\$ 320		\$ 680	
Engineering				20% of B	20%	\$ 10	20%	\$ 70	20%	\$ 140
Future Constructin Increase				0% of B	0%	\$ -	0%	\$ -	0%	\$ -
TOTAL PROJECT OPINION OF COST / LF					\$ 50		\$ 390		\$ 820	

ROADWAY IMPROVEMENT ALTERNATIVES																		
ITEM	CONTRACT ITEM DESCRIPTION	UNIT	UNIT COST	R1 - Bike Lane		R2 - Parking		R3 - Chicane (each)		R4 - Speed Table (Each)		R5 - Relocate Rdwy		R6 - Wire Mesh		R7 - Rock Control Wall		
				Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost - Each	Quantity	Cost	Quantity	Cost	Quantity	Cost	
201	Clearing & Grubbing	SF	\$ 0.50	16	\$ 8	13	\$ 7	1100	\$ 550	0	\$ -	41	\$ 21	0	\$ -	19	\$ 10	
202	Removal of Asphalt Mat	SY	\$ 10	0	\$ -	0	\$ -	311	\$ 3,110	311	\$ 3,110	3	\$ 30	0	\$ -	3	\$ 30	
202	Removal of Asphalt Mat (Planing)	SY	\$ 3	0.6	\$ 2	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	
203	Unclassified Excavation (CIP)	CY	\$ 35	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0.6	\$ 21	
203	Embankment Material (CIP)	CY	\$ 50	1.5	\$ 75	1.3	\$ 65	0	\$ -	0	\$ -	5	\$ 250	0	\$ -	1	\$ 50	
203	Rock Excavation	CY	\$ 60	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	2.4	\$ 144	
214	Landscaping	SF	\$ 5	0	\$ -	0	\$ -	300	\$ 1,500	0	\$ -	0	\$ -	0	\$ -	0	\$ -	
304	Aggregate Base Course (Class 6)	CY	\$ 40	0.20	\$ 8	0.15	\$ 6	55	\$ 2,200	0	\$ -	0.50	\$ 20	0	\$ -	0.50	\$ 20	
403	Hot Mix Asphalt (Patching)	CY	\$ 150	0.13	\$ 20	0.00	\$ -	70	\$ 10,500	0	\$ -	0.00	\$ -	0	\$ -	0.00	\$ -	
403	Hot Mix Asphalt	TON	\$ 75	0.00	\$ -	0.20	\$ 15	0	\$ -	0	\$ -	0.70	\$ 53	0	\$ -	0.65	\$ 49	
504	Soil Nail Wall	SF	\$ 70	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	12	\$ 840	
601	Concrete Class C	CY	\$ 400	0	\$ -	0	\$ -	0	\$ -	104	\$ 41,600	0	\$ -	0	\$ -	0	\$ -	
606	Guardrail Type 7	LF	\$ 70	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	1	\$ 70	
607	Mesh Anchor	EA	\$ 1,400	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0.03	\$ 37	0	\$ -	
607	Wire Mesh	SF	\$ 6	1.3	\$ 8	0	\$ -	0	\$ -	0	\$ -	1.3	\$ 8	20	\$ 120	0	\$ -	
609	Curb & Gutter Type 2 (Section IB)	LF	\$ 20	0	\$ -	0	\$ -	200	\$ 4,000	0	\$ -	0	\$ -	0	\$ -	0	\$ -	
609	Curb & Gutter Type 2 (Section IIB)	LF	\$ 20	0	\$ -	1	\$ 20	200	\$ 4,000	0	\$ -	0	\$ -	0	\$ -	0	\$ -	
627	Pavement Marking	SF	\$ 15	1.3	\$ 20	0	\$ -	0	\$ -	0	\$ -	1.3	\$ 20	0	\$ -	1.3	\$ 20	
TOTAL OF BID ITEMS (A)					\$ 150		\$ 120		\$ 25,860		\$ 44,710		\$ 410		\$ 160		\$ 1,260	
Miscellaneous Items				30% of A	30%	\$ 50	30%	\$ 40	30%	\$ 7,760	30%	\$ 13,420	30%	\$ 130	30%	\$ 50	30%	\$ 380
TOTAL OF CONSTRUCTION BID ITEMS (B)					\$ 200		\$ 160		\$ 33,620		\$ 58,130		\$ 540		\$ 210		\$ 1,640	
Engineering				20% of B	20%	\$ 40	20%	\$ 40	20%	\$ 6,730	20%	\$ 11,630	20%	\$ 110	20%	\$ 50	20%	\$ 330
Future Constructin Increase				0% of B	0%	\$ -	0%	\$ -	0%	\$ -	0%	\$ -	0%	\$ -	0%	\$ -	0%	\$ -
TOTAL PROJECT OPINION OF COST / LF					\$ 240		\$ 200		\$ 40,350		\$ 69,760		\$ 650		\$ 260		\$ 1,970	