

Carbondale to Crested Butte Trail Plan

Adopted pursuant to BOCC Resolution 151.2018

Amended pursuant to BOCC Resolution 045.2024



**RESOLUTION OF THE BOARD OF COUNTY
COMMISSIONERS (“BOCC”) OF PITKIN COUNTY,
COLORADO AMENDING THE CARBONDALE TO
CRESTED BUTTE TRAIL PLAN**

RESOLUTION NO. 045-2024

RECITALS

WHEREAS, Pursuant to Section 2.8.3 (Actions) of the Pitkin County Home Rule Charter (“HRC”) official action by formal resolution shall be required for all actions of the Board not requiring ordinance power on matters of significant importance affecting citizens, and;

WHEREAS, The Voters of Pitkin County and the Board of County Commissioners of Pitkin County (BOCC) established an Open Space and Trails Fund for the purposes of acquiring, preserving, managing, and maintaining open space and trails assets and resources, and established an Open Space and Trails Board of Trustees (OSTB) to guide the expenditure of those funds.

WHEREAS, The Carbondale to Crested Butte Trail Plan is a vision for potential options to complete the remaining sections of the trail from the KOA Campground to McClure Pass, and;

WHEREAS, The Carbondale to Crested Butte Trail Plan adopted in December 2018 was considered a living document that would be amended in the future based on studies on biodiversity, and;

WHEREAS, All applicable Federal and State planning processes, EA, EIS, or other process will be fully engaged in while looking at any trail segment, and;

WHEREAS, No trail construction will commence on any segment without approval by the BOCC and recommendation from the Open Space and Trails Board, and;

WHEREAS, The Open Space and Trails Board recommended adoption of this update to the Carbondale to Crested Butte Trail Plan to the Board of County Commissioners at their Joint meeting with the BOCC on June 4, 2024, and;

WHEREAS, The BOCC finds that it is in the best interests of the citizens of Pitkin County to approve this Resolution.

NOW, THEREFORE, BE IT RESOLVED by the Board of County Commissioners of Pitkin County, Colorado that it hereby adopts the Resolution Amending the Carbondale to Crested Butte Trail Plan in the attached form and authorizes the Chair to sign the Resolution and upon the satisfaction of the County Attorney as to form, execute any other associated documents necessary to complete this matter.

INTRODUCED AND FIRST READ ON THE 12TH DAY OF JUNE, 2024 AND SET FOR SECOND READING AND PUBLIC HEARING ON THE 26TH DAY OF JUNE 2024.

NOTICE OF PUBLIC HEARING AND TITLE AND SHORT SUMMARY OF THE RESOLUTION PUBLISHED IN THE ASPEN DAILY NEWS ON THE 13TH DAY OF JUNE, 2024.

NOTICE OF PUBLIC HEARING AND THE FULL TEXT OF THE RESOLUTION POSTED ON THE OFFICIAL PITKIN COUNTY WEBSITE (www.pitkincounty.com) ON THE 13TH DAY OF JUNE 2024.

ADOPTED AFTER FINAL READING AND PUBLIC HEARING ON THE 26TH DAY OF JUNE 2024.

POSTED BY TITLE AND SHORT SUMMARY, AFTER ADOPTION, ON THE OFFICIAL PITKIN COUNTY WEBSITE (www.pitkincounty.com) ON THE 4TH DAY OF JULY 2024.

PUBLISHED BY TITLE AND SHORT SUMMARY, AFTER ADOPTION, IN THE ASPEN DAILY NEWS ON THE 4TH DAY OF JULY, 2024.

ATTEST:

BOARD OF COUNTY COMMISSIONERS

By Sam Engen
Sam Engen
Clerk to the Board

By: Greg Poschman
Greg Poschman, Chair
Date: Jun-28-2024

APPROVED AS TO FORM:

MANAGER APPROVAL

Richard Neiley
Richard Neiley,
Assistant County Attorney

Jon Peacock
Jon Peacock, County Manager

ABBREVIATIONS / ACRONYMS

AVLT - Aspen Valley Land Trust

BOCC - Board of County Commissioners

CDOT - Colorado Department of Transportation

CNHP - Colorado Natural Heritage Program

CPW - Colorado Parks and Wildlife

CRC - Crystal River Caucus

CRCE - Crystal River Country Estates

CVEPA - Crystal Valley Environmental Protection Association

EA - Environmental Assessment

ESA - Endangered Species Act

FSS - U.S. Forest Service Sensitive Species

GMUG - Gunnison-Mesa-Uncompahgre National Forests

GOCO - Great Outdoors Colorado

HRSB - Healthy Rivers and Streams Board

NEPA - National Environmental Policy Act

OST - Open Space and Trails

OSTB - Open Space and Trails Board

RFC - Roaring Fork Conservancy

RFMBA - Roaring Fork Mountain Bike Association

WW - Wilderness Workshop

WRNF - White River National Forest



CONSULTANTS

Environmental Analysis: ERO Resources, Inc.

Engineering Feasibility: Loris and Associates Consulting Engineers

Right-of-way Survey: SGM Engineering

The opinions and documents presented herein are for information purposes only and are based on the then existing knowledge of the Open Space and Trails Department. No individual or entity should rely on the information presented herein for any other purpose than evaluating the overall goals set forth for the Draft Carbondale to Crested Butte Trail Plan. This document does not express a policy of Pitkin County and may be updated as necessary.

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BOCC Resolution XXX.2024 Amended the 2018 Plan to include the following commitments.

1. Pitkin County shall in conjunction with Federal and State agencies conduct a comprehensive environmental analysis of the potential direct, indirect, and cumulative impacts and connected actions associated with the entire Carbondale to Crested Butte (CCB) Trail in Pitkin County prior to constructing or seeking approval for construction of any future segment of that trail whether or not the County may have current plans or dedicated funding to implement its entire approved trail plan at any particular point in time. The analysis will consider a range of alternatives including but not limited to alternatives that involve widening the shoulder of Highway 133, that proactively manage recreational demand, minimize impacts, and protect the sensitive wildlife values and sensitive habitat affected by the proposed Carbondale to Crested Butte Trail in Pitkin County. The analysis will use the best available science as well as the principles outlined in the Open Space and Trails Program’s Biodiversity Policy to review and analyze potential impacts to wildlife, sensitive habitat, and the Crystal River, as well as mitigation measures to reduce potential impacts of recreation on wildlife, sensitive habitat, and the Crystal River.

Notwithstanding the foregoing, the commitment to evaluate the environmental impacts of the proposed trail described above does not preclude or limit in any manner the use, improvement, and/or maintenance of any current trail or property interest or the acquisition or use of any existing or future trail or other property interest in the Crystal River Valley.

2. Removed the option for construction of any portion of the trail on the east side of the Crystal River in the Avalanche trail segment. This has been reflected in Section 3 of this document

* Appendix documents can be viewed and downloaded from the Pitkin County’s website at <http://www.pitkincounty.com/772/Properties-Trails> or by clicking on the links in the digital document.

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1. INTRODUCTION



The proposed 83-mile Carbondale to Crested Butte Trail will link two unique communities through some of western Colorado’s most beautiful landscapes, encompassing part of the West Elks Scenic Byway, the Redstone National Historic District and two national forests.

The trail will enhance safety for both motorized and non-motorized travelers in the Crystal Valley and on Kebler Pass in Gunnison County, while providing opportunities for recreation, education and interpretation of the area’s unique natural and cultural resources. Future users of the Carbondale to Crested Butte Trail will likely range from families on short outings to bicyclists seeking daylong excursions or long-distance cyclists linking destinations across the state. The trail project also offers the opportunity for riparian and land management enhancements.

A. TRAIL CONTEXT

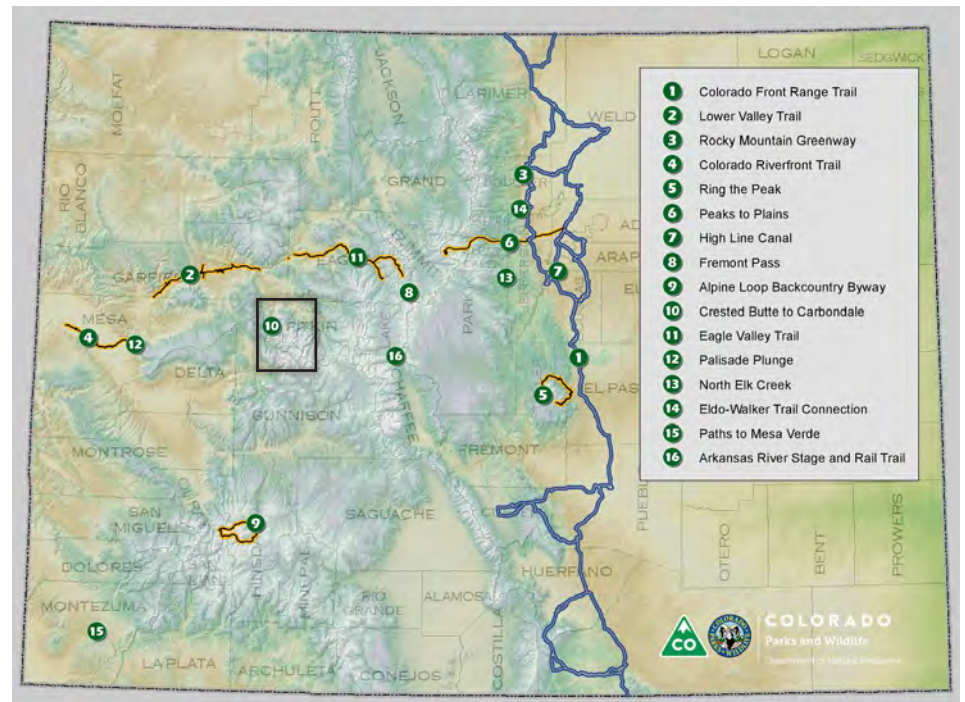
On a regional scale, the trail will link to the 44-mile Rio Grande Trail at Carbondale, allowing connections to Aspen on one end of the Roaring Fork Valley and to Glenwood Springs on the other. At Glenwood Springs, the Rio Grande Trail ties into the Glenwood Canyon Bike Path and existing connections to the east, as well as a planned trail extending west. In Gunnison County, the trail ties into a mountain biking mecca at Crested Butte and potential trail link between Crested Butte and Gunnison. The regional significance of the Carbondale to Crested Butte Trail connection led to its identification as a priority link in Colorado Gov. John Hickenlooper’s “Colorado’s 16” initiative. The trail is a component of an envisioned recreational trail network across Colorado that promotes multi-modal transportation and recreation-based tourism, as well as regional connections between communities.

Routes like the Carbondale to Crested Butte Trail are, in the words of Gov. Hickenlooper, “not only about connecting our parks, trails and scenic lands, but about connecting people to the outdoor delights that set Colorado apart as a special place. It’s important to bring our newest generations outside, away from electronic distractions and into the splendor of our waterways, forests, wildlife, grasslands, mountains and canyons.”

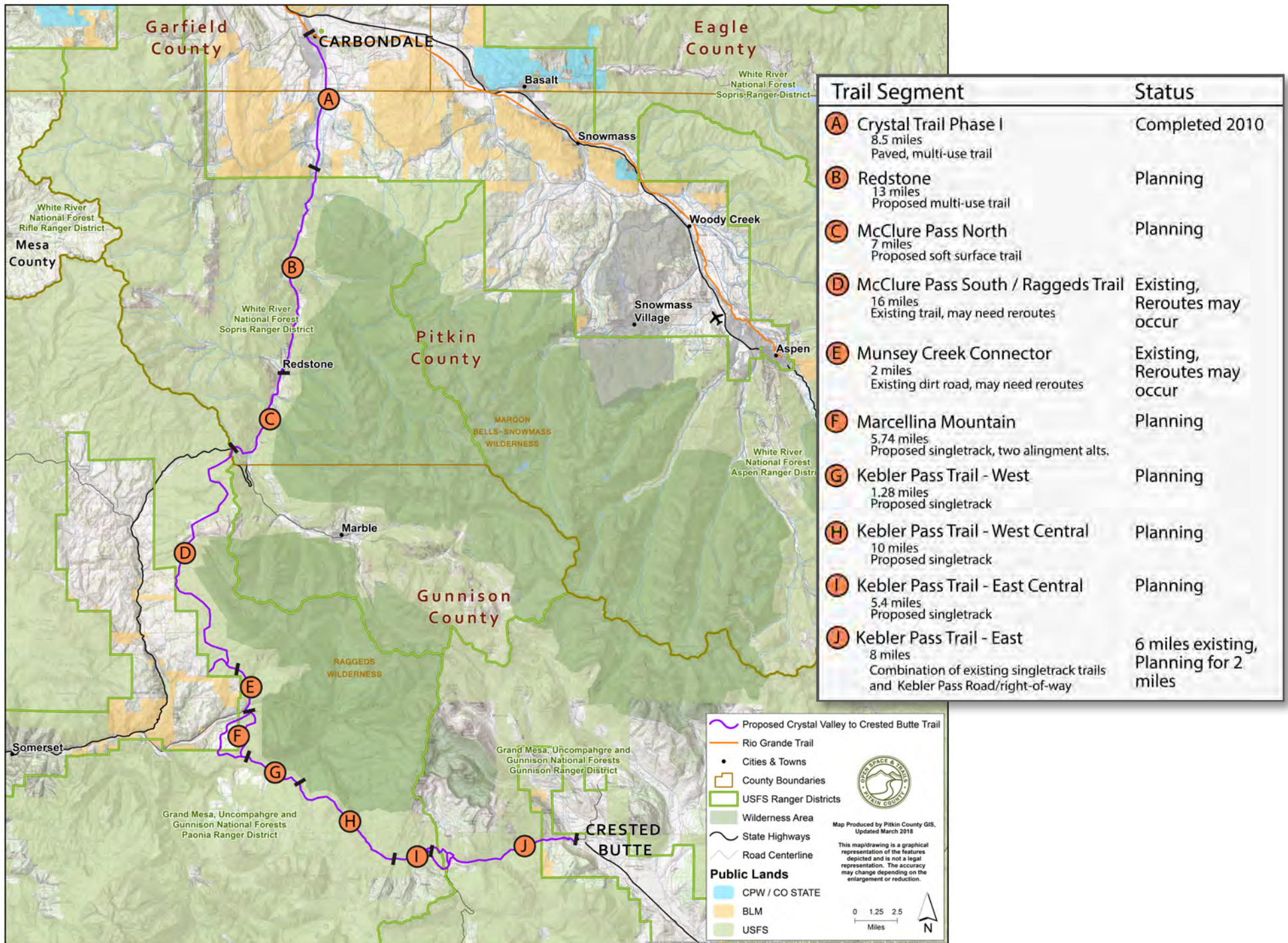
B. CONNECTING TWO MOUNTAIN TOWNS

The Carbondale to Crested Butte Trail, located in west-central Colorado, will eventually traverse multiple river drainages and connect several impressive mountain ranges. The trail begins in Carbondale, a town perched at the confluence of the Roaring Fork and Crystal rivers, follows the narrow and scenic Crystal Valley to the south, and eventually climbs to the top of McClure Pass. From the top of McClure, the trail continues into the Muddy Creek drainage, descending the southern side of the pass toward Kebler Pass Road and the Anthracite Creek drainage, where the trail climbs to the top of Kebler Pass through one of the country’s most impressive stands of aspen trees. From the top of Kebler Pass, the trail crosses into the Coal Creek drainage, descending east toward the Town of Crested Butte. The trail goes from an elevation of 6,170 feet at Carbondale to a height of 9,980 feet at Kebler Pass, traversing a diverse geography of landscapes. Predominant peaks and mountain ranges flanking the trail include Mount Sopris and the West Elk Mountains, the Raggeds, Marcellina Mountain, East and West Beckwith Mountain,

Figure 1: Colorado 16 Statewide Trail Network



Map 1.1: Carbondale to Crested Butte Trail System



the Anthracite Range, the Ruby Range and Mount Emmons. Land uses along the length of the trail are primarily rural and/or remote, including rural subdivisions scattered along Hwy. 133, large private landholdings, and public lands including Pitkin County Open Space and Forest Service lands.

The route focuses on approximately 49 miles of missing links connecting approximately 34 miles of existing trails, with some variation depending on specific trail alignments.

In Pitkin County, a trail connection in the Crystal Valley has been a vision in the community since the early 1990s, though a trail in the valley was historically part of a broad web of well-established pathways through the West Elk Mountains and throughout Colorado before the territory gained statehood. A survey team documented a Ute Indian trail running the length of the valley in 1873. With the eventual construction of a wagon road, unpaved county road, a railroad, and finally a state highway in the Crystal Valley, the ability for safe, non-motorized travel in the corridor was lost – a shortcoming acknowledged in multiple planning documents and noticed most acutely by bicyclists traveling Hwy. 133 (refer to Section 2B. Previous Planning Efforts and Studies). The Pitkin County side has approximately 10 miles of existing trail and 16 miles of missing links.

Within Gunnison County, the Town of Crested Butte and Gunnison County have coordinated trail planning with staff from the Gunnison-Mesa-Uncompahgre (GMUG) National Forests and the Crested Butte Mountain Bike Association. Sections of the potential trail connection in Gunnison County are already included in the GMUG Travel Management Plan.



The view from Red Hill looking south toward Carbondale and the Crystal Valley
Photo: Cynthia Phillips



Bicyclists in downtown Crested Butte. Photo: Tom Stillo

C. CURRENT TRAIL PLANNING

With the Carbondale to Crested Butte Trail's inclusion on the Colorado's 16 list in 2016, Pitkin County Open Space and Trails pursued Great Outdoors Colorado funding to undertake a comprehensive planning effort in order to draft a plan identifying a recommended alignment. A \$200,000 allocation from Pitkin County and \$100,000 grant from GOCO funded the first steps in the trail planning process, including thorough studies of the complex environmental and engineering realities of the Crystal River corridor. Environmental services consultant ERO Resources was selected by a review committee comprised of members from: Pitkin County, Colorado Parks and Wildlife, the White River and Gunnison-Mesa-Uncompahgre National Forests (GMUG), Town of Crested Butte, Gunnison County and two members of the Crystal River Caucus. In initial kick-off meetings, ERO met with U.S. Forest Service staff to create a methodology that could be built upon for future NEPA analysis. Loris and Associates was selected to complete the engineering evaluation and cost estimates by a review committee with members from Pitkin County and the caucus.

In addition to environmental and engineering considerations, this plan addresses the ownership and jurisdictional complexity of the proposed trail route. A coordinated approach involving Pitkin and Gunnison counties, the two national forests, the Colorado Department of Transportation (CDOT) and other stakeholders/landowners has been established in order to implement the plan's vision. Because of the distinct planning approaches required for the two counties and the presentation of more in-depth studies and analysis on the Pitkin County side, the body of the plan covers Pitkin County with the Gunnison County/GMUG portion of the trail addressed in Appendix A.

The Gunnison County trail segments are planned as primarily unpaved single-track, located mainly within the GMUG. The Gunnison Travel EIS 2010 mentioned the possibility of a non-motorized trail from Carbondale to Crested Butte, but site-specific NEPA is still required on the Gunnison forest. Local government staff and user group volunteers are working with GMUG staff to refine the recommended route through the national forest.



Crystal River Trail. Photo: John Fielder



The existing Raggeds Trail is the first segment within the GMUG National Forests.

Within Pitkin County, the goal is to establish a trail connection between Carbondale and the top of McClure Pass. An analysis of the alternatives sought to evaluate potential routes from Carbondale to the pass summit, including the Hwy. 133 right-of-way and parallel alignments utilizing previously established routes through Pitkin County Open Space and Forest Service lands, some subdivision roads and private landholdings. Given the initial goal of a multi-use trail from Carbondale to Redstone and the diversity of land ownership and rights-of-way along the potential alignments, the Pitkin County segments required a survey to define the CDOT right-of-way, detailed environmental and engineering studies, and significant public engagement and outreach to landowners, which will continue as segments are addressed over time. The input has been incorporated into this plan, which sets forth a “recommended alignment” from Redstone to the top of McClure Pass and a long-term phasing strategy to evaluate preferred alignments for segments from the end of the existing trail to Redstone. The segments are broken into manageable units in order to proceed with further planning, refinement and construction.

In addition, the Pitkin County portion of this plan has grown in scope to include a number of Action Items that can be pursued to enhance the area’s natural resources and recreation opportunities independent of the trail alignment. The plan’s proposals have been vetted through public engagement, as well as written public comment, with the goal of adopting a final plan that reflects sound, science-based decisions and input from all who have been involved in the plan’s creation.

The Action Items in the plan as well as future actions within the Crystal Valley should be evaluated based on the County's Strategic Plan and community vision to "continue to be a healthy, safe, vibrant and sustainable community, enhancing the quality of life for everyone who lives, works and visits here, while conserving the natural environment as the basis for our community success." The supporting focus areas and success factors are included in Figure 2.

D. PROJECT GOALS

The overarching goal for this planning project is to, “Design and construct a recreation and transportation trail from Carbondale to

Figure 2: County Strategic Plan Focus Areas and Success Factors



Crested Butte following the West Elk Scenic and Historic Byway.” Through the planning process, Open Space and Trails has drafted a plan that builds on the Scenic Byway’s original vision and attempts to address myriad objectives, including:

- Promote and coordinate access and management of non-motorized, multi-modal transportation;
- Enhance safety for non-motorized users, and Hwy. 133 and Kebler Pass motorists;
- Steward the environment and biodiversity through sensitive route selection and long-term management;
- Design a trail that utilizes best practices to minimize impacts and seeks aesthetic compatibility with the landscape;
- Provide ADA-accessible recreation to the extent possible on wider multi-use trail segments; and
- Enhance and expand opportunities for recreation, education, interpretation and appreciation of the unique natural, cultural and historical resources along the corridor.

A collective effort will be needed to implement this trail and will include many partners and stakeholders.

E. HISTORY

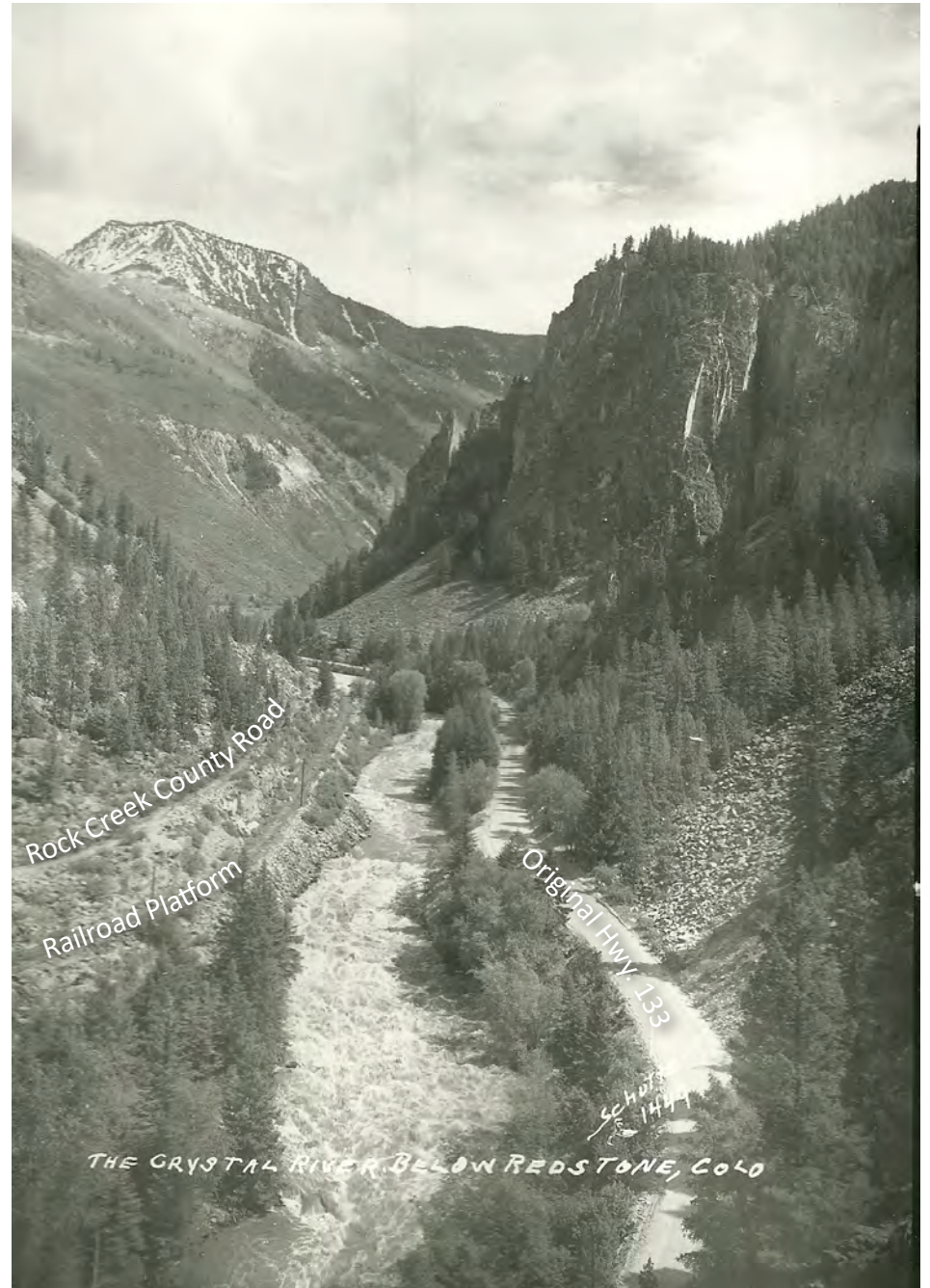
The splendor of the Crystal Valley has long captivated all who venture there, from the Native Americans who first wandered among its jagged peaks, craggy gorges and restorative hot springs, to the white explorers who mapped the imposing landscape for the gritty prospectors and hardscrabble ranchers who invariably followed. More than a century later, both visitors and those who call it home are mesmerized by the valley's beauty and its wonders.

The valley boasts a rich tapestry of historic travel routes, the first trampled by foot and horse as the Ute people wove a labyrinth of paths through the mountains and valleys of western Colorado. In 1873, three years before Colorado gained statehood, famed geologist Ferdinand V. Hayden and his party found "one of the principal Indian trails in the (Colorado) Territory" running the entire length of the Crystal River.¹ Witnesses as late as 1950 could recall Ute encampments near Penny Hot Springs along the Crystal years before.² A nomadic people, the Utes spent their summers in the valley in the pursuit of plentiful fish and game.³

However, by the time Hayden's "Geological and Geographical Atlas of Colorado" was published in 1881, the native Utes had been forced out of the Crystal Valley and other areas, and placed on small reservations in southwest Colorado and northeast Utah.

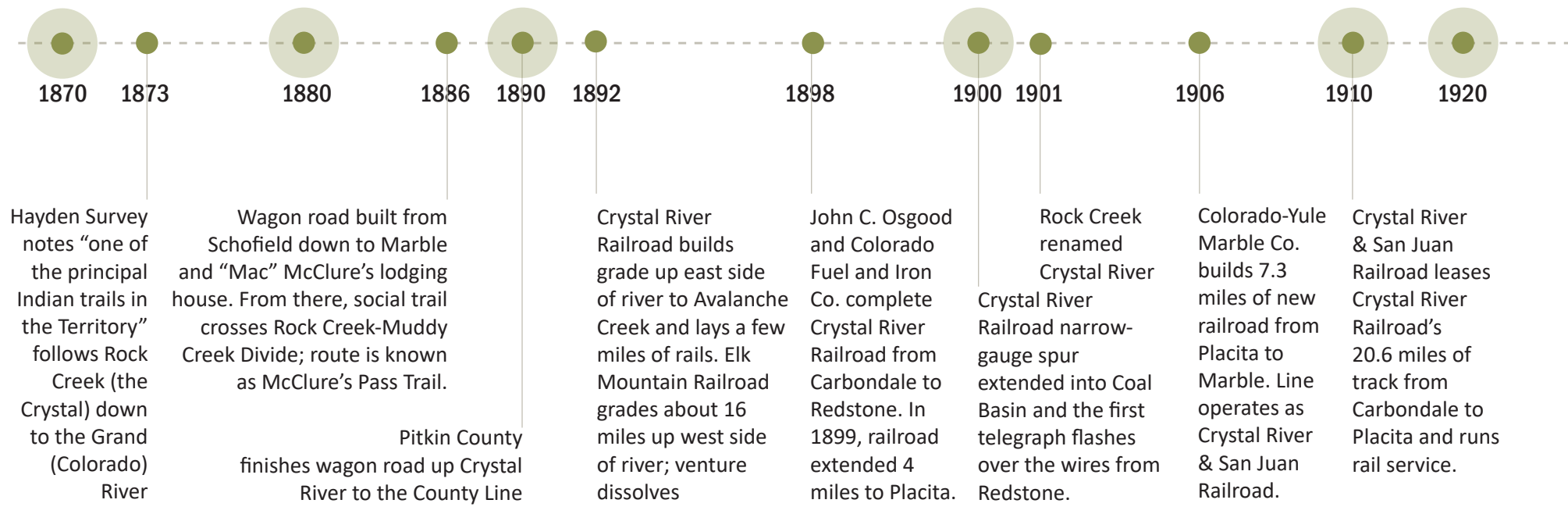
In their footsteps came many who traversed the Elk Mountains by tracing the north-south trail established by the Utes as they followed Rock Creek (now the Crystal River) across Schofield Pass to the head of the East River and down to the East's confluence with the Taylor and Gunnison rivers.

At the headwaters of the Crystal remains a remnant of icy snowmelt still dubbed Rock Creek, cascading from the flanks of Galena Mountain to Elko Lake. From the lake's outlet, the Crystal River begins its roughly 40-mile journey to its confluence with the Roaring Fork River at Carbondale. The first prospectors in the Crystal Valley, however, entered not via Carbondale, but from the Crested Butte side of the rugged Elk range, over a route that also served the mining camps of Elko, Schofield City and Gothic. The treacherous route through a narrow canyon and past



This undated photo of the Crystal Valley below Redstone shows the wagon road and the former railroad grade below it on the left, and the gravel road that would become Hwy. 133 on the right. Photo: Schutte, Glenwood Springs Historical Society

Figure 3: Crystal River Valley Transportation Timeline



Then and Now - Transportation Infrastructure of the Crystal Valley



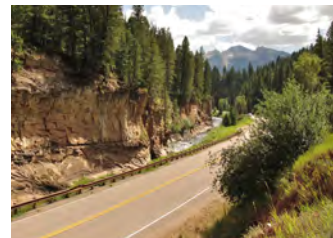
Crystal River Parcel Open Space with the train on its way to Carbondale



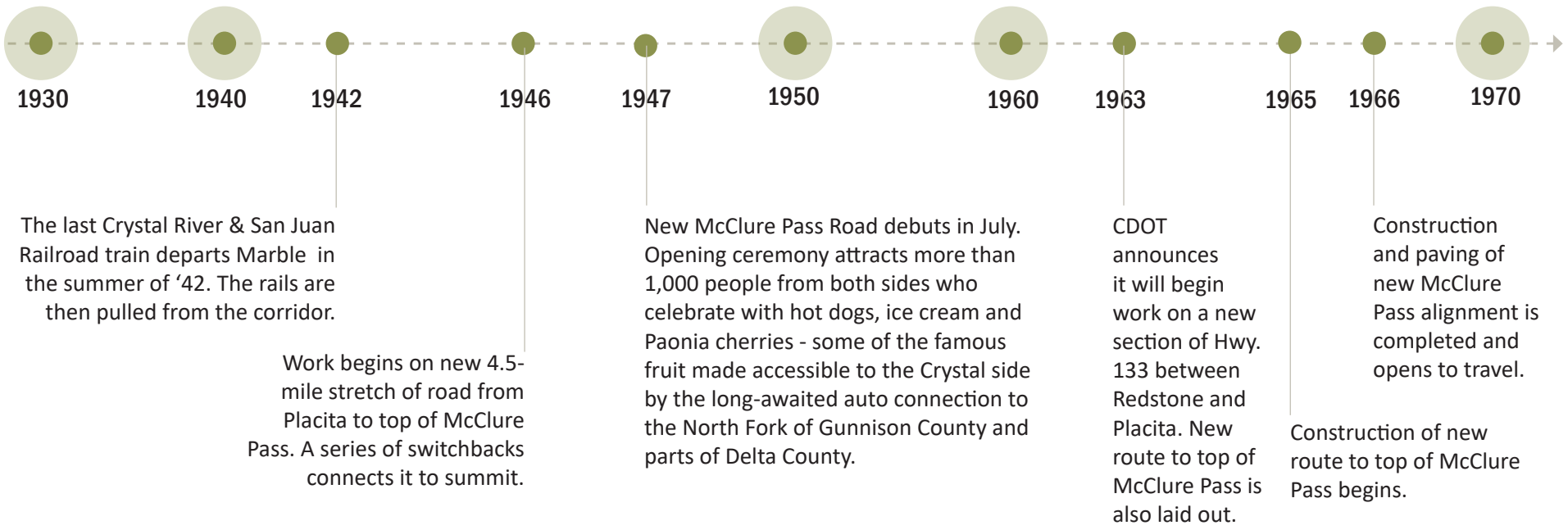
Rock Creek County Road and the railroad (between 1890-1920) flank the banks of the Crystal River



The Crystal River, originally called Rock Creek, between the Rock Creek County Wagon Road on the west and the railroad on the east (between 1889 and 1890)



Hays overlook with the historic railroad (between 1903-1920) now replaced by Hwy 133



Source: Glenwood Springs Historical Society



View from Placita looking up at the original McClure Pass switchbacks.



Source: Denver Public Library



Placita overlook with Chair Mountain in the background and railroad tracks leading to Marble.



Source: Private collection of historical photographs



Filoha Meadows historic cabins with the train approaching Redstone

the Devil’s Punchbowl, once visited by an impressed former President Ulysses S. Grant, was dubbed the “S.O.B. trail” by early miners.

Chief among the early mining enclaves in the Crystal Valley was Crystal City, a bustling town of 500 soon after its founding in 1880.⁴ Early ore shipments from mines in the upper reaches of the valley were sent to Crested Butte via donkey-led “jack trains.” The rocky wagon road connecting Crystal and Crested Butte, which came to be known as Schofield Pass Road, was completed in 1883, but was subject to rock and snow slides, and was often in such terrible condition that wagons could not pass.⁵

Slides closed the road to all but hikers and horses in 1928. It wouldn’t be until 1958 that Gunnison County cleared the rocky road sufficiently to allow four-wheel-drive vehicles to pass.⁶

For early inhabitants of the West Elks, this spectacular, but arduous route served as the accepted passage between the upper Crystal Valley and Gunnison County. Connecting Carbondale and Redstone with Crested Butte – three mountain towns steeped in Colorado’s pioneer history – would take a little more time.

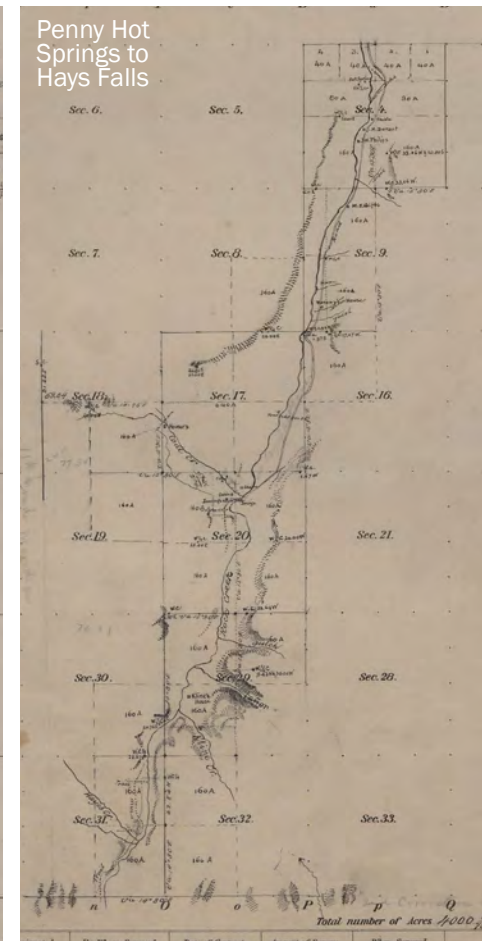
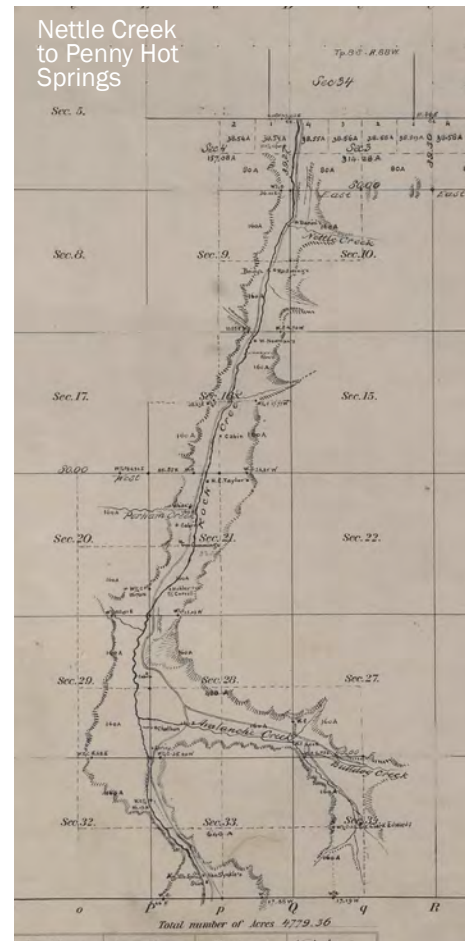
THE ROCK CREEK WAGON ROAD

In 1884, Pitkin County Assessor William Clark left Aspen for Rock Creek with the intention of assessing developed property in the valley, by then occupied by ranchers and fortune hunters armed with picks and shovels. He followed a wagon road beyond the Thompson ranch, where Myron Thompson’s original homestead cabin still stands, and then a trail as far as “the springs.”

“The trail is in very bad condition, almost impossible to get over, and the commissioners should do something in regard to fixing it,” he reported upon his return.⁷ Clark also noted plentiful game and a crowd of prospectors at the hot springs, where he “enjoyed a good bath” and the hospitality of landowner Mr. Penny, who was planning to build a hotel. “He will do well if the trail is fixed up,” Clark concluded.⁸ Dan Penny’s business acumen aside, the popular hot springs still bear his name.

Pitkin County, established in 1881, began constructing a wagon road

up the east side of Rock Creek from Carbondale in 1885. When road builders hit an impassible cliff face at Red Wind Point, the roadway was bridged to the west side, where it continued south to Janeway and again bridged the river, following the east side to Avalanche Creek and what’s now called Filoha Meadows. It may have reached Redstone at that time, though the Aspen Daily Times reported in 1890 that county commissioners contracted for construction of the road from Hot Springs (at Filoha) south to the county line.⁹ That boundary is just north of the present-day turnoff to Marble.



General Land Office (GLO) maps of the Crystal Valley from 1890. The GLO was the precursor to the BLM. The maps show the old Rock Creek County Road following what was then called Rock Creek, now the Crystal River.

At any rate, the wagon road stopped short of Marble and Crystal City, much to the chagrin of residents in the upper Crystal who clamored for a connection to Carbondale. Dacey Schofield Pass remained their sole road out of town.

At least one county commissioner shared their consternation. “The road up Rock Creek is of no benefit whatever as regards an outlet for the ores of Crystal, complained Commissioner James Bennett in 1890, calling the connection “almost useless” without the link to Crystal City. “The direct benefit of this road would be to Carbondale, but Aspen would feel the trade,” he said.¹⁰

The Rock Creek Wagon Road was completed to the county line by the summer of 1890, predating nearly all of the private land patents in the valley as well as the White River National Forest, which was established (as the White River Plateau Timber Reserve) in 1891. Scattered remnants of the old road remain on the ground today, a testament to the accuracy of hand-notated surveys recorded in the yellowed pages of Pitkin County’s early plat books.

References to Rock Creek’s new name, Crystal River, apparently date at least as far back as 1886, when the Colorado Coal and Iron Company purchased coal land near Thompson Creek, west of the Crystal River. When a company draftsman mapped the area, he labeled the river the Crystal to distinguish it from other streams that were also called Rock Creek.¹¹

The two names continued to appear interchangeably in Aspen newspaper articles for years afterward. The formal name change would take another 15 years.

After three years of review, the General Land Office of the Department of the Interior agreed there was a valid reason to change the name of the waterway. The agency cited at least 10 streams bearing the name Rock Creek in Colorado and acknowledged the river had already long been known locally as the Crystal. The change was made official on Nov. 22, 1901 and Crystal River appeared on official maps from that date forward.¹²



Remnants of the Rock Creek County Road can be found throughout the valley, including the original platform, old bridge abutments and hand-built retaining walls like the one pictured here, at the Drool Open Space.

THE RACE FOR A RAILROAD

The Rock Creek Wagon Road eased travel by horse and wagon into the Crystal Valley, but the desire for transport didn’t end there. By 1892, two separate attempts were being made to reach the Crystal Valley’s riches by rail.

The Crystal River Railway Company established a grade and laid a few miles of track up the east side of the Crystal, intending to link to the Denver and Rio Grande Railroad at Carbondale, while the Elk Mountain Railroad graded about 16 miles up the west side from the Colorado Midland. The latter effort fizzled before any track was set, though an 1892 advertisement placed by a mining investments broker proclaimed the Elk Mountain Railroad under construction and its completion assured. “This very rich district is now attracting attention and investors will do well to look closely into its merits,” the notice read.¹³

Meanwhile, the Crystal River Railway drew the county’s ire for using parts of the newly built county road as its platform. County commissioners discussed the situation in April 1893: “It having been reported to the board that the Crystal River Railway company has obstructed and continues to obstruct the county road along Rock Creek... it was ordered that E.C. Stimpson be appointed special attorney to take such action as may be necessary to prevent such obstruction, and to open said road for travel.”¹⁴

John C. Osgood, president of the Colorado Fuel & Iron Company and a leading U.S. industrialist, had taken over the Crystal, forming the Crystal River Railroad Company as a subsidiary of CF&I. In 1883, the company began pushing track up the line, but a silver crash and recession temporarily halted progress. By 1899, better times saw Osgood open his Coal Basin mines to full production and construct an extensive coking operation. He had also developed his model village of Redstone and Cleveholm, his opulent mansion just south of town.

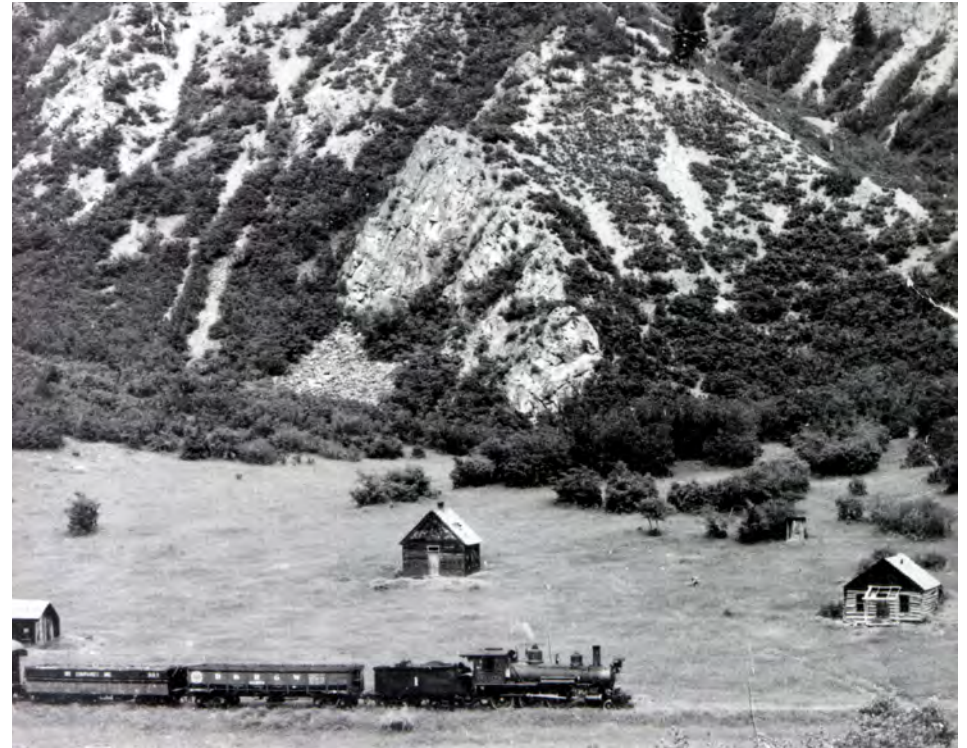
The Crystal River Railroad Company, meanwhile, finished construction to Redstone, offering a stop at Hot Springs, by 1898. A narrow-gauge line extended into Coal Basin and the main line reached Placita, south of Redstone, by 1899, serving Osgood's coal interests in both places.

With rails hampering travel on the county road, the abandoned Elk Mountain Railroad grade across the river was pressed into service. In 1908, county commissioners put \$1,000 toward improving the grade for wagon travel. The Elk Mountain Railroad was also tabbed to contribute \$1,000, with Osgood on the line to fund the remainder of the cost. The Aspen Daily Times predicted the new road would offer 18 miles of unparalleled automobiling. "For eighteen miles up the Crystal River, one of the prettiest streams in the world, the new road will run – with a grade of only two percent. There will not be such another stretch of road anywhere," the newspaper gushed.¹⁵

Meanwhile, Osgood lost control of the Crystal River Railroad in 1903 in a CF&I takeover. After the Coal Basin mines and coke ovens at Redstone closed in 1909, the Crystal River and San Juan Railroad took it over.¹⁶ The CR&SJ, dubbed "Can't Run and Seldom Jumps," had extended the Crystal River Railroad from Placita to Marble in 1906 to transport marble from the quarry there.

In its heyday, the railroad was hauling coal and coke tonnage, blocks of marble, and passengers seeking transport between Carbondale, Penny Hot Springs, Redstone and Placita, with connections to Coal Basin and Marble.

Deliberately scrapped blocks of imperfect marble still line the former rail bed in places, dumped along the tracks to prevent the Crystal River



A train passes through what was once called Hot Springs, en route to Redstone. The area is now Filoha Meadows. Photo source and date unknown.

from undercutting the tracks. Before the tracks were pulled for salvage in 1942, driven by the need for steel in World War II, giant blocks of Marble's famed, sparkling stone were transported down the rails to Carbondale, bound for use in the Colorado State Capitol and other landmark buildings in Denver and around the country, as well as in some of the nation's most treasured monuments – notably the Lincoln Memorial and Tomb of the Unknown Soldier in Washington, D.C.



Men and horses work on the Crystal River and San Juan Railroad track near Marble. Note the horse-drawn buggy crossing the river on a bridge in the foreground. Photo: History Colorado/William Henry Jackson Collection.

CONNECTING TO THE MUDDY

The clamor to connect the North Fork and Crystal valleys was making news as early as the 1920s. In January 1926, the then-highway supervisor for the district claimed he had secured sufficient funds to make a road over McClure Pass a reality that summer. In reality, it would take another two decades to turn a rough wagon road into a negotiable route for automobiles, albeit those with gutsy drivers. The pass, once used by the Utes to cross between the Crystal and the Muddy, took its name from “Mac” McClure, who built and ran a nearby hotel along the railroad in the 1900s.¹⁷

The opening of a single-lane, dirt road that climbed through a series of switchbacks for 4 ½ miles from Placita to the top of the pass was cause for celebration. Its construction had been championed by the Glenwood Springs Chamber of Commerce and merchants on both sides of the divide.

The new route cut more than 100 miles off a trip between Paonia and Denver and put the Muddy district, as the East Muddy Creek region west of the pass summit was known, within reach of local residents. Some of them motored up the winding route to see for themselves.

More than 1,000 people gathered near the summit on July 13, 1947 to consume ice cream, soft drinks, coffee and all the “delicious Paonia district cherries that could possibly be eaten.”¹⁸ Pitkin County put \$1,000 toward the pass road’s construction in Pitkin County with Glenwood Springs raising the balance.¹⁹

Despite the improvements, travel within the Crystal Valley was not without its challenges. And the pass itself was not for the faint of heart.

Alena Gauba’s parents drove the old road. “Mom said it was so sketchy that she made my dad stop the car so she could get out and walk with my two brothers, who were very little at the time (the early 1960s). She didn’t want to have anything to do with being in a car on that old pass.”²⁰

Redstone resident Jeff Bier recalls driving up the old pass road with his parents in 1955. “It was a one-lane road and at the switchbacks, at a couple of them you had to make two- or three-point turns to get around them, he said.”²¹ It wasn’t the kind of place where a driver wanted to



The original switchback road up McClure Pass. Photo: Glenwood Springs Historical Society

meet a vehicle heading in the opposite direction, but there was very little traffic in those days, Bier said.

The pass aside, the one-lane, dirt road extending south out of Carbondale along the Crystal made for a slow, jarring ride.

In 1957, Mid-Continent Coal and Coke Company was readying to revive mining in Coal Basin – an operation that would mean using the narrow, unimproved road up the valley to truck coal to Carbondale. At Redstone, the road went through town, where the street was exaggeratedly described as so muddy, the trucks “sank up to their radiator caps.”²² Mid-Continent briefly flirted with the notion of rebuilding the railroad between Carbondale and Redstone to haul coal.²³

Mid-Continent’s operation resulted in improving the road between Carbondale and Redstone to two lanes of graded gravel, and it was largely through the company’s efforts that the Colorado Highway

Department adopted the county road into the state highway system. Construction of Hwy. 133 in the 1960s altered the landscape, changed the course of the river and routed travelers around, rather than through, the town of Redstone.

Completion of the paved highway through the Crystal Valley came with a final push to ascend 8,775-foot McClure Pass. Highway builders bypassed the old zigzag route up the hillside at Placida, bulldozing and blasting a new, 3.4-mile route that extended farther to the south before swinging sharply to the north and cutting a wide gash across the mountainside to reach the summit.

Once again, a ceremony on McClure Pass, hosted by the chambers of commerce in Glenwood Springs, Carbondale and Paonia, celebrated the road improvements. Congressman Wayne Aspinall spoke at the 1966 dedication of the \$1 million, blacktop connection to the summit.

The new highway was not, however, without its critics. Crystal residents penned a letter to the First Lady, Mrs. Lyndon B. Johnson, to decry the blasting of giant boulders, desecration of the mountainside and changed course of the river to accommodate the asphalt strip to the pass summit. The U.S. Forestry Service and Bureau of Public Roads were targeted for blame.²⁴ The Denver Post chimed in with an editorial, calling the blacktopping of a highway in the Crystal Valley the “ruination of a river.”²⁵

“The Colorado Highway Department has ‘plowed up’ great chunks of the Crystal Valley – in the name of progress, we must assume,” the Post lamented. “Given the choice, we’d have preferred it the way it was.”²⁶

Twenty-five years later, Hwy. 133 in the Crystal Valley was evidently revered by travelers. The Colorado Scenic and Historic Byway Commission established the West Elk Loop Scenic and Historic Byway in July 1991. The 204-mile lasso-shaped loop through the spectacular West Elk Mountains includes Hwy. 133 from Carbondale to the summit of McClure Pass.

‘THE WAY IT WAS’

Much of “the way it was,” recalled so fondly by detractors at The Denver Post, was already gone by the time Hwy. 133 became a reality. Even less exists today. Place names, the collapsing remains of bygone buildings, and road or rail platforms carpeted in vegetation are all that hint at the Crystal Valley’s colorful past, with a few notable exceptions.

The existing Crystal Trail passes opposite Hwy. 133 from Myron Thompson’s homestead cabin, now on the Sustainable Settings farm property, and ends at a KOA Campground that is also the site of what remains of the roofless Rock Creek Schoolhouse, a log structure apparently built in 1884 and used until the 1930s.²⁷

Near Nettle Creek, a much-altered house and the trees around it still stand as depicted in a rare historical photograph, with the Rock Creek Wagon Road in the foreground.



This cabin, in altered form, still stands near Nettle Creek. Photo courtesy of Mike Brinson

At Janeway, close inspection of the riverbank reveals the location of a long-gone bridge crossing where the county road spanned then-Rock Creek. The community of Janeway sprang up around a burgeoning stage stop and then rail station with a siding for 29 cars. The flat swath of land, along the Crystal River just north of Avalanche Creek, was large enough to serve as an important stopover for teamsters and prospectors headed to the mines of Avalanche and beyond.²⁸ Established by 1880, it had a post office and store from 1887 to 1900.²⁹

Janeway founder John Chester Mobley first settled near Marble after coming into the valley via Schofield Pass in 1880. A year later, he moved his family to the junction of Rock and Avalanche creeks.³⁰ His cabin was noted on an 1890 Government Land Office map of the Crystal Valley and appears, judging from its location on the document, to be the one remaining structure still in evidence at Janeway. The sagging, roofless log cabin keeps silent watch over the once bustling frontier stop. The former rail bed cuts an unmistakable, straight, raised path across the sage flat before rounding a bend at the south end of Janeway, where marble riprap still lines the riverbank.

Mobley's Camp was renamed Janeway after Mary Jane Francis, a local innkeeper with mining claims on Avalanche and Bulldog creeks. By 1888, the settlement boasted 50 residents, a store, boarding house and saloon.³¹ Newspapers also made mention of a schoolhouse at Janeway.

In 1906, the Aspen Daily Times reported a snowslide that swept a freight train from the track near Janeway, completely burying the engine. No one was hurt, though the same slide took out the lower floor of the Colorado Supply Company store while an employee upstairs somehow slept through the "fearful crash." He, too, escaped uninjured.³²

Upstream from Janeway, the Crystal River crashes through a narrow gorge, dropping precipitously from a sun-drenched meadow dotted with hot springs. It was there that the Ute People set up camp before Penny Hot Springs, or simply Hot Springs, became a popular destination on the county wagon road and later, the Crystal River Railroad. Travelers found Dan Penny's guesthouse and dining facility built close to the track, along with a bathhouse at the river.³³



The lone remains of a cabin stand silent at the former rail stop of Janeway.



A rickety bridge and bathhouse were among the amenities at Penny Hot Springs. Photo source and date unknown.

One famous visitor was Doc Holliday, a gunslinger, gambler and dentist, who traveled to Penny Hot Springs in the summer of 1887, hoping to find a cure for his consumption. He stayed there, at a cabin owned by Alexander and Eva Harony, for a few months before returning to Glenwood Springs, where he died that November.³⁴

By the 1940s, Joseph Grange owned the meadow, raising cattle and potatoes there. At that time, Grange holdings also included land above Marble, as well as Rock Bottom Ranch and lands near Emma. Kelly Grange inherited Filoha. He recalls taking draft horses up the Crystal to plow the potato field and releasing the horses to find their own way back to Rock Bottom Ranch near present-day El Jebel.³⁵

Today's Penny Hot Springs along Hwy. 133 are actually Granite Springs, according to Dr. Bernarr Johnson, who purchased property there in 1979 with his wife, Dorothy. The famed Penny Hot Springs of old are out in the meadow, according to Johnson.³⁶ Dorothy named the meadows "Filoha" after a hospital where Dr. Johnson worked as a missionary doctor in the 1950s. Filoha means "hot water" in Ethiopian.³⁷

The Johnsons chose the property for its thermal properties, planning to care for arthritis patients with the curative waters. They heat their home and a greenhouse with the hot water.

The Johnsons carved off 50 acres in the meadow and sold the land to Pitkin County Open Space and Trails, which also acquired the 1.5-acre Penny Hot Springs and the 140-acre Hot Springs Ranch to create Filoha Meadows Nature Preserve.

Hot Springs on Rock Creek was a popular, though short-lived spa at the turn of the century. It remained an attraction for bathers over the years, but when the springs became popular in the 1960s with young people who skinny-dipped in the pools along the riverbank, neighboring residents made several unsuccessful attempts to destroy the springs.³⁸ Now protected as open space, the spot continues to draw crowds to the pullout on Hwy. 133.

The Penny Inn that once housed guests is long gone, and other historic structures at Filoha have collapsed or disappeared, including a bunkhouse that was still standing when a 1999 inventory of historic

structures was undertaken.³⁹ A deteriorating, old barn remains standing on the open space. The faux water wheel on the Johnsons' property is the leftover relic of a movie set for Disney's "Tall Tale." The 1995 release featured a tornado touching down in the meadow, among other cinematic feats.

A COMPANY TOWN

Redstone, John C. Osgood's model company town, was named to the National Register of Historic Places in 1989, and rightly so. The unincorporated community is a Crystal Valley landmark, boasting a number of historic structures that date back to the town's mining roots at the turn of the 19th century. In Redstone, one will find examples of the cottages built for miners and their families, and more expansive homes on the hillside that were once reserved for mine superintendents and other company higher-ups. The historic firehouse is there, too. The present-day Redstone Inn was originally built to house bachelors who worked in the nearby coking operation. Osgood's opulent Cleveholm Manor, also known as the Redstone Castle, has been preserved by a succession of owners. The lavishly appointed, 42-room mansion just



Redstone Castle , circa 1900. Photo: Aspen Historical Society

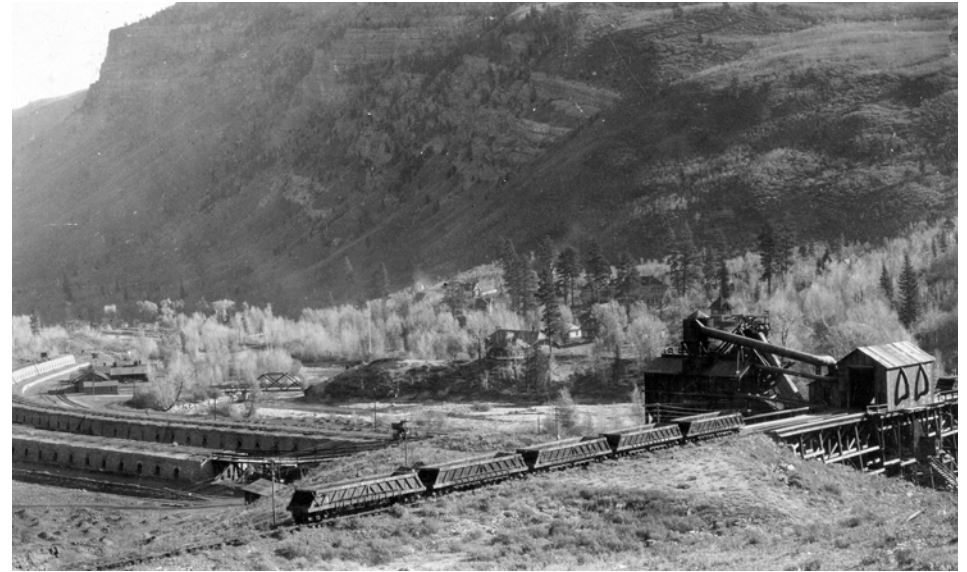
south of town was completed in 1902, boasting indoor plumbing and electricity before most of New York City enjoyed such amenities.⁴⁰ Osgood's nearby farms raised livestock and vegetables, as well as wild game, namely deer and elk. The gamekeeper's cottage across from Osgood's mansion is now a private residence, while the collapsed remains of the powerhouse that supplied electricity to Cleveholm sit on the bank of the Crystal, on what is now an Open Space and Trails property.

While Redstone's beehive coke ovens remain, preserved by Pitkin County, the industrial trappings of Osgood's coal and coking operations are long gone, as are the coal-processing facilities erected by Mid-Continent some five decades later. Relegated to grainy, black-and-white photographs are Colorado Fuel and Iron Company's massive trestle, from which narrow-gauge trains serving Coal Basin dumped their loads. Old photos also depict the coal washing and crushing plant, and the smoke and soot that belched from two rows of coke ovens, blotting out views of majestic Chair Mountain to the south. Gritty laborers forked the coke from the ovens into waiting boxcars lined up in front of the ovens.⁴¹ Three sets of parallel track curved under the trestle between the ovens and the Crystal River.⁴²

Redstone was but one piece of CF&I's vast holdings, which by the early 1890s included an estimated 400 tons of coal reserves, 14 coal mines, 800 coke ovens, iron mines and a steel plant in Pueblo.⁴³ Placita was another.

“LITTLE PLACE”

Osgood had extended the Crystal River Railroad above Redstone to Placita by 1899 to serve a coal mine and a community named with a Spanish word meaning “little place.” A photograph taken by James “Horsethief” Kelly, now preserved in the Aspen Historical Society collection, shows a neat row of miner's cottages below a mine. Tailings on the hillside still mark the mine site. From there, buckets on a long-gone aerial tram carried coal across the river to a tippie and the railroad. Later, a stock pen facilitated the loading of livestock onto the train at Placita. Today, a couple of houses west of the river are about all that remain of the former coal camp, though close inspection of the west bank of the Crystal reveals the detritus of a mining past at water's edge.



A view of the Redstone coking operation and the railroad from Coal Basin, circa 1909. U.S. Geological Survey. Photo: A.L. Beekly



Miners' cabins at Placita. Photo: Masterson Estate Collection, Aspen Historical Society.

ACROSS THE MOUNTAINS

During Ferdinand Hayden’s 1873 survey of the Elk Mountains, the geologist climbed 13,222-foot Mount Teocali for a better look at the surrounding terrain. To the southwest, two rugged peaks seemed to resemble the crests of a helmet. He referred to them as the “crested buttes.” One would be named Gothic Mountain and the other Crested Butte Mountain.⁴⁴ The town of Crested Butte would take the name of the peak towering above town.

Founded by investors attracted by promising coal deposits, Crested Butte saw its first boom in 1879 as a transportation and supply center to surrounding mining camps. By 1880, Crested Butte had incorporated as a town. It had three sawmills operating at full capacity and a smelter – the only one in the region, handling ore from near and far.⁴⁵

The dirt streets of Crested Butte filled with jack trains transporting ore to the smelter and to the railroad, once the Denver and Rio Grande reached Crested Butte in 1881. The mules returned to the mining camps laden with supplies until rail spurs penetrated the mountains. While both Carbondale and Crested Butte served as rail hubs, Crested Butte ultimately had more in common with Redstone than Carbondale.

Coal was king in Crested Butte by the early 1880s and a line of coke ovens produced coke for the Colorado Coal and Iron Company. The coal industry was the town’s largest employer and provided company housing.

While Redstone had Osgood, mining technology expert Julian A. Kebler was active in the mining industry on the Crested Butte side of the West Elks. He, along with Osgood and others, founded the Colorado Fuel Company, which would merge with the Colorado Coal and Iron Company to form Colorado Fuel and Iron. Kebler became CF&I’s general manager. He acquired coal lands outside of Crested Butte for Colorado Fuel Company and his name graced the town of Kebler, a combination sawmill operation and railroad spur on Ohio Pass Road.⁴⁶ Kebler Pass Road, originally a Ute trail, was also named for Osgood’s chief lieutenant. It dates back to the region’s mining camp days but became a private road until the state of Colorado took over its maintenance in 1904.⁴⁷



Coke ovens in Crested Butte in 1910. Photo: Denver & Rio Grande Railroad Co. Collection, History Colorado

In July 1880, the Pioneer Toll Road, a wagon road, linked Crested Butte with Ruby-Irwin, a booming silver camp nine miles to the west that dwarfed Crested Butte.⁴⁸ The Irwin and Ruby camps at one time boasted a combined population of an estimated 10,000 residents – “a floating population living in houses, hotels, boarding houses, shacks, tents, under trees and probably under the tables of the twenty-plus saloons in the area.”⁴⁹ Prospectors poured in after a silver strike at the Ruby Chief Mine, cutting trees for cabins in the dead of winter. When the snow melted come spring, 10-foot “stumps” littered the landscape.⁵⁰ Amazingly, virtually nothing remains of the original Ruby-Irwin. The Irwin turnoff from Kebler Pass Road serves a campground at Lake Irwin and the Ruby Range beyond.

It was mining for coal, rather than silver and other minerals, that proved Crested Butte's bread-and-butter industry into the 1950s. The age of coal came to end with the 1952 closure of the Big Mine. The Denver and Rio Grande Railroad pulled out of town a year later.⁵¹ American Smelting and Refining Co. stepped into to revive Crested Butte's mining legacy with the Keystone Mine on the flanks of Mount Emmons, a peak also known as Red Lady, above Kebler Pass Road. Mining for lead, zinc and copper, along with precious metals, continued until 1969. More recently, a new molybdenum mining venture reared its head, resulting in a public push to retire the possibility of future mining on Mount Emmons.

Crested Butte tapped its future as a recreational mecca in 1962, with the initial development of a ski resort on Crested Butte Mountain. The town may well be the birthplace of mountain biking, as well. It was certainly among the first to embrace the fledgling sport, sending riders on one-speed klunkers over Pearl Pass to Aspen in 1976.

The mountains surrounding Crested Butte, once littered with mines, are now criss-crossed with Jeep roads and bike paths. Kebler Wagon Trail No. 606 follows portions of the old Pioneer Toll Road and original Kebler Pass Road. It is an already constructed segment of the proposed Carbondale to Crested Butte Trail and a nod to the hardy souls who once traveled here.



Irwin was a bustling mining town in 1882. Photo: George E. Mellen, Denver Public Library

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2. PITKIN COUNTY / CRYSTAL VALLEY RECREATION AND BIODIVERSITY PLANNING



A. STUDY AREA CONTEXT

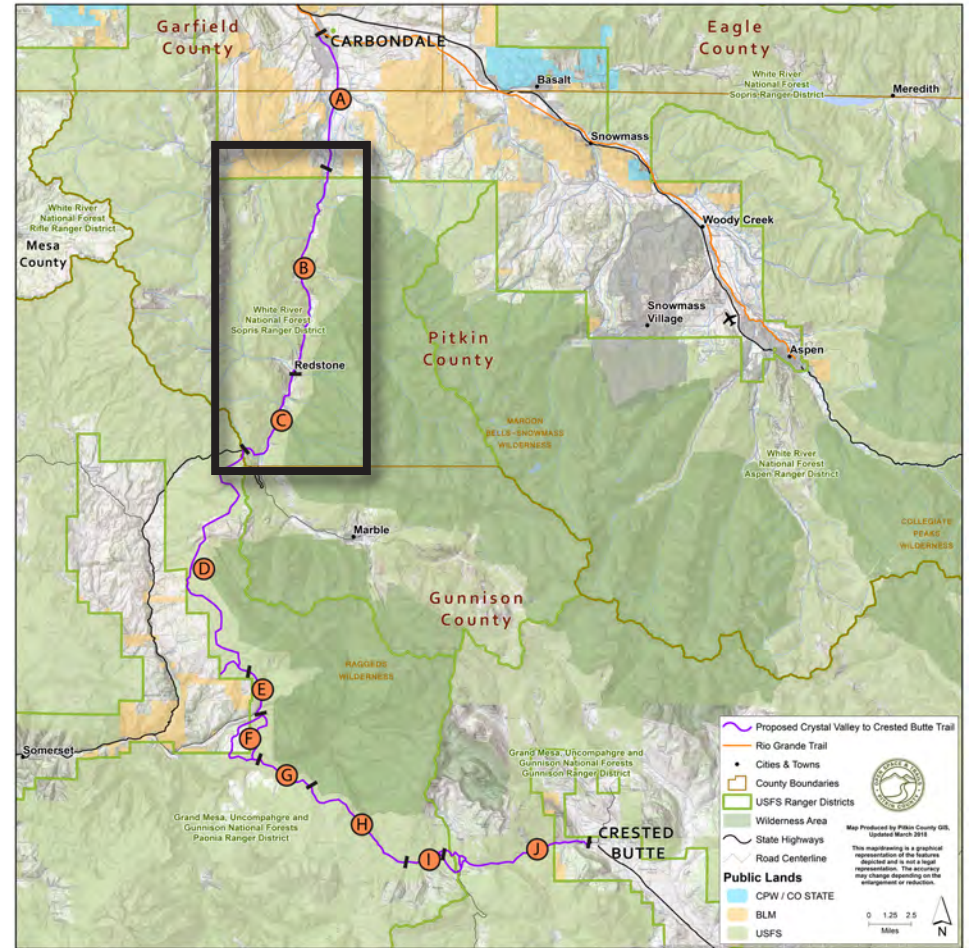
The Crystal River Valley is located within Gunnison and Pitkin counties south of Carbondale. The steep and scenic valley is framed by the flanks of Mt. Sopris and the Elk Mountains on the east and the Grand Hogback portion of the Colorado Plateau to the west. The Crystal Valley is characterized as a canyon with steep cliff walls forming a narrow, winding corridor following the Crystal River, paralleled by Hwy. 133. The valley floor has been developed with several low-density residential neighborhoods and the unincorporated town of Redstone. Woodlands, meadows, wetlands and shrublands punctuate the valley floor. The rich array of flora and fauna changes as the elevation rises from 6,425 feet in Carbondale to 8,990 feet at the top of McClure Pass. Several tributary creeks and streams, including Nettle Creek, Perham Creek, Avalanche Creek, Coal Creek and Hays Creek intersect the Crystal River.

The trail alternatives evaluated as a part of this plan begin at the terminus of the existing Crystal Trail, just south of milepost 62 and near the mouth of the canyon at the Crystal River KOA campground; and end at the summit of McClure Pass, at milepost 43. At the top of McClure Pass, potential trail segments connect to the existing Ragged Mountain Trail segments in the Gunnison-Mesa-Uncompahgre National Forests (details on the Gunnison County alignments are provided in [Appendix A: Gunnison County / GMUG Trail Planning](#)).

EXISTING LAND OWNERSHIP AND MANAGEMENT

Private Lands and Development: The northern part of the valley consists primarily of private ranching and agricultural lands. As one moves south, or upriver, the valley narrows and, the adjacent property is primarily White River National Forest lands with private, residential subdivisions and open space properties concentrated along the valley floor on both sides of the river. Private development over the years has reduced public access points and connectivity between public lands in the Crystal Valley. Midway through the study area, tourist-oriented retail and commercial operations are located in Redstone.

Map 2.1: Crystal Valley Study Area



Future Growth: A 2014 Caucus Build-out Analysis completed by Pitkin County shows that, at the time, the Crystal River Caucus Area was 41 percent built out, leaving an additional 59 percent remaining for development. This translates to a maximum build-out of 585 potential dwelling units; however, when the “likely” development scenario is applied to account for physical restraints and historical development patterns, the number of potential new dwelling units is adjusted to 351. While growth may occur at a slow pace in the Crystal Valley, the current zoning allows additional residential growth to occur along the valley floor clustered adjacent to existing development. Since 2014 there have not been any significant changes to the zoning or development context that would alter these projections.

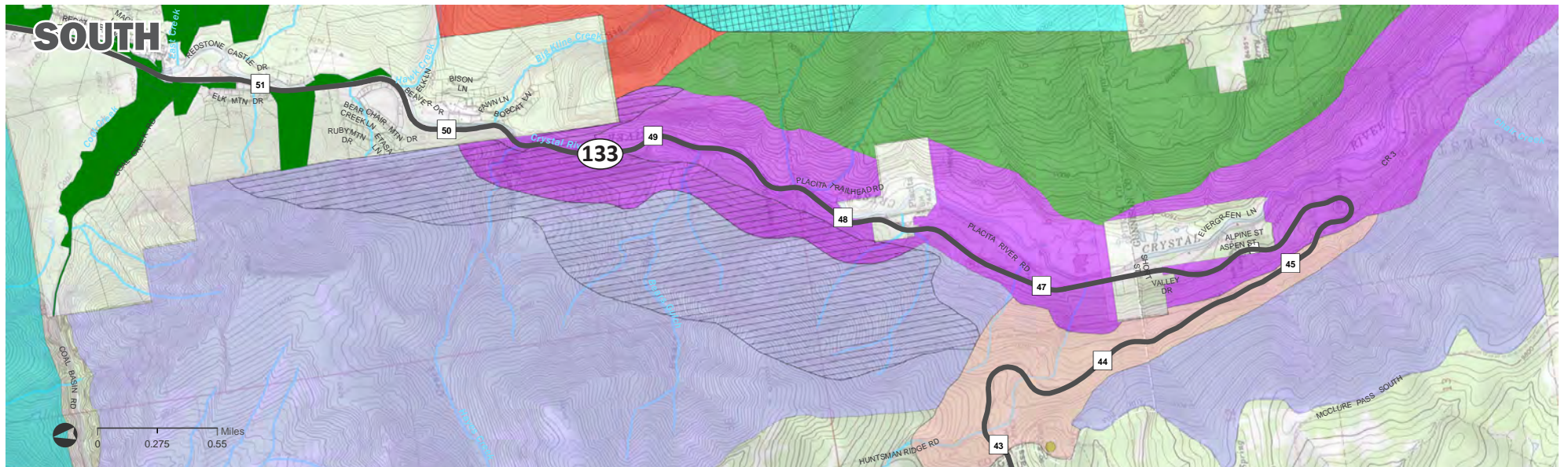
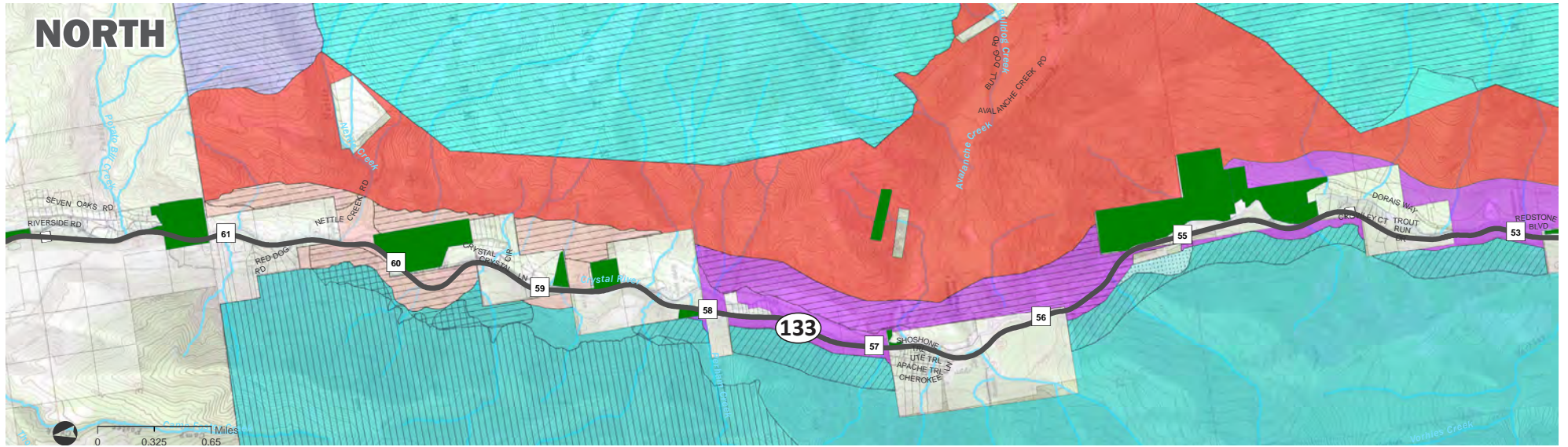
Open Space Properties: Since the early 1990s, Open Space and Trails, along with partners including the Aspen Valley Land Trust and Great Outdoors Colorado, have conserved a number of open space parcels in the Crystal Valley to preserve its scenic splendor, unique habitats, working lands and access to public lands and trails. As of 2018, over 806 acres (38 parcels) within the Crystal River Valley have been designated as open space with another 2,491 acres protected from development through conservation easements (including conservation easements held on fee simple lands). Some of the most notable investments include the Filoha Meadows Nature Preserve and an assemblage of open space and parks around the town of Redstone that provide recreational opportunities, access to the river and protect a number of sought-after winter and summer climbing areas. The program’s most recent purchase was Tract 116, which provides administrative access to the 40-acre Crystal River Parcel 1 Open Space and extinguishes potential residential development adjacent to national forest lands and important wildlife habitat.

National Forest Lands: The national forest lands are managed under the “multiple use” mandate to “provide a variety of use, products, and services for present and future generations.” The national forest lands are divided into management area categories that define where different management activities may occur and where different types of public uses can take place (Map 2.2). Along the Crystal Valley floor, the defined management areas fall under a common Category 4 classification. This

overarching classification, “Emphasizes scenic values and recreation. Ecological values are managed to provide recreational use, but are maintained well within the levels necessary to sustain overall ecological systems. Resource use for other values is not emphasized and has little impact on ecological structure, function, or composition. Human use is recreation-oriented. Sights and sounds of people on the site are expected and may even be desired. Motorized transportation is common.” (2002 White River National Forest Land and Resource Management Plan)

The northern portion of the corridor’s forest lands (from the northern boundary of the forest to just north of the Andrews Open Space) fall under the Management Area Direction defined as “4.23 Scenic Byways, Areas or Travel Corridors.” From the Perham Creek drainage to the south, the national forest lands that flank the potential trail alignments are designated as “4.4 Recreation Rivers - Designated and Eligible.” From the forest boundary to Redstone the lands are also under the management direction area “5.42 Bighorn Sheep Habitat.” The western side of McClure Pass transitions back to the scenic byway and travel corridor management area. The Maroon Bells-Snowmass Wilderness Area, established to protect the pristine values of nature, and where mechanized and motorized uses are prohibited, borders the eastern side of the valley along the majority of the study corridor.

Map 2.2: Forest Service Land Management Designations



- Open Space and Trails Parcels
- Private Property
- Mile Markers

WRNF Management Areas (2002)

- 1.11 Pristine Wilderness
- 1.12 Primitive Wilderness
- 1.13 Semi-Primitive Wilderness

- 1.2 Recommended Wilderness
- 1.31 Backcountry Recreation, Non-Motorized
- 4.23 Scenic Byways, Areas, or Travel Corridors
- 4.4 Recreation Rivers, Designated & Eligible
- 5.41 Deer & Elk Winter Range
- 5.42 Bighorn Sheep Habitat
- 8.32 Designated Utility Corridors, Existing & Potential

WRNF Management Area Combinations (2002)

- Comb with 2.2 Research Natural Areas
- Comb with 4.4 Recreation Rivers, Designated-Eligible
- Combo with 5.42 Bighorn Sheep Habitat

- Comb with 2.2/5.42 Research Natural Areas/Bighorn Sheep Habitat
- Combo with 2.2/4.4 Research Natural Areas/Recreation Rivers, Designated-Eligible
- Combo with 4.4/5.42 Recreation Rivers, Designated-Eligible/Bighorn Sheep Habitat

WHITE RIVER NATIONAL FOREST MANAGEMENT AREA DIRECTION WITHIN THE CRYSTAL RIVER VALLEY

Forest Management Area Direction areas are shown on Map 2.2.

4.23 SCENIC BYWAYS, SCENIC AREAS, VISTAS, AND TRAVEL CORRIDORS: These types of areas are managed to protect or preserve the scenic values and recreation uses of designated scenic byways, scenic areas, vistas, and other heavily used scenic travel corridors.

The recreation opportunity spectrum (ROS) for this management area is semi-primitive non-motorized, semi-primitive motorized, roaded natural, or rural year-round. Scenery is managed to provide a range of scenic integrity objectives from low to very high.

4.4 RECREATION RIVERS – Designated and Eligible: Recreation rivers are managed to protect and perpetuate eligible and designated recreation river segments.

The recreation opportunity spectrum (ROS) for this management area is roaded natural or rural year-round. Scenery is managed to provide a range of scenic integrity objectives from low to high.

5.42 BIGHORN SHEEP HABITAT: Management emphasis is to provide adequate amounts of quality forage, cover, escape terrain, and solitude for bighorn sheep and other species, while allowing vegetative manipulation that provides other multiple-use resources.

The recreation opportunity spectrum (ROS) for this management area is primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, or rural year-round. Scenery is managed to provide a range of scenic integrity objectives from moderate to high.

TRANSPORTATION CONTEXT

Vehicles

Colorado State Highway 133 runs the length of the project generally parallel to the Crystal River within the Crystal Valley and falls within Colorado Department of Transportation’s (CDOT) Region 3. Hwy. 133 is a rural, two-lane, minor arterial highway that connects Carbondale and Redstone and continues south toward Paonia. The highway connects a number of neighborhoods along the way, primarily north of Redstone, but also serves the residential and tourism area of Marble. North of Redstone, traffic volumes are approximately 2,800 vehicles per day with 3% to 4.4% trucks, based on 2016 data. South of Redstone, traffic thins to approximately 1,900 vehicles per day. Minimal projected traffic growth of approximately 80 additional vehicles per day is anticipated through the year 2037.

The highway is asphalt, has a posted speed limit of 50 miles per hour and is designated as part of the West Elk Loop Colorado Scenic Byway. The travel lanes are approximately 12 feet wide for the length of the project. Shoulders are generally narrow and range in width from approximately two (2) to four (4) feet, with a paved width of approximately one (1) foot or less to four (4) feet or greater (in isolated locations such as pullouts, intersections and accesses).

CDOT maintains Hwy. 133, which includes general pavement maintenance, traffic signage, snow removal, and rockfall and mudslide debris removal. CDOT completed a resurfacing project in 2015 on the northern end of the corridor from Redstone to the Town of Carbondale. The southern half of the corridor, from Redstone to the top of McClure Pass was resurfaced in 2018. There are several active rockfall zones on the west side of the highway, including substantial areas within the Filoha and Wild Rose trail segments. The first is at Penny Hot Springs (milepost 55.20) and the other at what is referred to as the “Meatgrinder,” named after the threatening rapid where the river narrows (milepost 53.40). These and other rockfall areas create persistent hazards and maintenance challenges.

Bicycles

Since the 1990s, Hwy. 133 has gained popularity as a recreational cycling route, though many people who have historically used this route suggest they now find it too unsafe or uncomfortable to ride. The current conditions for cyclists and pedestrians along the roadway are unsafe with narrow to no shoulder, though accident information from CDOT over the last 10-year period does not show any incidents of bicycle- or pedestrian-related vehicle crashes. County records show one vehicle vs. bicycle accident in this area occurred in 2017. Because of the absence of shoulders, cyclists are forced into the traffic lane, notwithstanding the poor sight lines and high motorist speeds. The current highway conditions serve a limited set of expert riders and exclude less experienced or confident cyclists and families with children from both recreational and transportation-related trips. This situation prevents residents from using alternative modes of transportation due to safety concerns.

Crystal Trail - The Crystal Trail has received steady use over the years since it was constructed in 2010. The trail counter, placed at the north end of Thompson Creek Open Space, has tracked an average of approximately 10,000 annual trail users over the last five years. The most popular months, when the trail gets the most use, are May through September. During this time, the monthly average is just shy of 1,800 users. A motion-triggered camera placed on the Crystal Trail from May 5 to September 3, 2017 indicated bicyclists are by far the largest user group on the trail. From camera images, 7,427 bikers were tallied, along with 601 walkers/runners and 87 users on skates of some kind – primarily Nordic roller skis. Dogs numbered 194; all but six were on leash.

Pedestrians

After the existing Crystal Trail ends just south of mile marker 62, no pedestrian infrastructure exists along Hwy. 133. There are, however, a number of social trails along the eastern side of the Crystal River following segments of the railroad grade and the Rock Creek County Road that are used for recreation. These social trails are primarily used by neighboring residents, though some are used by the public. On the



Limited shoulders and the winding highway create a dangerous and uncomfortable place for non-motorized modes of transportation through the Crystal Valley.



The existing Crystal Trail gets frequent use during the summer months as an out-and-back recreation activity for walkers, runners and cyclists.

west side of the highway, the Bear Creek section of old McClure Pass Road and the old switchbacks leading to the top of McClure are used by the public.

Red Wind Open Space - A camera placed on the social trail on Red Wind Open Space tallied 312 people during the months of June, July and August 2017. It appeared many of the trail users walked the trail frequently.

ATTRACTIONS AND RECREATION

The Crystal Valley offers a wide array of recreation and leisure activities that serve locals as well as visitors.

- **Redstone** – The Town of Redstone, on the National Register of Historic Places, provides shopping, lodging and restaurant amenities to visitors. Redstone Boulevard offers access to two public parks – Redstone Park and Elk Park (both open space properties), as well as public restroom facilities. Redstone Park includes a children’s play area and, in winter, a small ice rink. Access to the Crystal River is also available from open space properties bordering Redstone Boulevard. Historic coke ovens line the west side of the highway, while the Redstone Castle, the original home of the town’s founder, is on the east side of the river, just south of Redstone.
- **Climbing Areas** – Open space properties in the vicinity of Redstone offer bouldering opportunities at Redstone Boulders and well as ice climbing at the Pillar and the Drool. Hays Falls also attracts ice climbers, while rock climbers seek the granite cliffs of Avocado Gully on the west side of Hwy. 133 near Penny Hot Springs and areas up Coal Creek.
- **Penny Hot Springs** – Penny Hot Springs is a popular stopping point for those interested in soaking in the man-made pools created on the west bank of the Crystal River.



The Historic District of Redstone provides dining, shopping and lodging to visitors.

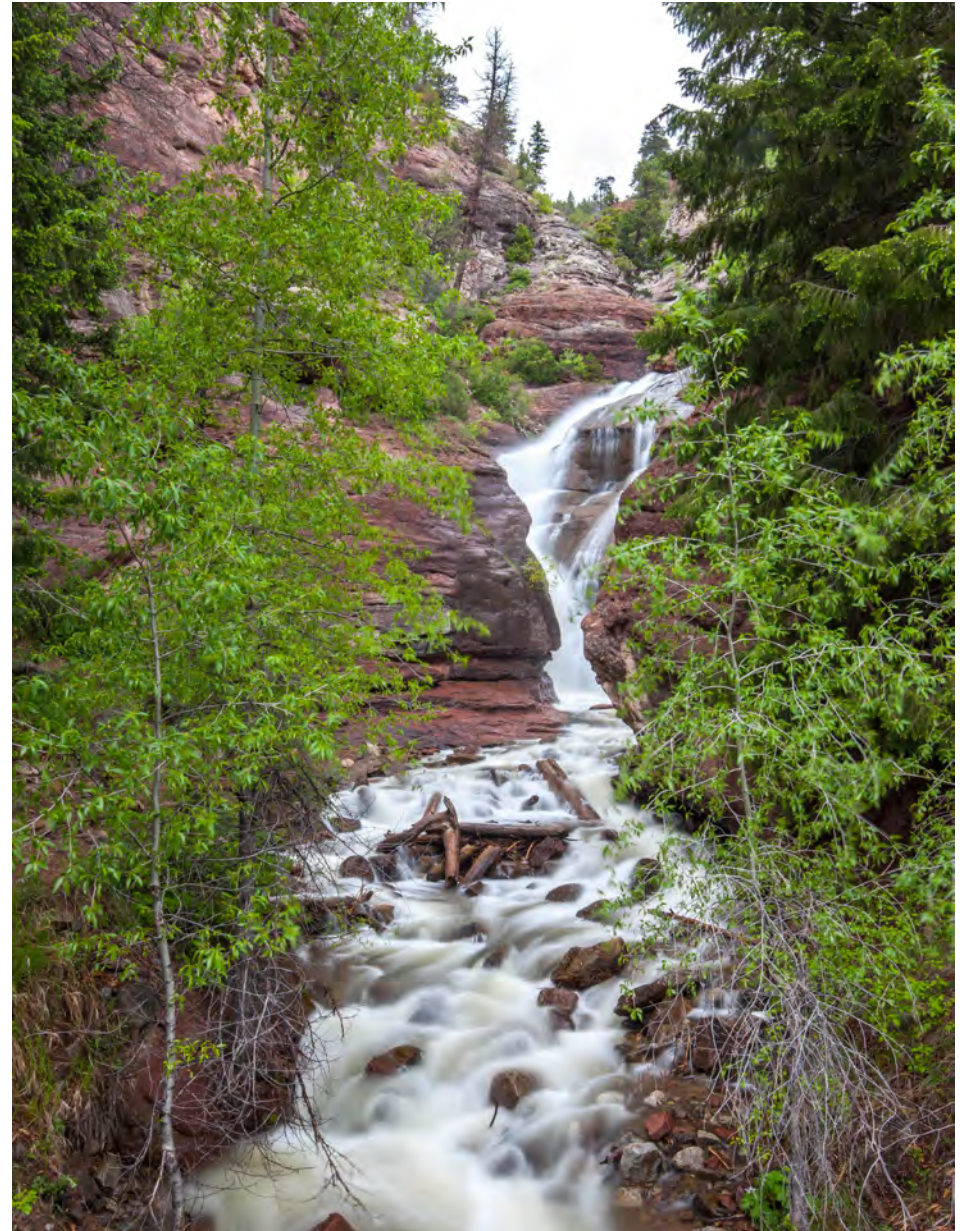


Penny Hot Springs is a year-round destination that draws both visitors and locals to soak in the natural springs.

- **Hays Falls** – Travelers on Hwy. 133 frequently pull off at Hays Falls, located two miles south of Redstone. A series of waterfalls tumble impressively through a narrow gorge of red sandstone as Hays Creek flows to the Crystal River. It is a popular spot for photos.
- **Campgrounds** – The Crystal Valley offers access to three Forest Service campgrounds – Avalanche, Redstone and Bogan Flats. In addition, McClure Campground is located just south of the McClure Pass summit. The privately owned KOA campground is located at the southern terminus of the existing Crystal Trail.
- **Trails** – There are a number of maintained hiking trails of various lengths, from day hikes to overnight backpacking routes that can be accessed from Hwy. 133 including: Perham Creek Trail, Avalanche Creek, Filoha Meadows (seasonal closure), East Creek, Lily Lake and Placita. In addition, there are Forest Service routes that have been decommissioned and social trails that are used regularly, such as the Bear Creek Trail and old McClure Pass switchbacks, and there are neighborhood trails on open space.



There are a number of popular trails including those on Open Space properties and Forest Service lands. Left: The decommissioned trail route through the Bear Creek area is perched on the ledge to the west of the highway and offers views of Chair Mountain. Right: Red Wind Point Open Space has a seasonally open trail route.



Hays Falls is a frequent stop for visitors to the Crystal Valley who park in a shallow pull-off from the highway to get a view of the Hays Creek waterfalls descending through the steep canyon. Photo: John Fielder

B. PREVIOUS PLANNING EFFORTS AND STUDIES

The Pitkin County Open Space and Trails Board in its Crystal River Valley Bicycle Trail Feasibility Study (1994) recognized the lack of travel routes for non-motorized travel through the Crystal Valley, where historic trails had previously connected settlements to the south. Two years later, Club 20 identified the need for a trail in its “Missing Links” Report (1996). The West Elk Historic and Scenic Byway Steering Committee then echoed the need in its Strategic Plan (2000), followed by its Crested Butte to Carbondale Trail Feasibility Study (2004). CDOT’s State Transportation Improvement Plan (2004) ranked the trail its No. 3 priority for Intermountain Region 3.

The Crystal Valley portion of the trail has been repeatedly recognized as a priority in regional, county and municipal plans. Both Carbondale’s Recreation Master Plan (2003) and Pitkin County’s Crystal River Master Plan (2003) identified the trail project as a priority. In 2009, Pitkin County and Carbondale, in partnership with Great Outdoors Colorado (GOCO) and Garfield County, extended a municipal bike trail southward out of Carbondale for 5.3 miles, putting the Crystal Trail’s current terminus at the KOA campground on Hwy. 133. The project was completed in 2010. The Town of Carbondale has worked over the years to extend bicycle and pedestrian infrastructure from the intersection of Highway 82 to the town’s boundary, making for a seamless connection.

In 2011, the Open Space and Trails Board adopted a “Recreational Inventory and Analysis” that called for extending the Crystal Trail to the Pitkin/Gunnison County line. The analysis set out a planning schedule for a hard-surface trail connection to Redstone and a soft-surface trail between Redstone and the county boundary. Such an amenity, much like open space acquisitions in the Crystal Valley to date, would reflect Open Space and Trail’s stated mission: To acquire, preserve, maintain and manage open space properties for multiple purposes including, but not limited to, recreational, wildlife, agricultural, scenic and access purposes; and to acquire, preserve, develop, maintain and manage trails for similar purposes.

Pitkin County’s Crystal Valley Caucus Master Plan, updated in 2016, reflects caucus support for the extension of the Crystal Trail as part of the West Elk Loop Scenic Byway, though caucus members recognized it might not be feasible to continue the existing trail within the highway right-of-way all the way to McClure Pass. The master plan states: The trail shall be designed for user safety, wildlife and habitat protection and consider best science, other available information and input from landowners along proposed routes (Section 2, Recreation and Open Space, pp 7-8).

In 2016, the Carbondale to Crested Butte Trail was placed on a priority list of statewide trail connections by Gov. Hickenlooper, now known as “Colorado’s 16.” Subsequently, the Pitkin County Open Space Department partnered with Gunnison County and GOCO to undertake planning a trail alignment for the missing links, as well as the first thorough studies of both the environmental and engineering realities of the Crystal River corridor in the context of the trail discussion.

TRAIL PLANNING TIMELINE

The Carbondale to Crested Butte Trail connection is a trail concept that has been developed over more than 20 years and has been addressed in multiple reports and plans calling for its construction.

- **1994 – The Crystal River Valley Bicycle Trail Feasibility Study:** In 1994, the Pitkin County OST Report, “The Crystal River Valley Bicycle Trail Feasibility Study,” recognized the need for a bike path along Hwy. 133. At the time, there was a marked increase in cycling along the highway. The study analyzed the opportunities and constraints for increased shoulder width and bicycle facilities from Carbondale to the top of McClure Pass and laid the groundwork for the first phase of a separated trail system.
- **1996 – The Missing Links:** In 1996, Club 20, an organization of counties, communities, tribes, businesses and individuals representing the interests of western Colorado, issued a report titled “The Missing Links” that identified the Crystal Trail as an important missing link in the western Colorado trail system.
- **2000 – West Elk Loop Scenic and Historic Byway Corridor Management Plan:** This plan included the goal to “coordinate design and construction of a non-motorized recreation and transportation trail to accompany the Byway (where the right-of-way does not accommodate a trail, an off-road trail may be appropriate).”
- **2002 – White River National Forest Land and Resource Management Plan:** This plan established management areas for national forest lands within the Crystal Valley including the “Scenic Byways, Areas or Travel Corridors,” “Recreation Rivers - Designated and Eligible” and “Bighorn Sheep Habitat.”
- **2003 – Crystal River Valley Master Plan:** The studies from the 1990s laid the groundwork for including the trail in the Crystal River Valley Master Plan. The Crystal River Valley Caucus’ community survey found that respondents desired a bicycle trail in the highway right-of-way, as well as support for Pitkin County’s purchase of sections of the old railroad grade to facilitate public access. The Master Plan identified transportation and recreation objectives including creating a paved bike path within the highway right-of-way, providing paved highway shoulders, and pursuing an off-road bicycle/pedestrian path paralleling Hwy. 133 where appropriate.
- **2004 – West Elk Loop Scenic and Historic Byway Crested Butte to Carbondale Trail Feasibility Study:** In 2004, the West Elk Scenic Byway completed a feasibility study showing the viability of the 74-mile-long Carbondale to Crested Butte Trail. This report included detailed maps of the potential route(s) on which the trail could be completed.
- **2010 - Final Environmental Impact Statement - Gunnison Basin Federal Lands Travel Management** – The USFS, in 2010, adopted the travel management plan that covers the Grand Mesa Uncompahgre and Gunnison National Forests where the majority of the Gunnison County portion of the Carbondale to Crested Butte is located. The plan determines which routes are needed to provide for a range of recreational users while balancing resource protection and access needs. The preferred alternative for the plan includes approximately 23 miles of the Kebler Wagon Trail identified as part of the Carbondale to Crested Butte bike trail. The plan states:

In the Kebler Pass area, a new trail (approximately 23 miles) is being proposed to link the Kebler Wagon Trail to the Erickson Springs Campground on the Paonia Ranger District parallel to the Kebler Pass Road. This proposal is to help realize the long-envisioned biking trail between Crested Butte and Carbondale via Kebler Pass. A mountain bike trail connection would also be provided between Gunsight Pass and down to the Kebler Pass Road.
- **2011 – Pitkin County Open Space Recreation Inventory and Analysis:** The Open Space and Trails Board called for extending the Crystal Trail to the Pitkin/Gunnison County line. The analysis set out a planning schedule for a hard-surface trail connection to Redstone and a soft-surface trail between Redstone and the county boundary.
- **2013 – Crystal Valley Caucus Master Plan Update:** This plan’s transportation section supports working with CDOT to create a paved bike path within the Hwy. 133 right-of-way and to provide paved shoulders on the highway as well as working with Pitkin County and CDOT to pursue, where appropriate, an off-road bicycle/pedestrian path paralleling Hwy. 133.

- **2015 – RFTA Regional Bicycle, Pedestrian and Transit Access Plan:** This plan evaluated and prioritized regional bicycle and pedestrian projects within the RFTA region from Parachute to Aspen. A shared-use path from Bill Creek Road to Redstone is ranked as a high priority within Pitkin County.
- **2015 – Carbondale Parks, Recreation and Trails Master Plan:** This plan includes an action item to work with CDOT on making Hwy. 133 more bike and pedestrian friendly, including recommendations for calming vehicular traffic.
- **2016 – Colorado’s 16** recognition and GOCO recognizing the common public interest in the completion of the trail and pledging mutual support in securing the permits and needed funding.

OTHER PLANNING EFFORTS:

- **2015 - CDOT Statewide Bicycle and Pedestrian Plan** – The Colorado Department of Transportation identifies intermodal transportation goals for the state. The plan’s overarching goal is improving safety for bicyclists and pedestrians to increase the use of these alternate modes of transportation. The plan outlines a number of the benefits of non-motorized transportation including environmental benefits, improved health, local and regional economic advantages, transportation equity, and benefits to overall quality of life. Enhancing Scenic Byways with safe and comfortable bicycle and pedestrian accommodation is one of the initiatives identified in the plan. Providing access to public lands and facilities on roads that lead to public lands is also outlined as a strategic initiative within the statewide plan. The Carbondale to Crested Butte Trail meets a number of the goals and investment decision criteria outlined in the plan from enhanced safety and transportation equity to economic potential.
- **2016 – Crystal River Management Plan** – The Roaring Fork Conservancy and Public Counsel of the Rockies commissioned the Roaring Fork Watershed Plan in 2016 to identify, prioritize and guide management actions that balance the multiple demands and functions of the Crystal River. The plan evaluates the complex interactions between the watershed structure, riverine ecosystems, the social context and competing needs of the river and the legal framework governing water rights

and diversions. Regarding the ecosystem function evaluated for the river, the stretch from the headwaters to Redstone has a generally healthy ecosystem, whereas moving downstream, the cumulative effects of floodplain development and diversions have negatively affected the health of the river, leading to a degraded overall functional condition. The plan suggests that management strategies focused on streamflow and habitat will have the greatest overall environmental benefits to the river’s health.

- **Wild and Scenic River Application:** Efforts are underway to designate the Crystal River as Wild and Scenic. The Carbondale to Crested Butte Trail is entirely within the section of the Crystal River deemed eligible for “recreational” status within the Wild and Scenic Rivers Act, and will not jeopardize eligibility of this reach for the Wild and Scenic status. The most recent draft of Wild and Scenic designation legislation specifically anticipates the completion of the trail. The trail planning objectives would only further support and bolster the status.

C. SOCIOECONOMIC SUMMARY

Colorado’s demographic and economic character is experiencing change and growth, a substantial part of which is due to the attractiveness of the mountain lifestyle and the amenities its communities offer. ERO evaluated social and economic patterns of the Crystal Valley, from Carbondale to the top of McClure Pass. They looked at the current conditions and potential impacts from trail construction and implementation. Current population, recreation and tourism trends for the state and county were all taken into account, alongside statewide and local demographics. The Crystal River Caucus’s core values and reports, and public comments to date were also part of the data analyzed. The full report is included as an addendum to the Environmental Review in [Appendix B](#).

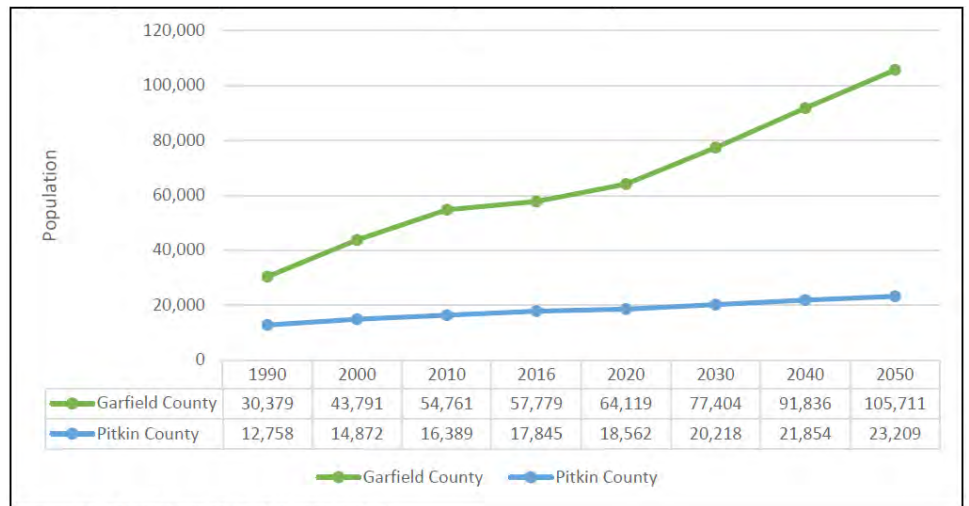
The population, residential development and highway traffic in Carbondale and the Crystal Valley is anticipated to increase at rates similar to county and state projections. Some residents may be attracted to the Crystal Valley in part because of access to a trail that provides connection to other communities and easy access to expanded recreational activities. These in-migrants often have high incomes and contribute to the economic health of the communities in which they live.

The Carbondale to Crested Butte Trail may open up opportunities for a more diverse trail user group to explore the Crystal Valley and engage with the ecological and historic environment. Carbondale’s high proportion of Hispanic and Latino residents, households with children, and households with relatively low incomes would have easier access to expanded recreational opportunities. Increased access may result in beneficial public health and social outcomes for these groups.

Recreation and tourism in the area will continue to be an important part of the economy and culture. Recreation and tourism account for almost a third of the direct employment in Pitkin County (USCB 2016), and many more jobs are indirectly related to the industry. A trail segment would likely result in more non-motorized visitors to the Crystal Valley, including residents from nearby communities and out-of-state tourists.

Use of the existing Crystal Trail has exceeded 10,000 individuals every year since 2010, with approximately 11,000 visits in 2017. The Rio

Figure 4: Population Projections for Pitkin County and Garfield County



Source: USCB 1990, 2000, 2010, 2016; DOLA 2010

Table 1: Crystal Caucus potential residential buildout analysis

Land Use Type	Figure
Total private land	22,173 acres (15%)
Total private parcels	661
Maximum number of dwelling units allowed by zoning and conservation agreements	1,020
Existing dwelling units	435
Maximum remaining buildout potential (dwelling units)	585
Likely remaining buildout potential (dwelling units)	351
Potential population in 2040 (based on historic growth rate)	1,100

Source: Pitkin County 2014

Grande Trail, which runs through the Roaring Fork Valley between Aspen and Glenwood Springs, generally has between 25,000 and 100,000 visits per year, depending on location. Based on existing use increases of the Crystal Trail over time, and anticipated population growth in Carbondale and the Crystal Valley, trail use is likely to increase in the future.

The economic benefit from potential out-of-region tourism, assuming that the 81-mile trail to Crested Butte would attract overnight cyclists, could be substantial. Pitkin and Gunnison counties are mountain- and road-biking destinations. A Colorado Office of Economic Development and International Trade study found that out-of-state visitors spend \$93.92 per day per person at local businesses.

The economic benefits from residential users, including commuters, recreationists and utilitarian trail users, may also result in substantial impacts on the local economy, based on a literature review of trail user spending in Colorado and communities with similar amenities. If daily expenditures by residential users are \$3.50 to \$21.00 per day, and assuming that the trail segment sees 30 percent of the users of the lower Crystal Trail, local economic impacts may range from \$15,700 to \$157,000 per year.

While construction activities would result in short-term increases in employment and spending within the project area during a two- to four-year construction period, trail construction itself is not anticipated to result in long-term local employment or economic growth. That said, OST would likely hire additional personnel to support the long-term maintenance and safety of the trail.

With traffic along Hwy. 133 projected to increase, a trail that is protected and removed from traffic would result in increased pedestrian and recreationist safety. Bicyclists report that they ride their bikes more often in areas where protected and off-highway bike lanes are present. Women are more likely to increase the frequency that they bike when protected bike lanes and trails are available. Trails that have greater physical separation from busy roads increase bikers' comfort. Any type of barrier between traffic and a bike lane increases biker ease compared to a striped bike lane. Residents that live near off-roadway paths perceive their neighborhoods as safer and are more likely to use the trails, and

over half of residents near protected bike lanes found that interactions between motorists and cyclists had become more predictable and less dangerous.

Multiple studies show that residents living near trails often perceive the trails as having a positive impact on their health and quality of life, and use trails near their homes frequently. In some areas with similar demographic and land-use patterns as the Crystal Valley, up to 90 percent of residents use trails at least every other day in summer. Trail construction and use could raise concerns about privacy among landowners who are immediately adjacent to the trail alignment. Recreation use statutes would protect property owners in the Crystal Valley from risk and liability associated with trail use. Trail design and mitigation measures would likely reduce or eliminate concerns about trespassing and disturbances to Crystal Valley property owners and residents. Based on studies of impacts on property owners from trails, it is possible that the trail and trail users would be good neighbors.

D. TRAIL ALTERNATIVES - ENVIRONMENTAL SUMMARY

The Trail Alternatives section explores the potential routes a trail could take through the Crystal Valley portion of the Carbondale to Crested Butte Trail. The potential routes within the Crystal Valley were divided into 20 segments based on topographical, environmental and land ownership transitions. All segments have an on-highway alternative, Alternative A, and most also have an off-highway alternative, Alternative B. Open Space and Trails has worked with consultants to define the alternative and segment locations and collect data on existing environmental conditions, potential impacts, mitigation measures, engineering feasibility and cost data for each of the alternatives. Existing or potential new bridges to connect the A and B segments were a part of both the environmental and engineering analysis.

ENVIRONMENTAL EVALUATION SUMMARY

The objectives of the Environmental Report were to understand the potential impacts of the possible trail alternatives and to inform the trail planning process and discussion. The ecological consultants, ERO Resources (ERO), utilized existing data and studies, expert interviews with U.S. Forest Service (USFS) and Colorado Parks and Wildlife (CPW) staff, and on-the-ground fieldwork (completed in June 2017). ERO's report summarizes the existing environmental conditions of the areas the trail alternatives would intersect; and analyzes the potential impacts the trail would have on **wildlife habitat, vegetation, in-stream and riparian areas, and cultural resources**. A critical element of the potential trail environmental impacts, which goes beyond what was evaluated as a part of the environmental study, are the life-cycle costs of trail construction. These life-cycle costs include the materials and other resources that are used to construct a trail. Typically, these costs will be higher for the more highly engineered trail platforms as opposed to less resource-intensive construction on existing trail platforms. The following section provides a summary of the findings of each of the elements that were evaluated; the complete report is included as [Appendix B](#).

1. Wildlife Habitat

ERO's analysis of wildlife habitat focused on identifying sensitive wildlife species and habitats within the corridor; important habitats of more common wildlife species; and the potential impacts of each potential alignment on both sensitive and common wildlife species. The analysis assumed that existing seasonal closures on protected open space and Forest Service lands would apply to any future trail development. The Crystal Valley functions as a relatively intact ecosystem that includes riparian habitat along the river bounded by other adjacent habitats (meadows, forest, cliffs, etc.). This corridor provides specialized habitat for some wildlife species (primarily riparian-dependent wildlife) and seasonal habitat or movement corridors for other broad-ranging wildlife. As a result of the existing human disturbance (subdivisions and highway), some wildlife populations are likely habituated to human disturbance, while others are not and depend on undisturbed habitat patches to survive.

The analysis of potential trail impacts looked at four primary indicators of wildlife habitat:

1. **High-quality habitat** – Eight high-quality habitat areas within the trail corridor were identified through fieldwork.
2. **Listed and Sensitive Species Potential** – The field review identified potential habitat for rare, sensitive or tracked species as identified by the CPW and USFS.
3. **Seasonal ranges for bighorn sheep and elk** – The team looked at the impacts to seasonal wildlife activity areas, mapped by CPW for bighorn sheep and elk. These mapped areas illustrate the specific areas each species uses at different times of the year.
4. **Landscape analysis of undisturbed habitat** – The team used GIS analysis to understand where human development and presence currently influence wildlife habitat, and where wildlife habitat is truly free from human disturbance. The evaluation of impacts to undisturbed, moderately disturbed, and undisturbed habitat are factors that contributed to the overall assessment of impacts to wildlife. Habitat areas that have low levels of human use and disturbance are considered more vulnerable to new impacts resulting from new trail alignments.

Measuring Impacts: Possible impacts to these areas were evaluated


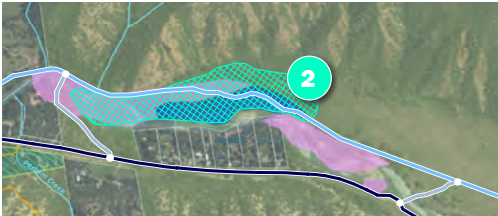
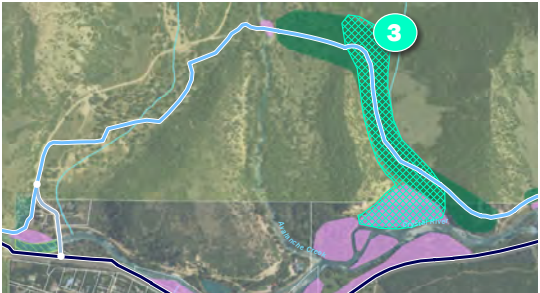
based on the potential for direct disturbance that would result from a potential trail alignment as well as disturbance to areas within a 100-meter buffer from the trail alignments. This 100-meter buffer is known as the zone of influence within which wildlife behavior is altered due to human disturbance. Actual influence areas and impacts vary based on location, species and context. Sensitive species would need to be confirmed by follow-up surveys.

1a. High-Quality Wildlife Habitat:

Eight areas within the Crystal Valley corridor were identified as high-quality wildlife habitat based on habitat quality (structure and context), favorability for sensitive wildlife species and evidence of use.

The identified High-Quality Habitat areas are described in Table 2:

Table 2: Potential Trail Impacts Summary - 7 Oaks/Sewell Tracts to Nettle Creek

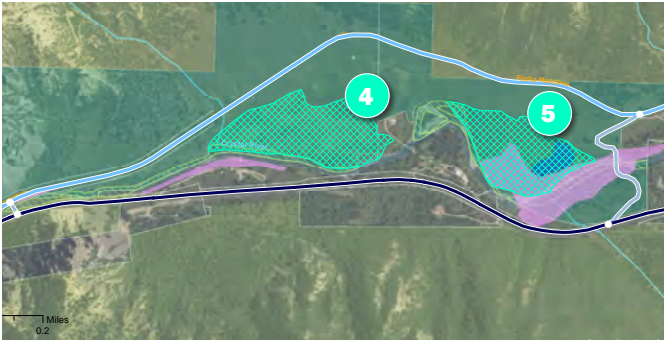
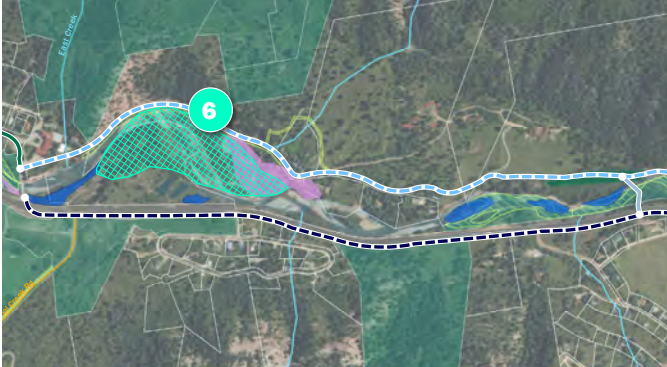

High Quality Habitat Area	BASIS FOR HIGH-QUALITY HABITAT	HABITAT AREA MAP
<p>1. Crystal River Parcel (Map 2.6)</p>	<p>Broad, multi-storied riparian habitat supported by ditches and the Crystal River; potential habitat for yellow-billed cuckoo; large cottonwoods with cavities for nesting/roosting.</p> <p>Existing Disturbance: Existing social trails and human use.</p>	 <p>High Quality Habitat Areas</p> <ul style="list-style-type: none"> High Quality Habitat Areas <p>Vegetation Communities</p> <ul style="list-style-type: none"> High Quality Riparian/Wetland High Quality Upland General Riparian
<p>2. Janeway North (Map 2.16)</p>	<p>Large area of multi-storied riparian habitat between the Crystal River, cliff areas and upland hillsides; diverse understory with high-quality wetlands and oxbows; potential habitat for yellow-billed cuckoo and other species; frequent signs of wildlife use.</p> <p>Existing Disturbance: Minimal evidence of human use.</p>	
<p>3. Avalanche South (Map 2.21)</p>	<p>Undisturbed valley with diverse vegetation communities; good habitat for bird and bat foraging, lynx, ungulate, and bear corridors, and several USFS sensitive species such as northern goshawk and flammulated owl.</p> <p>Existing Disturbance: Predominantly undisturbed valley with little existing access</p>	

WHY 100 METERS?

The 100-meter buffer distance is based on scientific literature pertaining to the impacts of recreation and human development on wildlife. The actual zone of influence varies widely by location, terrain, species and levels of habituation.

High Quality Habitat #X

Look for these labels on the *Environmental and Engineering Summary Maps* to see where the high-quality habitat areas are located throughout the corridor.

<p>4. Filoha Wetlands A (Map 2.25)</p>	<p>Large, undisturbed wetlands on the lower terraces adjacent to the Crystal River; diverse plant species and wildlife use supported by warm springs; beaver use and high insect diversity supports birds, bats, waterfowl and other wildlife.</p> <p>Existing Disturbance: Limited human disturbance from educational activities</p>	
<p>5. Filoha Wetlands B (Map 2.25)</p>	<p>Large, undisturbed wetlands on the lower terraces adjacent to the Crystal River; diverse plant species and wildlife use supported by warm springs; beaver use and high insect diversity supports birds, bats, waterfowl and other wildlife.</p> <p>Existing Disturbance: Limited human disturbance from educational activities</p>	
<p>6. Castle (Map 2.30)</p>	<p>Broad floodplain, with natural habitat structure of multiple channels, islands, and benches and unique conifer wetlands; Reported use as elk rearing area on islands; multiple big-game trails cross the road and go down to the river.</p> <p>Existing Disturbance: Adjacent to roads with year-round vehicular access</p>	
<p>7. Placita Wetlands (Map 2.38)</p>	<p>Broad floodplain with diverse wetland and riparian habitat; beaver-supported wetlands; known habitat for amphibians, waterfowl, heron, moose and many others.</p> <p>Existing Disturbance: Social trail following the railroad grade</p>	
<p>8. McClure Pass (Map 2.38)</p>	<p>Large, undisturbed aspen forest; habitat for birds including Cooper's hawk, sharp-shinned hawk, northern goshawk and flammulated owls; habitat for Canada lynx, ungulates, and bear; movement corridor between Huntsman Ridge and Raggeds.</p> <p>Existing Disturbance: Social trail on previously disturbed route</p>	

1b. Listed and Sensitive Species Habitat

Potential habitat areas for listed and sensitive species were identified based on existing documentation and field reviews for federally listed and U.S. Forest Service Sensitive (FSS) species. Federally listed species included species that have been identified as threatened, including Canada lynx and yellow-billed cuckoo. Forest Service Sensitive Species included the Townsend's big-eared bat, peregrine falcon and northern goshawk. While the conditions that are conducive to these species were found in certain locations, the actual presence of the species and impacts would need to be confirmed by additional surveys.

1c. Seasonal Activity Areas

Bighorn Sheep and Elk Winter Ranges – Potential impacts to seasonal ranges for bighorn sheep and elk were specifically evaluated based on input from CPW and previous documentation. Impacts to these sensitive areas that overlapped with the 100-meter buffer offset from the trail were measured to help understand how significant of an effect trail development would have. The impact to these areas also considered the existing development and usage of the land, existing seasonal closures and documented issues. For example, if a portion of the critical winter range for a species overlapped with an existing subdivision where year-round use and human presence occurred, the impact of a trail in this area was ranked lower than if the trail were crossing through a protected open space where no development or existing human presence is found. Similarly, if the trail passed through a critical winter range, but the area would be subject to existing seasonal closures, the impact was rated lower than an area where no seasonal closure existed. Other species tracked by CPW, including mule deer, moose, black bear, wild turkey, bald eagle and peregrine falcon were also evaluated based on CPW mapping.

Bighorn Sheep: Bighorn sheep use the west- and southwest-facing slopes above the valley for winter range and lambing habitat. The bighorn sheep herd is in poor condition due to disease and exposure to domestic sheep and predation, and may be vulnerable to additional disturbances during the winter and spring. The analysis looked at potential impacts to Production Areas (lambing grounds), Winter Range, Winter Concentration Areas, Severe Winter Range, Migration Corridors and Mineral Licks that CPW has mapped.

Elk: Elk populations throughout the Roaring Fork and Crystal valleys are stable, but increasing human development and use has impacted winter range and calving habitat throughout the region. The analysis looked at potential impacts to Production Areas (calving grounds), Winter Range, Winter Concentration Areas, Severe Winter Range and Highway Crossings.



Federally listed species with habitats that can be found within the Crystal Valley corridor include the yellow-billed cuckoo on the left (Photo: Rocky Mountain Bird Observatory) and the Canada lynx on the right (Photo: Colorado Parks and Wildlife)



A mule deer buck captured on the county's wildlife camera at Filoha Meadows Nature Preserve, August 2017.

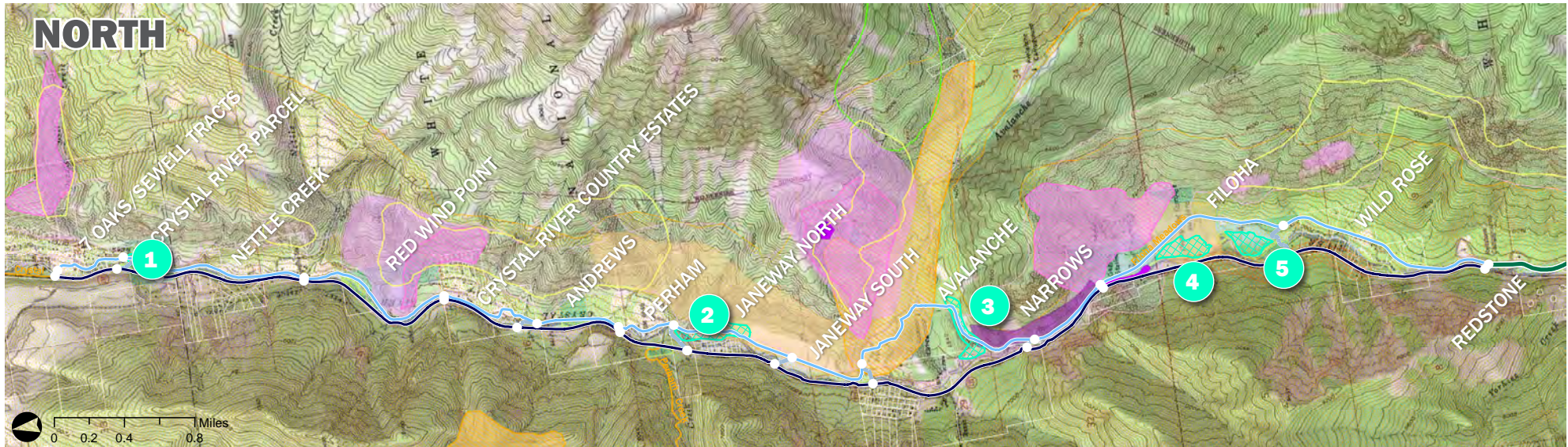
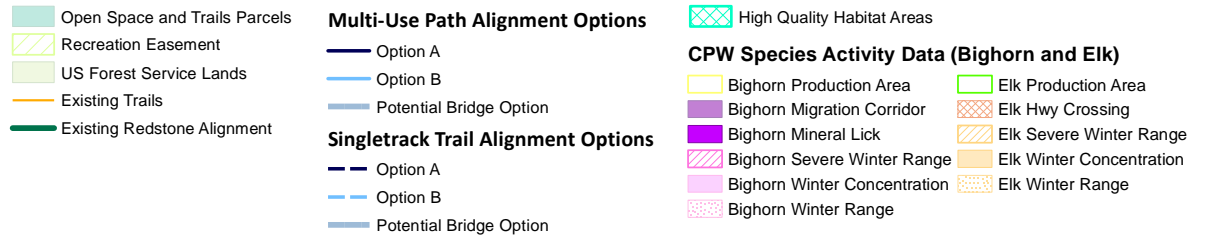
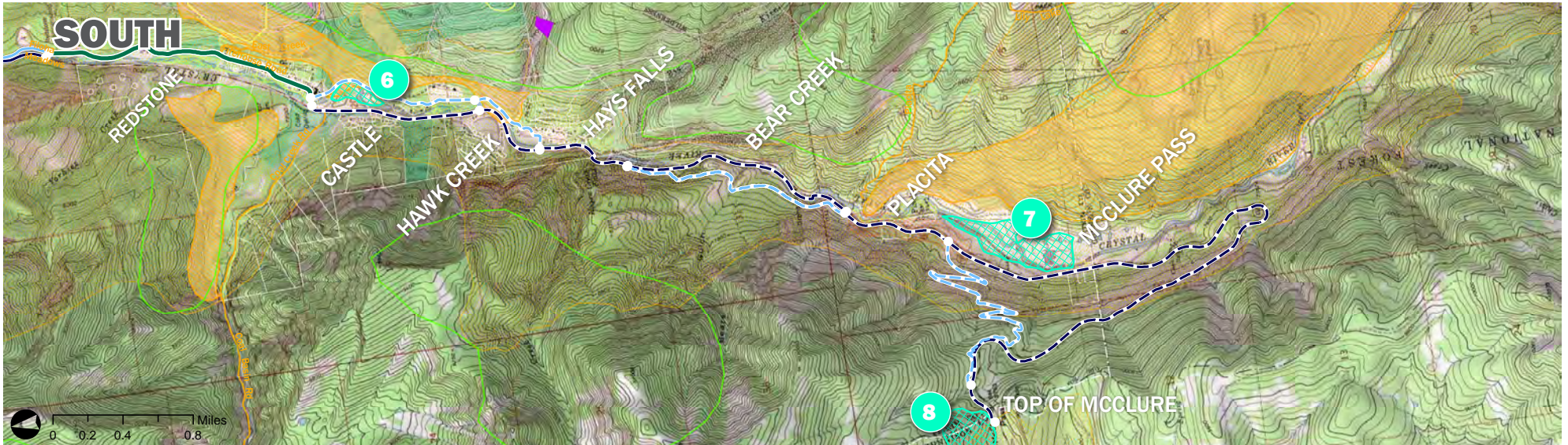
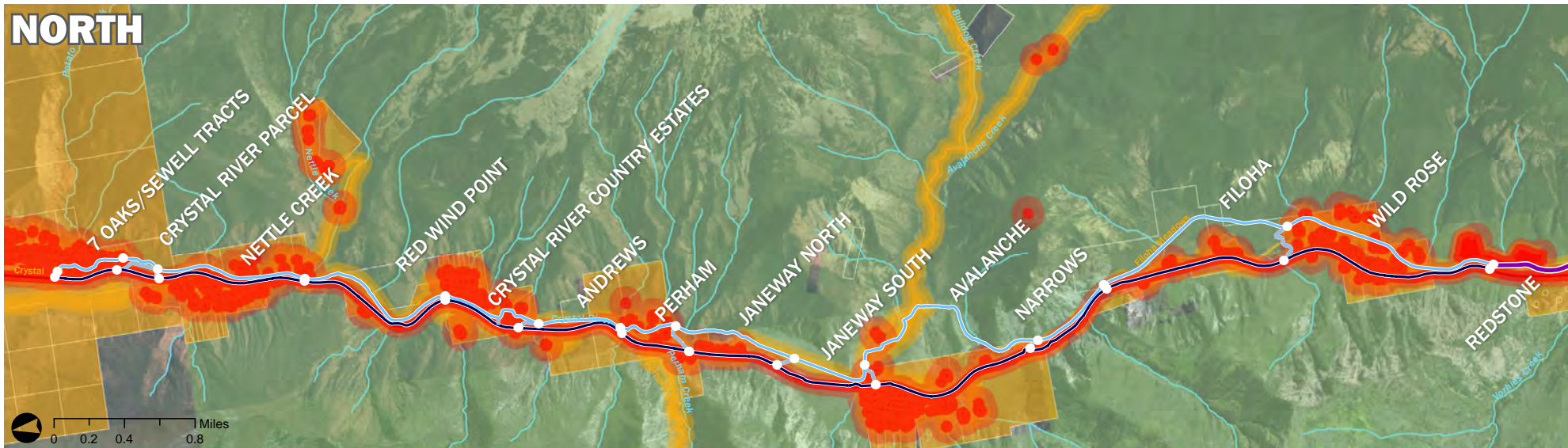


Table 3: CPW Species Activity Area Definitions

HABITAT TYPE	OVERALL RANGE	MIGRATION CORRIDOR	WINTER CONCENTRATION AREA	WINTER RANGE	SEVERE WINTER RANGE	PRODUCTION AREA	SUMMER RANGE	SUMMER CONCENTRATION AREA	MINERAL LICK
Definition	All known seasonal activity areas within the observed range of a bighorn sheep population.	A specific site through which large numbers of animals migrate and loss of which would change migration routes.	Population densities are >200% of surrounding areas from first heavy snowfall to spring green-up	Occupied by 90% of herd between first heavy snowfall and spring green-up	Occupied by 90% of herd during maximum annual snow pack and/or lowest annual temperatures	Occupied by pregnant females	Occupied by 90% of herd between spring green-up and the first heavy snowfall.	Individuals concentrate during summer to rear young and for optimal forage	Specific natural sites known to be utilized for obtaining minerals to meet basic nutritional needs.
Species	Elk and Bighorn Sheep	Bighorn Sheep	Elk and Bighorn Sheep	Bighorn Sheep	Bighorn Sheep	Bighorn Sheep	Bighorn Sheep	Bighorn Sheep	Bighorn Sheep
Season	Year Round	Year Round	Winter	Winter	Winter	May 1 to June 30	Spring/Summer	Mid-June to mid-August	Year-Round

Map 2.3: Wildlife Habitat - High-Quality Habitat & CPW Species Activity Data





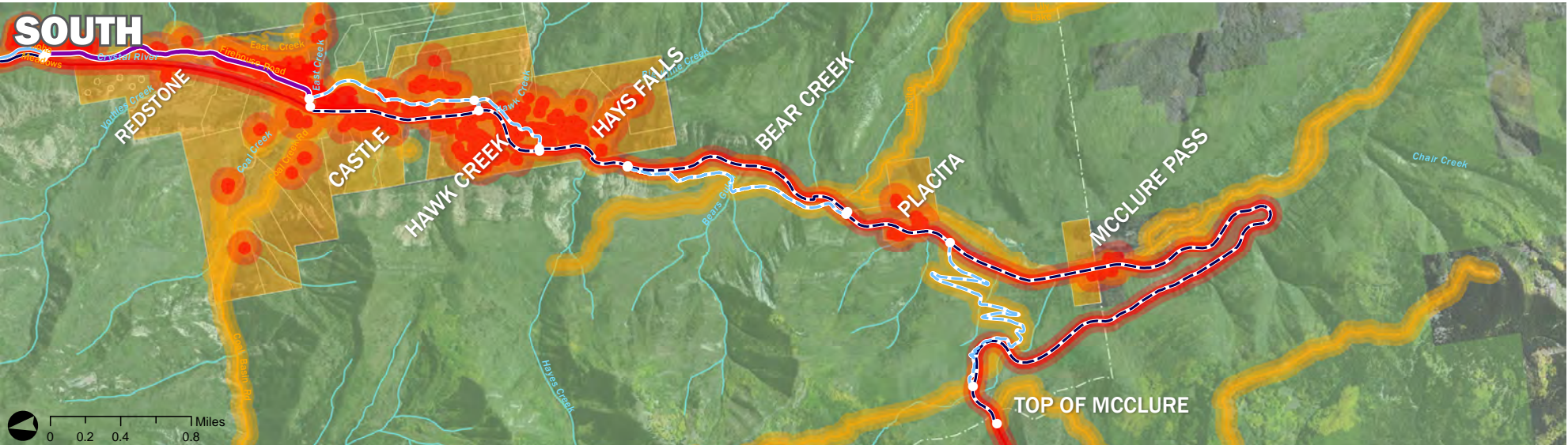
1d. Landscape Disturbance

The Crystal Valley, while providing some areas of relatively intact habitat and hosting a variety of wildlife species, is not an untouched valley, free of human impacts and development. Understanding the existing level of disturbance is important in evaluating potential new impacts to wildlife. ERO conducted an analysis of existing human development and disturbance within the Crystal Valley to understand where human development and presence currently impacts or influences wildlife habitat and where wildlife habitat is truly free from human disturbance. Habitat areas that have low levels of human use and disturbance are considered more vulnerable to new impacts resulting from trail alignments.

Understanding Existing Wildlife Habitat Disturbance: Existing human disturbance areas were identified based on a GIS analysis of high-, moderate- and low-disturbance areas. For the high- and moderate-disturbance areas, a 100-meter buffer of influence was applied to identify the affected areas, within which wildlife habitat is compromised or wildlife behavior is altered due to human development. The factors that determined the intensity of disturbance are described in Table 4.

New Disturbance Analysis: The evaluation of potential wildlife impacts included an analysis of new impacts that would be created from each of the trail alignments within undisturbed and moderately disturbed habitat areas. The same 100-meter disturbance buffer from the trail was applied. In addition, the analysis considered impacts to undisturbed river frontage, where broad areas of undisturbed habitat interface with the Crystal River.

- **High Disturbance Areas** – Existing homes/subdivisions, campgrounds, and highway (plus 100-meter buffer). These are areas where human development and use is frequent and heavy, wildlife habitat and behavior are substantially altered, and new impacts from trail development would be minimal.
- **Moderate Disturbance Areas** – Private parcels, secondary roads, trails and concentrated recreation areas (plus 100-meter buffer). These are areas where human use or occupation is prevalent but less intense, wildlife habitat is intact but is somewhat altered or degraded, and new impacts from trail development may further degrade habitat quality.



— Existing Trails
— Existing Redstone Alignment
— Multi-Use Path Alignment Options
— Option A
— Option B
— Potential Bridge Option
— Singletrack Trail Alignment Options
— Option A
— Option B

Landscape Disturbance Analysis
■ High Disturbance Areas
■ Medium Disturbance Areas
■ Low Disturbance Areas

- Low Disturbance Areas** – National forest lands, open space and other areas not otherwise classified. These are areas where human use or occupation is low, and wildlife habitat and behavior is largely uninhibited by humans. New impacts from trail development would be greater in these areas.

Table 4: Landscape Disturbance Areas

Landscape Disturbance	High Disturbance Area	Medium Disturbance Area	Low Disturbance Area
Development	- Homes and subdivisions - Campgrounds - Highways	- Private parcels - Secondary roads/driveways - Trails/social trails - Recreation areas	- National Forest lands - Open space - Undeveloped parcels
Human Use Intensity	- Frequent and heavy	- Prevalent but less intense	- Infrequent and low
Wildlife Behavior	- Substantially altered	- Somewhat altered	- Relatively unaltered
Wildlife Habitat	- Developed and degraded	- Moderately developed and degraded	- Relatively undeveloped and undisturbed
New Impact Intensity	- Minimal impacts to wildlife habitat quality	- Reduced wildlife habitat quality	- Greatest impacts to wildlife habitat quality

2. Vegetation

The Crystal Valley is a relatively narrow canyon, with a diverse mix of native and introduced vegetation communities. The riparian corridor along the river itself is an important resource, along with other areas with rare or unusual plant associations. For the trail planning and inventory process, ERO sought to better understand and document where the following vegetation areas occur along the corridor and how they may be impacted by the construction of a trail:

- High-quality or sensitive vegetation (determined by CNHP data and field review)
- Potential habitat for listed or sensitive species/communities (determined by CNHP, USFS GAP Vegetation data, and field review)
- Wetland and riparian vegetation (field review)
- General vegetation communities (USGS GAP Vegetation data/field review)

High-quality vegetation communities, potential habitat for listed and sensitive species, and wetland and riparian vegetation are described further below.

2a. High-Quality Vegetation Communities

ERO developed high-quality habitat polygons comprising sensitive or high-quality vegetation utilizing botanical field reviews, existing information and Colorado Natural Heritage Program (CNHP) protocol. CNHP tracks native plant species and communities throughout the state, and includes species that are considered rare but do not have federal or agency status; and ecological communities that have unique characteristics and diverse native species components. Possible impacts from the potential trail alignments to each of these areas was determined based on a 5-meter disturbance buffer, which is the widest area that is anticipated to be disturbed during construction.

These areas are mapped on the Environmental Overview maps for each group of segments on the following Environmental and Engineering Summary Maps. Areas of high-quality vegetation include:

- **High-quality sensitive and/or rare plant habitat** – CNHP ranks species on a scale of 1 to 10 based on their ecological significance,

with 10 being highly significant. Areas where multiple species ranking seven or higher were identified as high-quality vegetation areas.

- **Unique or diverse native vegetation communities** – Areas where ecological communities were dominated by native species and had a diverse plant community were identified as high-quality vegetation areas.
- **High-quality upland and riparian/wetland areas.**

2b. Potential Habitat for Listed and Sensitive Plants

Documented and potential occurrences of Listed and Sensitive plant species was based on fieldwork and a review of existing documents to understand where these plant communities are located within the corridor and what the potential impacts of a trail might be. The evaluation considered Endangered Species Act (ESA)-listed species, U.S. Forest Service Sensitive Species (FSS) and Colorado Natural Heritage Program (CNHP)-tracked species. Plant habitat observed in the study area includes:

- **Harrington's penstemon (FSS)** - Occurs among sagebrush often surrounded by pinon-juniper woodlands and thrives in disturbed areas along roads and trails.
- **Grand Mesa penstemon (CNHP)** - Occurs among oaks, aspens, sagebrush and in meadows, and thrives in disturbed areas along roads and trails.
- **Ute ladies' tresses orchid (ESA)** - Grows in small, sporadic microhabitats with calcareous, wet-mesic, temporarily-inundated meadows in shallow wetlands. Occurs along riparian edges, gravel bars, old oxbows, high-flow channels, and moist to wet meadows along perennial streams.
- **Dwarf raspberry (FSS)** - Grows in montane and sub-alpine areas in mesic and moist meadows and wetlands, often with willows.
- **American cranberry bush (FSS)** - Usually found adjacent to reliable water sources, but not restricted to wetland areas, and often found in aspen forests. This species is very rare in Colorado.
- **Park milkvetch (FSS)** - Grows in sedge-grass meadows, swales and hummocks, and among streamside willows. It may often occupy the ecotone between soils saturated with water throughout the growing season and adjacent dry uplands.

- **Bracken fern (CNHP)** - A very large fern that grows in large colonies within aspen forests and along springs.
- **Large-flowered globemallow (CNHP)** - Grows in desert, semi-desert, prairies, grasslands, scrub, pinon-juniper, and sagebrush plant communities, and also often on dry roadsides, disturbed areas and dry slopes.

2c. Riparian and Wetland Vegetation

ERO identified and mapped 25 “general riparian” and wetland areas based on the field review with particular focus on the potential bridge locations. The general riparian and wetland areas were those that were not considered “high quality” based on sensitive plant habitat and native plant community quality. These general riparian areas include two primary vegetation communities, the Rocky Mountain Montane Riparian Shrubland and Rocky Mountain Subalpine/Upper Montane Riparian Forest and Woodland/Shrubland. The general riparian vegetation communities occur within the following segment areas: Crystal River Parcel, Nettle Creek, Red Wind Point Open Space, Crystal River Country Estates, Andrews Open Space, Perham, Janeway North and South, Avalanche, the Narrows, Filoha Meadows Nature Preserve and Redstone.

HIGH-QUALITY RIPARIAN / WETLAND AREAS

11 areas within the Crystal Valley Trail Corridor were verified through fieldwork with diverse, native species representing Rocky Mountain Wetlands, Rocky Mountain Subalpine, Herbaceous/Riparian Shrublands, Upper Montane Riparian Forest and Woodland/Rocky Mountain Wetland - Herbaceous.



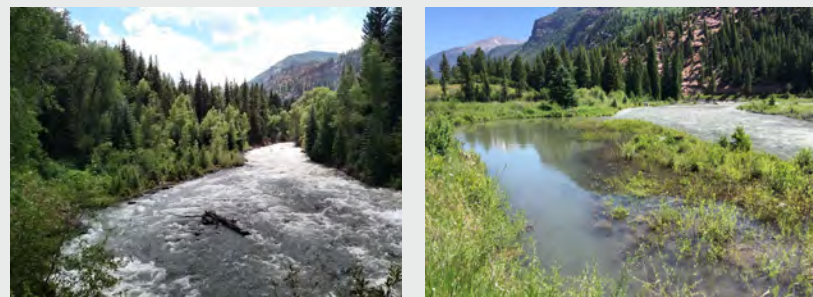
HIGH-QUALITY UPLAND AREA

7 areas within the Crystal Valley Trail Corridor were verified through fieldwork with diverse, sensitive and native plant communities representing Rocky Mountain Aspen Forest and Woodland, Southern Rocky Mountain Mesic Montane Mixed Conifer Forest and Woodland/Rocky Mountain Gambel Oak, and Mixed Montane Shrubland.



GENERAL RIPARIAN AREA

25 areas within the Crystal Valley Trail Corridor were identified with particular emphasis placed on potential bridge locations that did not have sensitive plant habitat or were not as high a quality representations of native plants.



High Quality
Upland #X

High Quality
Riparian #X

Look for these labels on the *Environmental and Engineering Summary Maps* to see where the high-quality vegetation communities are located throughout the corridor.

Table 5: High-Quality Vegetation Communities

NUMBER	SEGMENT	HIGH QUALITY VEGETATION COMMUNITY	DESCRIPTION
HIGH-QUALITY UPLAND			
1 Map 2.11	Andrews	Southern Rocky Mountain Mesic Montane Mixed Conifer Forest and Woodland/Rocky Mountain Gambel Oak/Mixed Montane Shrubland	Diverse native upland shrubland and forest dominated by oak, spruce, fir, cottonwood, snowberry, and serviceberry. Shrubs and forbs include meadow-rue, lupine, penstemon, Indian paintbrush, scarlet gilia, wild strawberry; potential Harrington's penstemon
2 Map 2.21	Avalanche	Southern Rocky Mountain Mesic Montane Mixed Conifer Forest and Woodland/Rocky Mountain Gambel Oak/Mixed Montane Shrubland/Southern Rocky Mountain Ponderosa Pine Woodland	Diverse native montane forest dominated by mixed conifer, aspen, Gambel oak; potential Harrington's penstemon (FSS), large-flower globemallow (CNHP), and Grand Mesa penstemon (CNHP) habitat
3 Map 2.21	Narrows	Southern Rocky Mountain Mesic Montane Mixed Conifer Forest and Woodland/Rocky Mountain Gambel Oak/Mixed Montane Shrubland	Diverse native montane forest dominated by mixed conifer, aspen, Gambel oak, with oceanspray mad saxifrage throughout. The slope is primarily scree and sparsely vegetated; potential Harrington's penstemon (FSS) and Grand Mesa penstemon (CNHP) habitat
4 Map 2.30	Castle	Southern Rocky Mountain Mesic Montane Mixed Conifer Forest and Woodland/Rocky Mountain Gambel Oak/Mixed Montane Shrubland	Diverse native montane forest dominated by mixed conifer, aspen, Gambel oak, snowberry, and twinberry honeysuckle; monkeyflowers are present on the cliffside seeps along the trail; potential Harrington's penstemon (FSS) and Grand Mesa penstemon (CNHP) h
5 Map 2.38	McClure Pass A	Rocky Mountain Aspen Forest and Woodland	Diverse subalpine aspen forest with willow and birch understory
6 Map 2.38	McClure Pass B	Rocky Mountain Aspen Forest and Woodland	Diverse native subalpine aspen forest with bracken fern (CNHP) and known Grand Mesa penstemon (CNHP) documented in area
7 Map 2.38	Top of Pass	Rocky Mountain Aspen Forest and Woodland	Diverse native subalpine aspen forest with bracken fern and known Grand Mesa penstemon (CNHP) documented in area

NUMBER	SEGMENT	HIGH-QUALITY VEGETATION COMMUNITY	DESCRIPTION
HIGH-QUALITY RIPARIAN/WETLAND			
1 Map 2.16	Janeway North A	Rocky Mountain Subalpine/Upper Montane Riparian Forest and Woodland	Diverse riparian forest dominated by cottonwood, twinberry, and alder; species include wintergreen, redosier dogwood, starry lily of the valley, several orchids, several milkvetches; potential dwarf raspberry (FSS), American cranberry (FSS), park milkvet
2 Map 2.16	Janeway North B	Rocky Mountain Subalpine/Upper Montane Riparian Forest and Woodland/Rocky Mountain Wetland- Herbaceous	Diverse riparian forest dominated by cottonwood, twinberry, and alder; species include wintergreen, redosier dogwood, starry lily of the valley, several orchids, several milkvetches; potential dwarf raspberry (FSS), American cranberry (FSS), park milkvet
3 Map 2.16	Janeway North C	Rocky Mountain Wetland- Herbaceous/ Riparian Shrubland	Diverse gravel bar wetland with narrowleaf willow, grasses, and forbs; Potential dwarf raspberry, American cranberry, and park milkvet habit; potential Ute Ladies' Tresses orchid (ESA) within wetland areas
4 Map 2.16	Janeway North D	Rocky Mountain Wetland- Herbaceous	Diverse riparian forest dominated by alder and mesic forbs and grasses; potential dwarf raspberry (FSS), American cranberry (FSS), park milkvet habit (FSS), and Ute Ladies' Tresses orchid (ESA) within wetland areas
5 Map 2.25	Filoha	Rocky Mountain Wetland- Herbaceous	Disturbed herbaceous wetland area where past occurrences of Ute Ladies' Tresses orchid (ESA) have been documented
6 Map 2.30	Castle A	Rocky Mountain Wetland- Herbaceous/ Riparian Shrubland	Diverse riparian forest dominated by cottonwood and narrowleaf willow; potential dwarf raspberry (FSS), American cranberry (FSS), park milkvet habit (FSS), and Ute Ladies' Tresses orchid (ESA) within wetland areas
7 Map 2.30	Castle B	Rocky Mountain Wetland- Herbaceous/ Riparian Shrubland	Subalpine riparian willow carr with potential dwarf raspberry (FSS), American cranberry (FSS), park milkvet habit (FSS), and Ute Ladies' Tresses orchid (ESA) within wetland areas
8 Map 2.30	Castle C	Rocky Mountain Wetland- Herbaceous/ Riparian Shrubland	Gravel bar wetland shrubland with potential dwarf raspberry (FSS), American cranberry (FSS), park milkvet habit (FSS), and Ute Ladies' Tresses orchid (ESA) within wetland areas
9 Map 2.30	Castle D	Rocky Mountain Wetland- Herbaceous/ Riparian Shrubland	Gravel bar wetland shrubland with potential dwarf raspberry (FSS), American cranberry (FSS), park milkvet habit (FSS), and Ute Ladies' Tresses orchid (ESA) within wetland areas
10 Map 2.30	Castle E	Rocky Mountain Wetland- Herbaceous/ Riparian Shrubland	Gravel bar wetland shrubland with potential dwarf raspberry (FSS), American cranberry (FSS), park milkvet habit (FSS), and Ute Ladies' Tresses orchid (ESA) within wetland areas
11 Map 2.38	Placita/ McClure Pass	Rocky Mountain Wetland- Herbaceous/ Riparian Shrubland	Diverse montane wetland and riparian shrubland dominated by narrowleaf willow; potential dwarf raspberry (FSS), American cranberry (FSS), park milkvet habit (FSS), and Ute Ladies' Tresses orchid (ESA) within wetland areas

3. In-stream Areas

Existing Stream Habitat Condition

Most of the Crystal River through the study area has been constricted by past developments, including the historic railroad grade, Hwy. 133 and numerous bridges. Through much of the study area, banks are hardened and stabilized by riprap, retaining walls and vegetated fill material. These past impacts have left the Crystal River in an impaired ecological condition through much of the study area (Roaring Fork Conservancy 2016, Beardsley and Johnson 2014).

Based on this existing stream condition, the potential impacts of trail implementation within and along the Crystal River stream channel and floodplain stem from new structures or hardening (e.g., riprap, walls, bridge abutments or piers) that further degrade or constrict the stream channel, or result in a significant loss of wetland and riparian habitat.

ERO's field review focused on wetlands and riparian areas where potential disturbance from the trail alternatives would be most likely: near potential bridge locations, along the actual footprint of the alignment, and in areas where construction in floodplains and stabilization of streambanks would potentially occur.

Summary of Impacts by Alignment Alternatives

While the potential impacts of each alternative will vary depending on the type of trail construction required and the specific conditions for each segment alternative, a summary of the type of impacts for each primary alignment are summarized below.

Alternative A Segments: Alternative A follows the existing alignment of Hwy. 133 for its entire length. During the field review, limited native vegetation was observed in the highway right-of-way. A disturbance area of approximately 15 feet would be likely for Alternative A segments. Anticipated impacts from Alternative A include the following:

- Existing riparian vegetation would likely be removed to make way for the trail bench, with little opportunity for revegetation and mitigation, most of which would be adjacent to the Crystal River.
- Challenging trail design solutions along the narrow strip between

the highway and the streambank would require new riprap, walls, piers or other hardened structures. These new hardened structures could further incise and degrade stream function in affected areas.

- New construction and excavation along the Crystal River streambank, and in some cases within the channel, would increase erosion and sedimentation and the potential for impacts to water quality and in-stream habitat. While these impacts would be reduced by construction timing, best management practices (BMPs) and engineered solutions, the location and extent of this impact would elevate the risk of impacts.
- However, since a significant extent of the streambank is already degraded by past development and stabilization, the overall incremental impact would still be minor.

Alternative B Segments: Alignment B follows existing trails and roads for almost its entirety. Anticipated impacts from Alternative B include the following:

- Several small areas of wetland and riparian vegetation would be disturbed during construction. A larger extent of wetland and riparian vegetation in the Janeway North area (about 0.35 acre) would be impacted.
- Most of the disturbance to vegetation would be in upland locations.
- Increased drainage and sedimentation would occur along the length of the trail during and immediately following construction, potentially affecting water quality and in-stream habitat. In many areas, construction BMPs (best management practices) and the vegetated buffer distance between the trail alignment and the Crystal River would reduce these impacts.
- Besides the localized wetland impacts described above, the overall incremental impact of Alignment B segments to in-stream areas would be minor.

Bridges

Fifteen potential bridge locations are identified in the study area. Some are new structures, while others are adjacent to or replacements of existing bridges. To the extent that trail alignment options utilize bridges to switch between Alternative A and Alternative B segments, new bridge abutments could result in impacts to wetlands, riparian habitat or stream function. However, the location, extent and significance of these

impacts is not known at this time, since the exact location and span length of new bridges has not been determined.

Potential Design Measures to Mitigate Impacts and Improve Stream Conditions:

In some locations, trail and bridge implementation has the potential to reduce existing impacts or potentially improve stream and habitat conditions. These opportunities include:

- Avoiding removal of riparian vegetation whenever possible;
- Incorporating riparian and upland vegetation as appropriate into stabilization design to support and increase habitat and hydrologic balance;
- Designing bridges with the maximum feasible width to minimize floodplain constriction and promote channel migration, hydrological balance, and riparian habitat succession;
- Replacing existing narrow bridges with wider structures to withstand bankfull flows and minimize flow deflection;
- Avoiding and minimizing the use of impermeable materials along the riverbank to support hydrological balance; and
- Designing piers and bridges so that flow deflection from pilings or structures is minimized.

In addition, there is potential for breaching the railroad grade or other confining structures at key locations (such as Red Wind Point), thus re-establishing floodplain connectivity, increasing the potential for channel migration, improving hydrologic balance, and enhancing aquatic and riparian habitat (Roaring Fork Conservancy 2016).



There are opportunities along the river corridor to improve the river's function and improve riparian areas.

4. Cultural Resources

The Crystal Valley has a long history of historic human use and occupation, ranging from Native American travel routes to 19th century ranching, mining and railroad development. The goal of the Cultural Resource Analysis was to better understand and document the location, condition and significance of cultural resources within the trail corridor. ERO evaluated cultural resources along the proposed trail alignment corridors, based on archival research, review of existing data and documentation, and a field survey of the corridors performed by a professional archaeologist.

Cultural resources may consist of buildings, structures, objects or sites and can include districts, cultural landscapes and traditional cultural properties that are typically 50 years or older. All cultural resources that overlapped with the potential trail alignments were documented regardless of significance.

Twelve cultural resources were documented; all are historical and most are products of late 1800s/early 1900s Euro-American activity in the Crystal Valley. Five historic transportation corridors are located within or cross the proposed trail alignments: the Rock Creek County Wagon Road, the Crystal River and San Juan Railroad, State Highway 133, an abandoned segment of Hwy. 133, and Redstone Boulevard. Other resources include a bridge, a hydroelectric station, three ditches, an abandoned stage stop, and a trash dump. Six of these sites are historically significant:

1. The Rock Creek County Road appears to be the first formalized transportation corridor in the Crystal River Valley. Pitkin County completed a wagon road from the Garfield County line to the Gunnison County line between 1885 and 1890. It crossed the Crystal River in three locations – from east to west at Red Wind Point, from west to east at Janeway, and back to the west side at Coal Creek. Combined with other efforts, it reached the county line by 1890. Some sections of the original wagon road were obscured by the railroad grade in the 1890s. In some locations, it remained parallel to the railroad. The sections on the west side of the river between Red Wind Point and Janeway are now part of Highway 133. It also forms both Bill Creek Road and Redstone Boulevard.

WHAT MAKES A HISTORICALLY SIGNIFICANT SITE?

Just because a site is older than 50 years does not mean it is significant.

A historically significant site must meet one of the following four criteria:

- Association with important historic events,
- Association with important historic people,
- Representation of a type, period, or method of construction, or
- Have potential to yield important information.

AND

It must also have maintained **physical integrity**.

For example, if a historic road has been completely upgraded, i.e. widened and/or paved, it is unlikely to be considered significant even if it is associated with important historic events.

2. The Crystal River Railroad extended from the Denver & Rio Grande depot in Carbondale up the Crystal River Valley to Placita. The railroad was built to accommodate John C. Osgood's interest in hauling coal, obliterating the original wagon road at some points. Unlike the wagon road construction, the railway used dynamite to stay on an east-side alignment from Red Wind Point to Janeway, and also significantly altered the landscape in the narrows below Filoha Meadows. The section of grade to Penny Hot Springs was completed by March 1893 by the Crystal River Railroad. By 1898, the rails reached Redstone, and Placita soon after. The line from Placita to Marble was built by the Crystal River and San Juan Railroad to haul marble. After coal production ended in 1909, the CR&SJ leased the lower section that had been built by Osgood. The railroad was used until 1942, at which point it was abandoned and dismantled. Outside of the grade, no significant features of the railroad remain within the trail corridor. The Carbondale station was moved and remains in use as an American Legion Post at 97 N Third St. in Carbondale. The majority of the proposed trail alignments that are not within the Hwy. 133 right-of-way follow either the Rock Creek County Road or the abandoned railroad grade, some of which has been integrated into neighborhood road systems.

3. Redstone Boulevard extends from Hwy. 133 near Redstone Campground, south through Redstone and continues past the Redstone Inn south to Cleveholm (a.k.a. Redstone Castle); a section of the boulevard then continued south of the castle to Osgood's first residence, the Crystal River Ranch. The boulevard is associated with Osgood, arguably the most important person in the development of the railroad, mining and settlement in the Crystal Valley, and the founder of Redstone. Only the section from the Redstone Inn south has physical integrity.

4/5. The East Mesa and Bane & Thomas Ditches are active water conveyance resources that are maintained and still in use. The East Mesa Ditch was built around 1894 and the Bane & Thomas Ditch was built around 1886; both likely contributed to early settlement and agriculture in the valley. These resources are earthen, U-shaped ditches.

6. The Filoha Meadows (or Penny Hot Springs) stage stop was first built by H.D. Penny in the 1880s; some of the buildings were built later, in the 1940s. During a 2017 site visit, only the bunkhouse and barn were revisited; all other structures were well outside of the project area to the west. The bunkhouse, which was the closest feature to the site of potential trail alignment B, has collapsed since a 1999 documentation of the site. This feature is located approximately 75 feet west of the proposed trail alignment. The barn is still standing but is deteriorated; the center of the roof is sagging. This feature is located about 200 feet west of the proposed trail alignment.

ERO evaluated potential impacts to these resources, as well as potential measures to mitigate those impacts.

Potential Impacts to Cultural Resources

Impacts to cultural resources can be anything that alters the characteristics of a site that make it significant; this includes physical destruction of the resource, alterations that are not consistent with its history, removal from its original location, change in the character of its use or setting, or introduction of any elements that negatively impact the integrity of the site. Potential impacts from the development of a trail could include:

- For the three transportation cultural resources (Rock Creek County Road, the Crystal River and San Juan Railroad, and Redstone Boulevard), paving sections of these resources that have not been

previously upgraded and paved would not be consistent with their historic integrity.

- The Filoha Meadows stage stop would likely see an increase in visitation from trail users. This increase could result in the removal of artifacts from the property or further deterioration of the structures.

Potential impacts can typically be mitigated by providing more detailed documentation of portions of the resources that have integrity (this could include measured drawings of significant features, high-quality photographs) and interpretive signage.



On the Crystal River Parcel Open Space, the platform is all that remains of the historic Crystal River Railroad that extended from Carbondale to Marble.

E. TRAIL ALTERNATIVES - ENGINEERING FEASIBILITY SUMMARY

The physical characteristics of the Crystal Valley that make it scenic and desirable for outdoor recreation also create substantial engineering challenges. The two alternatives for each segment of trail have unique engineering challenges, including creek crossings and washes, narrow canyons, constrained rights-of-way, unique geological conditions, steep and rocky cliffs, wildlife and riparian habitats, historic sites and residential areas. Loris and Associates worked with the project team and built on previous studies to determine the best on-highway and off-highway routes to provide a safe, pleasant and intuitive user experience. The Engineering Feasibility Report classifies specific portions of each segment alignment into Typical Sections with associated cost estimates in order to compare the two alignments. The costs described are preliminary estimates, in future project stages more detailed design, alignment modifications and surface material decisions will influence the cost estimates. In addition, in response to public feedback, an addendum to the original report looks at the feasibility of shoulder improvements along Hwy. 133 with a similar approach using typical sections to estimate design difficulty and estimated costs. The complete Engineering Feasibility Report is included as [Appendix C](#).

1. Multi-Use Path Typical Sections:

The engineering feasibility analysis reviewed the two trail route alternatives and developed conceptual designs using “Typical Cross-Sections” responding to existing topographic, hydrologic, environmental and physical conditions. The Typical Cross-Sections are characterized by construction or engineering difficulty and an estimated cost per linear foot based on the current cost of construction, structural requirements, earthwork and level of disturbance. Each trail typical section is assigned a unique name (i.e., TS-1, TS-2, etc.) and color as shown on the Alternatives Evaluation Summary Maps in the following section. The typical sections range from simple trails on flat existing grades (i.e. old railroad grade) to very complex structural trails on steep slopes (between the highway and the river). The overall goal is to apply these typical trail

sections in a manner that will minimize the visual and environmental impacts while trying to preserve the character of the river valley.

Additional design considerations included:

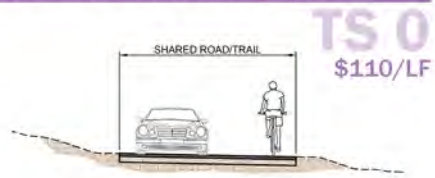
- **Surface Type:** For the purpose of the conceptual design and a cost estimate comparison, the engineers developed estimates based on an asphalt surface for the multi-use trail segments from where the existing Crystal Trail ends to Redstone, and soft-surface trail from Redstone to the Pitkin County boundary at the top of McClure Pass. The asphalt trail was used for the initial analysis as this trail type, especially when combined with an adjacent soft-surface platform, accommodates the greatest diversity of user groups. The feasibility of an adjacent soft-surface trail was evaluated, though it is not always possible in areas where the trail would be built on structure, largely in Alternative A segments. Potential surface type, specifically along Alignment B, was a topic OST sought feedback on during the first round of public engagement; no decisions have been made on the specific surface types to be used.
- **Trail Width:** Trail width is ideally at least 10 feet for the primary surface; however, in constrained areas the width can be narrowed to 8 feet. Shoulders along the sides of the trail are typically up to 2 feet wide where space allows.
- **Accessibility:** The alignments for the multi-use path to Redstone strive to meet the ADA accessibility guidelines for bicycle and pedestrian facilities and for the most part are designed to achieve a grade of 5% or less. In locations where 5% is not feasible, the ADA requirements for landing platforms and other strategies have been accommodated.

SURFACE TYPES

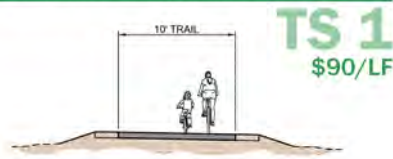
Asphalt is Pitkin County Open Space and Trails’ standard for a hard-surface trail material. Concrete trails are used extensively by many jurisdictions for durability, however, concrete is generally more expensive than asphalt. Hard trail surfaces often aren’t the preferred surface for some users such as equestrians and runners. A soft-surface trail constructed of crusher fines or similar material is by far the least expensive surfacing material, but it generally requires more maintenance than hard-surfaces in order to address erosion and rutting.

Figure 5: Typical Sections for Multi-Use Trail Alternatives

TS 0 - Trail shares existing road



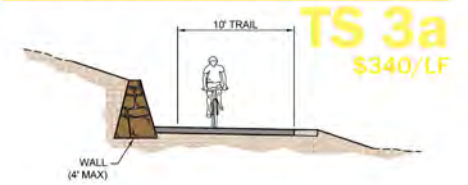
TS 1: Natural Bench/Minor Grading



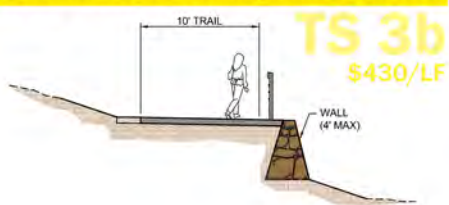
TS 2: Moderate Grading



TS 3a: Moderate Grading/Minor Cut Wall



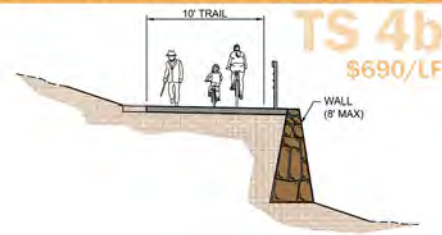
TS 3b: Moderate Grading/Minor Fill Wall



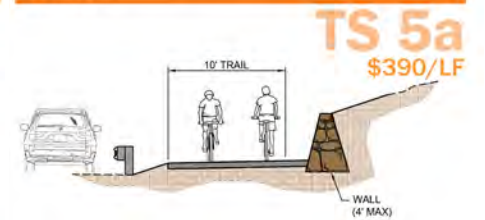
TS 4a: Significant Grading/Major Cut Wall



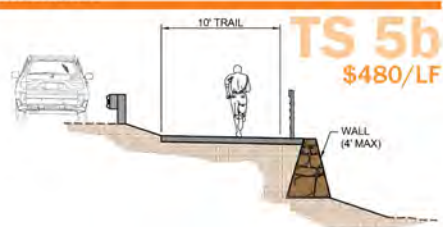
TS 4b: Significant Grading/Major Fill Wall



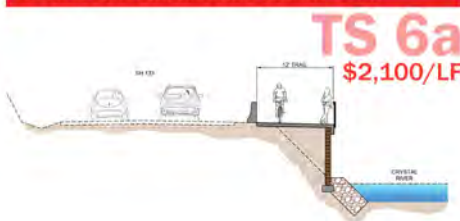
TS 5a: Attached Trail/Minor Cut Walls/Guardrail



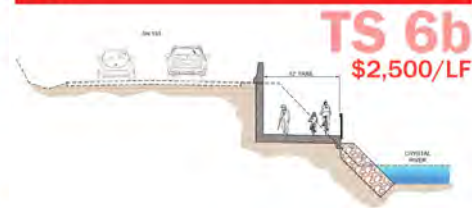
TS 5b: Attached Trail/Minor Fill Walls/Guardrail



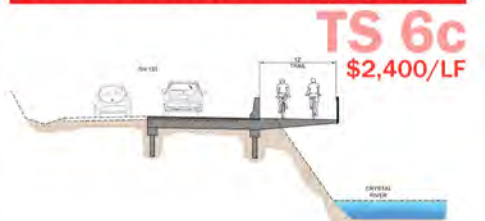
TS 6a: Structural Trail on Fill Wall



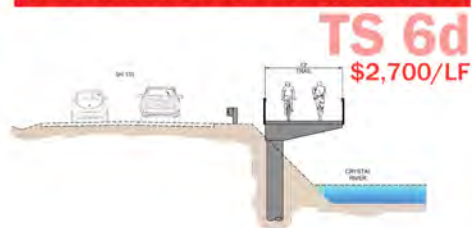
TS 6b: Structural Trail on Cut Concrete I-Wall



TS 6c: Structural Trail-Cantilevered Slab



TS 6d: Structural Trail-Precast Slab/Pier



2. Soft-surface Segments Design Difficulty:

For the purpose of the planning study, the segments south of Redstone to the Pitkin County line at the top of McClure Pass are conceptualized as a soft/natural-surface trail. There are a couple of segments where an off-highway route is not feasible and therefore only one route is shown. The soft-surface segments have been rated according to their design difficulty, taking into consideration the existing physical conditions, where new trail segments would need to be developed or if there are opportunities to utilize and enhance existing routes and social trails. Some areas where there are washes, significant creek crossings or the need for an engineered solution adjacent to the highway have been rated as a having high design difficulty. This corresponds to higher costs compared to other soft-surface sections.

3. Bridges:

The engineering and environmental teams worked together to determine where the best locations would be to bridge or transition between alignments A and B. The bridge locations that are shown are those that are least impactful on the natural environment and most cost effective. Current vehicular bridges are also considered, though they may require improvements for bike and pedestrian use.

4. Shoulder Improvements:

Pitkin County Open Space and Trails has been working with CDOT to encourage wider shoulders in conjunction with routine paving in the Hwy. 133 corridor, to improve safety for cyclists and vehicles, for a number of years. Shoulder widening will generally not change the character of the highway corridor's existing conditions, and in most cases, existing soft shoulders could be paved with asphalt with little to no grading or vegetation impacts. In some cases, more extensive grading and impacts would be necessary to obtain wider paved shoulders. The Loris Engineering Feasibility Report-Addendum, evaluates shoulder improvements from Carbondale to Redstone. The 2011 CDOT Design Guide says that to accommodate bicycles, paved shoulders should be at least 4 feet wide. Bicycles are required to follow the same rules of the road as vehicles and must ride with the flow of traffic.

Figure 6: Level of Design Difficulty for Soft-surface Trail Alternatives

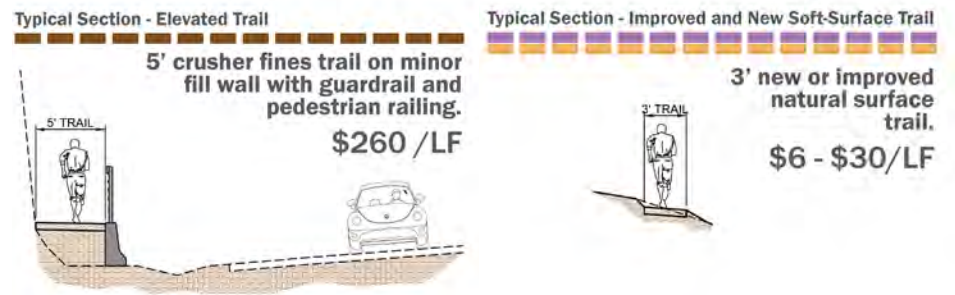
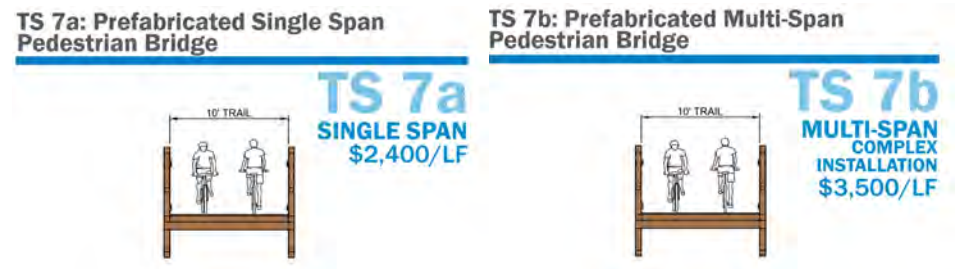


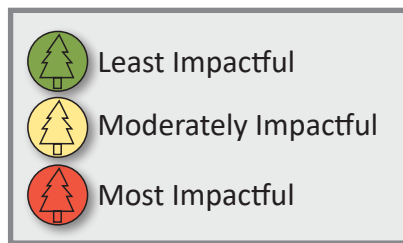
Figure 7: Typical Bridge Sections



F. EVALUATION CRITERIA

Each potential alignment segment was evaluated based on four main categories including: Environmental Factors, User Experience, Engineering Difficulty and Costs. Subcategories under each of the main categories were classified based on the potential impact of a trail alignment from least/minor impact to most/major impact. A color coding system makes the evaluation factors user friendly and eases comparison of the potential impacts of each potential segment alignment. Each factor's scoring is ranked as compared to other trail segment alternatives in the project. More detailed information on each of the factors considered is included in [Appendix B. Environmental Review](#) and [Appendix C. Engineering Feasibility Report](#).

Section G. Alignment Alternatives reviews the factors that were evaluated as a part of the planning process and provides background data for each of the 20 segments.



ENVIRONMENTAL FACTORS

Environmental factors were scored as minor impact (**green**), moderate impact (**yellow**), and major impact (**red**) to the natural environment.

- **Wildlife:** Potential impacts to wildlife were based on a composite ranking that considered impacts to high-quality habitat areas, potential habitat for federally listed or sensitive species, new landscape-scale impacts to undisturbed habitat, and seasonal activity areas for bighorn sheep and elk.
- **Vegetation/Wetlands:** Potential impacts to vegetation and wetlands were based on the area of impact on high-quality vegetation communities, listed and sensitive species, wetland and riparian areas.

- **Cultural Resources:** This category summarized the potential impacts to historically significant resources such as the old Rock Creek County Road, railroad routes, ditches and stage stops.



USER EXPERIENCE FACTORS

User experience factors were scored as least impactful or positive user experience (**green**), moderately impactful (**yellow**), and most impactful or negative user experience (**red**).

- **Safety/Comfort:** Evaluates the potential trail user's sense of comfort and safety while on each trail segment. Factors considered included separation from the highway and level of interaction with vehicles.
- **Trail User Types:** Evaluates whether the trail segment would accommodate all user groups or if some users would be excluded from using a potential alignment. For example, the highway alignments generally do not accommodate equestrian travel and some of the alignments may have steeper grades that could limit users.
- **Scenic Quality/Ambiance:** Evaluates the scenic quality or ambiance of potential trail routes from the perspective of the trail user. Also important, but not included in this analysis, is the impact of a trail on the scenic quality or views from a vehicle on the highway.
- **Seasonal Use:** Evaluates the months of the year the trail would be available to users taking into consideration that Pitkin County does not do winter maintenance on trail corridors and that existing or potential seasonal closures may limit the period of use.



ENGINEERING FACTORS

Engineering factors were scored as least impactful or easy to engineer and build (**green**), moderately impactful (**yellow**), to most impactful or challenging to engineer and construct (**red**).

- **Design Difficulty:** Accounts for the average typical section difficulty level with TS-0 being very easy or least impactful to TS-8 being challenging construction and engineering.
- **Geotechnical:** Geotechnical factors impacting engineering decisions

include challenges such as mitigating hazards such as rockfall and mudslides; stability of terrain, soils and slopes; and other unknown factors that may impact the complexity of implementation.

- **Potential for adjacent soft surface:** This factor looks at whether there is adequate space to allow for an adjacent soft-surface trail platform and only applies to the northern trail segments where a multi-use path was evaluated.
- **Hydrologic Impact:** This factor evaluates the potential impacts of the typical cross-sections for each segment on the hydrology of the river.

ESTIMATED COST FACTORS

Estimated cost factors were scored as least expensive (green), moderately expensive (yellow), and most expensive (red).

- **Construction Costs:** For each segment, this ranking is based on construction cost per mile.
- **Maintenance:** This factor looked at the potential maintenance needs, frequency and costs to maintain the segment of trail. Maintenance needs can be impacted by potential hazards such as rockfall and separation or barriers between the trail and the highway (greater separation leads to fewer impacts from highway debris).
- **Property/Easement Acquisition:** The alternatives evaluation looked at all of the potential routes, regardless of current ownership. Some of the alternatives may have additional costs to acquire the ability for the public to use a trail segment route, while others will necessitate working with CDOT and/or the U.S. Forest Service to complete additional studies and meet their specifications, which often contribute to additional costs.

REFINING THE ALTERNATIVES:

The A and B alignments presented for public feedback and included in the Segment Overview section were determined through the initial findings and site visits to be the best routes for a potential trail. Staff and the consulting team evaluated a number of other variations that were not carried forward because parallel routes were preferable or because an alternative route was not feasible.

- **West Side Highway Alignment** - A number of respondents to the public survey raised the question of why an alignment following the west side of Hwy. 133 was not included in the alternatives analysis. Building a trail along the west side of Hwy. 133 presents a new set of challenges resulting from new cut slopes; new, steeper and taller rock cuts and significant retaining walls; and undermining or destabilizing the slopes beneath the irrigation ditch that runs along portions of the west side of the highway. A trail along this side has the potential to create new hazards and make existing hazards worse for both highway users and trail users.
 - » For much of the west side of the highway corridor, the road parallels steep slopes that present challenging geologic hazards including mudslides and rockfall.
 - » Constructing a trail along this side would require significant cuts to create a trail platform and have the potential of further destabilize already steep slopes. The added instability would pose a threat to potential trail users that can be largely avoided with the east side alignment.
 - » A west side alignment would require numerous driveway and access crossings, which would steepen many driveways that are already quite steep.
 - » Additionally, in some areas (e.g. Narrows and Filoha), a west-side alignment is unfeasible and would require crossing the highway.
 - » At-grade trail crossings of a multi-use path across the highway are undesirable and present potential safety hazards for both trail users and motorists and grade-separated crossings are costly.
- **Sweet Jessup** – This potential alignment follows the west side of the highway on a vertically separated bench created by the Sweet Jessup Ditch. The alignment would begin at the terminus of the existing Crystal Trail and would bypass a number of segments before meeting the highway at the Andrews segment. The challenges with this alignment include the vertical distance between the highway and the ditch platform, making it challenging to meet recommended grades for a multi-use trail; the safety hazards of locating a trail in proximity to an open ditch; similar private property challenges as exist along the east side of the river; as well as constrained space that may not be able to hold a multi-use trail width.
- **Crystal River Park** – This was a third alternative evaluated for the Hawk Creek segment, which pulled away from Hwy. 133 to the

west following the Crystal River Park subdivision road and then continuing south to reconnect with the highway. This alternative would require substantial grade changes in a relatively short distance and did not offer any significant benefits over the other alternatives.

- **Janeway South** – This alternative route traversed southeast from Janeway meadow to connect farther east on Avalanche Creek Road. This segment was not carried forward because it is within the national forest seasonal closure and had potential wildlife impacts with little added benefits. It would also be very difficult to achieve a trail grade that met ADA standards.
- **Placita** – A few different alignments were evaluated in the Placita meadow, however, utilizing this area would traverse high-quality riparian and wildlife areas, would require two additional highway crossings, and ultimately did not connect to a feasible lower McClure route. The sage and wetland areas make construction more difficult.
- **Lower McClure** – The switchbacks of the old McClure Pass road are steeper at the bottom and mellow out going up the hillside. An alternative route was evaluated to see if it was possible to construct a more moderate grade approach from the south, however when this was field tested, the grades along the hillside were too steep for trail construction and traversed an area with dense vegetation and evidence of elk activity.
- **Upper McClure** – This route traversed a relatively undisturbed area of high-quality upland vegetation and required significant additional trail miles to create a sustainable and enjoyable grade. Additional challenges included a steep and erosive drainage where a substantial bridge solution would be needed.
- **Potential Bridges** - A number of potential bridge locations were also evaluated during the initial analysis and fieldwork phase. The options were narrowed to the 14 new or existing bridge locations along the corridor with the least impacts. Where bridge crossings are required between potential alternatives, additional studies and further refinement of the location and specifications will be required.

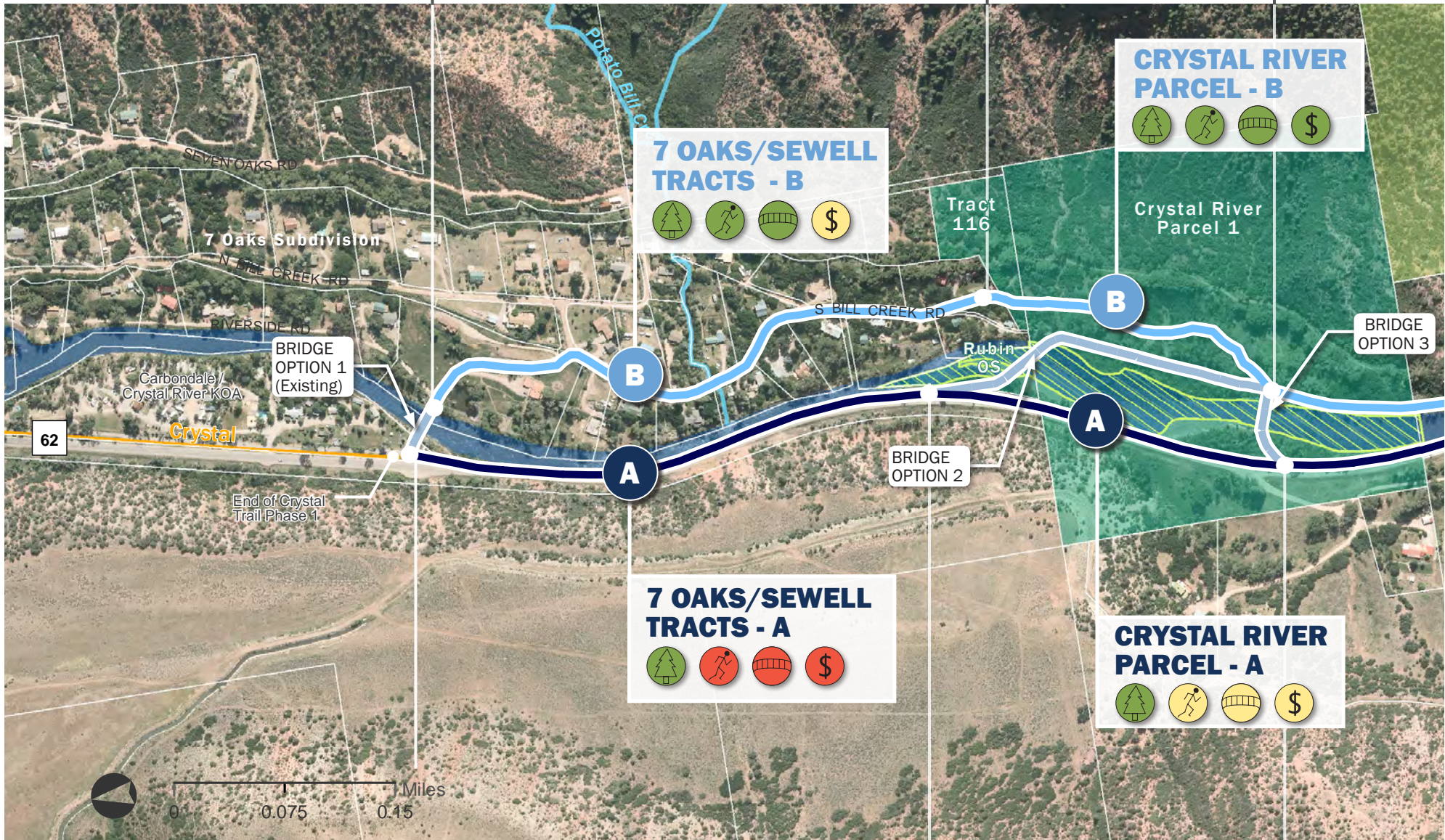
G. ALIGNMENT ALTERNATIVES

The following section reviews the existing conditions and impact summary information for each of the 20 trail segments within the Crystal Valley corridor.

EXISTING CRYSTAL VALLEY TRAIL

7 OAKS / SEWELL TRACTS

CRYSTAL RIVER PARCEL



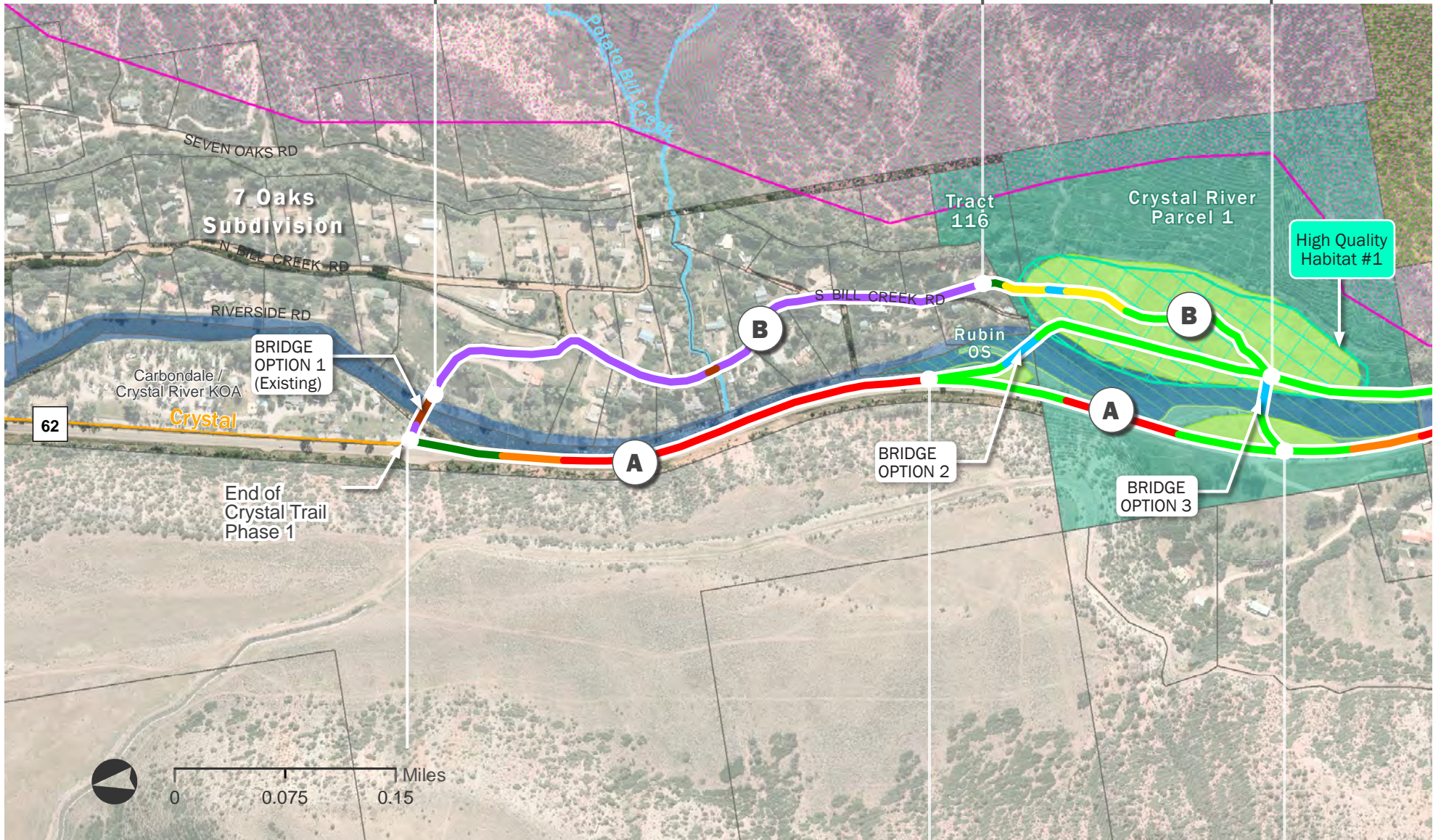
Map 2.5: Alignment Alternatives Impacts Summary - 7 Oaks/Sewell Tracts to Nettle Creek



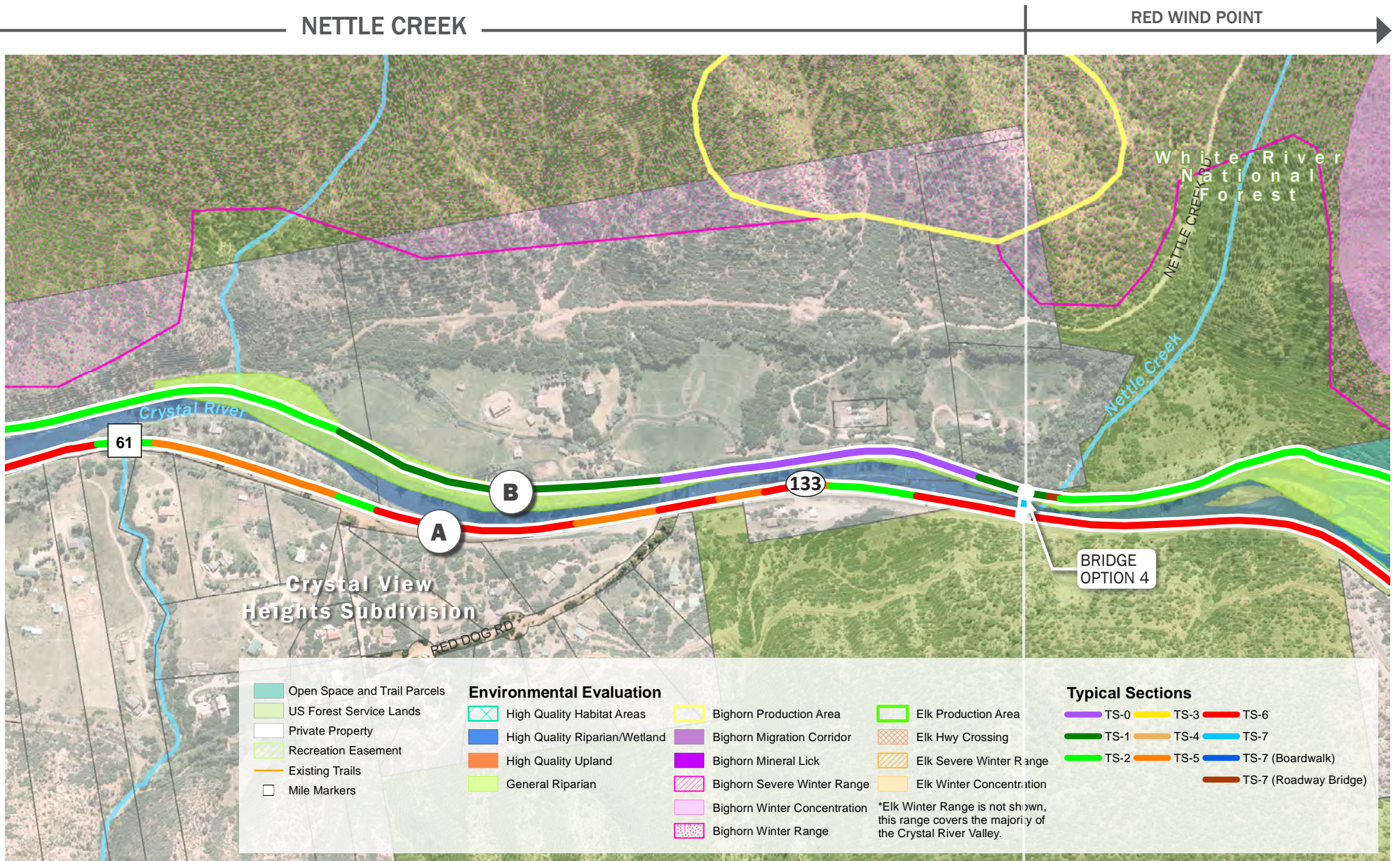
EXISTING CRYSTAL VALLEY TRAIL

7 OAKS / SEWELL TRACTS

CRYSTAL RIVER PARCEL



Map 2.6: Environmental and Engineering Summary - 7 Oaks/Sewell Tracts to Nettle Creek



7 OAKS/SEWELL TRACTS SEGMENT ALTERNATIVES

7 OAKS/SEWELL TRACTS A

MULTI-USE TRAIL MILES: 0.36 miles

OVERVIEW: The 7 Oaks/Sewell Tracts A trail alternative runs between Hwy. 133 and the west side of the Crystal River. It begins at the current terminus of the Crystal Trail, at the KOA campground, and runs south through a wide and flat informal parking area. Continuing south, the available space for a trail gradually gets narrower, and then disappears to a very constrained area between the highway guardrail and the river. This alternative ends where the river diverges from the highway.

CONTINUATION: The trail can continue onto Crystal River Parcel A along the highway or can cross the river on Bridge Option 2.

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way

7 OAKS/SEWELL TRACTS B

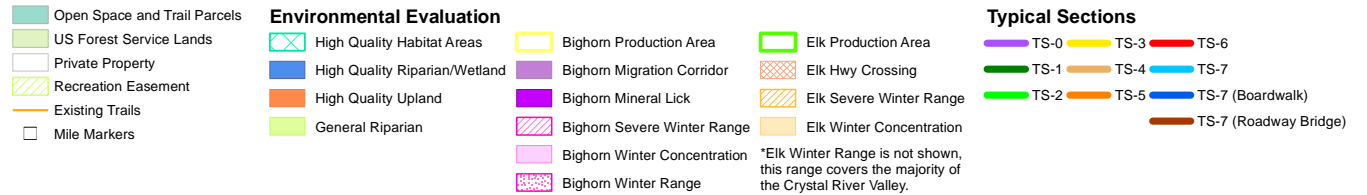
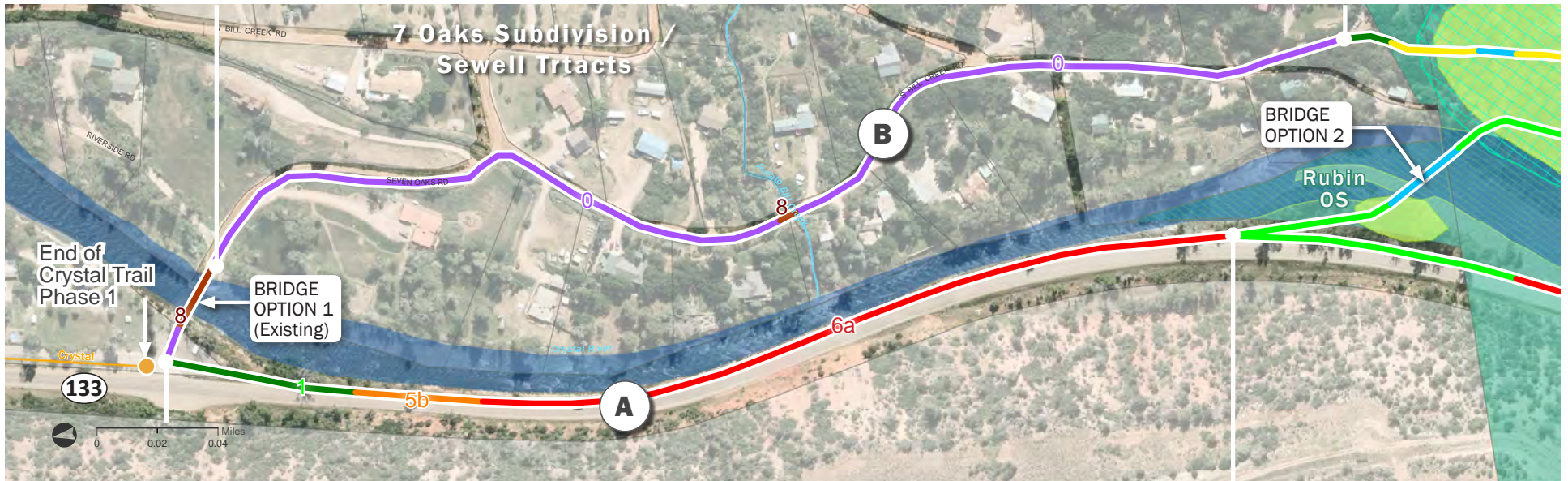
MULTI-USE TRAIL MILES: 0.42 miles (shared road)

OVERVIEW: The 7 Oaks/Sewell Tracts B trail alternative follows 7 Oaks Road to South Bill Creek Road, from the bridge providing access to the 7 Oaks subdivision and the Sewell Tracts to the boundary with Pitkin County Open Space's Crystal River Parcel 1. The existing vehicular bridge (Bridge Option 1) is in poor condition and is in need of improvements. The existing subdivision roads are unpaved and vary in width and grade – generally wider and flatter on the north end near the river and narrower and steeper farther south, away from the river. Depending on the surface type of the trail, the subdivision road could be resurfaced with asphalt pavement and the trail would share the road with local traffic. An existing roadway bridge at the Potato Bill Creek drainage way would need to be replaced about midway through the subdivision. There are approximately 20 residential driveways along the alternative and trail users would share the road with vehicles. This segment ends at the southern end of the subdivision boundary at Crystal River Parcel 1.

CONTINUATION: If the trail utilizes 7 Oaks/Sewell Tracts B alternative, the trail would continue onto Crystal River Parcel B.

PROPERTY OWNERSHIP/JURISDICTION: South Bill Creek Road traverses the 7 Oaks subdivision and the Sewell Tracts. A trail alternative in this section would involve coordination and use agreements with private homeowners and the use of Bridge Option 1 would require working with the neighborhood's bridge association.

Comparable Trail: This trail segment and other potential alternatives that utilize existing subdivision roads would be similar to the Basalt-Old Snowmass Trail, which utilizes the paved Holland Hills Road through the Holland Hills subdivision to connect the multi-use trail segments on either side. This shared road concept has worked well in this area. OST partners with the subdivision on road improvements and maintenance including speed bumps to slow down motorists and bicycles.



7 OAKS / SEWELL TRACTS A

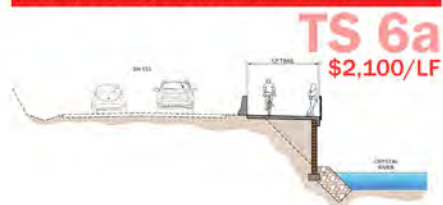
TS 1: Natural Bench/Minor Grading



TS 5b: Attached Trail/Minor Fill Walls/Guardrail

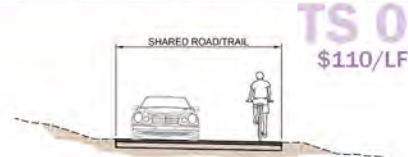


TS 6a: Structural Trail on Fill Wall



7 OAKS / SEWELL TRACTS B

TS 0 - Trail shares existing road



7 OAKS/SEWELL TRACTS A



ENVIRONMENTAL

- **Wildlife:** Minor impact to elk winter range
- **Vegetation and Wetlands:** Vegetation is disturbed, and no new impacts to vegetation communities would occur.
- **Cultural Resources:** No impact



USER EXPERIENCE

- **Safety/Comfort:** Trail users would be adjacent to highway traffic lane.
- **Trail User Types:** Proximity to highway may limit use by equestrians
- **Scenic Quality/Ambiance:** Even though adjacent to the river, proximity to highway will negatively impact the scenic quality from the trail
- **Seasonal Use:** Proximity to highway would make winter use difficult to impossible.



ENGINEERING

- **Design Difficulty:** Structural options are available. Typical Sections: 17% TS 1; 11% TS 5; 71% TS 6.
- **Geotechnical:** Many unknowns until drilled
- **Potential for adjacent soft surface:** Not where trail is on structure; proximity to highway would make soft surface difficult to impossible to maintain.
- **Hydrologic Impact:** More impact with mechanically stabilized earth (MSE) section than other structural sections. Further analysis required



COSTS

- **Construction Costs:** \$5,828,861
High, due to limited space and complex structural options
- **Maintenance:** Moderate to high, depending on barrier type between highway (to control road debris)
- **Property/Easement Acquisition:** CDOT ROW

7 OAKS/SEWELL TRACTS B



ENVIRONMENTAL

- **Wildlife:** Minor impact to elk winter range
- **Vegetation and Wetlands:** Vegetation is disturbed, and no new impacts to vegetation communities would occur.
- **Cultural Resources:** Minor impact to RR and Wagon Road



USER EXPERIENCE

- **Safety/Comfort:** Trail users would share a road and bridge with local subdivision traffic (low speed/volume); use interface with driveways
- **Trail User Types:** Slower traffic speeds and lower traffic counts would allow most users to co-exist
- **Scenic Quality/Ambiance:** Brings trail users into a more "private" subdivision environment and away from scenic river, but also away from the Hwy 133.
- **Seasonal Use:** Year-round use



ENGINEERING

- **Design Difficulty:** Existing soft surface road possibly replaced with asphalt surface, minor drainage improvements; replace one short roadway bridge. Typical Sections: 99% TS 0; 1% TS 7.
- **Geotechnical:** Road appears stable in most locations; will need to be drilled at vehicular bridge location
- **Potential for adjacent soft surface:** Existing road is already soft surface, requiring no new surface
- **Hydrologic Impact:** None



COSTS

- **Construction Costs:** \$935,910
Low; due to road/trail platform already in place
- **Maintenance:** Maintenance can remain as currently exists, would need to be worked out as part of an agreement
- **Property/Easement Acquisition:** Would require use agreements between County and road owners



White River
National
Forest

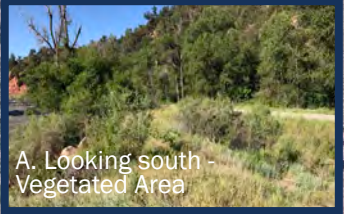
Crystal River
Parcel 1

7 Oaks Subdivision
/ Sewell Tracts

B

A

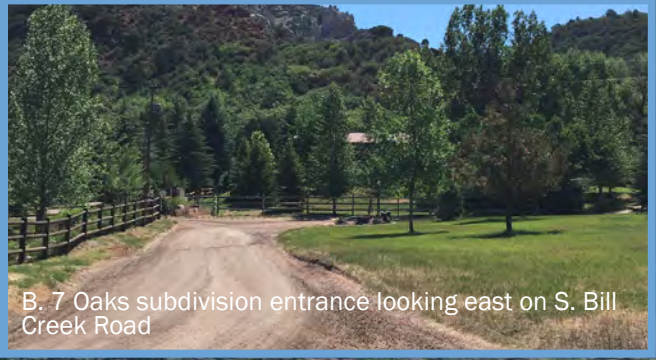
Carbondale / Crystal
River KOA



A. Looking south -
Vegetated Area



A. Looking south



B. 7 Oaks subdivision entrance looking east on S. Bill
Creek Road

CRYSTAL RIVER PARCEL SEGMENT ALTERNATIVES

CRYSTAL RIVER PARCEL A

MULTI-USE TRAIL MILES: 0.29 miles

OVERVIEW: The Crystal River Parcel A trail alternative runs between Hwy. 133 and the west side of the Crystal River. This segment begins at the southern end of 7 Oaks / Sewell Tracts A in a wide, vegetated area, allowing for easy trail construction. Moving south, the trail meets a heavily vegetated area for about 500 feet. Where the river converges again with the highway, the trail corridor becomes constrained, requiring a fill wall along the river until it reaches another wide and heavily vegetated area allowing for simple trail construction.

CONTINUATION: The trail can continue on the Nettle Creek A alternative, or on a new bridge crossing over the river (Bridge Option 3) to Nettle Creek B alternative.

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way / Pitkin County Crystal River Parcel 1 Open Space

CRYSTAL RIVER PARCEL B

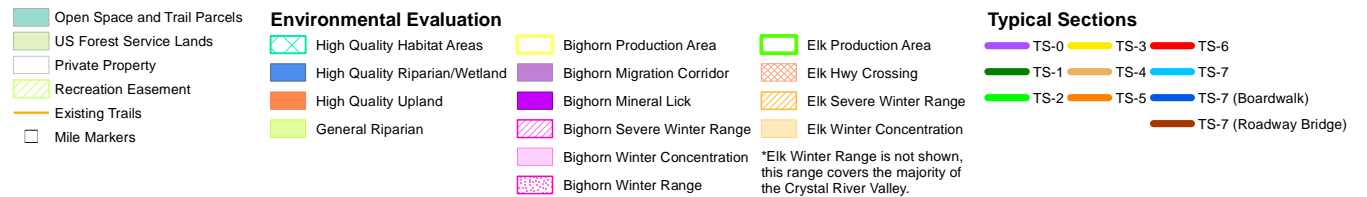
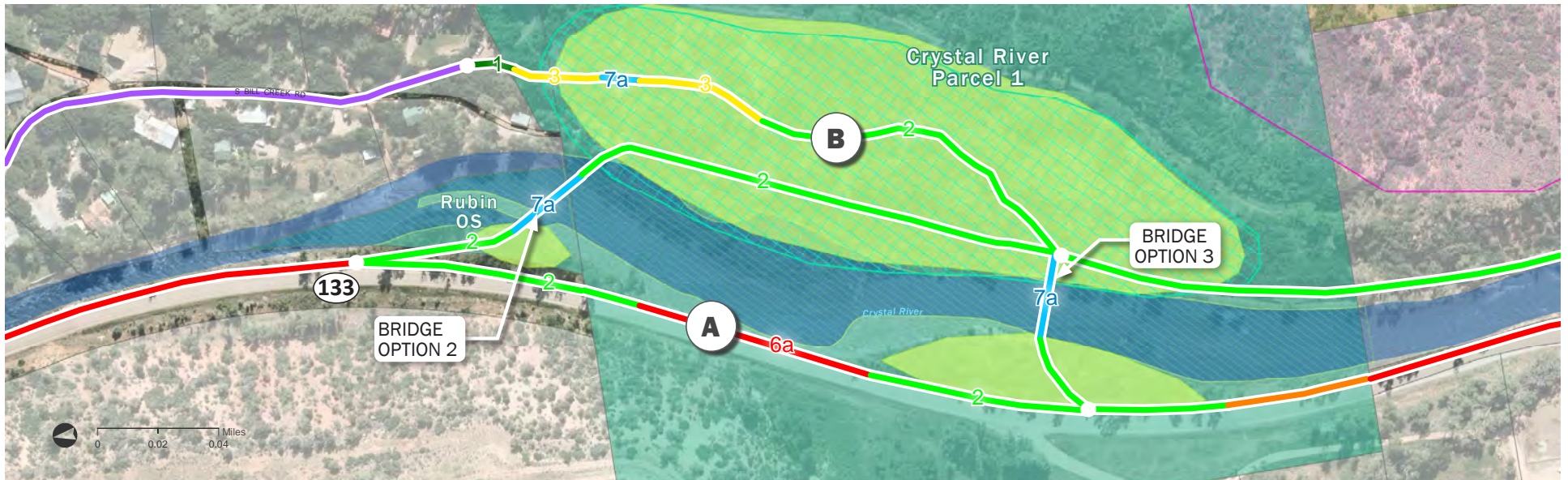
MULTI-USE TRAIL MILES: 0.22 miles

OVERVIEW: The Crystal River Parcel B trail alternative begins at the southern end of 7 Oaks / Sewell Tracts B approximately where the subdivision road ends. The trail runs along remnants of the old Rock Creek County Road and then onto a heavily vegetated slope, crossing several incised drainages, one requiring a 65-foot bridge crossing. The trail continues to wind through the vegetation using the old road as much as possible before descending a moderate slope to the old railroad grade at the end of this segment. Several cross culverts may be needed to accommodate the drainages along the segment. The Crystal River Parcel 1 Open Space is identified as a high-quality habitat area due to the broad, multi-storied riparian vegetation that offers potential habitat and cavities for nesting/roosting.

CONTINUATION: The trail can either continue south to Nettle Creek B on the old railroad grade or cross the river to Nettle Creek B alternative (Bridge Option 3).

ADDITIONAL OPTION: The Bridge 2 crossing offers a unique option that could connect 7 Oaks / Sewell Tracts A and Nettle Creek B, creating an alternative alignment for most of the rail grade for the Crystal River Parcel B segment. This bridge crossing would require further investigation.

PROPERTY OWNERSHIP/JURISDICTION: Crystal River Parcel 1 is a Pitkin County Open Space Parcel that was obtained through a land swap with the BLM. The 7 Oaks and Sewell Tracts homeowners currently use trails on this property for hiking and dog walking. OST purchased Tract 116 in 2018 to add a buffer between the open space and residential development. Tract 116 also provides administrative access to the Crystal River Parcel. There is currently no adopted management plan for Crystal River Parcel B or Tract 116, and they will be managed under Title 12 regulations pending future planning.

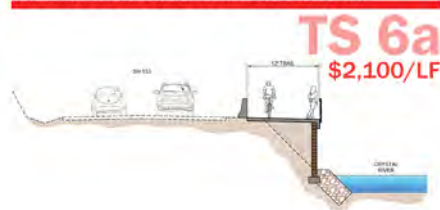


CRYSTAL RIVER PARCEL A

TS 2: Moderate Grading



TS 6a: Structural Trail on Fill Wall



CRYSTAL RIVER PARCEL B

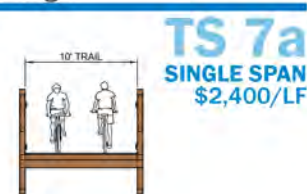
TS 1: Natural Bench/Minor Grading



TS 3a: Moderate Grading/Minor Cut Wall



TS 7a: Prefabricated Single Span Pedestrian Bridge



TS 2: Moderate Grading



CRYSTAL RIVER PARCEL A



ENVIRONMENTAL

- **Wildlife:** Minor impact to elk winter range
- **Vegetation and Wetlands:** Alignment follows existing road where vegetation is disturbed, and no new impacts to vegetation communities would occur.
- **Cultural Resources:** No impact



USER EXPERIENCE

- **Safety/Comfort:** Trail users will be directly adjacent to highway traffic lane.
- **Trail User Types:** Proximity to highway will negatively impact the scenic quality from the trail and may limit use by equestrians.
- **Scenic Quality/Ambiance:** Even though adjacent to the river, proximity to highway will negatively impact the scenic quality from the trail.
- **Seasonal Use:** Proximity to highway would make winter use difficult to impossible, potential to use Open Space to gain more separation from highway



ENGINEERING

- **Design Difficulty:** Typical Sections: 73% TS 2; 27% TS 6.
- **Geotechnical:** Many unknowns until drilled
- **Potential for adjacent soft surface:** Not where trail is on structure; proximity to highway would make soft surface difficult to maintain
- **Hydrologic Impact:** More impact with mechanically stabilized earth (MSE) section than other structural sections. Further analysis required in some locations



COSTS

- **Construction Costs:** \$1,976,876 - Moderate, due to limited space and complex structural options
- **Maintenance:** Moderate to high, depending on barrier type between highway (to control road debris)
- **Property/Easement Acquisition:** CDOT ROW and OST property

CRYSTAL RIVER PARCEL B



ENVIRONMENTAL

- **Wildlife:** Minor impact to high-quality riparian habitat and river frontage
- **Vegetation/Wetlands:** Most of the alignment follows existing social trails or roads where vegetation is disturbed and no new impacts to vegetation communities or riparian vegetation would occur. Passes through an upland area with a diverse native plant community, where a social trail exists. The fringe wetlands along the ditch may be avoided using bridges or other trail design criteria. The alignment may cross through FSS Harrington's penstemon and Grand Mesa penstemon habitat, but there is a low risk of impacts to these species.

- **Wildlife and Vegetation Mitigation:** Clearance surveys for species of concern, plant surveys, specific best management practices (BMPs) for construction and weed management, seasonal construction windows, design considerations for engineering and placement of improvements.

- **Cultural Resources:** Moderate impact to Rock Creek County Road and ditches
- **Cultural Mitigation:** A combination of detailed documentation (e.g. measured drawings of significant features and photographs) and interpretive signage would likely mitigate any potential impacts to these resources.



USER EXPERIENCE

- **Safety/Comfort:** Trail users would be fully separated from vehicular traffic
- **Trail User Types:** All users
- **Scenic Quality/Ambiance:** Trail traverses Open Space and looks down on river
- **Seasonal Use:** Year-round use



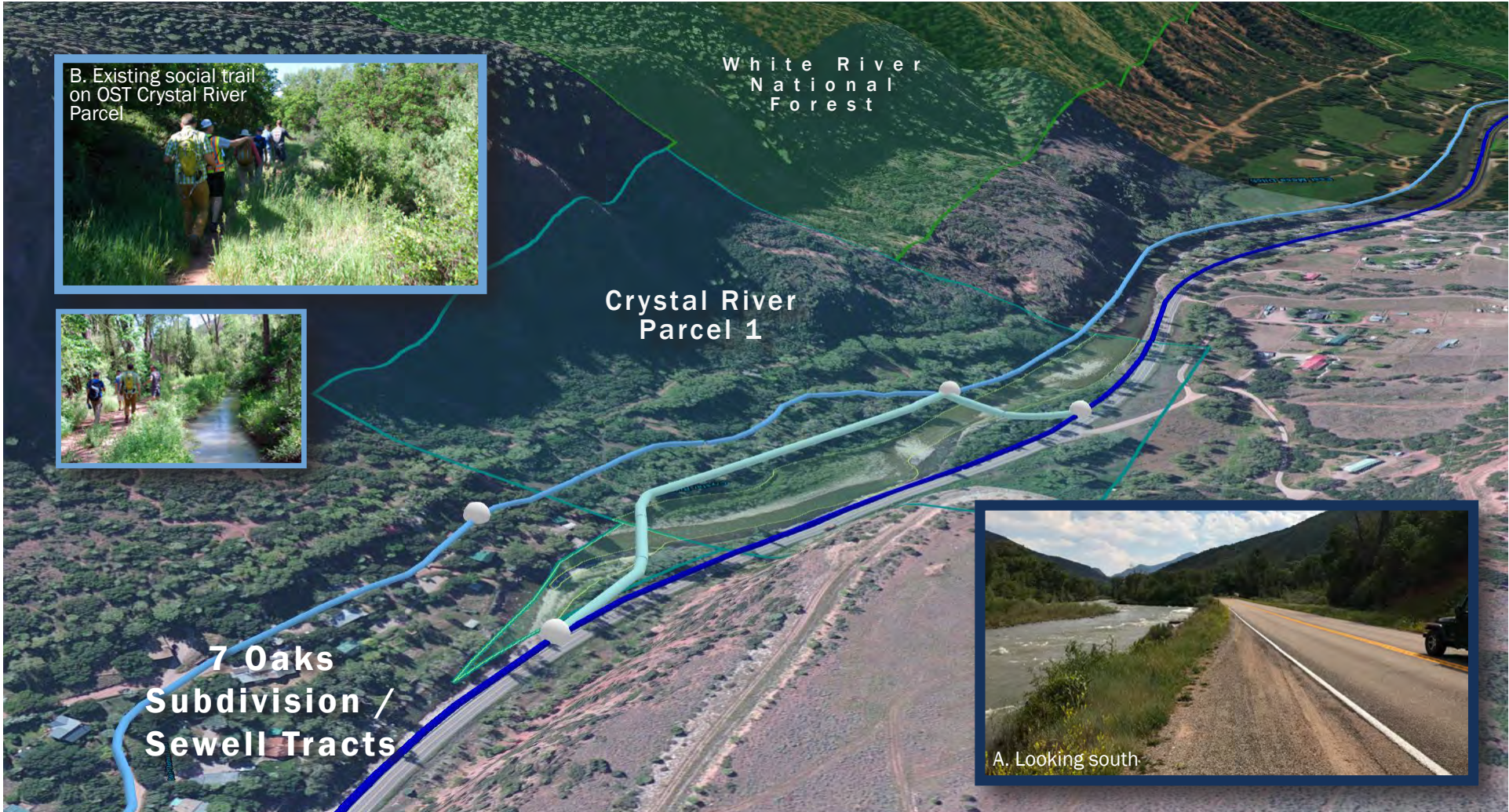
ENGINEERING

- **Design Difficulty:** Follows route of Rock Creek County Road; alignment on hillside crosses several ravines/drainages; may require additional study to determine best connection down to existing RR grade. Typical Sections: 7% TS 1; 53% TS 2; 33% TS 3; 6% TS7.
- **Geotechnical:** Variable terrain, potentially unstable in some areas
- **Potential for adjacent soft surface:** Yes
- **Hydrologic Impact:** None



COSTS

- **Construction Costs:** \$799,635 - Moderate, follows route of Rock Creek County Road; access somewhat remote and wooded/vegetated
- **Maintenance:** Low
- **Property/Easement Acquisition:** OST property



B. Existing social trail on OST Crystal River Parcel

White River National Forest

Crystal River Parcel 1

7 Oaks Subdivision / Sewell Tracts

A. Looking south

NETTLE CREEK SEGMENT ALTERNATIVES

NETTLE CREEK A

MULTI-USE TRAIL MILES: 0.84 miles

OVERVIEW: The Nettle Creek A trail alternative runs between Hwy. 133 and the west side of the Crystal River. The northern and central portions of this segment are generally wide and moderately to highly vegetated, while the remaining portions are unvegetated or sparsely vegetated and very constrained where the river parallels highway. This segment begins with relatively easy trail construction from the southern end of Crystal River Parcel A through a wide and heavily vegetated area but shortly transitions to more a more constrained corridor requiring more complex construction methods (incorporating fill walls of various heights) for large portions of this segment. There are a couple of areas where the river pulls away from the highway, allowing for easier construction. One driveway crossing would be required through this section.

CONTINUATION: This segment ends at the WRNF boundary just north of the Nettle Creek drainage. The trail can continue along the Red Wind Point A alternative or can cross Bridge Option 4 to follow the Red Wind Point B alternative.

PROPERTY OWNERSHIP/JURISDICTION: Primarily CDOT right-of-way with small sections crossing Forest Service property.

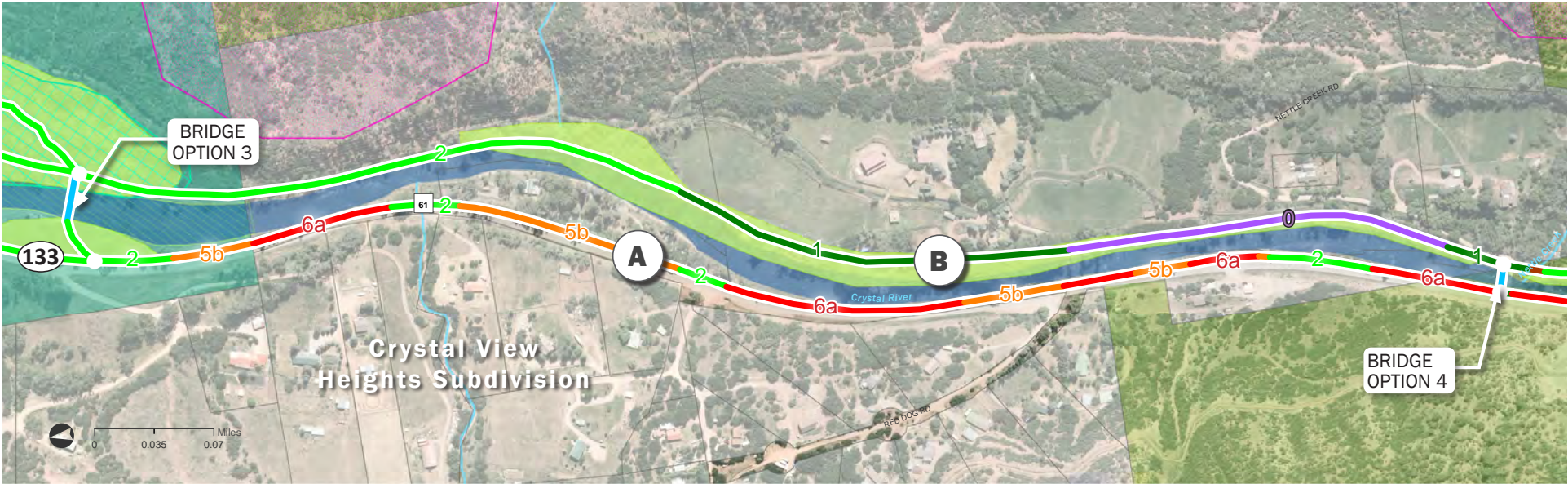
NETTLE CREEK B

MULTI-USE TRAIL MILES: 0.86 miles

OVERVIEW: The Nettle Creek B trail alternative begins at the southern end of the Crystal River Parcel B. The trail would follow the flat bench that was once used by the railroad and Rock Creek County Road along the highly vegetated eastern bank of the Crystal River. Near the southern end are several residential driveways and access roads, where the trail would share a soft-surface driveway, which could be resurfaced with asphalt pavement, before approaching the end of the segment. Where the alternative shares the existing access driveway, new signage and minor drainage improvements are likely necessary. The existing platform in this stretch of the corridor allows for relatively simple trail construction methods on existing grades.

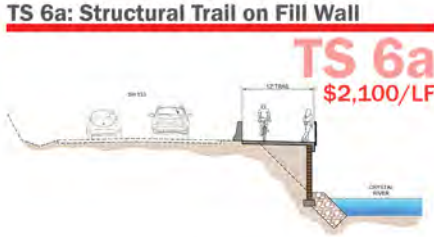
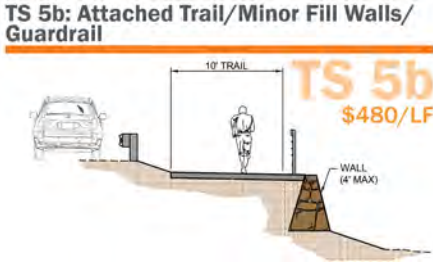
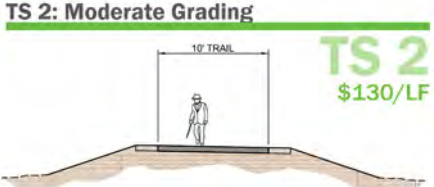
CONTINUATION: The trail can then either continue on to the Red Wind Point B alternative or cross over the river on Bridge Option 4.

PROPERTY OWNERSHIP/JURISDICTION: The very northern end of this segment is on Open Space and Trail's Crystal River Parcel 1, which quickly transitions to privately owned land. The alignment follows the old Rock Creek County Road and is used year-round by the property's residents. A public trail following this route would require settlement of historic access rights or new access agreements with the property owner. No on-the-ground surveys occurred on the private property.

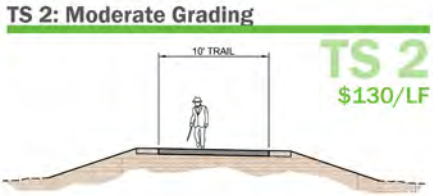
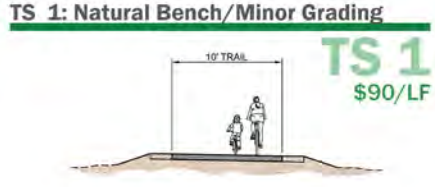
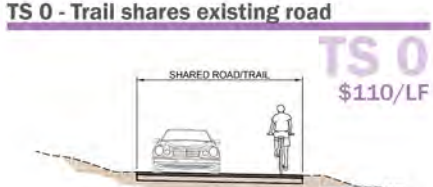


<ul style="list-style-type: none"> Open Space and Trail Parcels US Forest Service Lands Private Property Recreation Easement Existing Trails Mile Markers 	<p>Environmental Evaluation</p> <ul style="list-style-type: none"> High Quality Habitat Areas High Quality Riparian/Wetland High Quality Upland General Riparian Bighorn Production Area Bighorn Migration Corridor Bighorn Mineral Lick Bighorn Severe Winter Range Bighorn Winter Concentration Bighorn Winter Range Elk Production Area Elk Hwy Crossing Elk Severe Winter Range Elk Winter Concentration <p><small>*Elk Winter Range is not shown, this range covers the majority of the Crystal River Valley.</small></p>	<p>Typical Sections</p> <ul style="list-style-type: none"> TS-0 TS-3 TS-6 TS-1 TS-4 TS-7 TS-2 TS-5 TS-7 (Boardwalk) TS-7 (Roadway Bridge)
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TYPICAL SECTIONS A:



TYPICAL SECTIONS B:



NETTLE CREEK A



ENVIRONMENTAL

- **Wildlife:** Minor impact to elk winter range
- **Vegetation/Wetlands:** Vegetation is disturbed, and no new impacts to vegetation communities would occur.
- **Cultural Resources:** No impact



USER EXPERIENCE

- **Safety/Comfort:** Trail users would be directly adjacent to highway traffic lane.
- **Trail User Types:** Proximity to highway may limit use by equestrians.
- **Scenic Quality/Ambiance:** Proximity to highway will negatively impact the scenic quality from the trail.
- **Seasonal Use:** Proximity to highway would make winter use difficult to impossible



ENGINEERING

- **Design Difficulty:** High, due to limited space, many complex structural options available. Typical Section: 21% TS 2; 33% TS 5; 46% TS 6.
- **Geotechnical:** Many unknowns until drilled
- **Potential for adjacent soft surface:** Not where trail is on structure; proximity to highway would make soft surface difficult to impossible to maintain.
- **Hydrologic Impact:** More impact with mechanically stabilized earth (MSE) section than other structural sections. Further analysis required.



ESTIMATED COSTS

- **Construction Costs:** \$9,908,676 - High, due to limited space and complex structural options.
- ↓
- **Mitigation:** Opportunities are available to realign Hwy 133 to allow for a less expensive trail typical section.
- **Maintenance:** Moderate to high, depending on barrier type between highway (to control road debris)
- **Property/Easement Acquisition:** CDOT ROW, USFS property; more complex if highway realigned

NETTLE CREEK B



ENVIRONMENTAL *

- **Wildlife:** Minor impact to elk winter range
- **Vegetation/Wetlands:** Alignment follows existing road where vegetation is disturbed, and no new impacts to vegetation communities would occur. Riparian vegetation is present along the road, but the trail would result in no new impacts.*
- **Cultural Resources:** Not Evaluated



USER EXPERIENCE*

- **Safety/Comfort:** Trail users would be fully separated from vehicular traffic
- **Trail User Types:** All users
- **Scenic Quality/Ambiance:** Trail would follow Rock Creek County Road route and look down on the river
- **Seasonal Use:** Year-round use



ENGINEERING*

- **Design Difficulty:** Low; most of trail is old transportation platforms. Typical Section: 36% TS 0; 32% TS 1; 42% TS 2.
- **Geotechnical:** Existing road grades are likely stable
- **Potential for adjacent soft surface:** Yes
- **Hydrologic Impact:** None



ESTIMATED COSTS*

- **Construction Costs:** \$943,521 - Low; most of trail is old transportation platform
- **Maintenance:** Coordination with property owner necessary
- **Property/Easement Acquisition:** Would require use agreements between County and homeowners

* No on-the-ground surveys occurred across private property



White River
National
Forest

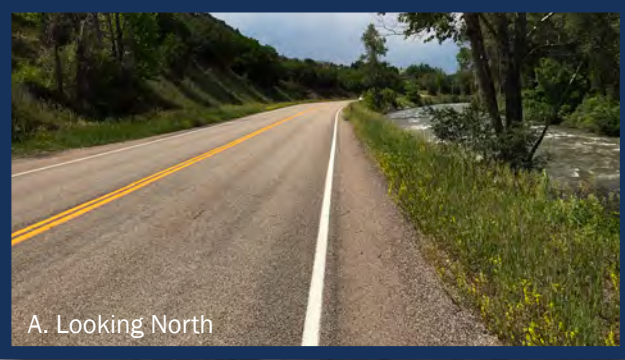


B. Nettle Creek closure gate / private property boundary looking south

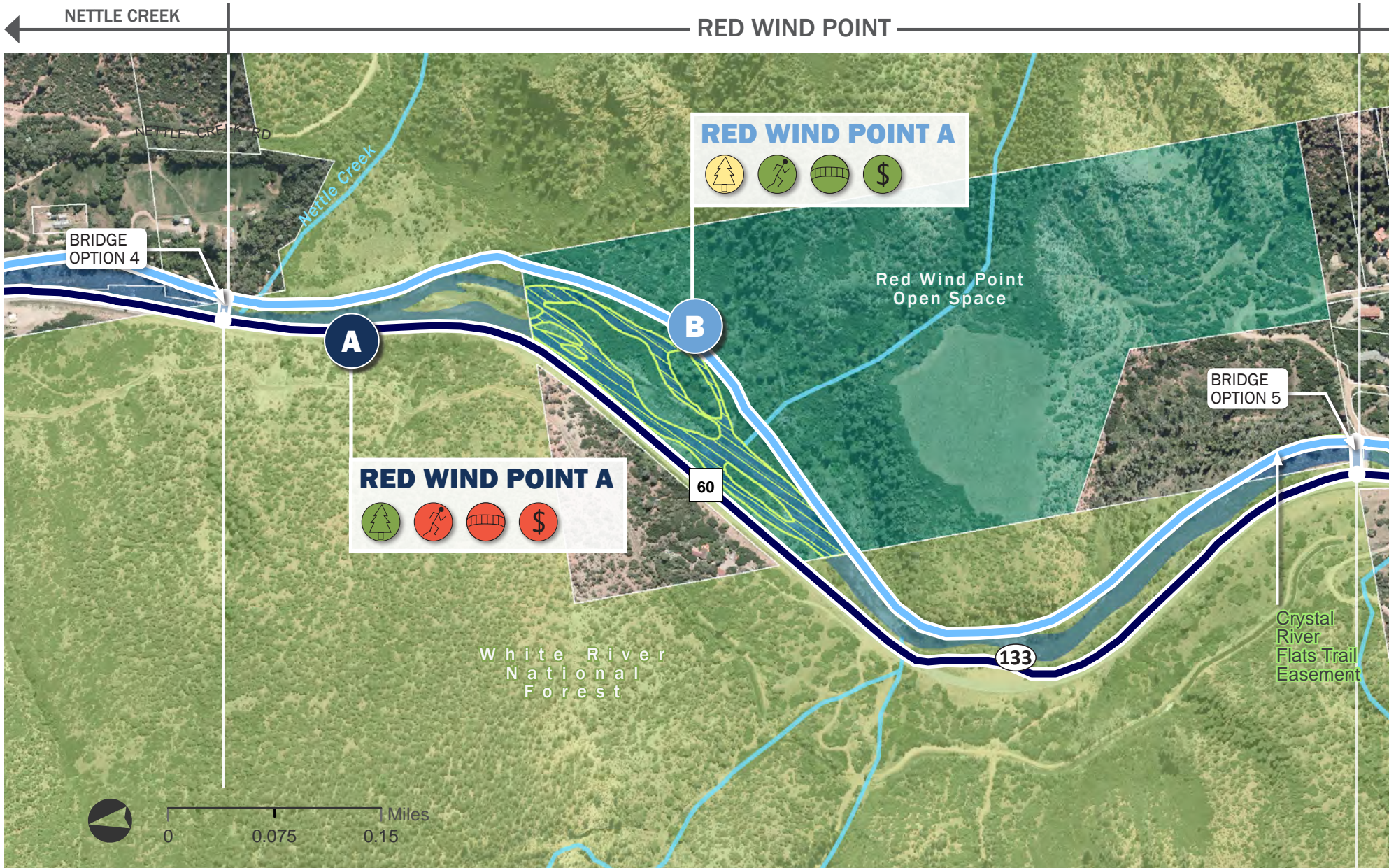


Crystal View
Heights
Subdivision

Crystal
River
Parcel 1



A. Looking North

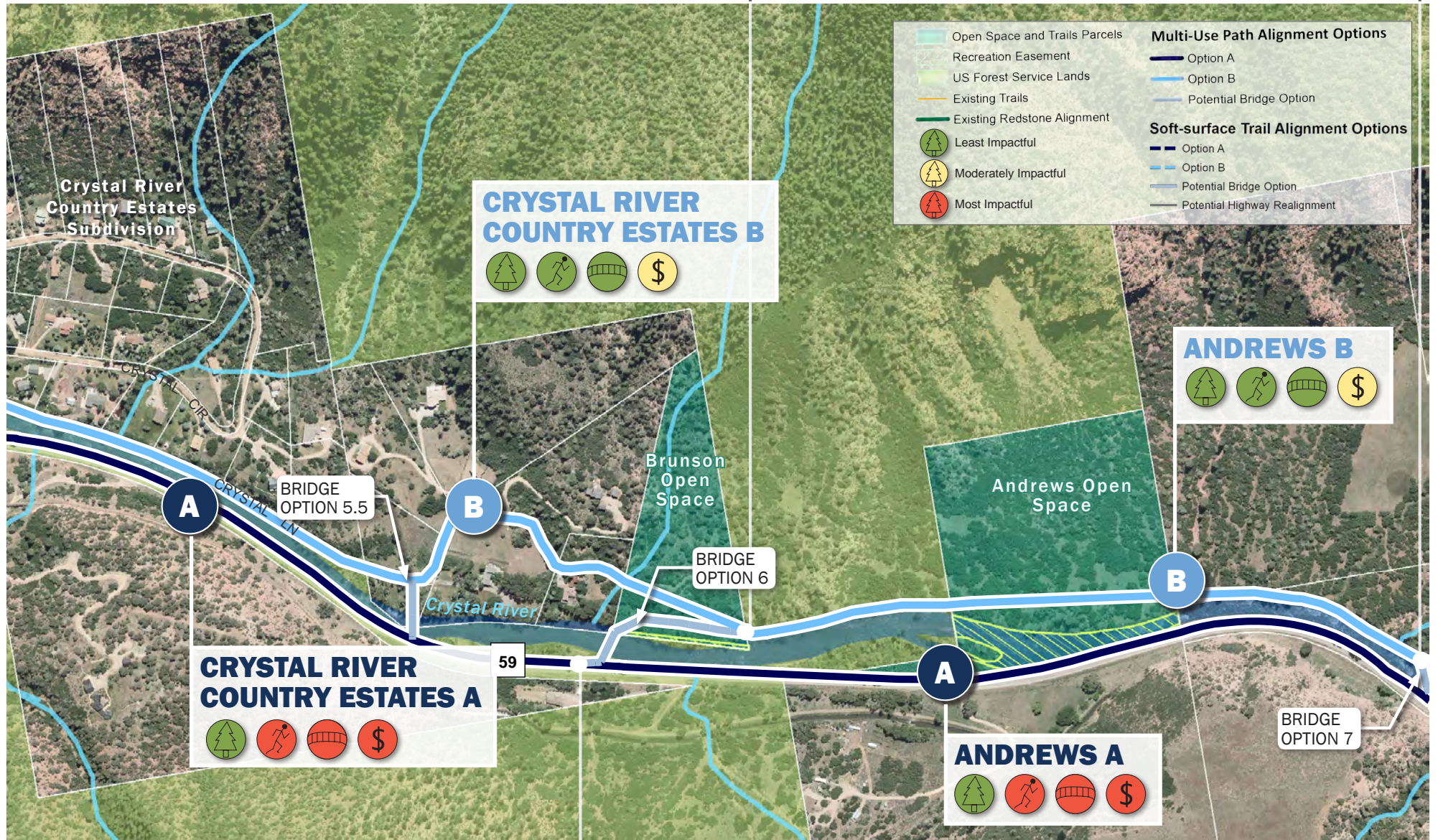


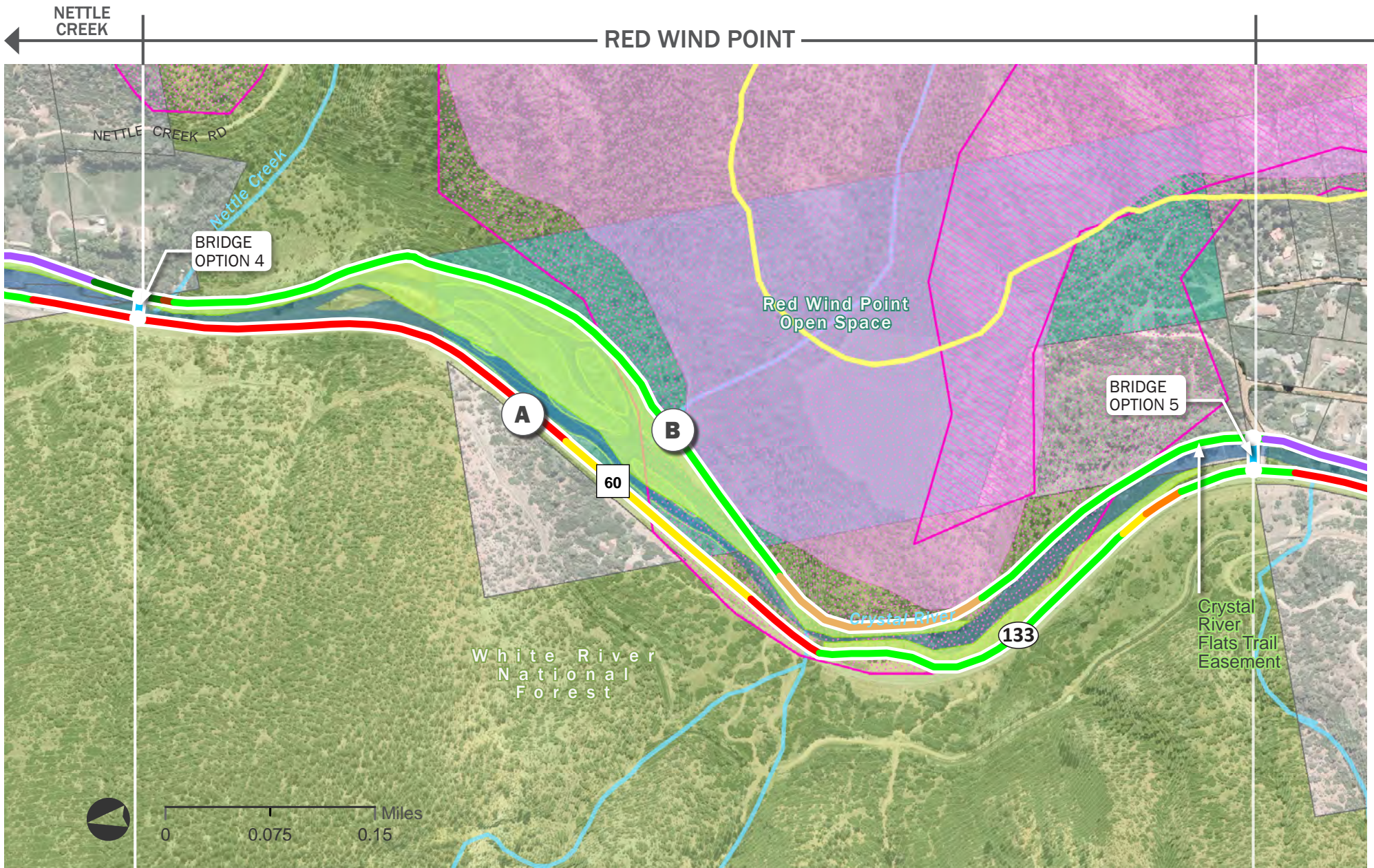
Map 2.10: Alignment Alternatives Impacts Summary - Red Wind Point to Andrews



CRYSTAL RIVER COUNTRY ESTATES

ANDREWS



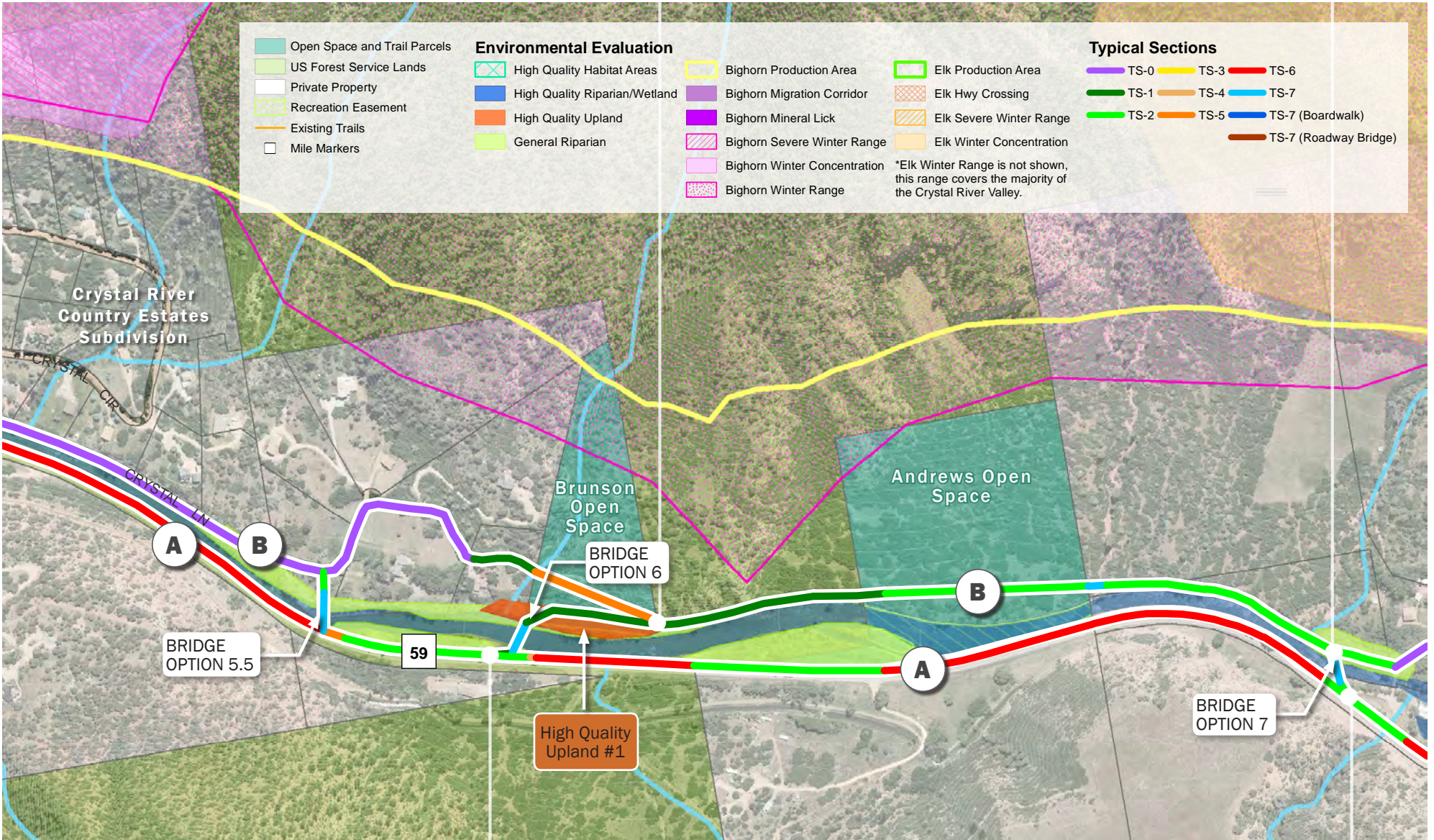


Map 2.11: Environmental and Engineering Summary - Red Wind Point to Andrews



CRYSTAL RIVER COUNTRY ESTATES

ANDREWS



RED WIND POINT SEGMENT ALTERNATIVES

RED WIND POINT A

MULTI-USE TRAIL MILES: 0.93 miles

OVERVIEW: The Red Wind Point A trail alternative follows Hwy. 133 along the west side of the Crystal River. The northern half of this segment is generally sparsely vegetated and very constrained where the river parallels highway, while the southern half is much wider and highly vegetated. The constrained platform requires the trail to be constructed on fill wall of various heights adjacent to the edge of river. Approaching the large curve in the river and highway near the cliffs of Red Wind Point is another vertically constrained section of trail, followed by a large pullout that allows ample room to construct an easy segment of trail along the pullout and then through a moderately vegetated riverbank below the highway. The trail then gradually climbs back up to the highway level until reaching the end of the segment at a wide, paved pullout near an existing road bridge to Crystal River Country Estates.

CONTINUATION: The trail can either continue south along the highway on Crystal River Country Estates A or cross the river on a new pedestrian bridge (Bridge Option 5) to the Crystal River Country Estates subdivision.

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way and WRNF lands.

RED WIND POINT B

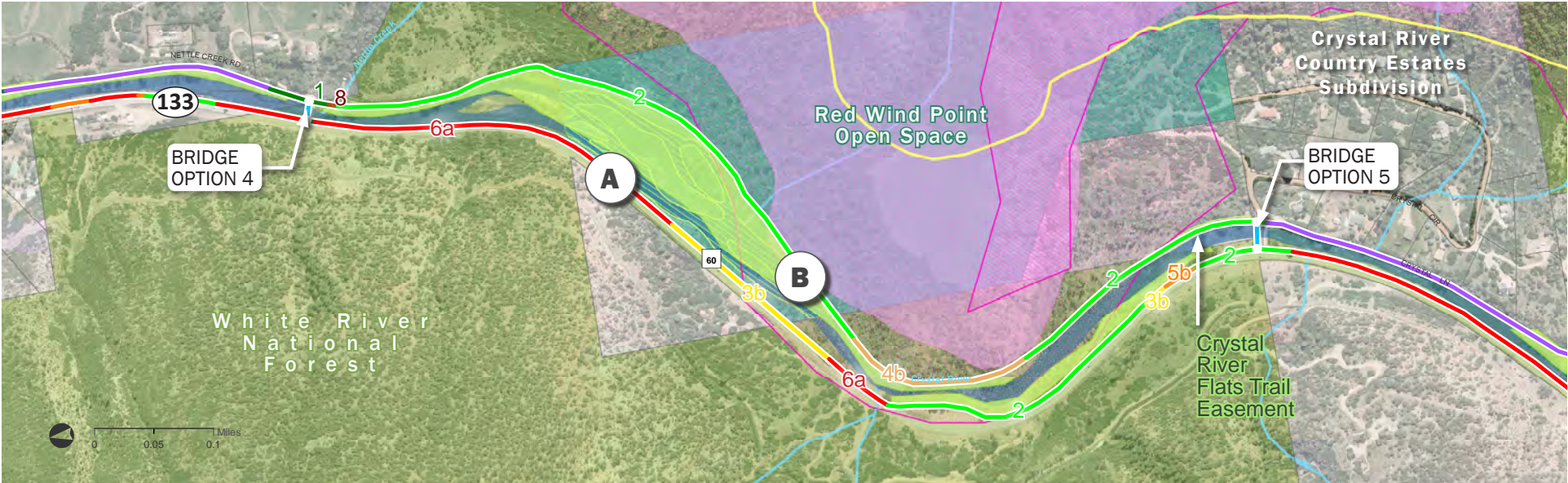
MULTI-USE TRAIL MILES: 0.95 miles

OVERVIEW: The Red Wind Point B trail alternative begins at the southern end of Nettle Creek B or from Bridge Option 5. The trail runs along the flat bench of the old railroad grade that shares a driveway for about 100 feet, crosses a drainage with a new roadway bridge and then runs between the river and irrigation ditch and then adjacent to the river, all on the old railroad grade. Below the red cliffs

of Red Wind Point, the space available for the trail narrows to where it must be constructed on a fill wall or the trail platform narrowed. The remaining trail would utilize simple construction taking advantage of the old railroad grade to north of an existing road bridge at Crystal River Country Estates. The old railroad grade (portions of which cross both county open space and WRNF lands) is used as a trail by the neighbors and the public. Areas of geotechnical concern within this segment include potential rockfall from the cliffs at Red Wind Point. Where the trail runs between the river and the irrigation ditch, additional pedestrian railings may need to be considered depending on the available width.

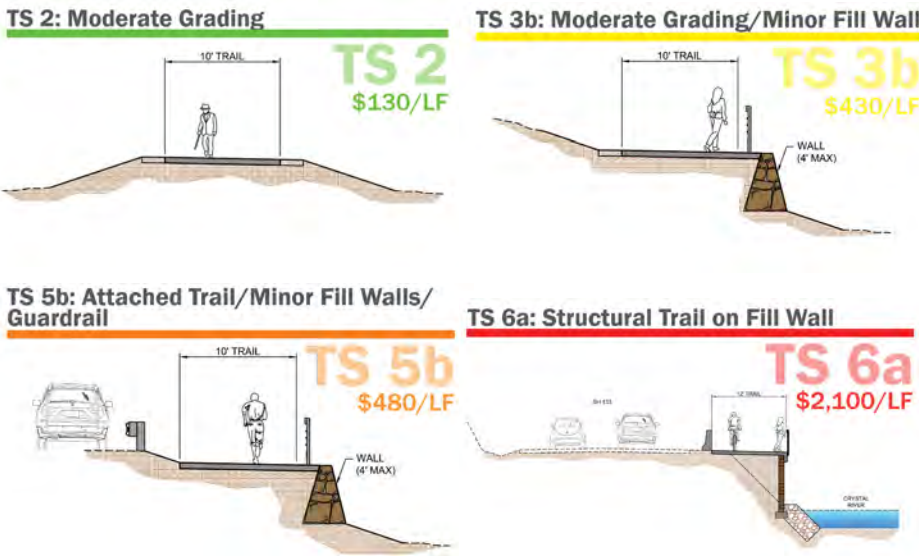
CONTINUATION: The trail can cross the river on a new bridge (Bridge Option 5) to connect to the highway or continue south into the Country River Country Estates subdivision.

PROPERTY OWNERSHIP/JURISDICTION: WRNF, Pitkin County Red Wind Point Open Space, and Pitkin County's Crystal River Flats Trail Easement. Red Wind Point Open Space is managed according to the 2005 adopted Management Plan for the property. The resource management goals for the open space include protecting and enhancing bighorn sheep habitat (primarily located on the upper pasture), providing a multi-use trail along the railroad grade, providing river access for anglers and boaters, and monitoring the riparian areas. To protect the bighorn sheep, the upper slopes and dry meadow are closed year-round to public use and there is a seasonal closure of the entire property from December 1 through April 30. The county has the legal right to access the southern end of the property from Hwy. 133 across the Crystal River Country Estates bridge as well as an access easement to allow for the construction of a pedestrian bridge to the north of the existing bridge. From the north, the Nettle Creek Bridge (Bridge Option 5) provides access on WRNF land. The town of Carbondale holds an easement on the bridge. The Crystal River Flats Trail Easement is a 30-foot wide trail easement that allows for non-motorized public use. There are no restrictions in the easement regarding the surface of a trail.

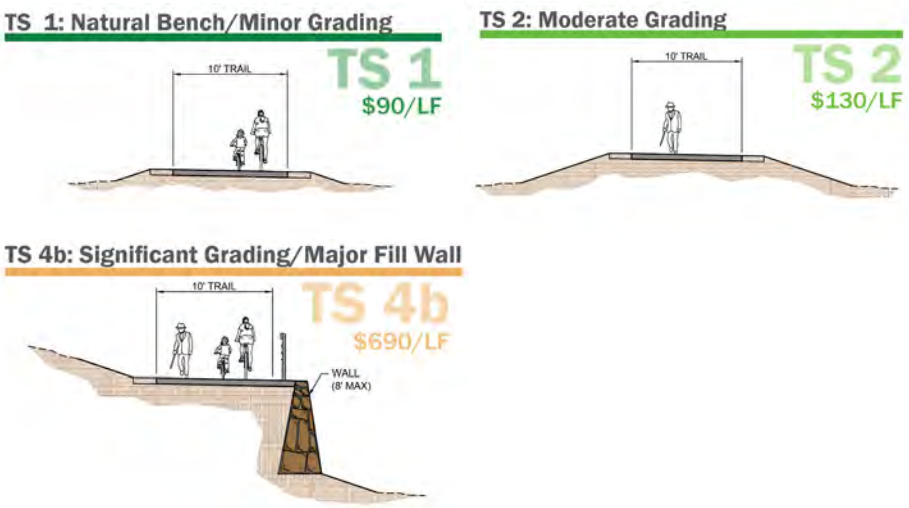


<ul style="list-style-type: none"> Open Space and Trail Parcels US Forest Service Lands Private Property Recreation Easement Existing Trails Mile Markers 	<p>Environmental Evaluation</p> <ul style="list-style-type: none"> High Quality Habitat Areas High Quality Riparian/Wetland High Quality Upland General Riparian Bighorn Production Area Bighorn Migration Corridor Bighorn Mineral Lick Bighorn Severe Winter Range Bighorn Winter Concentration Bighorn Winter Range Elk Production Area Elk Hwy Crossing Elk Severe Winter Range Elk Winter Concentration <p><small>*Elk Winter Range is not shown, this range covers the majority of the Crystal River Valley.</small></p>	<p>Typical Sections</p> <ul style="list-style-type: none"> TS-0 TS-3 TS-6 TS-1 TS-4 TS-7 TS-2 TS-5 TS-7 (Boardwalk) TS-7 (Roadway Bridge)
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TYPICAL SECTIONS A:



TYPICAL SECTIONS B:



RED WIND POINT A



ENVIRONMENTAL

- **Wildlife:** Minor impact to elk winter range
- **Vegetation/Wetlands:** Vegetation is disturbed, and no new impacts to vegetation communities would occur.
- **Cultural Resources:** No impact



USER EXPERIENCE

- **Safety/Comfort:** Trail users would be directly adjacent to highway traffic lane.
- **Trail User Types:** Proximity to highway may limit use by equestrians
- **Scenic Quality/Ambiance:** Proximity to highway will negatively impact the scenic quality from the trail
- **Seasonal Use:** Proximity to highway would make winter use difficult to impossible



ENGINEERING

- **Design Difficulty:** Moderate to high, due to limited space, many complex structural options available; mix of easy and difficult. Typical Sections 1% TS 1; 33% TS 2; 21% TS 3; 3% TS 5; 42% TS 6.
- **Geotechnical:** Many unknowns until drilled
- **Potential for adjacent soft surface:** Not where trail is on structure; proximity to highway would make soft surface difficult to impossible to maintain.
- **Hydrologic Impact:** More impact with mechanically stabilized earth (MSE) section than other structural sections. Further analysis required



ESTIMATED COSTS

- **Construction Costs:** \$9,810,034 - Moderate to high, due to limited space, many complex structural options available
- **Maintenance:** Moderate to high, depending on barrier type between highway (to control road debris)
- **Property/Easement Acquisition:** CDOT ROW, USFS property

RED WIND POINT B



ENVIRONMENTAL

- **Wildlife:** Impact to undisturbed habitat and river frontage, and proximity to bighorn production area
- **Wildlife Mitigation:** Monitoring to see if the area is used for lambing, permanently close upper bluffs to humans, stock tank/guzzler water for supplemental water, extension of seasonal closure and mitigation commitment to monitor yearly if the ewes and lambs are present or absent before a seasonal closure is lifted.
- **Vegetation/Wetlands:** Alignment follows existing trail/RR grade and construction footprint would be limited to trail when possible. Minimal native and riparian vegetation would be removed. Weed control BMPs would reduce the risk of noxious weeds spreading. Wetlands would be avoided where possible, and any impacts would be mitigated.
- **Cultural Resources:** Moderate impact to East Mesa Ditch, railroad, and Rock Creek County Road.
- **Cultural Mitigation:** A combination of detailed documentation (e.g. measured drawings of significant features and photographs) and interpretive signage would likely mitigate any potential impacts to these resources.



USER EXPERIENCE

- **Safety/Comfort:** Trail users would be fully separated from vehicular traffic
- **Trail User Types:** All users
- **Scenic Quality/Ambiance:** Trail would follow Rock Creek County Road route and old RR grade and look down on the river.
- **Seasonal Use:** Seasonally closed for wildlife protection, Dec. 1 - April 30



ENGINEERING

- **Design Difficulty:** Low; most is on RR grade. Typical Sections: 2% TS 1; 80% TS 2; 17% TS 4.
- **Geotechnical:** May be some rockfall areas
- **Potential for adjacent soft surface:** Yes
- **Hydrologic Impact:** None



ESTIMATED COSTS

- **Construction Costs:** \$2,255,690 - Low; most is on RR grade
- **Maintenance:** May be some rockfall areas
- **Property/Easement Acquisition:** OST and USFS property



B. Red Wind Point from across the river

White River National Forest

Red Wind Point Open Space

White River National Forest

A. Looking north

CRYSTAL RIVER COUNTRY ESTATES SEGMENT ALTERNATIVES

CRYSTAL RIVER COUNTRY ESTATES A

MULTI-USE TRAIL MILES: 0.45 miles

OVERVIEW: The Crystal River Country Estates A trail alternative runs along Hwy. 133 and the west side of the Crystal River. The northern three-quarters of this segment is in a highly constrained, sparsely vegetated strip that is paralleled by the river and partially protected by guardrail, while the remaining southern portion is much wider, flatter and moderately vegetated. The constrained portion of this segment would require constructing a platform atop a fill wall structure along the river edge. As the river pulls away from the highway toward the south of the segment, the trail transitions from a complex structure onto a short fill wall and then onto grade between the highway and a large grove of trees before approaching the end of the segment.

CONTINUATION: At this point, the trail may continue south along the Andrews A alternative or cross the river at Bridge Option 6 to Andrews B alternative.

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way through WRNF lands.

CRYSTAL RIVER COUNTRY ESTATES B

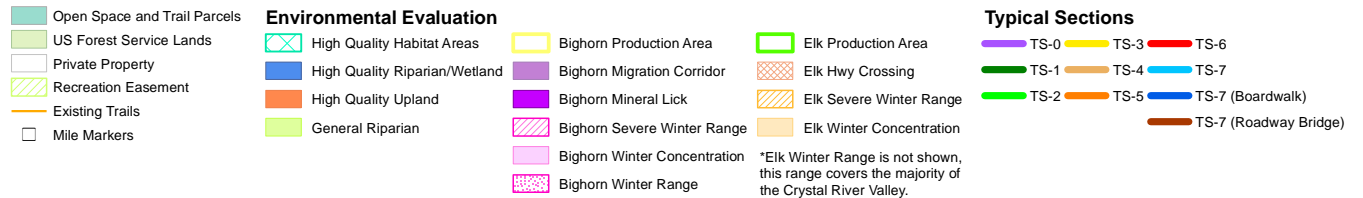
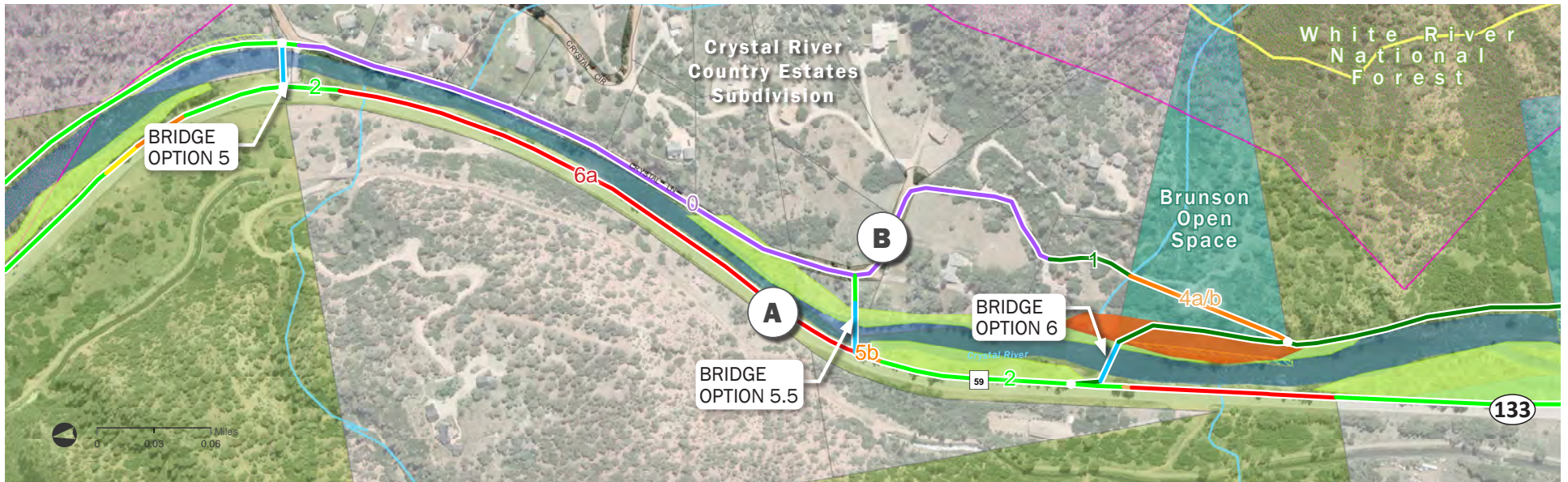
MULTI-USE TRAIL MILES: 0.61 miles

OVERVIEW: The Crystal River Country Estates B trail alternative begins at the southern end of Red Wind Point B or Bridge Option 5 and runs along the flat bench of the old railroad grade that is also Crystal River Country Estates subdivision road. The alternative would parallel the river for approximately 0.32 miles to an optional mid-segment bridge crossing (Bridge Option 5.5) toward the highway, or turn southeast up the hill and travel farther into the neighborhood and past approximately eight residential driveways staying on the road alternative until approaching the driveway and garage of a private residence. At this point, the trail is constructed near existing grade

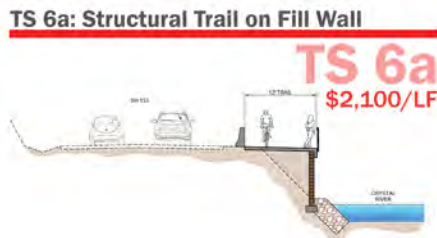
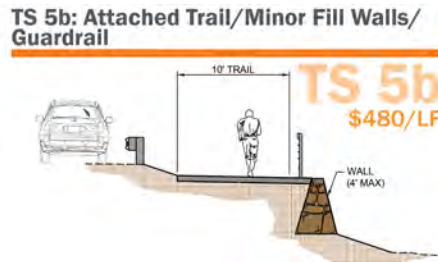
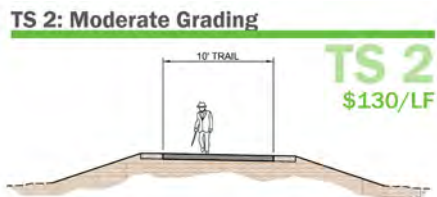
on an existing driveway to the Brunson Parcel Open Space and then begins to drop in grade with moderate slopes to the old railroad grade adjacent to the east riverbank to complete this segment. The grade in this last section of trail will need to be studied carefully during final design due to the elevation change down to the railroad grade adjacent to the river. It would be difficult to impossible to achieve ADA grades for this last portion of the trail segment.

CONTINUATION: At the southern end of Alternative B, the trail connects with the railroad grade at the WRNF boundary where it can continue for the next segment or jog north along the railroad grade to the Bridge Option 6 crossing. As mentioned above, another potential option would be to utilize Bridge Option 5.5, which was added to the alternatives analysis in response to neighborhood input and to create an Option where ADA grades could be achieved. This option would allow for the trail to utilize a portion of the Crystal River Country Estates subdivision road along Alternative B through the most challenging portion of Alternative A on the highway alignment, and then to connect over to Alternative A where the construction difficulty lessens.

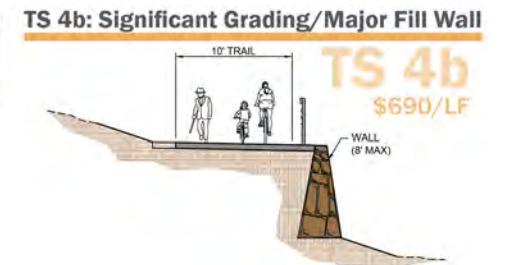
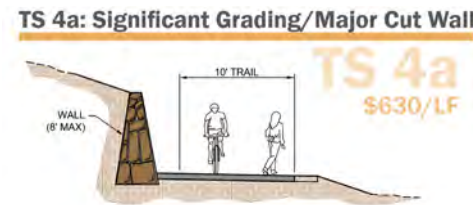
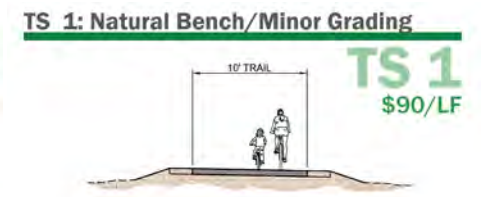
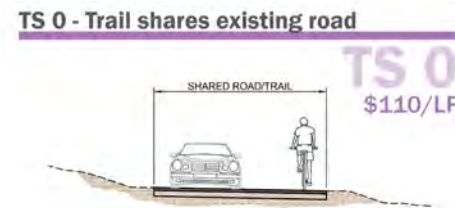
PROPERTY OWNERSHIP/JURISDICTION: Crystal River Country Estates subdivision road, private residential lot, and Pitkin County's Brunson Open Space Parcel, which contains a section of the historic railroad grade. A public trail following this route would involve clarification of the meaning of public dedication language on the CRCE subdivision plat, or new access agreements with the HOA.



TYPICAL SECTIONS A:



TYPICAL SECTIONS B:



CRYSTAL RIVER COUNTRY ESTATES A



ENVIRONMENTAL

- **Wildlife:** Minor impact to elk winter range
- **Vegetation/Wetlands:** Vegetation is disturbed, and no new impacts to vegetation communities would occur.
- **Cultural Resources:** No impact



USER EXPERIENCE

- **Safety/Comfort:** Trail users would be directly adjacent to highway traffic lane.
- **Trail User Types:** Proximity to highway may limit use by equestrians
- **Scenic Quality/Ambiance:** Proximity to highway will negatively impact the scenic quality from the trail
- **Seasonal Use:** Proximity to highway would make winter use difficult to impossible



ENGINEERING

- **Design Difficulty:** Structural options are available. Typical Sections: 29% TS 2; 3% TS 5; 68% TS 6.
- **Geotechnical:** Many unknowns until drilled
- **Potential for adjacent soft surface:** Not where trail is on structure
- **Hydrologic Impact:** More impact with mechanically stabilized earth (MSE) section than other structural sections. Further analysis required



ESTIMATED COSTS

- **Construction Costs:** \$8,144,590 - High, due to limited space and complex structural options
- **Maintenance:** Moderate to high, depending on barrier type between highway (to control road debris)
- **Property/Easement Acquisition:** CDOT ROW

CRYSTAL RIVER COUNTRY ESTATES B



ENVIRONMENTAL

- **Wildlife:** Minor impact to elk winter range
- **Vegetation/Wetlands:** Alignment follows existing road where vegetation is disturbed, and no new impacts to vegetation communities would occur.
- **Cultural Resources:** Least Impactful



USER EXPERIENCE

- **Safety/Comfort:** Trail users would share a road with local subdivision traffic (low speed/volume); low number of driveways, separation from the highway
- **Trail User Types:** Steep grade at south end may not meet ADA
- **Scenic Quality/Ambiance:** Most of alignment along the river; south end brings trail users into a more "private" subdivision environment and away from scenic river; very close to one home and garage
- **Seasonal Use:** Year-round use



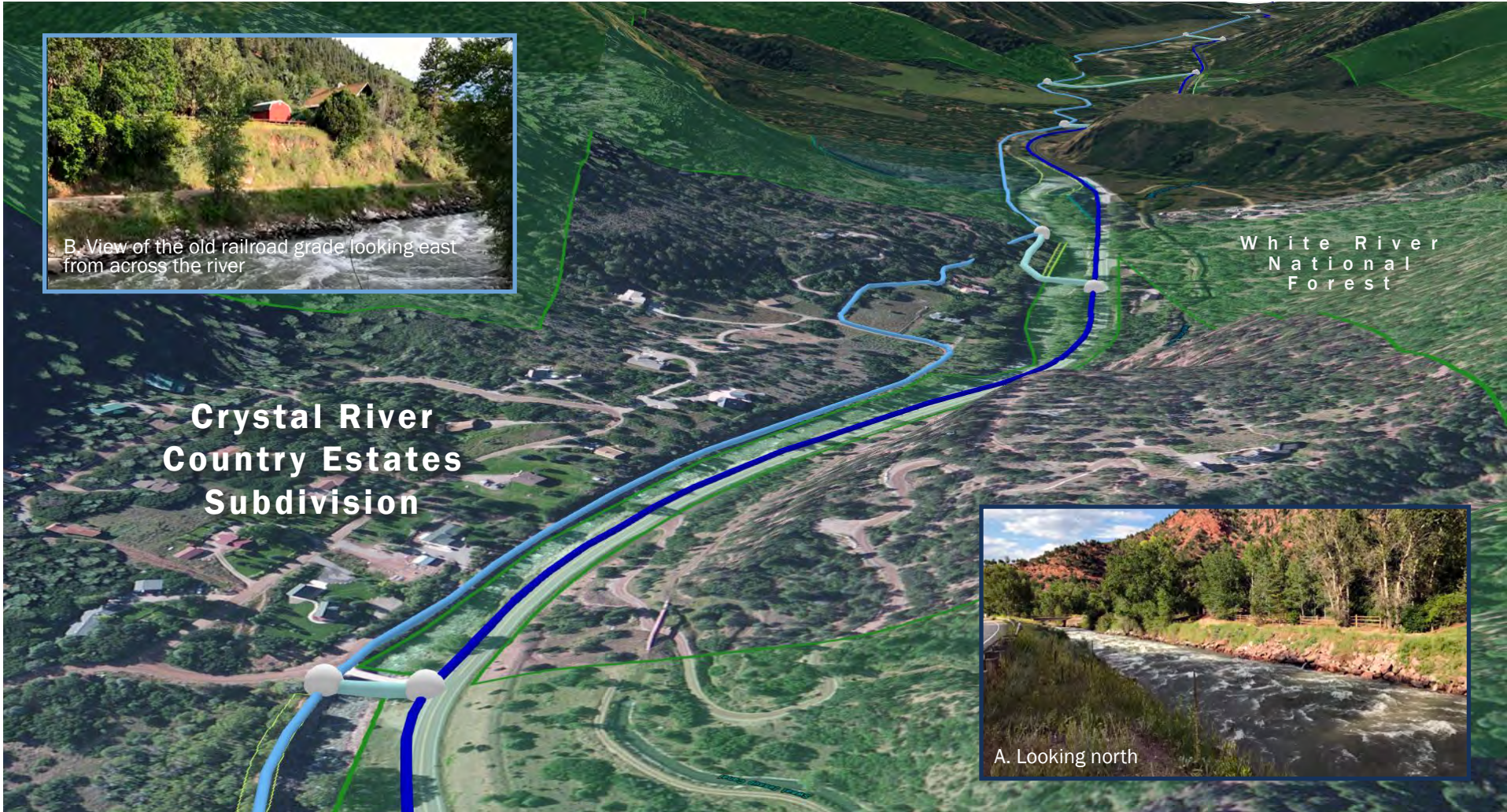
ENGINEERING

- **Design Difficulty:** Low; most is on existing road or RR grade. Typical Sections: 76% TS 0; 7% TS 1; 2% TS 2; 15% TS 5.
- **Geotechnical:** Existing road grades are likely stable
- **Potential for adjacent soft surface:** Existing road is already soft surface, requiring no new surface
- **Hydrologic Impact:** Not at river; replacing road with asphalt surface will slightly increase runoff



ESTIMATED COSTS

- **Construction Costs:** \$856,118 - Low, most is on existing road or RR grade
- **Maintenance:** Maintenance can remain as currently exists, would need to be worked out as part of an agreement
- **Property/Easement Acquisition:** Would require use agreements between County and homeowners



B. View of the old railroad grade looking east from across the river

White River National Forest

Crystal River Country Estates Subdivision

A. Looking north

ANDREWS SEGMENT ALTERNATIVES

ANDREWS A

MULTI-USE TRAIL MILES: 0.48 miles

OVERVIEW: The Andrews A trail alternative runs between Hwy. 133 and the west side of the Crystal River. This segment begins in a relatively wide, flat and generally unvegetated area off the highway shoulder where the trail can be constructed at or near grade before transitioning into a long, straight and constrained stretch requiring the trail be constructed on top of a fill wall along the river edge. Following this difficult trail section is a relatively simple segment alongside the highway beneath tall trees. After taking advantage of simple construction for a good distance, another section of constrained corridor will likely require construction on top of fill wall at the edge of the river behind the guardrail before ending on a more simple stretch of trail at a driveway just north of a roadway bridge and irrigation diversion structure.

CONTINUATION: The trail can continue running south along relatively simple trail, or turn east and cross the river on a new pedestrian bridge (Bridge Option 7).

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way

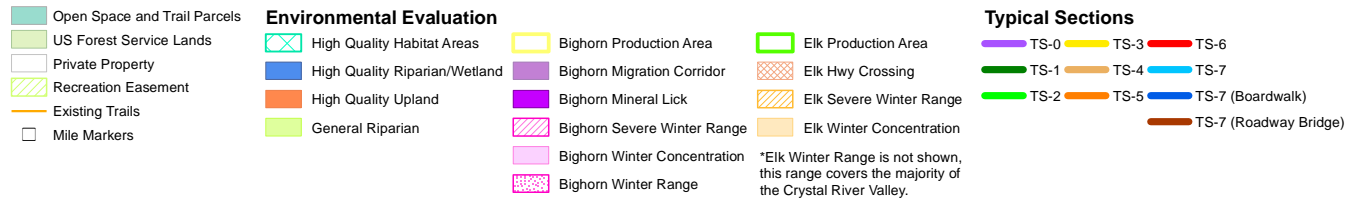
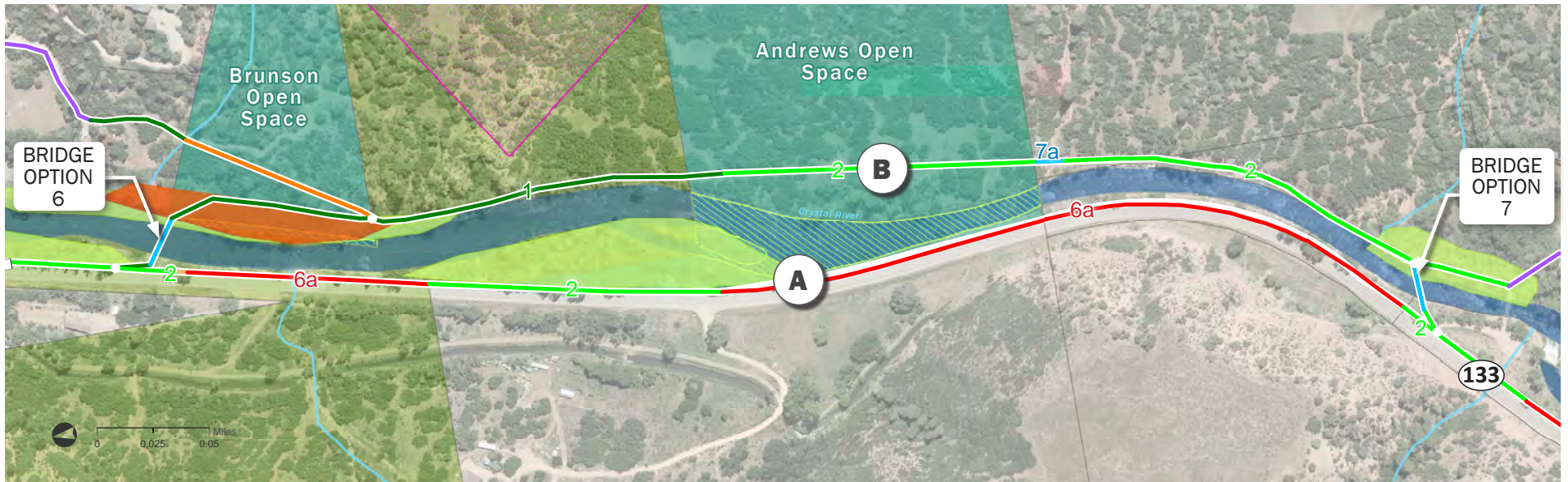
ANDREWS B

MULTI-USE TRAIL MILES: 0.61 miles

Overview: The Andrews B trail alternative begins at the southern end of Crystal River Country Estates B or from Bridge Option 6 and follows the old railroad grade along the high-quality vegetation of the eastern bank of the Crystal River through WRNF lands. The trail continues onto Pitkin County's Andrews Open Space along the flat bench of the old railroad grade while generally paralleling the river. At a crossing of a substantial drainage way (which would require a 65-foot long pedestrian bridge), the trail crosses onto a private ranch property before approaching the end of the segment on a new bridge (Bridge Option 7).

CONTINUATION: The trail can continue south on Perham B or cross the river at a Bridge Option 7 to connect to the Perham A alternative along the highway.

PROPERTY OWNERSHIP/JURISDICTION: WRNF, Pitkin County Andrews Open Space, and private property. The Andrews Open Space was purchased in 2003 to protect its scenic, wildlife and recreation values. The property is managed according to Title 12. A public trail entering private land upstream of Andrews would require an access agreement with the property owner.

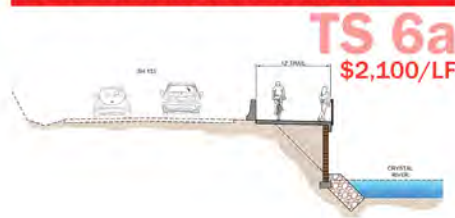


TYPICAL SECTIONS A:

TS 2: Moderate Grading

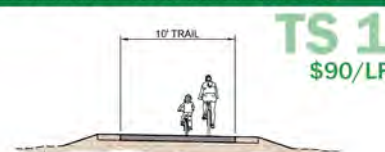


TS 6a: Structural Trail on Fill Wall



TYPICAL SECTIONS B:

TS 1: Natural Bench/Minor Grading



TS 2: Moderate Grading



TS 7a: Prefabricated Single Span Pedestrian Bridge



ANDREWS A



ENVIRONMENTAL

- **Wildlife:** Minor impact to elk winter range
- **Vegetation/Wetlands:** Vegetation is disturbed, and no new impacts to vegetation communities would occur.
- **Cultural Resources:** No impact



USER EXPERIENCE

- **Safety/Comfort:** Trail users would be directly adjacent to highway traffic lane
- **Trail User Types:** Proximity to highway may limit use by equestrians
- **Scenic Quality/Ambiance:** Proximity to highway will negatively impact the scenic quality from the trail
- **Seasonal Use:** Proximity to highway would make winter use difficult



ENGINEERING

- **Design Difficulty:** Structural options are available. Typical Sections: 29% TS 2; 1% TS 4; 70% TS 6.
- **Geotechnical:** Many unknowns until drilled
- **Potential for adjacent soft surface:** Not where trail is on structure
- **Hydrologic Impact:** More impact with mechanically stabilized earth (MSE) section than other structural sections. Further analysis required



ESTIMATED COSTS

- **Construction Costs:** \$9,410,595 - Moderate to high, due to limited space, many complex structural options available
- **Mitigation:** Opportunities are available to realign Hwy 133 to allow for a less expensive typical trail section.
- **Maintenance:** Moderate to high, depending on barrier type between highway (road debris); structures need to accommodate snow removal equipment
- **Property/Easement Acquisition:** CDOT ROW, USFS property

ANDREWS B



ENVIRONMENTAL

- **Wildlife:** Minor impact to undisturbed river frontage
- **Vegetation/Wetlands:** Alignment follows existing RR grade, and construction would be limited to the footprint wherever possible. Tree removal would be avoided if possible. Adjacent riparian vegetation would not be disturbed. Habitat for FSS Grand Mesa penstemon is present, and it is likely that Harrington's penstemon is present. Mitigation for impacts to FSS species, if present, would reduce impacts.

- **Cultural Resources:** Least Impactful



USER EXPERIENCE

- **Safety/Comfort:** Trail users would be fully separated from vehicular traffic on FS and OST lands
- **Trail User Types:** Steep grade at north end may not meet ADA
- **Scenic Quality/Ambiance:** Trail would follow rail grade route and look down on the river
- **Seasonal Use:** Year-round use



ENGINEERING

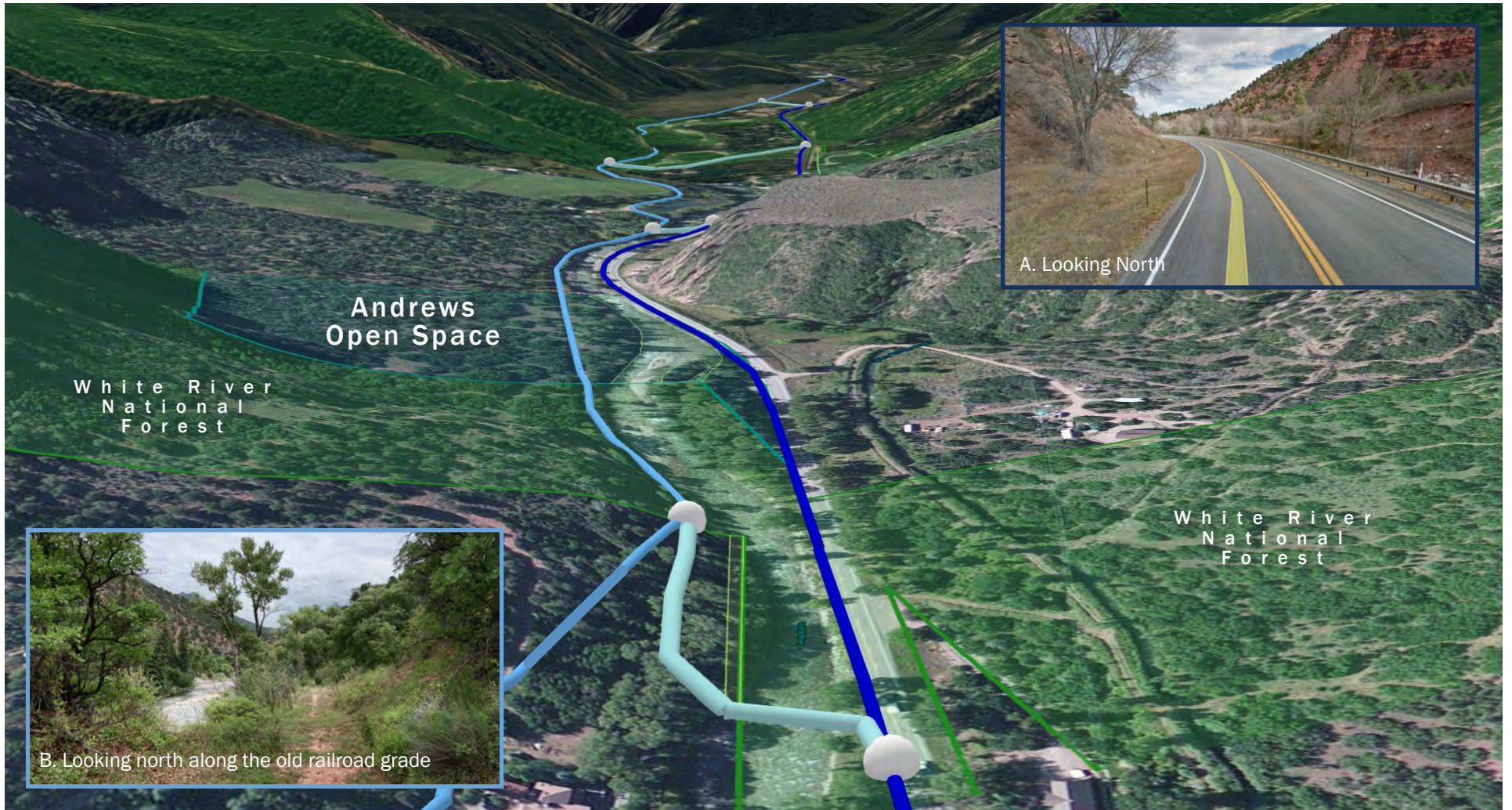
- **Design Difficulty:** Low; on RR grade. Typical Sections: 33% TS 1; 65% TS 2; 3% TS 7.
- **Geotechnical:** Existing RR grade likely stable
- **Potential for adjacent soft surface:** Yes, may be limited in some areas
- **Hydrologic Impact:** None

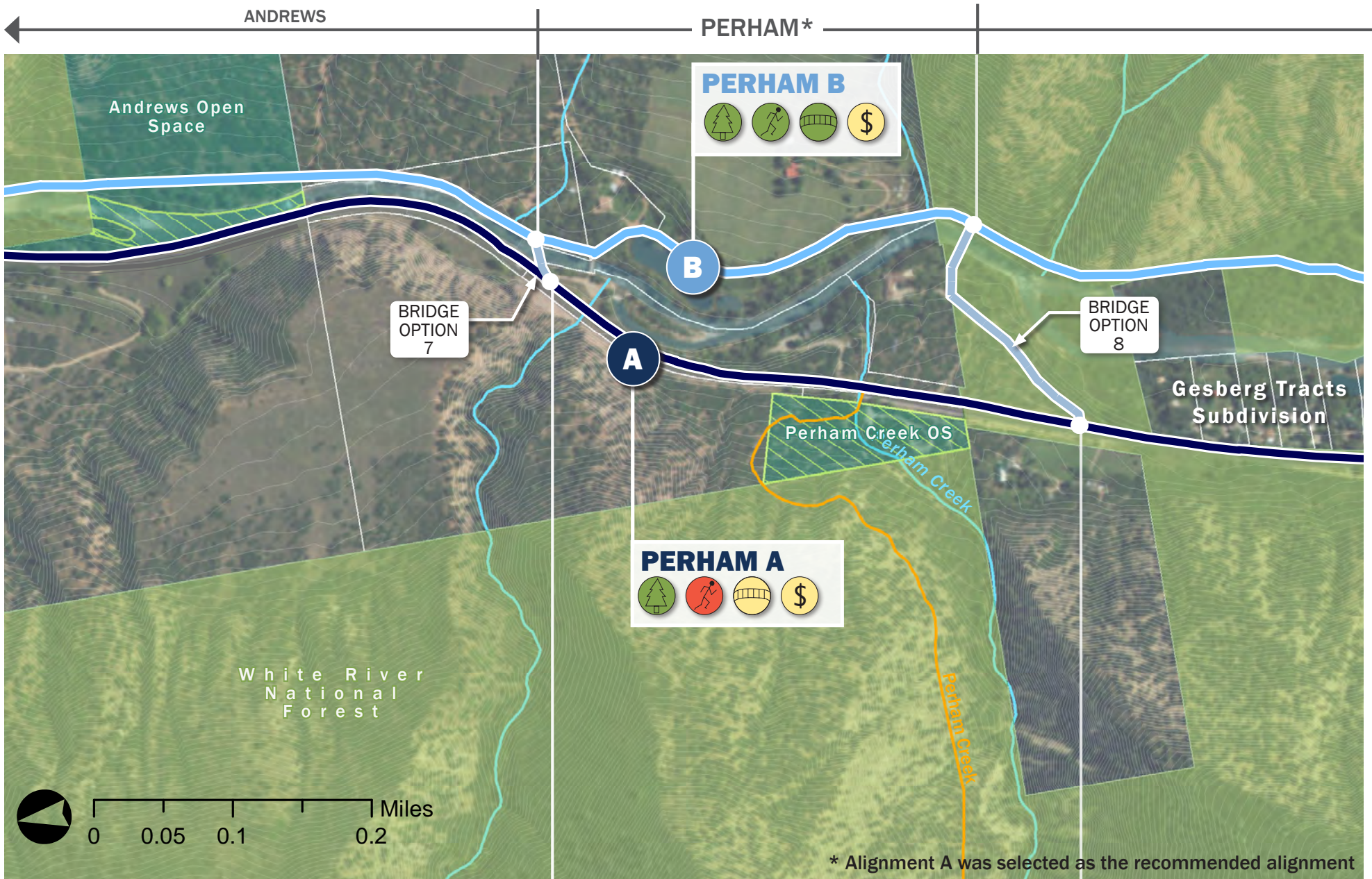


ESTIMATED COSTS

- **Construction Costs:** \$793,859 - Low; on RR grade
- **Maintenance:** Low
- **Property/Easement Acquisition:** Open Space, USFS, and private property. Would require use agreements between County and homeowners

* No on-the-ground surveys occurred across private property





* Alignment A was selected as the recommended alignment

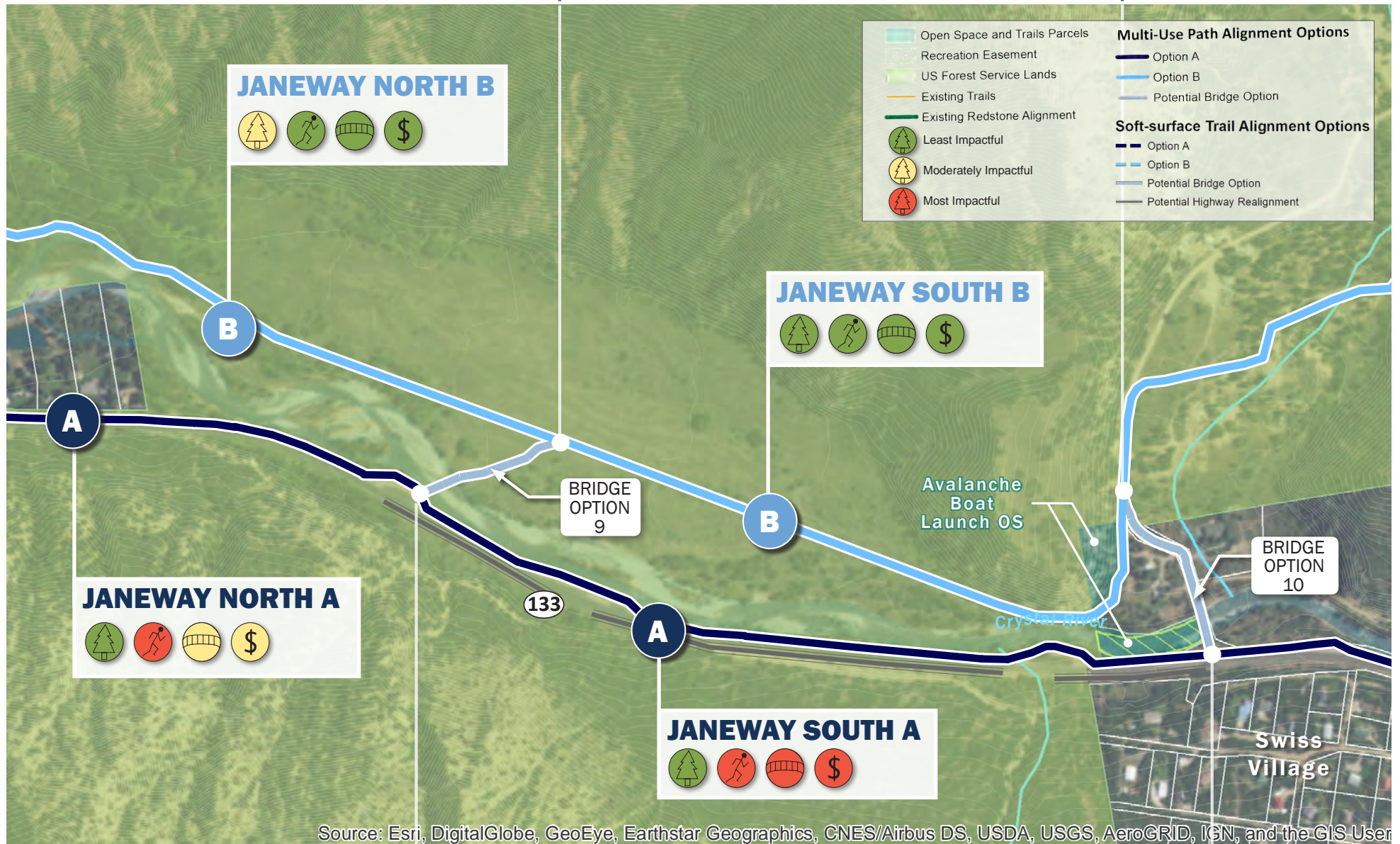
Map 2.15: Alignment Alternatives Impacts Summary - Perham to Janeway South



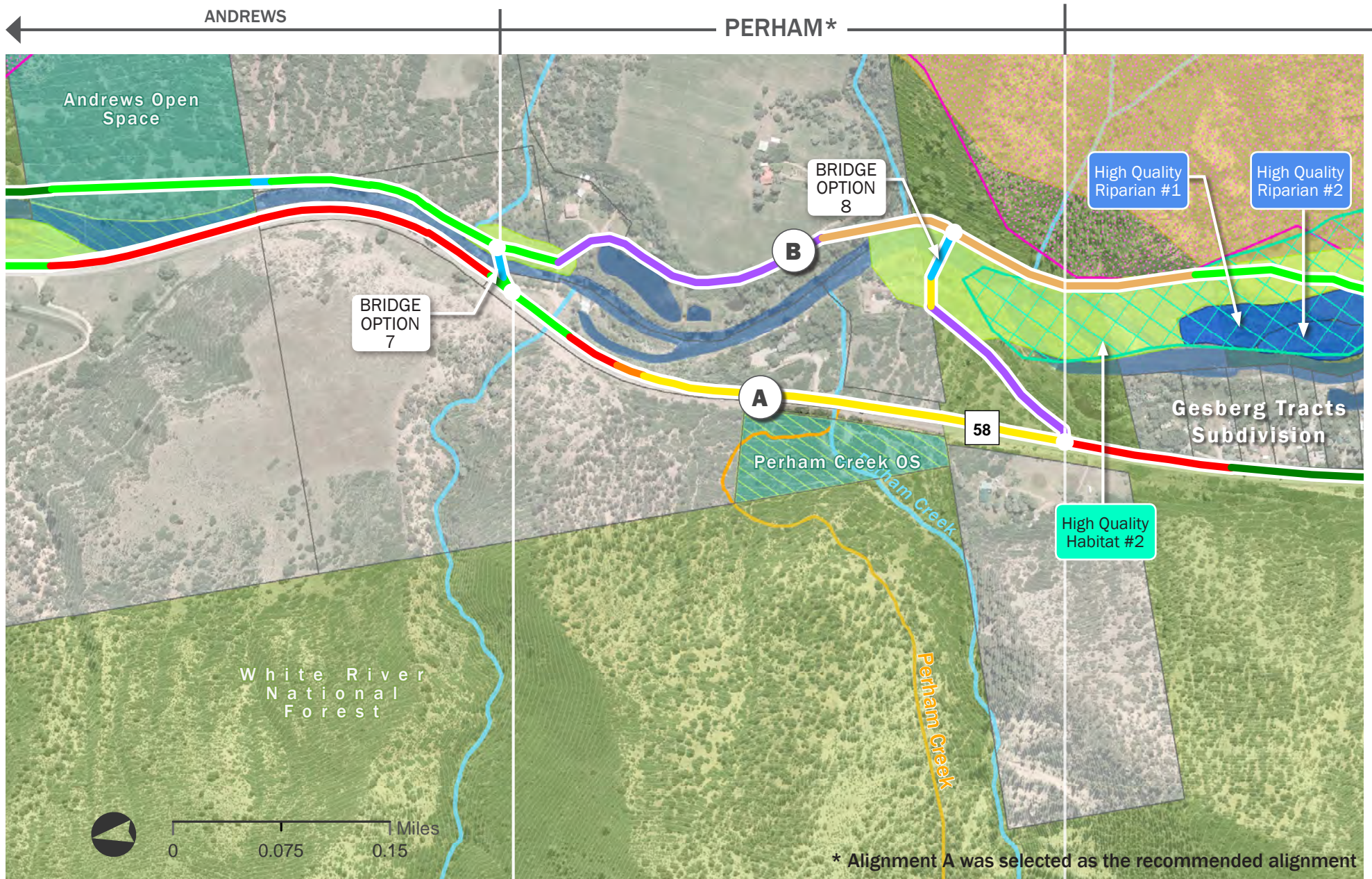
JANEWAY NORTH*

JANEWAY SOUTH

AVALANCHE



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User



* Alignment A was selected as the recommended alignment

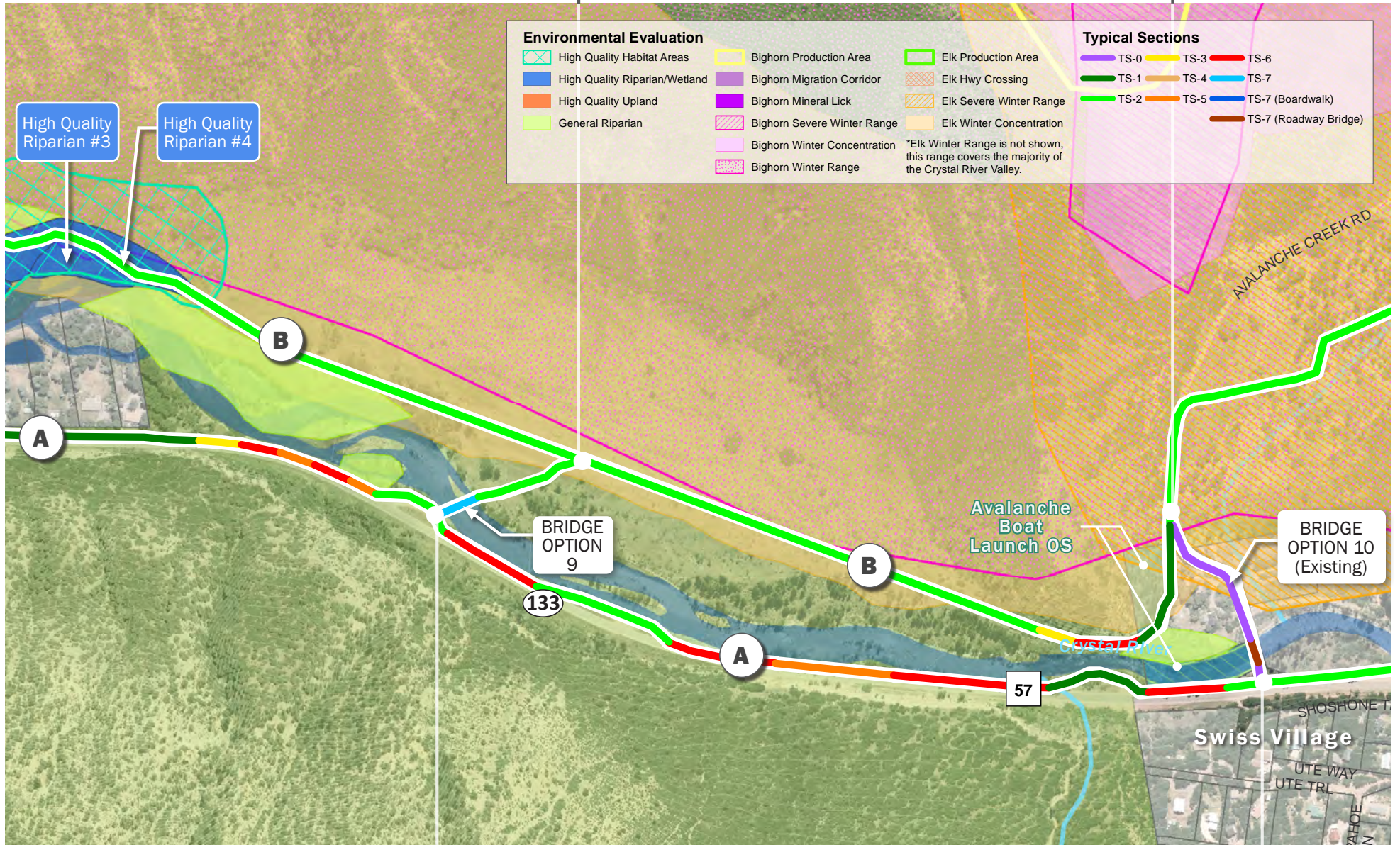
Map 2.16: Environmental and Engineering Summary - Perham to Janeway South



JANEWAY NORTH*

JANEWAY SOUTH

→
AVALANCHE



Environmental Evaluation			Typical Sections		
High Quality Habitat Areas	Bighorn Production Area	Elk Production Area	TS-0	TS-3	TS-6
High Quality Riparian/Wetland	Bighorn Migration Corridor	Elk Hwy Crossing	TS-1	TS-4	TS-7
High Quality Upland	Bighorn Mineral Lick	Elk Severe Winter Range	TS-2	TS-5	TS-7 (Boardwalk)
General Riparian	Bighorn Severe Winter Range	Elk Winter Concentration	TS-7 (Roadway Bridge)		
	Bighorn Winter Concentration	*Elk Winter Range is not shown, this range covers the majority of the Crystal River Valley.			
	Bighorn Winter Range				

PERHAM SEGMENT ALTERNATIVES

PERHAM A

MULTI-USE TRAIL MILES: 0.40 miles

OVERVIEW: The Perham A trail alternative runs between Hwy. 133 and the west side of the Crystal River. This segment begins in a relatively wide, flat driveway and pullout area along the edge of the highway, but quickly approaches steeper slopes near the diversion of the river into a ditch. Continuing south, the slopes become flatter and the river pulls away from the highway, allowing for more moderate trail sections. Some of the trail along the last stretch may be in-cut due to the existing topography.

CONTINUATION: The trail can continue south along the east side of the highway or turn and run down the driveway toward the Bridge Option 8 crossing.

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way, the southern end of the right-of-way is over WRNF lands.

PERHAM B*

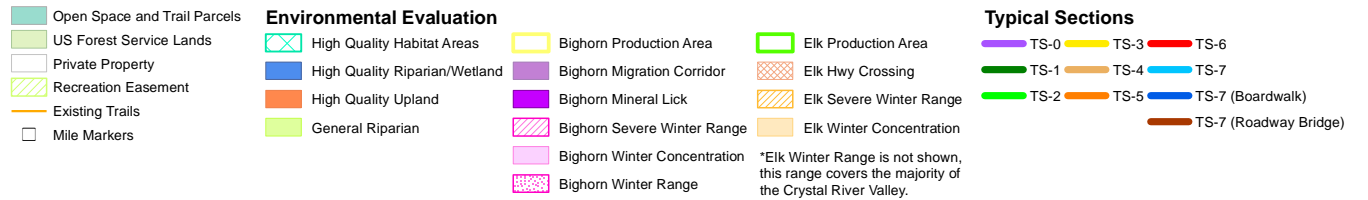
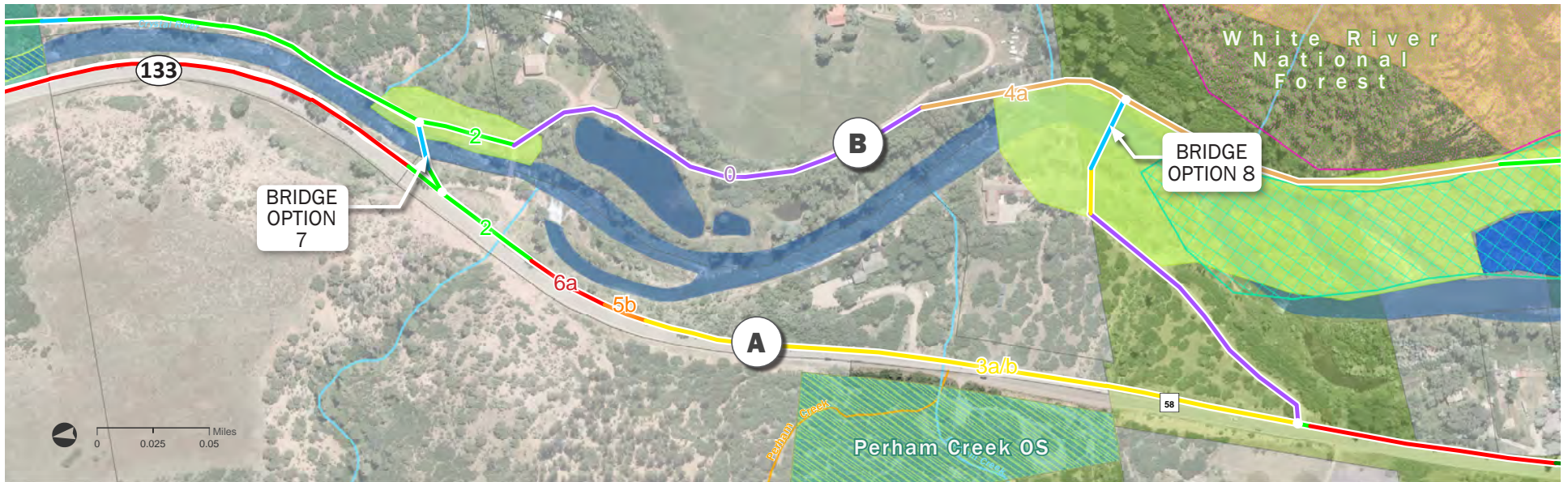
MULTI-USE TRAIL MILES: 0.34 miles

OVERVIEW: The Perham B trail alternative begins at the end of the Andrews B alternative and runs south, sharing an existing private driveway, which could be resurfaced in asphalt. The trail/shared drive pulls away from the river and runs along several ponds and fields before dropping off as the trail diverges from the driveway. The substantial drop in grade requires cut walls on the riverside until reaching the old railroad grade and crossing onto WRNF lands. The rail grade in this section has been all or partially obliterated over time.

CONTINUATION: The trail can continue south along the Janeway B alternative following the old railroad, or it can cross the river at a new Bridge Option 8 to connect to the highway.

PROPERTY OWNERSHIP/JURISDICTION: This segment is almost entirely on private property. No on-the-ground surveys occurred on the private property.

* Alignment A was selected as the recommended alignment.

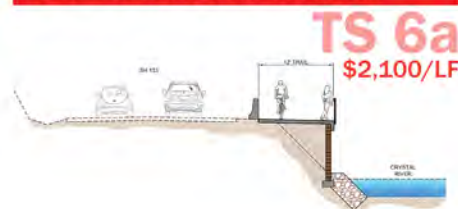


TYPICAL SECTIONS A:

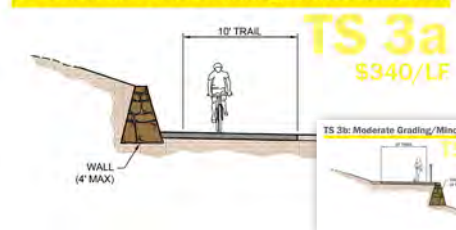
TS 2: Moderate Grading



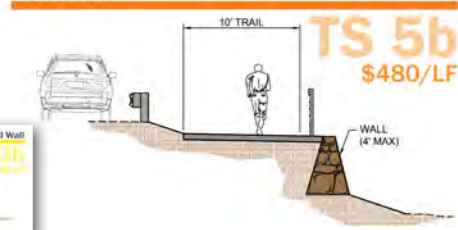
TS 6a: Structural Trail on Fill Wall



TS 3a: Moderate Grading/Minor Cut Wall

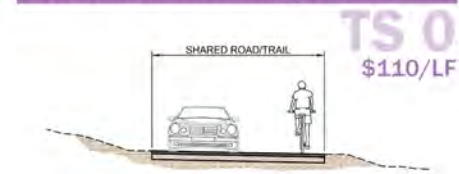


TS 5b: Attached Trail/Minor Fill Walls/Guardrail

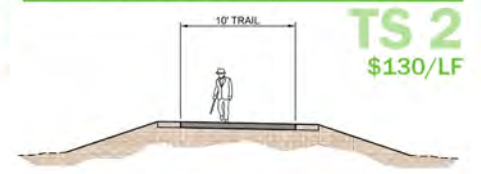


TYPICAL SECTIONS B:

TS 0 - Trail shares existing road



TS 2: Moderate Grading



TS 4a: Significant Grading/Major Cut Wall



PERHAM A



ENVIRONMENTAL

- **Wildlife:** Minor impact to elk winter range
- **Vegetation/Wetlands:** Vegetation is disturbed, and no new impacts to vegetation communities would occur.
- **Cultural Resources:** No impact



USER EXPERIENCE

- **Safety/Comfort:** Trail users would be directly adjacent to highway traffic lane
- **Trail User Types:** Proximity to highway may limit use by equestrians
- **Scenic Quality/Ambiance:** Proximity to highway will negatively impact the scenic quality from the trail
- **Seasonal Use:** Proximity to highway would make winter use difficult to impossible



ENGINEERING

- **Design Difficulty:** Moderate to high, due to limited space, many complex structural options available; mix of easy and difficult. Typical Sections: 12% TS 2; 73% TS 3; 5% TS 5; 10% TS 6.
- **Geotechnical:** Many unknowns until drilled
- **Potential for adjacent soft surface:** Not where trail is on structure
- **Hydrologic Impact:** Likely, more analysis needed (where adjacent to river)



ESTIMATED COSTS

- **Construction Costs:** \$2,185,668 - Moderate, due to limited space, many complex structural options available
- **Maintenance:** Moderate to high, depending on barrier type between highway (road debris); structures need to accommodate snow removal equipment
- **Property/Easement Acquisition:** CDOT ROW, USFS property

PERHAM B



ENVIRONMENTAL *

- **Wildlife:** Minor impact to elk winter range
- **Vegetation/Wetlands:** Alignment follows existing RR grade where vegetation is disturbed, and no new impacts to vegetation communities would occur.
- **Cultural Resources:** Not evaluated



USER EXPERIENCE *

- **Safety/Comfort:** Trail users would be fully separated from highway traffic, may need to share platform with private driveway
- **Trail User Types:** All users
- **Scenic Quality/Ambiance:** Trail would follow rail grade route through trees and meadows and look down on the river
- **Seasonal Use:** Year-round use



ENGINEERING *

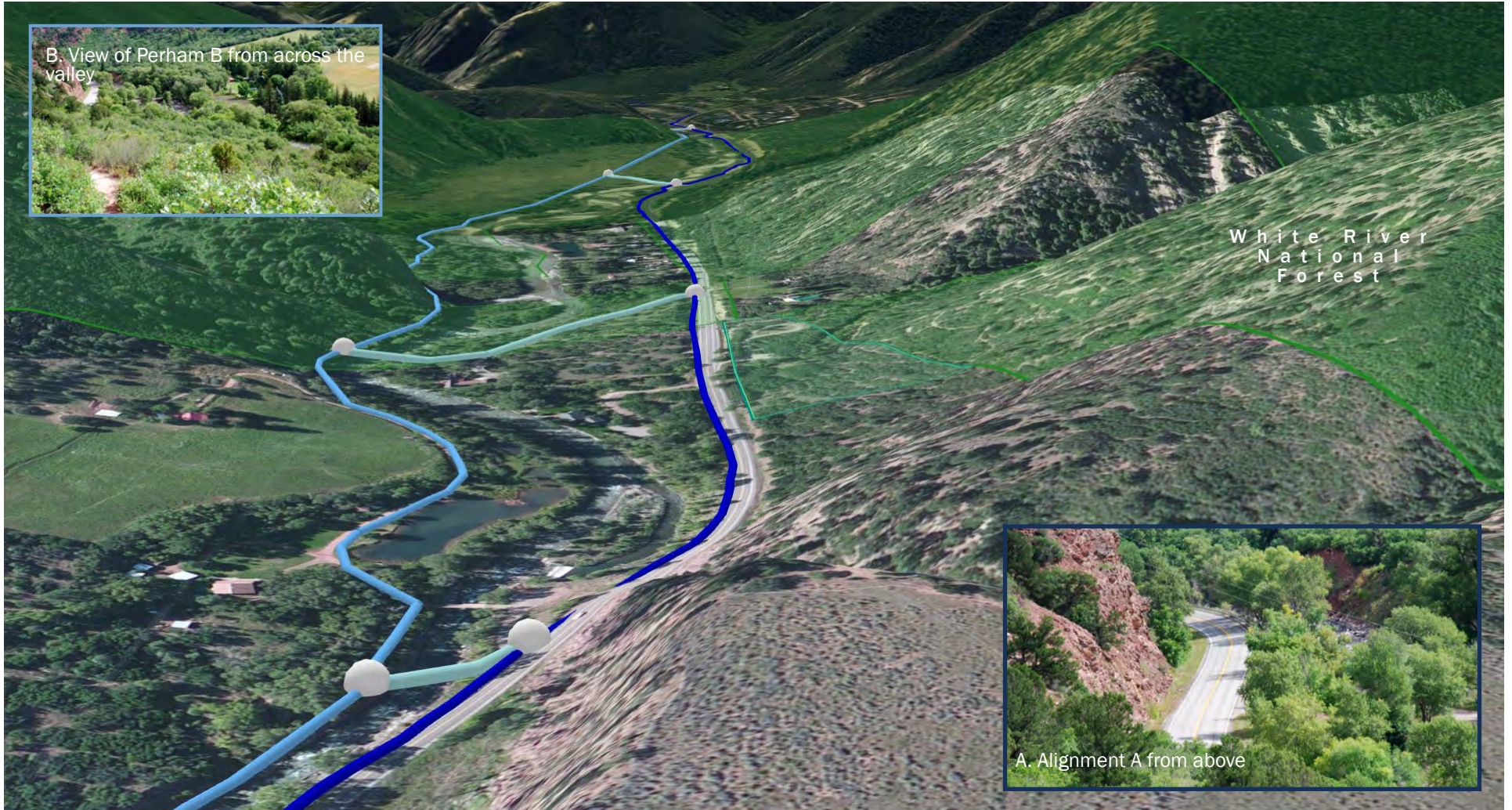
- **Design Difficulty:** Low; most is on existing road or RR grade. Typical Sections: 60% TS 0; 13% TS 2; 28% TS 4.
- **Geotechnical:** Existing road/RR grades are likely stable
- **Potential for adjacent soft surface:** Yes
- **Hydrologic Impact:** None



ESTIMATED COSTS *

- **Construction Costs:** \$746,825 - Low; most is on existing road or RR grade
- **Maintenance:** Coordination with private property owner may be necessary
- **Property/Easement Acquisition:** USFS and private property. Would require use agreements between County and homeowners

* No on-the-ground surveys occurred across private property



JANEWAY NORTH SEGMENT ALTERNATIVES

JANEWAY NORTH A

MULTI-USE TRAIL MILES: 0.51 miles

OVERVIEW: The Janeway North A trail alternative runs along the east side of Hwy. 133 and, in places, the west side of the Crystal River. This segment quickly encounters an area with steep, highly vegetated embankments requiring significant fill walls to minimize disturbance as much as possible. Near the beginning of the Gesberg Tracts Subdivision, a lone row of homes located in a wide stretch where the river pulls away from the highway, the trail can be easily constructed using minimal fill and grading. The trail crosses 10 driveways over this stretch; however, the straight alignment and relatively wide-open sight distance should not pose a problem for trail users or vehicles using the driveways. The next third of this alternative alternates between more moderately difficult and difficult typical sections on fill walls in a constrained area next to the river. This alternative ends with an easily constructed section running through an existing unpaved pullout.

CONTINUATION: At the pullout, the trail can either continue south between the highway and the river on Janeway South A or head southeast over the river with a new bridge crossing (Bridge Option 9) to Janeway South B.

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way, in locations within WRNF lands

JANEWAY NORTH B*

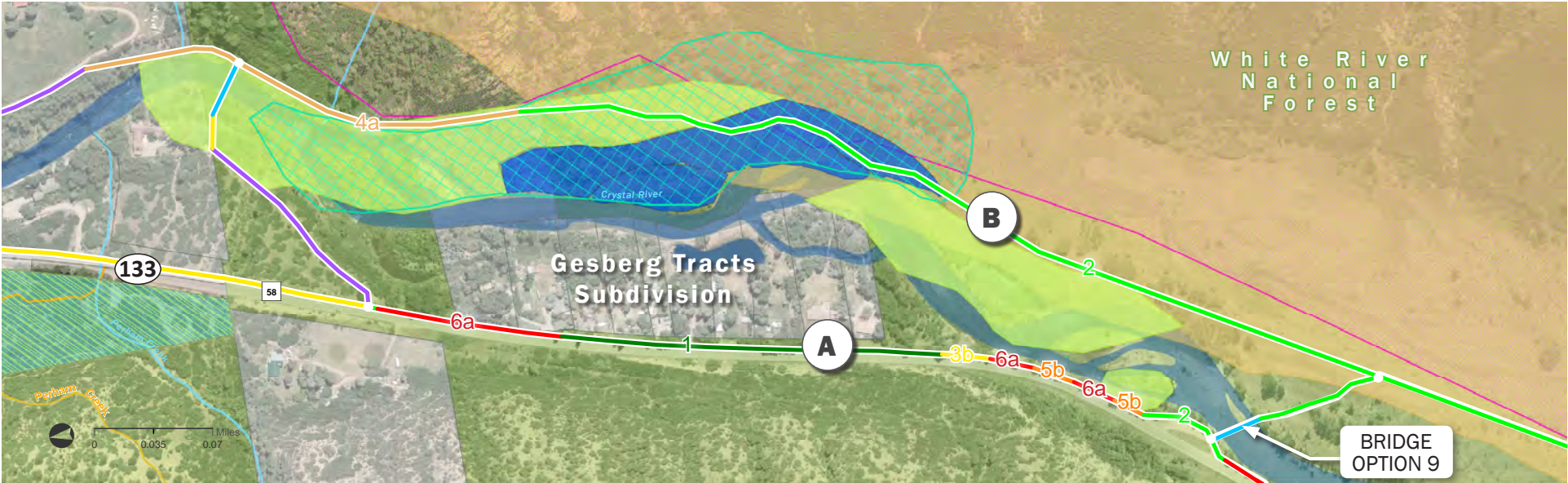
MULTI-USE TRAIL MILES: 0.72 miles

OVERVIEW: The Janeway North B trail alternative begins at the southern end of Perham B where the trail runs south along the partially obliterated old railroad grade. In this section, a portion of the railroad grade has been eroded by the river, leaving the option to use fill walls to create a platform. Further investigation and a detailed topographic survey will be required in this area during final design to determine the optimal alignment. The trail then continues for over a half-mile south through a highly vegetated riparian area along the east bank of the river on the old railroad grade before it pulls away from the river into the open and sparsely vegetated Janeway meadow and runs straight along the railroad grade to the end of the segment. The high-quality vegetative cover along the Janeway North B alignment offers multi-storied riparian habitat with a diverse understory of high-quality wetlands and oxbows. This high-quality habitat area showed frequent signs of wildlife activity and minimal evidence of human use.

CONTINUATION: The trail can continue running straight south on the railroad grade or head northwest toward a bridge crossing over the river (Bridge Option 9).

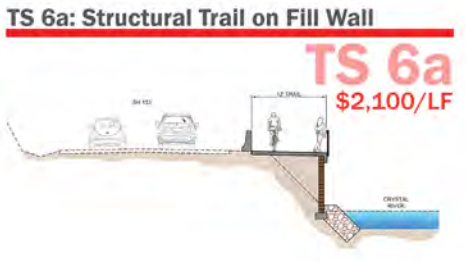
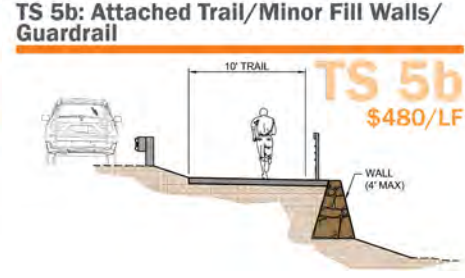
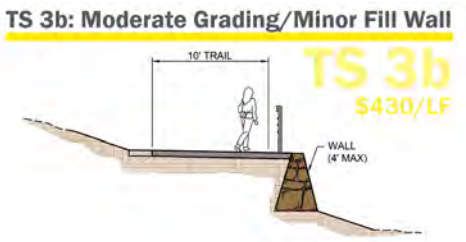
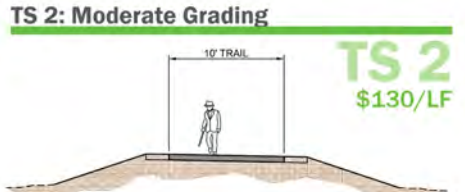
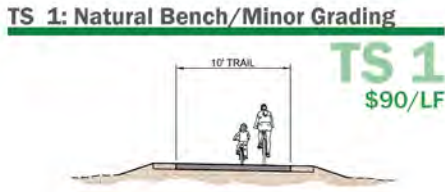
PROPERTY OWNERSHIP/JURISDICTION: WRNF lands – Currently, public access to the Janeway meadow is limited by the seasonal closure of Pitkin County’s Avalanche Boat Launch Open Space from November 15 through May 1; it is the only access to the area.

* Alignment A was selected as the recommended alignment.

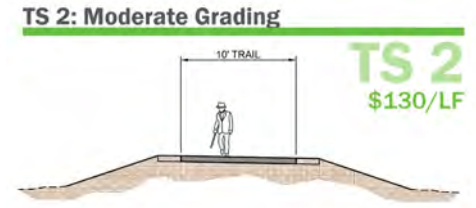


<ul style="list-style-type: none"> Open Space and Trail Parcels US Forest Service Lands Private Property Recreation Easement Existing Trails Mile Markers 	<p>Environmental Evaluation</p> <ul style="list-style-type: none"> High Quality Habitat Areas High Quality Riparian/Wetland High Quality Upland General Riparian 	<ul style="list-style-type: none"> Bighorn Production Area Bighorn Migration Corridor Bighorn Mineral Lick Bighorn Severe Winter Range Bighorn Winter Concentration Bighorn Winter Range 	<ul style="list-style-type: none"> Elk Production Area Elk Hwy Crossing Elk Severe Winter Range Elk Winter Concentration <p><small>*Elk Winter Range is not shown, this range covers the majority of the Crystal River Valley.</small></p>	<p>Typical Sections</p> <ul style="list-style-type: none"> TS-0 TS-3 TS-6 TS-1 TS-4 TS-7 TS-2 TS-5 TS-7 (Boardwalk) TS-7 (Roadway Bridge)
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TYPICAL SECTIONS A:



TYPICAL SECTIONS B:



JANEWAY NORTH A



ENVIRONMENTAL

- **Wildlife:** Minor buffer impacts to elk and bighorn winter range
- **Vegetation/Wetlands:** Vegetation is disturbed, and no new impacts to vegetation communities would occur.
- **Cultural Resources:** No impact



USER EXPERIENCE

- **Safety/Comfort:** Trail users would be directly adjacent to highway traffic lane, multiple driveway crossings
- **Trail User Types:** Proximity to highway may limit use by equestrians
- **Scenic Quality/Ambiance:** Proximity to highway will negatively impact the scenic quality from the trail
- **Seasonal Use:** Proximity to highway would make winter use difficult



ENGINEERING

- **Design Difficulty:** Much is on grade, with only minimal on structure. Typical Sections: 44% TS 1; 10% TS 2; 6% TS 3; 30% TS 5; 10% TS 6.
- **Geotechnical:** Many unknowns until drilled
- **Potential for adjacent soft surface:** Not where trail is on structure
- **Hydrologic Impact:** Likely at southern end where highway is near river, more analysis needed



ESTIMATED COSTS

- **Construction Costs:** \$2,199,618 - Much is on grade, with only minimal on structure
- **Maintenance:** Low to moderate, depending on barrier type between highway (road debris); structures need to accommodate snow removal equipment
- **Property/Easement Acquisition:** CDOT ROW, USFS property



ENVIRONMENTAL

- **Wildlife:** Impact to high-quality, undisturbed habitat including potential T&E/FSS species
- **Vegetation/Wetlands:** Alignment intersects a high-quality, diverse riparian forest with habitat for federally-listed and FSS species. Footprint of trail would be limited to the existing trail/RR grade, and disturbance to wetlands would be avoided. Impacts to wetlands would be avoided if possible, and mitigated if necessary. Removal of trees and native species is likely, and the trail would result in permanent loss of riparian vegetation along the trail width. Tree removal would be avoided to the extent possible. Weed control BMPs (Best Management Practices) would reduce the risk that noxious weeds would increase.
- **Mitigation:** Clearance surveys for species of concern, orchid and wetland surveys, seasonal construction windows, design considerations for engineering and placement of improvements.
- **Cultural Resources:** Least Impactful



USER EXPERIENCE

- **Safety/Comfort:** Trail users would have a separate route on the east side of the river
- **Trail User Types:** All users
- **Scenic Quality/Ambiance:** Trail would follow railgrade route through trees and riparian area
- **Seasonal Use:** Seasonally closed for wildlife protection, Nov 15 to May 1



ENGINEERING

- **Design Difficulty:** Low to moderate at north end. Typical Sections: 76% TS 2; 24% TS 4.
- **Geotechnical:** Some complexities toward north where no RR grade exists
- **Potential for adjacent soft surface:** Limited width on old RR grade
- **Hydrologic Impact:** Not likely



ESTIMATED COSTS

- **Construction Costs:** \$1,722,610 - Low
- **Maintenance:** Low
- **Property/Easement Acquisition:** USFS property



B. Looking north at Janeway

White River
National
Forest

Gesberg Tracts

A. Looking south

JANEWAY SOUTH SEGMENT ALTERNATIVES

JANEWAY SOUTH A

MULTI-USE TRAIL MILES: 0.59 miles

OVERVIEW: The Janeway South A trail alternative runs between Hwy. 133 and the west side of the Crystal River. The river is just below highway grade for much of this segment and is generally within a very constrained corridor requiring complex structures due to the proximity of the highway to the river. The more difficult trail sections are interrupted by a few areas where the platform is less constrained and construction of a trail would be easier along pullouts where the river pulls slightly away from the highway. This alternative ends at the existing bridge to Avalanche Creek Road.

CONTINUATION: The trail can turn east over the river using the existing roadway bridge on Avalanche Creek Road (Bridge Option 10) or continue south along the highway. Bridge 10 is an existing roadway bridge on Avalanche Creek Road that is likely to require upgrades in order to accommodate trail usage. These improvements include, but may not be limited to, deck and railing work. A full inspection of the existing bridge structure should be performed if this bridge is part of the ultimate trail alternative.

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way within WRNF lands and the Avalanche Boat Launch Open Space parcel.

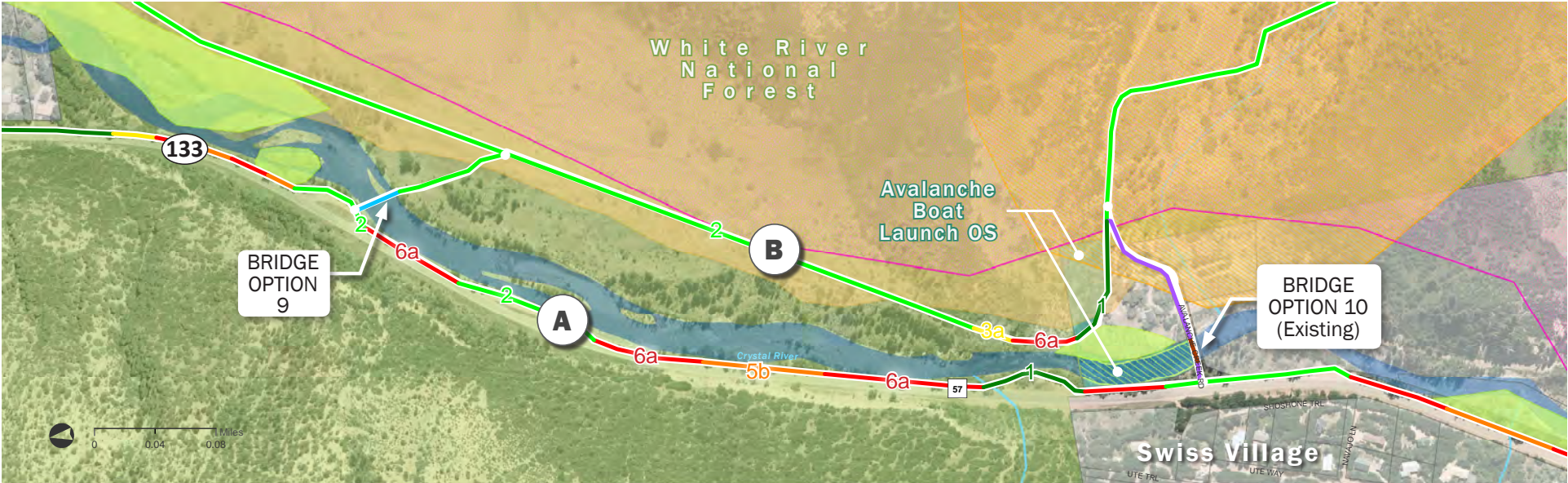
JANEWAY SOUTH B

MULTI-USE TRAIL MILES: 0.48 miles

OVERVIEW: The Janeway South B trail alternative begins at the southern end of Janeway North B or at Bridge Option 9. The majority of this alternative runs south along the very straight and generally unvegetated old railroad grade/Rock Creek County Road. The trail then approaches and follows the base of a steep hillside, requiring a short section of minor cut walls followed by a more complex section where more substantial fill walls are required to create a wide enough trail bench along the existing railroad grade. In this area, the railroad grade has likely been filled in and narrowed over time, possibly by rockfall or erosion. The trail connects with existing singletrack trail across Pitkin County's Avalanche Boat Launch Open Space until it reaches the end of the segment at a small trailhead at Avalanche Creek Road.

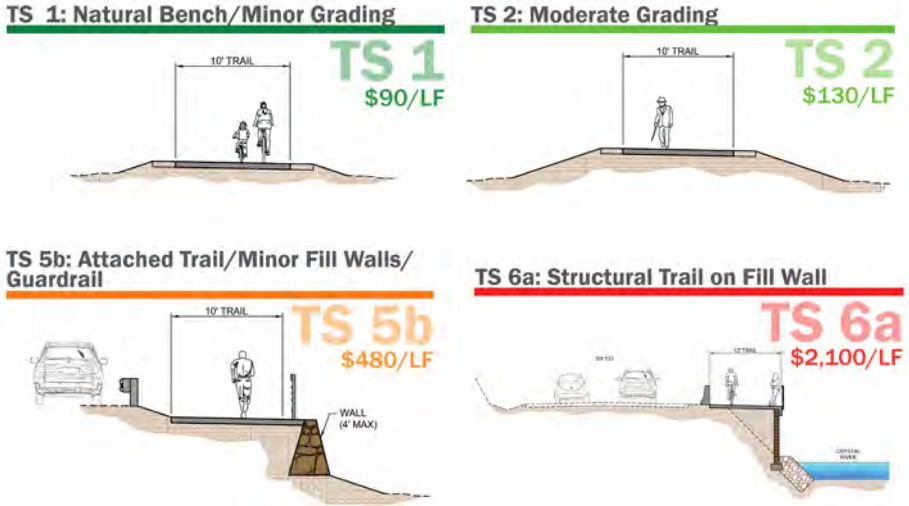
CONTINUATION: From the Avalanche Boat Launch Trailhead, the trail can continue east along Avalanche Creek Road on the Avalanche B alignment or west down the road toward the existing roadway bridge (Bridge Option 10) to access the Avalanche A alignment.

PROPERTY OWNERSHIP/JURISDICTION: WRNF land and Pitkin County's Avalanche Boat Launch Open Space. The Avalanche Boat Launch Open Space provides important public access to the Crystal River and the adjacent federal lands. The property and access are managed to be consistent with the WRNF winter closures limiting access to the Janeway meadows from November 15 through May 1; additional management of the Boat Launch property is guided by Title 12. The Janeway meadows historically were occupied by the old Janeway townsite, a primary stage and rail stop before the development of Redstone.

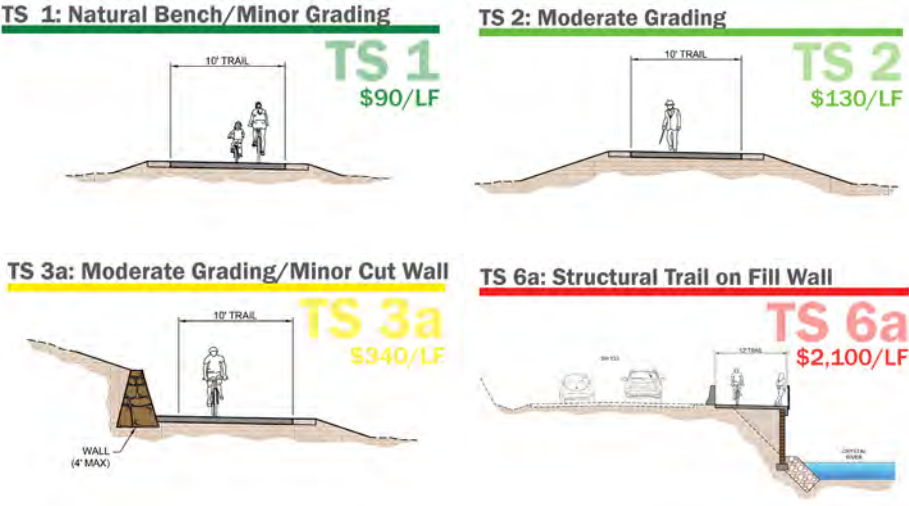


<ul style="list-style-type: none"> Open Space and Trail Parcels US Forest Service Lands Private Property Recreation Easement Existing Trails Mile Markers 	<p>Environmental Evaluation</p> <ul style="list-style-type: none"> High Quality Habitat Areas High Quality Riparian/Wetland High Quality Upland General Riparian Bighorn Production Area Bighorn Migration Corridor Bighorn Mineral Lick Bighorn Severe Winter Range Bighorn Winter Concentration Bighorn Winter Range Elk Production Area Elk Hwy Crossing Elk Severe Winter Range Elk Winter Concentration <p><small>*Elk Winter Range is not shown, this range covers the majority of the Crystal River Valley.</small></p>	<p>Typical Sections</p> <ul style="list-style-type: none"> TS-0 TS-3 TS-6 TS-1 TS-4 TS-7 TS-2 TS-5 TS-7 (Boardwalk) TS-7 (Roadway Bridge)
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TYPICAL SECTIONS A:



TYPICAL SECTIONS B:



JANEWAY SOUTH A



ENVIRONMENTAL

- **Wildlife:** Minor buffer impacts to elk and bighorn winter range
- **Vegetation/Wetlands:** Vegetation is disturbed, and no new impacts to vegetation communities would occur.
- **Cultural Resources:** No impact



USER EXPERIENCE

- **Safety/Comfort:** Trail users would be directly adjacent to highway traffic lane.
- **Trail User Types:** Proximity to highway may limit use by equestrians
- **Scenic Quality/Ambiance:** Proximity to highway will negatively impact the scenic quality from the trail
- **Seasonal Use:** Proximity to highway would make winter use difficult to impossible



ENGINEERING

- **Design Difficulty:** Mostly on structures, many structural options available. Typical Sections: 12% TS 1; 23% TS 2; 14% TS 5; 12% TS6; 52% TS 6.
- **Geotechnical:** Many unknowns until drilled
- **Potential for adjacent soft surface:** Not where trail is on structure
- **Hydrologic Impact:** Likely due to proximity to highway, more analysis needed



ESTIMATED COSTS

- **Construction Costs:** \$8,097,627 - High, due to limited space and complex structural options, mostly on structures
- **Mitigation:** Opportunities are available to realign Hwy 133 to allow for a less expensive typical trail section.
- **Maintenance:** Moderate to high, depending on barrier type between highway (to control road debris)
- **Property/Easement Acquisition:** CDOT ROW, USFS; possibly more complex if highway realigned

JANEWAY SOUTH B



ENVIRONMENTAL

- **Wildlife:** Minor impact to undisturbed habitat and river frontage
- **Vegetation/Wetlands:** Trail is adjacent to riparian area on south side, but would not result in new impacts to vegetation. No wetlands are within alignment. The plant community is diverse and dominated by natives, with noxious weeds present. Design criteria would reduce or eliminate impacts by containing the trail footprint and construction activities to the existing RR grade.
- **Cultural Resources:** Least Impactful



USER EXPERIENCE

- **Safety/Comfort:** Trail users would be on the east side of the river on the Rock Creek County Road/old RR grade, through a large meadow
- **Trail User Types:** All users
- **Scenic Quality/Ambiance:** Scenic trail route through a large meadow with a historic structure
- **Seasonal Use:** Seasonally closed for wildlife protection, Nov 15 to May 1



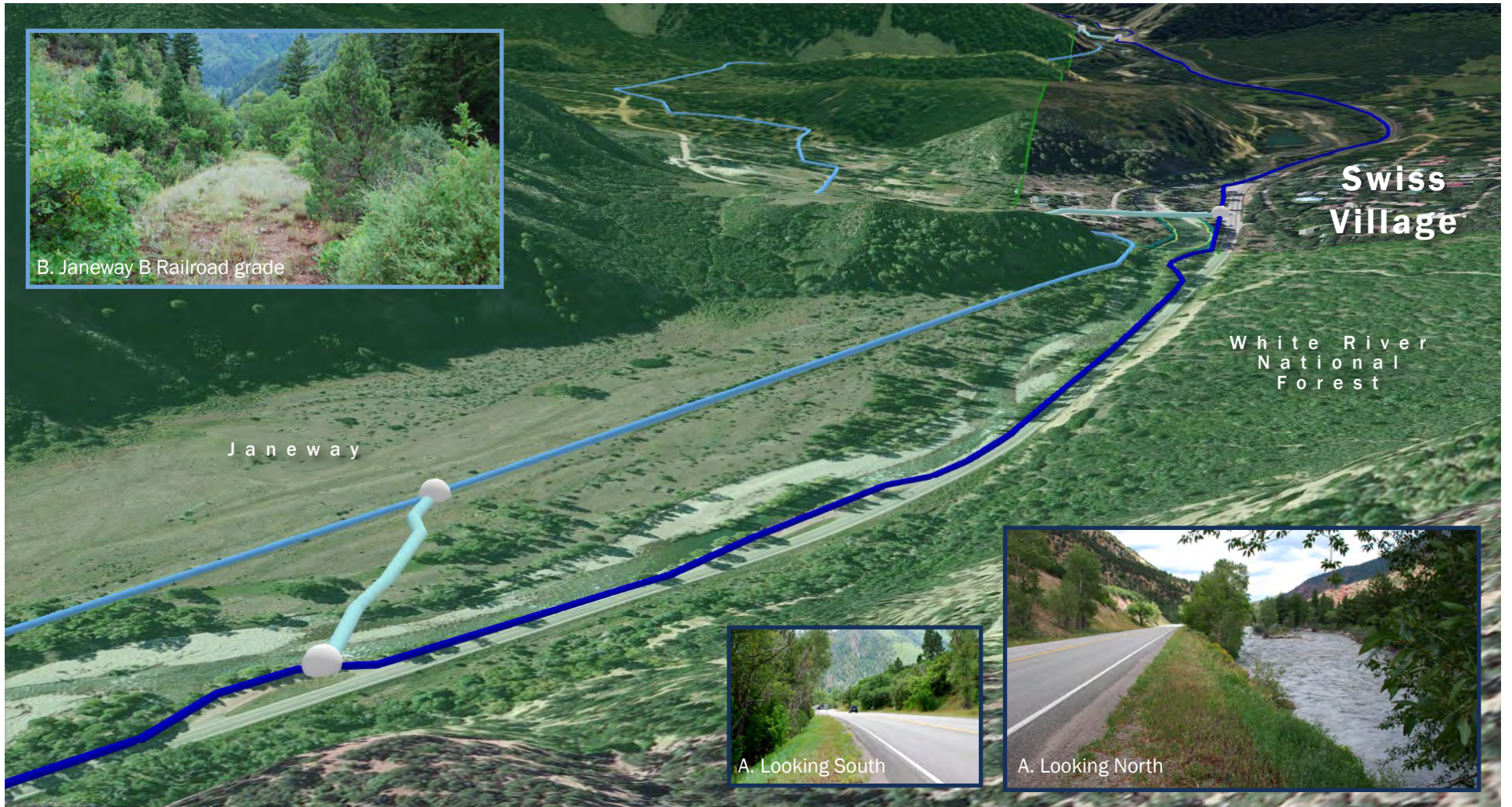
ENGINEERING

- **Design Difficulty:** Low. Typical Sections: 18% TS 1; 68% TS 2; 6% TS 3; 9% TS 6.
- **Geotechnical:** Some potentially unstable slopes above at south end
- **Potential for adjacent soft surface:** Yes
- **Hydrologic Impact:** Not likely



ESTIMATED COSTS

- **Construction Costs:** \$1,355,195 - Low
- **Maintenance:** Low
- **Property/Easement Acquisition:** USFS, OST property



B. Janeway B Railroad grade

Janeway

Swiss Village

White River National Forest

A. Looking South

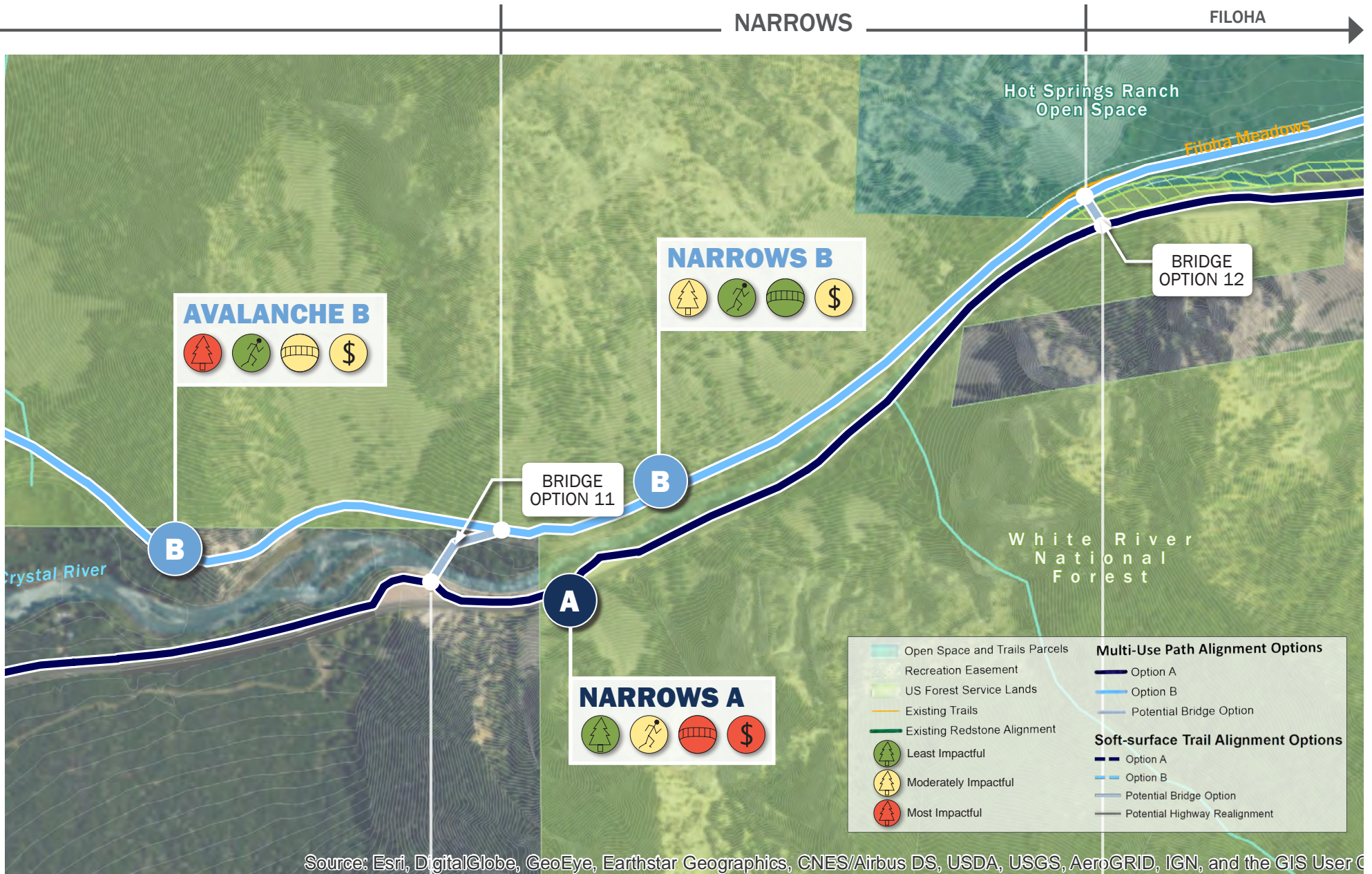
A. Looking North

JANEWAY SOUTH

AVALANCHE



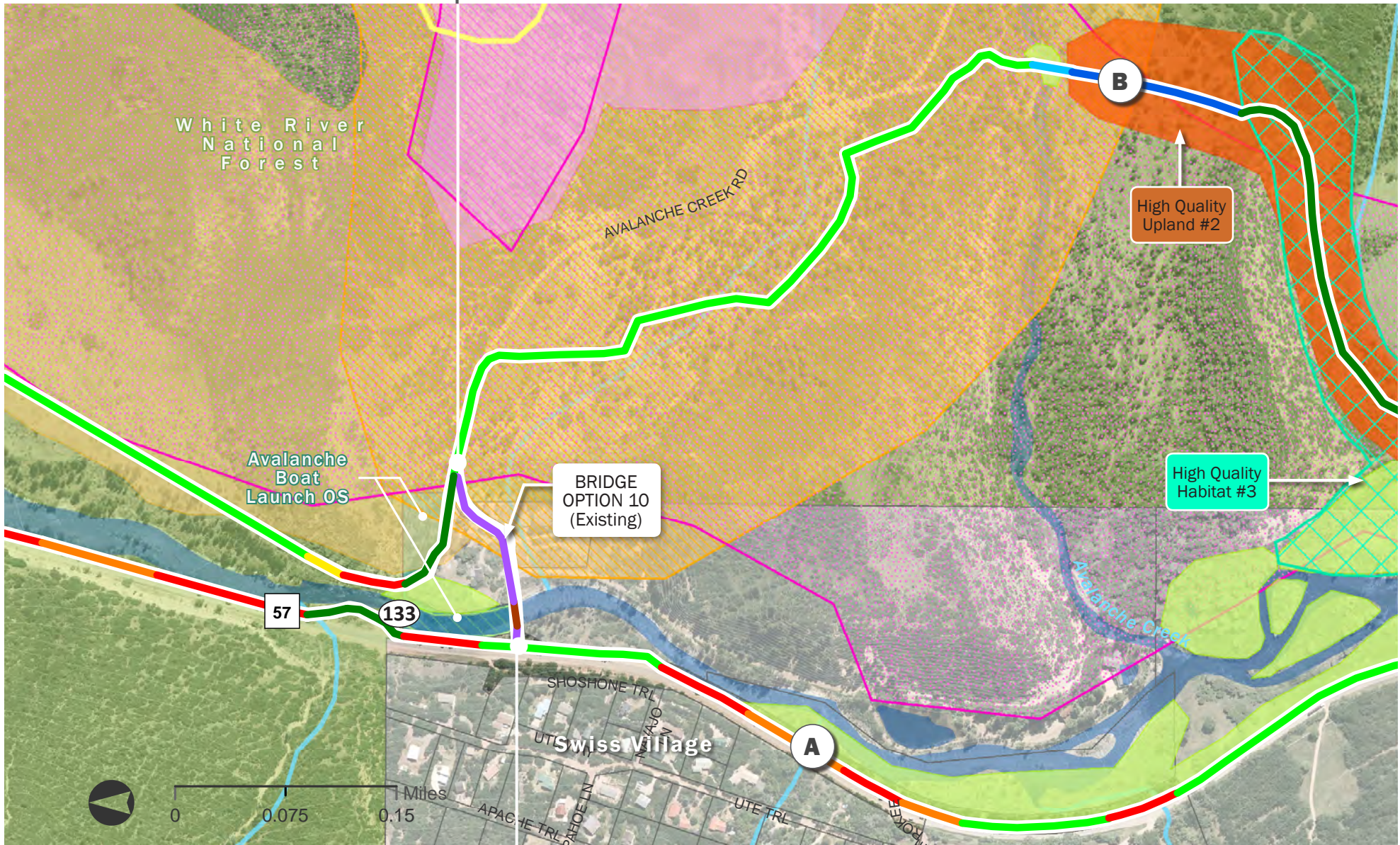
Map 2.20: Alignment Alternatives Impacts Summary - Avalanche to the Narrows



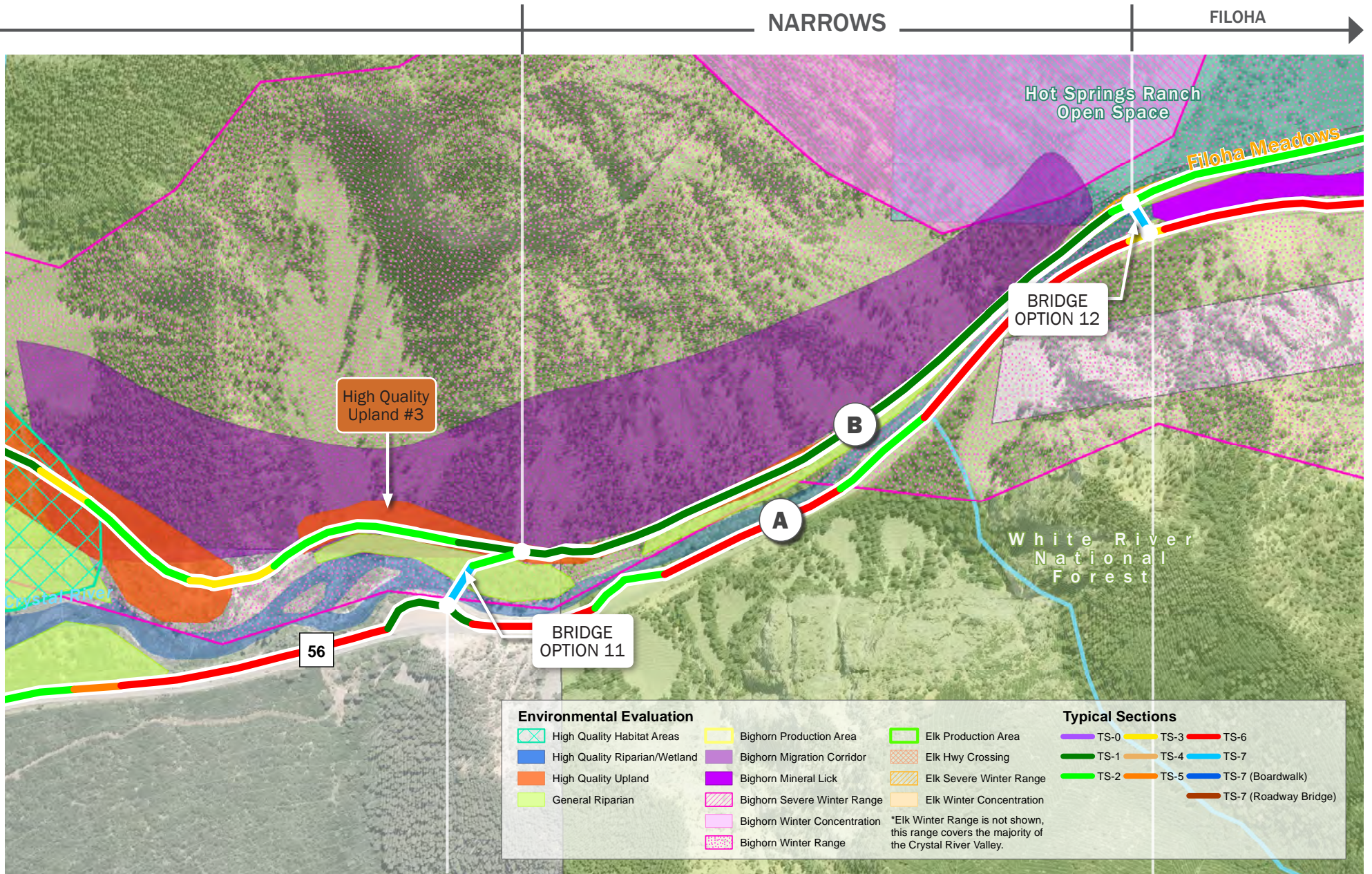
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User C

JANEWAY SOUTH

AVALANCHE



Map 2.21: Environmental and Engineering Summary - Avalanche to the Narrows



Environmental Evaluation			Typical Sections		
High Quality Habitat Areas	Bighorn Production Area	Elk Production Area	TS-0	TS-3	TS-6
High Quality Riparian/Wetland	Bighorn Migration Corridor	Elk Hwy Crossing	TS-1	TS-4	TS-7
High Quality Upland	Bighorn Mineral Lick	Elk Severe Winter Range	TS-2	TS-5	TS-7 (Boardwalk)
General Riparian	Bighorn Severe Winter Range	Elk Winter Concentration	TS-7 (Roadway Bridge)		
	Bighorn Winter Concentration				
	Bighorn Winter Range				

*Elk Winter Range is not shown, this range covers the majority of the Crystal River Valley.

AVALANCHE SEGMENT ALTERNATIVES

AVALANCHE A

MULTI-USE TRAIL MILES: 0.97 miles

OVERVIEW: The Avalanche A trail alternative follows Hwy. 133 and the west side of the Crystal River. The river is well below highway grade for much of this segment and is generally located away from the highway. The roadside is moderately to heavily vegetated. The segment begins at the Avalanche Creek Road intersection running south through a moderately sized pullout with generous room for a trail. The trail then comes upon a somewhat constrained section, requiring trail above a fill wall along the river edge and in-cuts to construct a trail platform. The next third of this alternative allows for mostly simple trail construction interrupted by a shorter segment of more difficult trail construction. The trail through this section can be built on a very wide shoulder where the trail could be separated from the highway and run along the edge of trees at the top of the slope with little to no impacts to vegetation. Where the trail would cross an existing driveway, a transition to a more difficult section through a heavily vegetated slope would require a fill wall along the slope. Avalanche A ends by following along the outer edge of a large pullout perched high above the Crystal River below.

CONTINUATION: From the pullout, the trail can continue south along the southern edge of the pullout along the Narrows A alignment or cross over the river on a new bridge (Bridge Option 11) to Narrows B alignment.

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way.

AVALANCHE B*

MULTI-USE TRAIL MILES: 1.35 miles

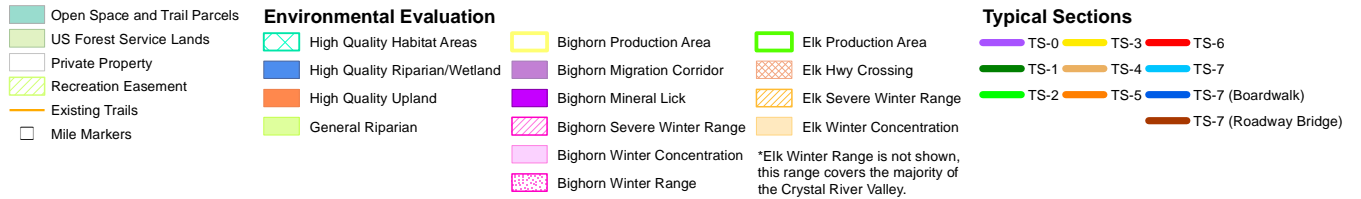
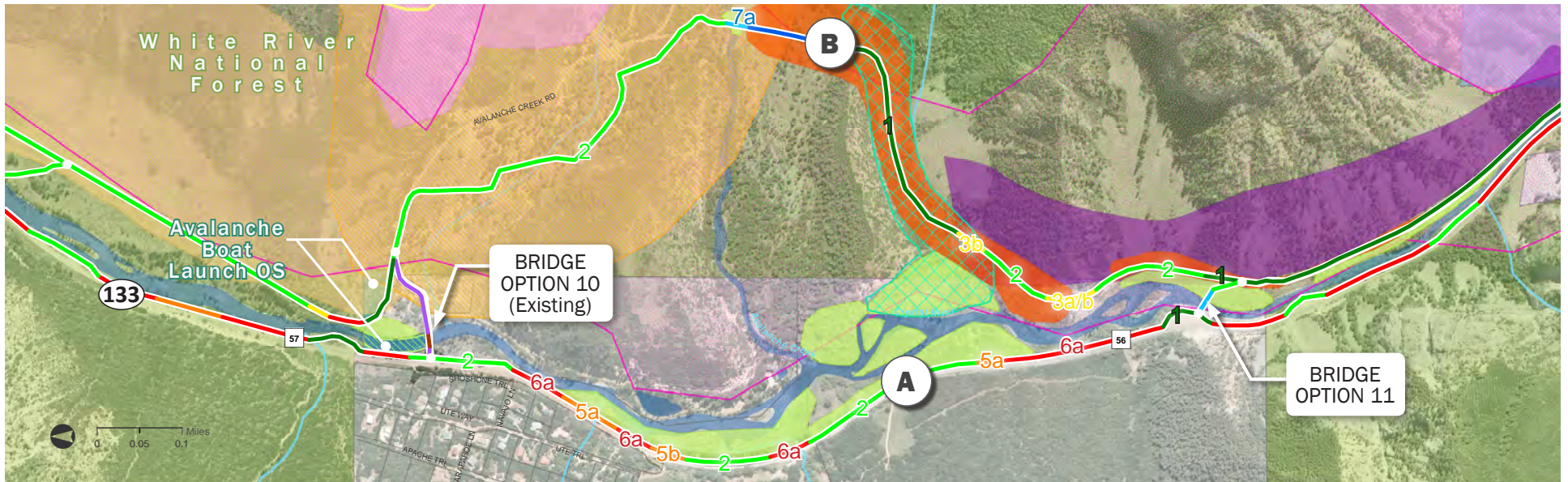
OVERVIEW: The Avalanche B trail alternative is one of the more unique alternatives of the project, departing from the river more than all other segments. It begins at the southern end of Janeway South B at an existing trailhead and runs along Avalanche Creek Road and onto an abandoned U.S. Forest Service campground road that follows the old Rock Creek County Road alignment. This area has been impacted by floods and debris flows in the past. Trail grades would be relatively

flat to moderately steep approaching Avalanche Creek. At Avalanche Creek, a bridge would cross the main channel followed by a raised trail across the remaining width of the floodplain to avoid impacts from meandering secondary channels that form during high runoff. A boardwalk-type trail structure would follow the old Rock Creek County Road. Once out of the area prone to flooding, the trail climbs on grade over moderate to steep terrain toward the base of Elephant Mountain and then drops into a pristine meadow with moderate to steep grades (depending on actual alignment). This relatively undisturbed valley was identified as a high-quality habitat area with diverse and high-quality upland vegetation communities; good habitat for bird and bat foraging; lynx, ungulate and bear corridors; and habitat for a couple of USFS sensitive species. At the base of this meadow, the trail climbs out of a narrow ravine, requiring short fill walls to join with the old railroad grade before abruptly encountering a heavily vegetated narrow rock cut with vertical walls at the base of Elephant Mountain, likely requiring minor walls to support the trail. Immediately south of this section is a wide-open railroad grade bench. Potential geologic hazards in this segment are possible rockfall in the rock cut of Elephant Mountain as well as anywhere the trail runs below a large scree slope such as the southernmost section of trail. Both underground and overhead utilities present in the southern portion of this alternative pose potential obstacles to the trail in some locations and may require relocation.

CONTINUATION: The trail can continue south on the existing railroad grade connecting to the Narrows B alternative or west toward a bridge crossing of the Crystal River (Bridge Option 11) connecting to the Narrows A alternative.

PROPERTY OWNERSHIP/JURISDICTION: Primarily WRNF lands with a small section across private property. The northern portion of this alternative is currently open year-round with the exception of a winter closure from November 15 through May 1 to motorized vehicles (except snowmobiles) and dogs in order to protect wintering big game in the area. The WRNF has not had the resources to enforce the dog closure consistently and the area is informally used by a number of pedestrians and dog owners throughout the year. Due to the difficulty crossing Avalanche Creek, the area to the south of the creek is a comparably natural area that has seen limited human disturbance in more recent years.

* Alignment A was selected as the recommended alignment. (June 2024)



TYPICAL SECTIONS A:

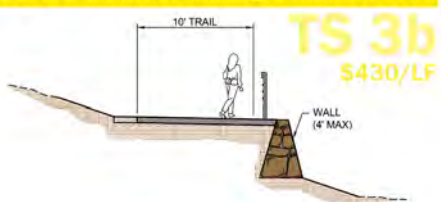
TS 1: Natural Bench/Minor Grading



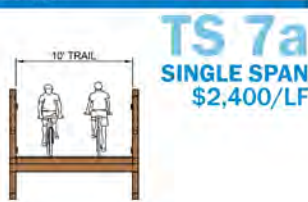
TS 2: Moderate Grading



TS 3b: Moderate Grading/Minor Fill Wall



TS 7a: Prefabricated Single Span Pedestrian Bridge

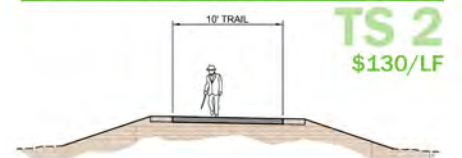


TYPICAL SECTIONS B:

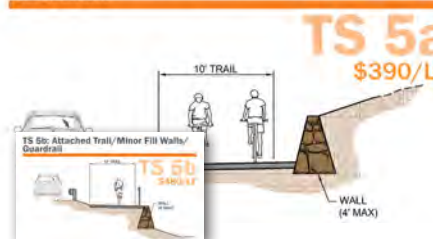
TS 1: Natural Bench/Minor Grading



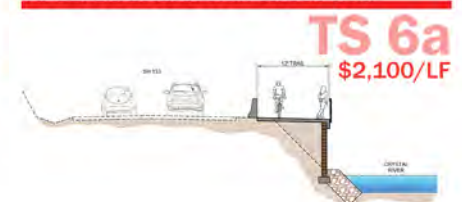
TS 2: Moderate Grading



TS 5a: Attached Trail/Minor Cut Walls/Guardrail



TS 6a: Structural Trail on Fill Wall



AVALANCHE A



ENVIRONMENTAL

- **Wildlife:** Minor impact to elk winter range and potential lynx habitat
- **Vegetation/Wetlands:** Vegetation is disturbed, and no new impacts to vegetation communities would occur.
- **Cultural Resources:** No impact



USER EXPERIENCE

- **Safety/Comfort:** Trail users would be directly adjacent to highway traffic lane
- **Trail User Types:** Proximity to highway may limit use by equestrians
- **Scenic Quality/Ambiance:** Overlook of rapids below (could offset proximity to highway and noise from highway)
- **Seasonal Use:** Proximity to highway would make winter use difficult; locations exist that could potentially provide some separation from the Hwy.



ENGINEERING

- **Design Difficulty:** Structural options are available. Typical Sections: 5% TS 1; 43% TS 2; 1% TS 3; 16% TS 5; 35% TS 6.
- **Geotechnical:** Potential rockfall hazards from opposite side of highway
- **Potential for adjacent soft surface:** Not where trail is on structure
- **Hydrologic Impact:** Possible in some areas



ESTIMATED COSTS

- **Construction Costs:** \$8,155,968 - High, due to limited space and complex structural options.
- **Mitigation:** Opportunities are available to realign portions of Hwy 133 to allow for a less expensive typical trail section.
- **Maintenance:** Moderate to high, depending on barrier type between Hwy. (road debris); structures need to accommodate snow removal equipment
- **Property/Easement Acquisition:** CDOT ROW, USFS property, possibly more complex if highway realigned

AVALANCHE B



ENVIRONMENTAL

- **Wildlife:** Impact to elk winter range, bighorn migration corridor, and undisturbed high-quality habitat
- **Vegetation/Wetlands:** The alignment north of Avalanche Creek is in a previously disturbed area and would not result in new disturbance. The alignment south of Avalanche Creek intersects a diverse and mostly-native plant community with several CNHP species and a variety of forbs, shrubs, and trees. High-quality habitat for native species and for FSS Harrington's penstemon and Grand Mesa penstemon, as well as the rare plant large flower globemallow are present throughout the area.

- **Wildlife and Vegetation Mitigation:** Extend seasonal closures to match other areas with similar management concerns (closed to people Nov 15 - May 1), commitment to enforcement to help with current issues; clearance surveys for species of concern, plant surveys, seasonal construction windows, design considerations for engineering and placement of improvements.

- **Cultural Resources:** Moderate impact to Rock Creek County Road

- **Cultural Mitigation:** A combination of detailed documentation (e.g. measured drawings of significant features and photographs) and interpretive signage would likely mitigate any potential impacts to these resources.



USER EXPERIENCE

- **Safety/Comfort:** Trail user would share road platform until crossing Avalanche Creek, then very secluded trail
- **Trail User Types:** Steep grade after Avalanche Creek may not meet ADA
- **Scenic Quality/Ambiance:** Extremely scenic trail corridor, away from highway, creek crossing
- **Seasonal Use:** Avalanche Creek Road is seasonally closed to dogs and vehicles for wildlife protection, Nov 15 to May 1, the road remains open to humans year-round.



ENGINEERING

- **Design Difficulty:** Low to moderate, follows Rock Creek County Road and RR grade. Typical Sections: 24% TS 1; 58% TS 2; 3% TS 3; 4% TS 5; 11% TS 7.
- **Geotechnical:** Potential rockfall hazards from above
- **Potential for adjacent soft surface:** Yes
- **Hydrologic Impact:** Not at Avalanche Creek, but elsewhere at high flows



ESTIMATED COSTS

- **Construction Costs:** \$5,058,441 - Moderate, access may be difficult
- **Maintenance:** Potential rockfall at several locations
- **Property/Easement Acquisition:** USFS and private property. Would require use agreements between County and homeowner



NARROWS SEGMENT ALTERNATIVES

NARROWS A

MULTI-USE TRAIL MILES: 0.58 miles

OVERVIEW: The Narrows A trail alternative runs along a constrained stretch of Hwy. 133 between the Crystal River and the highway. This is one of the more challenging alternatives due to the proximity of the highway to the adjacent river channel, which is very straight, narrow and steep with very large rapids during high water. This segment requires a combination of alternating very simple and very difficult trail sections due to several pullouts that interrupt constrained sections. The segment begins along the outer edge of the large pullout at the south end of Avalanche A and immediately runs into a very complex and constrained alternative where the trail is perched high above the river. Cantilevered, highly engineered sections will be required in parts of this section that traverse the narrowest and most constrained terrain within the Crystal Valley.

CONTINUATION: At the southern end of the Narrows A the trail can cross the river on a new pedestrian bridge (Bridge Option 12) toward Filoha Meadows or the trail can continue along the highway on Filoha A.

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way within WRNF lands.

NARROWS B

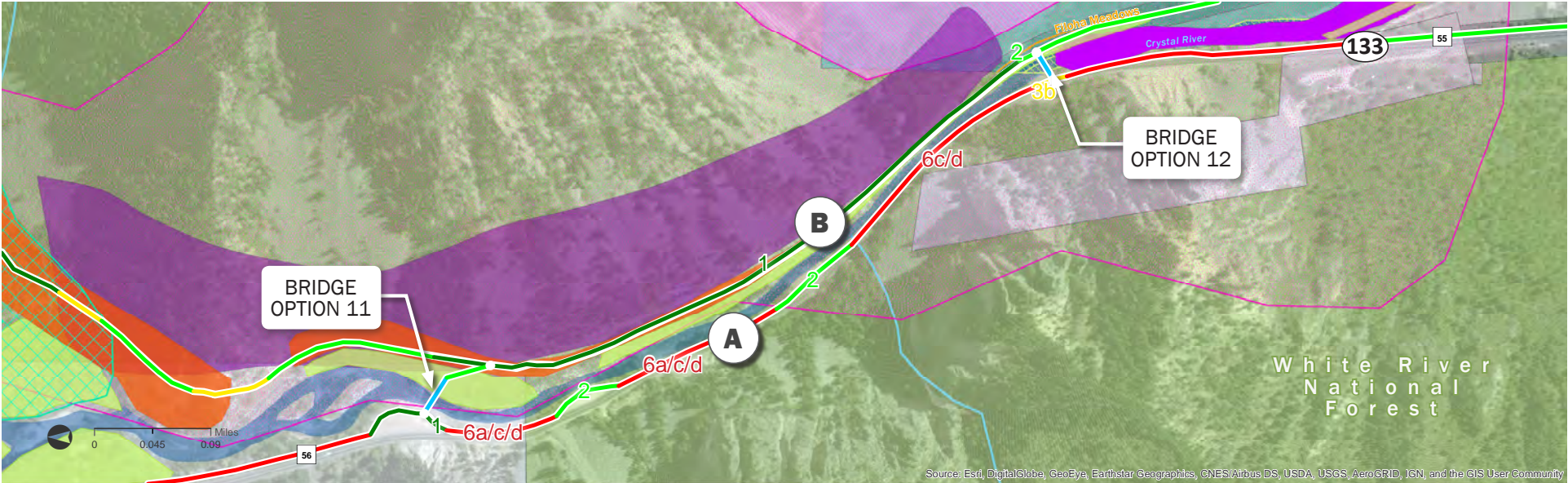
MULTI-USE TRAIL MILES: 0.50 miles

OVERVIEW: The Narrows B trail alternative is another unique alternative in that it is perched above the Crystal River following either the old rail grade or the old County Rock Creek Road platform. Both historic platforms traveled the east side of the river in this location, separated by up to 20 feet vertically and horizontally. It begins at the southern end of Avalanche B where the two platforms split as they head south. At this point, the trail can follow the lower railroad grade or the upper road grade. Vegetation adjacent to the two potential platforms is characterized as a high-quality upland area with a diverse native montane forest. Though the slope above is primarily scree and is sparsely vegetated, it provides suitable habitat for sensitive species that thrive in disturbed areas. There are many existing utility poles along both grades, as well as underground fiber optic on the upper grade and likely another communications line along the lower grade. Almost the entire segment is easily constructed on the existing upper grade. If the lower railroad grade is preferred, additional protection from potential falls may be necessary along the edge of the trail closest to the river. Possible geotechnical hazards exist along the entire segment due to the scree slope on the mountainside above; however, some areas are more protected than others are and the lower grade, being farther away from the slope, may have less rockfall danger. The lower grade shows some signs of potential instability along the slope down to the river. Geotechnical evaluation of the entire area will be required during final design.

CONTINUATION: At the south end of the segment, the trail either continues south into Filoha Meadows or crosses a new bridge crossing of the river (Bridge Option 12) toward the highway and the Penny Hot Springs area.

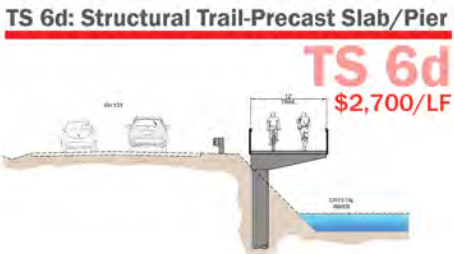
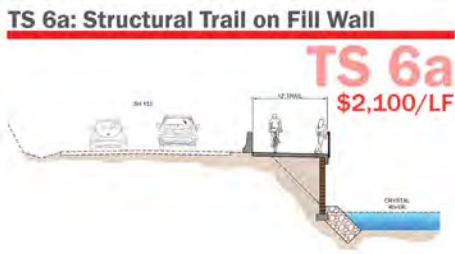
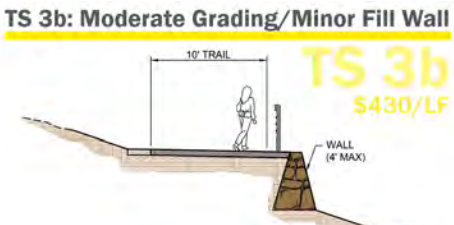
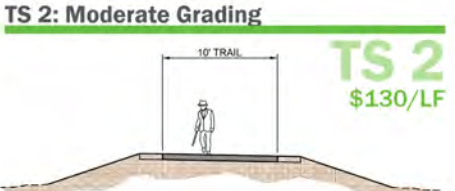
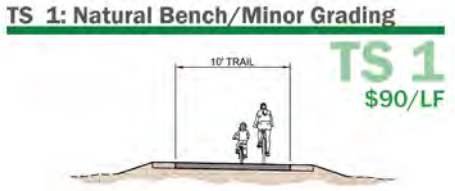
PROPERTY OWNERSHIP/JURISDICTION: WRNF land, crossing onto Pitkin County Open Space just before Bridge Option 12.

Map 2.23: Narrows Trail Alternatives

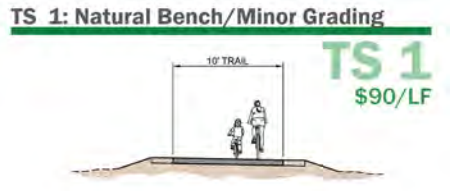


<ul style="list-style-type: none"> Open Space and Trail Parcels US Forest Service Lands Private Property Recreation Easement Existing Trails Mile Markers 	<p>Environmental Evaluation</p> <ul style="list-style-type: none"> High Quality Habitat Areas High Quality Riparian/Wetland High Quality Upland General Riparian Bighorn Production Area Bighorn Migration Corridor Bighorn Mineral Lick Bighorn Severe Winter Range Bighorn Winter Concentration Bighorn Winter Range Elk Production Area Elk Hwy Crossing Elk Severe Winter Range Elk Winter Concentration 	<p>Typical Sections</p> <ul style="list-style-type: none"> TS-0 TS-1 TS-2 TS-3 TS-4 TS-5 TS-6 TS-7 (Boardwalk) TS-7 (Roadway Bridge) <p>*Elk Winter Range is not shown, this range covers the majority of the Crystal River Valley.</p>
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TYPICAL SECTIONS A:



TYPICAL SECTIONS B:



NARROWS A



ENVIRONMENTAL

- **Wildlife:** Minor impact to elk winter range
- **Vegetation/Wetlands:** Vegetation is disturbed, and no new impacts to vegetation communities would occur.
- **Cultural Resources:** No impact



USER EXPERIENCE

- **Safety/Comfort:** Trail users would be directly adjacent to highway traffic lane
- **Trail User Types:** Proximity to highway may limit use by equestrians
- **Scenic Quality/Ambiance:** Overlook of rapids below (could offset proximity to highway and noise from highway)
- **Seasonal Use:** Proximity to highway would make winter use difficult to impossible



ENGINEERING

- **Design Difficulty:** Structural options are available. Typical Sections: 4% TS 1; 23% TS 2; 3% TS 3; 71% TS 6.
- **Geotechnical:** Potential rockfall hazards from opposite side of highway
- **Potential for adjacent soft surface:** Not where trail is on structure
- **Hydrologic Impact:** None



ESTIMATED COSTS

- **Construction Costs:** \$10,838,585 - High, due to limited space and complex structural options
- **Maintenance:** Moderate to high, depending on barrier type between highway (to control road debris)
- **Property/Easement Acquisition:** CDOT ROW, USFS property

NARROWS B



ENVIRONMENTAL

- **Wildlife:** Impact to winter ranges, bighorn migration corridor, and undisturbed habitat
- **Vegetation/Wetlands:** Construction footprint would be limited to the existing trail/RR grade disturbance. High-quality vegetation, which is characterized by sparse native shrubs and trees, is present along the trail but would not be removed or disturbed. Weed control BMPs would reduce the risk of noxious weeds spreading. Habitat for FSS Harrington's penstemon and Grand Mesa penstemon is present, but it is not likely that these species, if present, would be impacted by the trail.
- **Wildlife and Vegetation Mitigation:** Seasonal closures to match other areas with similar management concerns (closed to people Nov 15 - May 1), using lower grade for trail instead of upper grade, plant surveys, design considerations for engineering and placement of improvements.
- **Cultural Resources:** Moderate impact to Rock Creek County Road / railroad
- **Cultural Mitigation:** A combination of detailed documentation (e.g. measured drawings of significant features and photographs) and interpretive signage would likely mitigate any potential impacts to these resources.



USER EXPERIENCE

- **Safety/Comfort:** Trail user would have separate route on the east side of the river
- **Trail User Types:** All users
- **Scenic Quality/Ambiance:** Extremely scenic trail corridor, above river, views up pass
- **Seasonal Use:** Currently no seasonal closures



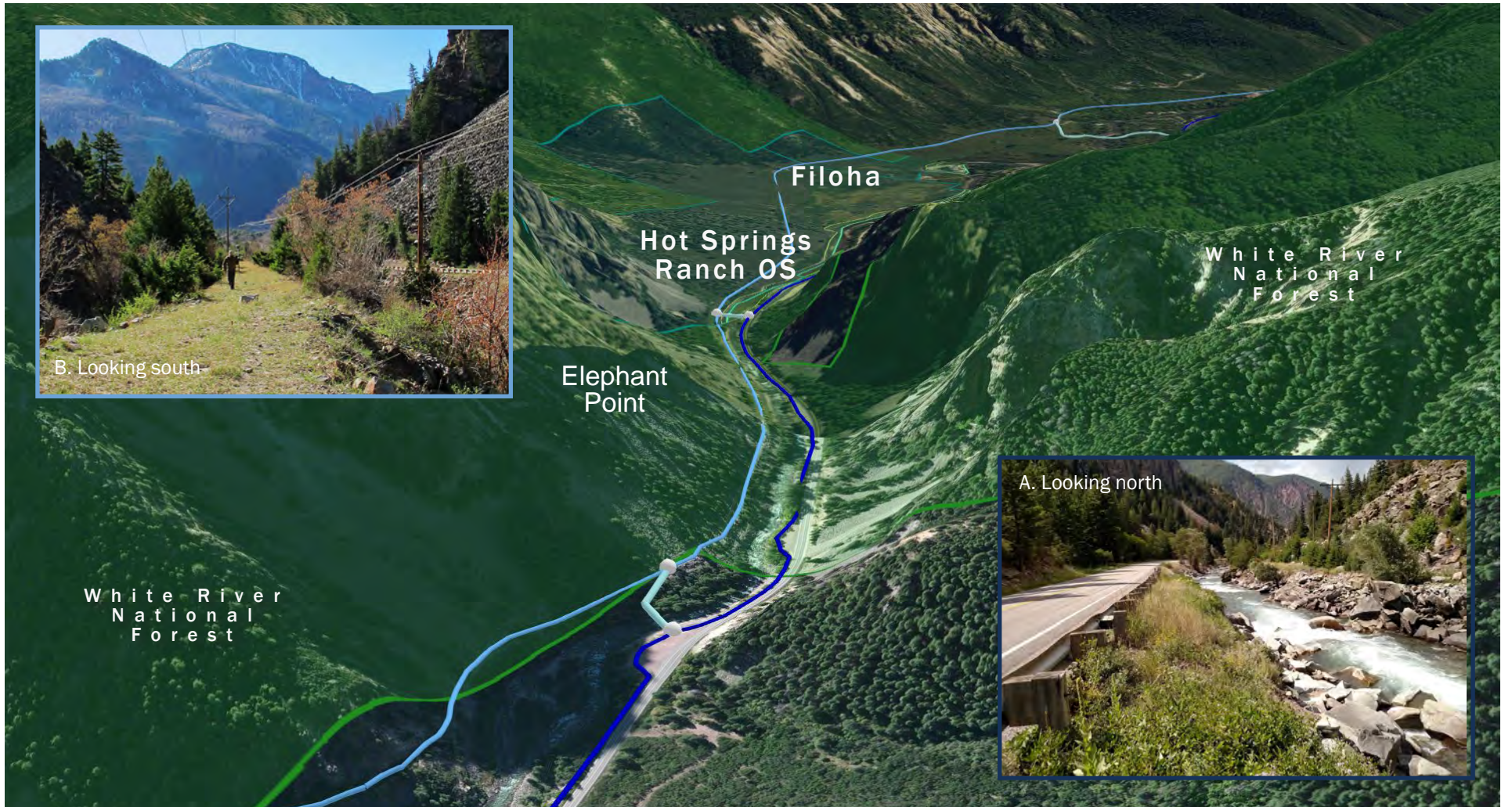
ENGINEERING

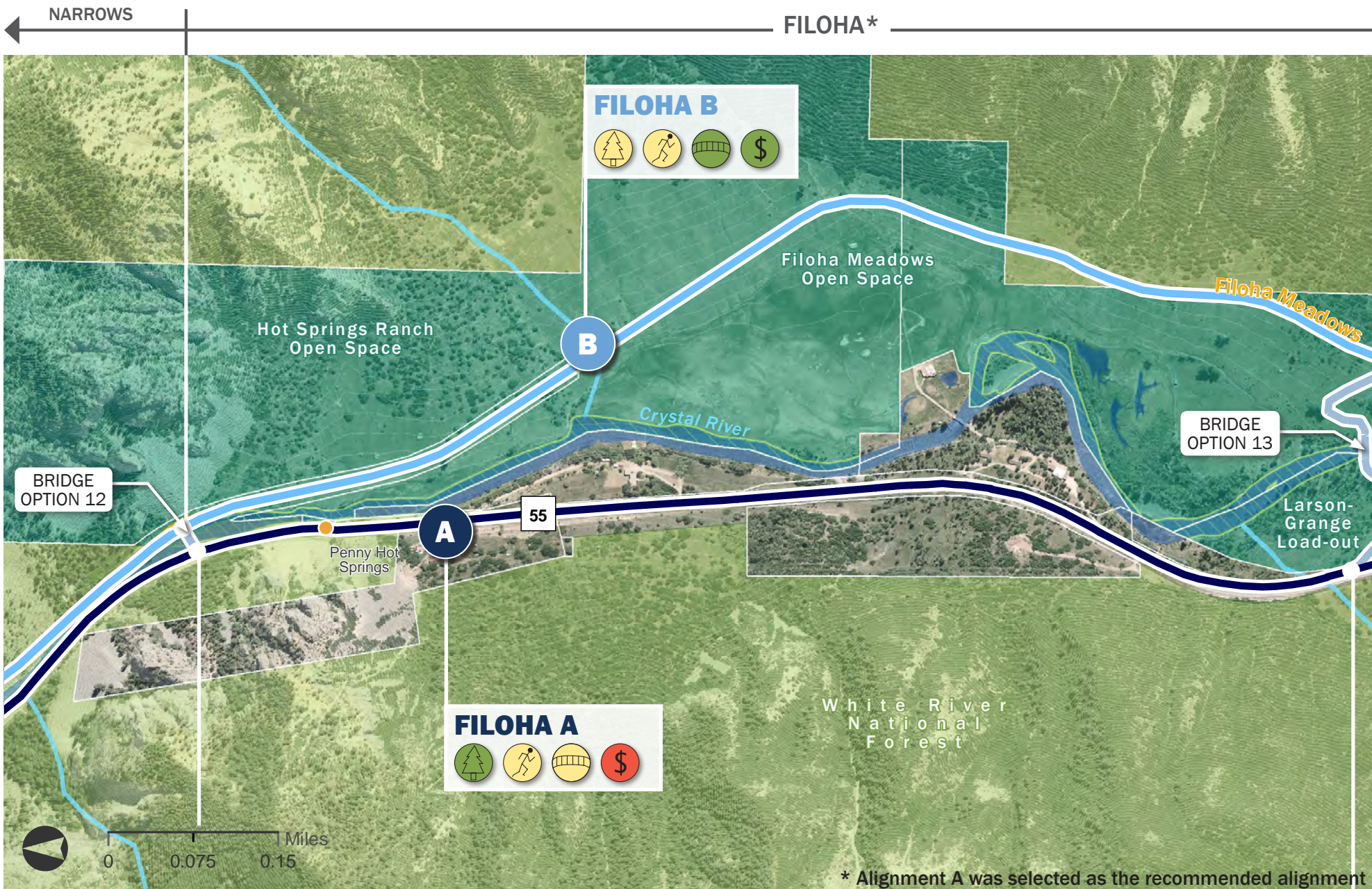
- **Design Difficulty:** Low, follows Rock Creek County Road and RR grade; may require additional study to determine "low" or "high" bench alignment. Typical Sections: 97% TS 1; 3% TS 2.
- **Geotechnical:** Potential rockfall hazards from above
- **Potential for adjacent soft surface:** Yes
- **Hydrologic Impact:** None



ESTIMATED COSTS

- **Construction Costs:** \$442,822 - Low; Access may be difficult
- **Maintenance:** Potential rockfall onto trail several locations
- **Property/Easement Acquisition:** USFS and private property. Would require use agreements between County and homeowners



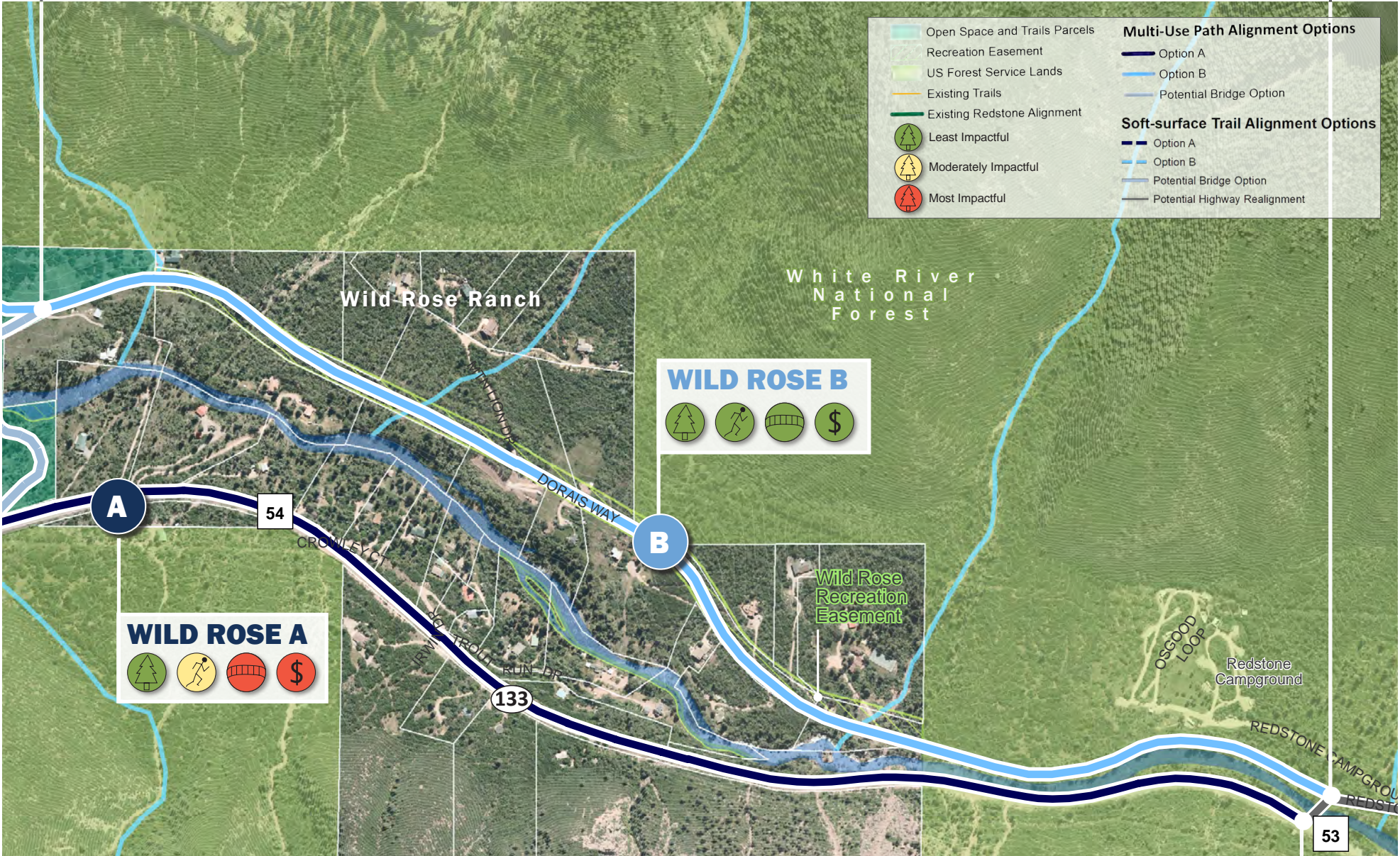


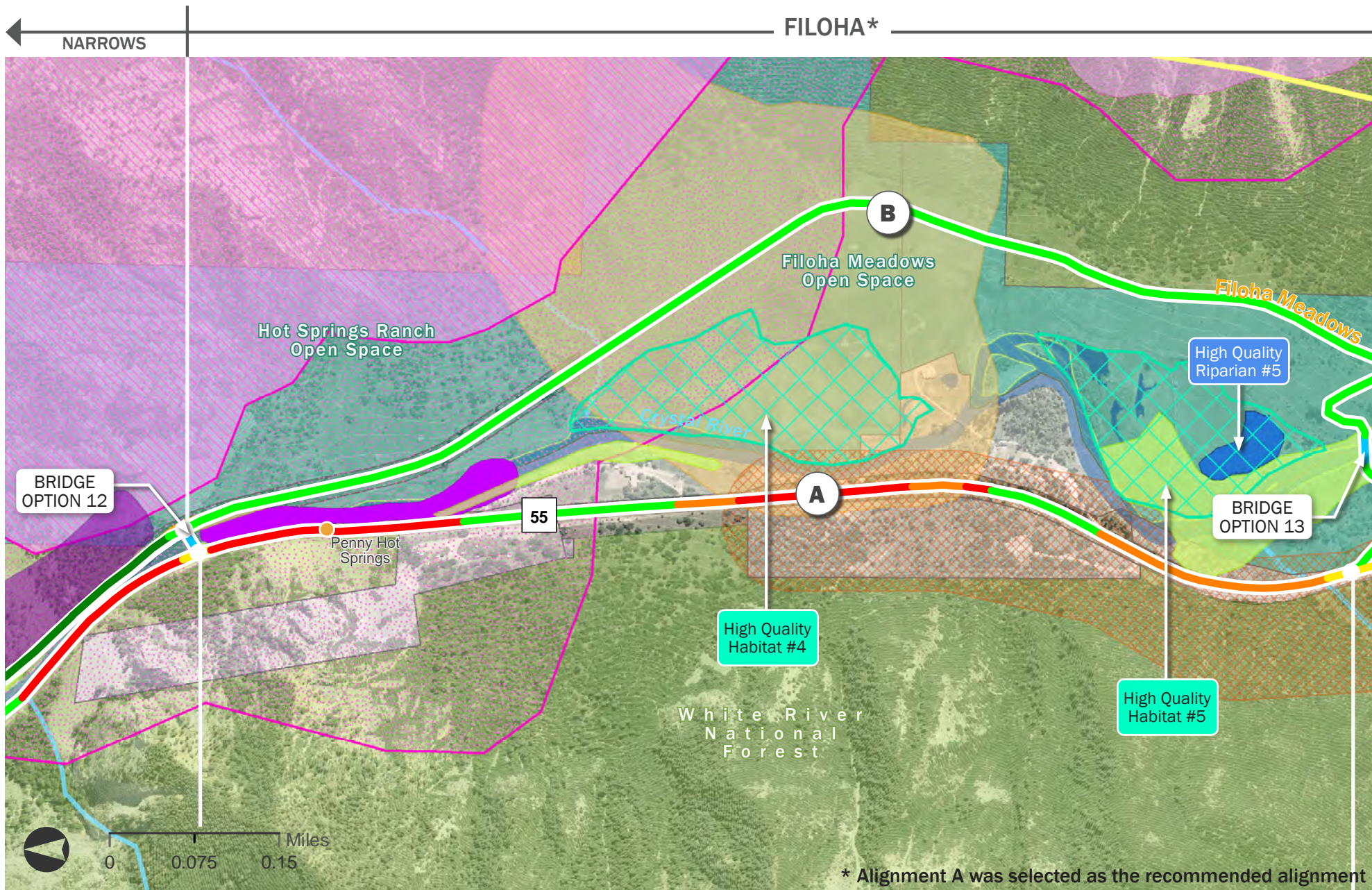
* Alignment A was selected as the recommended alignment

Map 2.24: Alignment Alternatives Impacts Summary - Filoha to Wild Rose



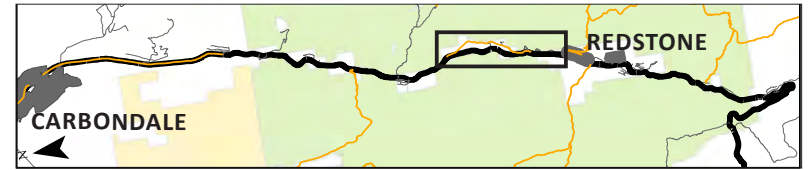
WILD ROSE



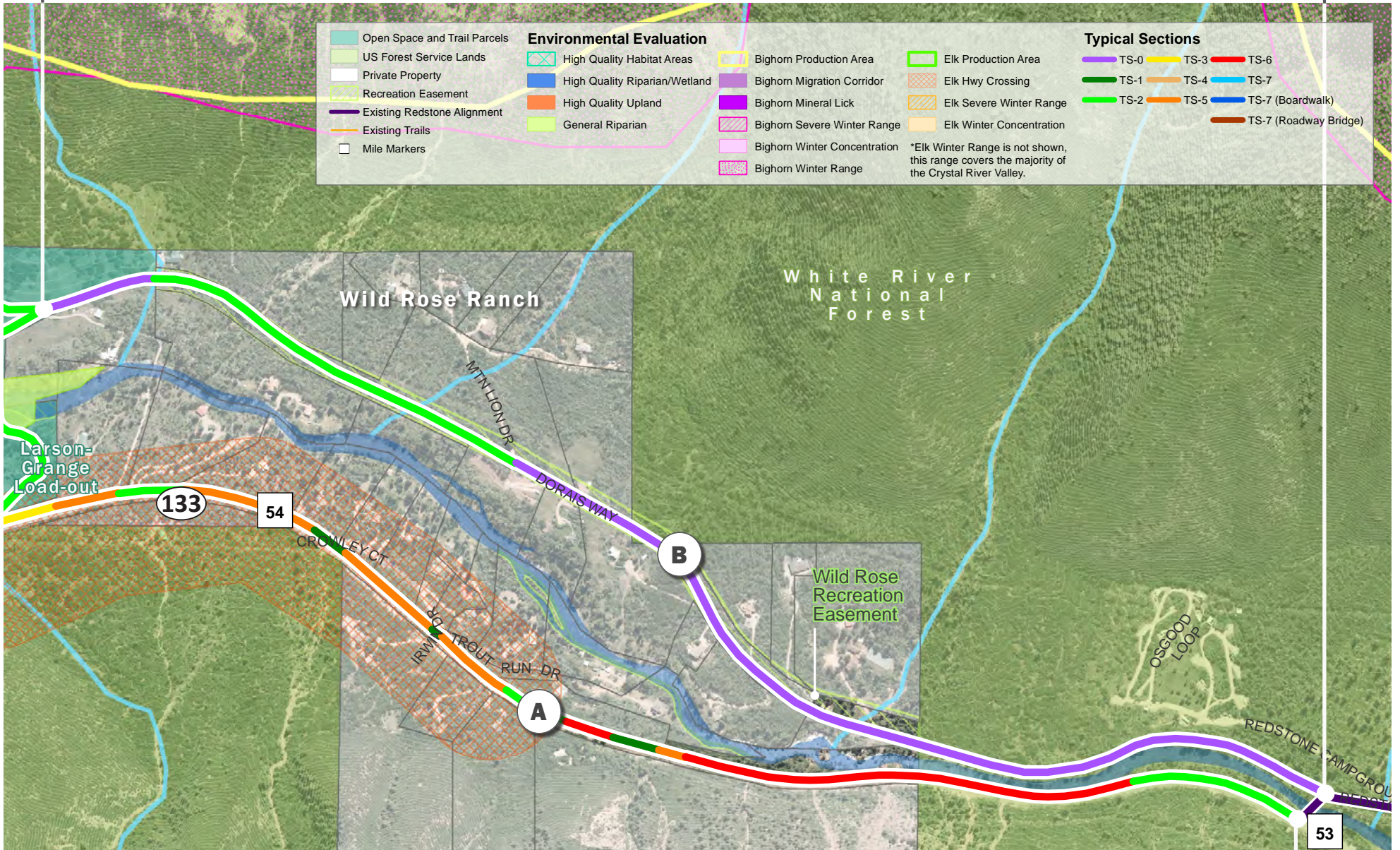


* Alignment A was selected as the recommended alignment

Map 2.25: Environmental and Engineering Summary - Filoha to Wild Rose



WILD ROSE



FILOHA SEGMENT ALTERNATIVES

FILOHA A

MULTI-USE TRAIL MILES: 1.04 miles

OVERVIEW: The Filoha A trail alternative runs along the east side of Hwy. 133 from the south end of the Narrows (Bridge Option 12) to the northern end of Wild Rose Alternative A (Bridge Option 13). The alternative traverses varying conditions including portions where a trail platform is easily accommodated along a wide bench to constrained segments where trail construction is more complex due to steeper slopes and limited space between the river and the highway requiring more difficult trail construction. For much of this segment, the Crystal River is situated farther away from the highway with the exception of the portion adjacent to Penny Hot Springs on the northern end and a portion in the middle of the segment where the river bends. A paved pullout serves Penny Hot Springs, with informal parking and pedestrian access via a steep slope to the edge of the river below. The alternative would cross four driveways that serve existing homes between the river and the highway.

CONTINUATION: From the end of the segment the trail can either continue south along the highway or turn east down the hill to a new bridge crossing (Bridge Option 13) toward the south end of Filoha Meadows.

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way, with the northern portion over WRNF land and portions on Open Space property.

FILOHA B*

MULTI-USE TRAIL MILES: 1.18 miles

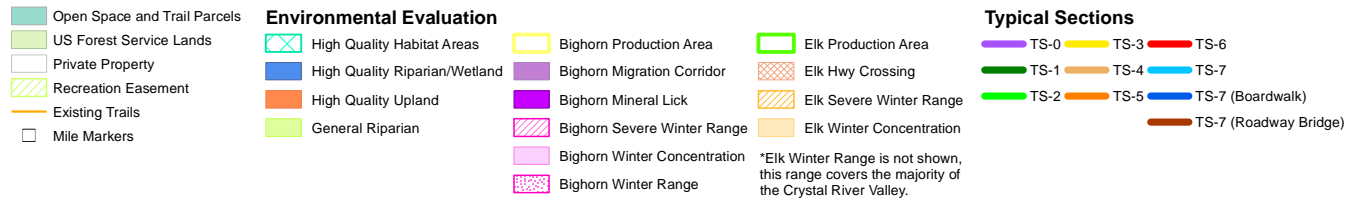
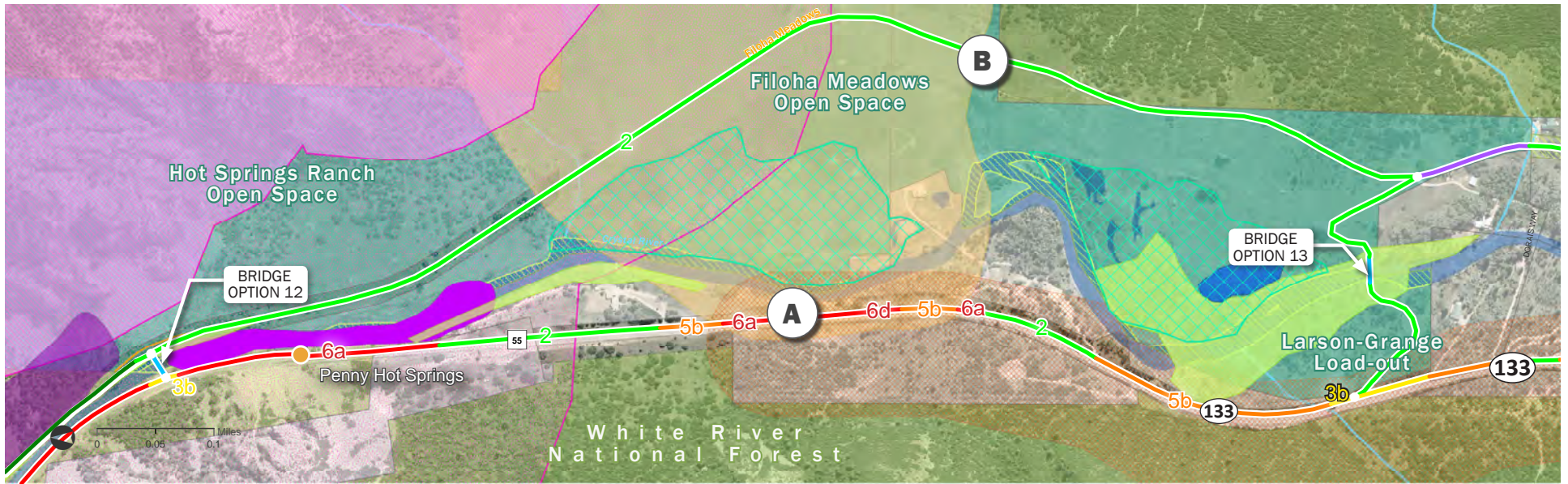
OVERVIEW: The Filoha B trail alternative is approximately 1.18 miles long and begins at the southern end of Narrows B where the Filoha meadow begins to widen out. It runs entirely on the old railroad grade through the Filoha Meadows Nature Preserve, an Open Space

property, across very flat and open terrain. Similar to Avalanche B, Filoha B separates from the Crystal River by a great distance. There is very little vegetation other than grasses and occasional trees along the railroad grade. There are two high-quality habitat areas identified within the Filoha Meadows area. These areas are characterized by large, undisturbed wetlands on the lower terraces adjacent to the Crystal River, where the warm springs support diverse plant species and wildlife use. Beaver use and high insect diversity support birds, bats, waterfowl and other wildlife. The meadows are also a popular winter stomping ground for bighorn sheep and elk. The segment ends where the alternative intersects with a driveway serving one home.

CONTINUATION: At the southern end of this alternative, the trail can either turn northwest toward the highway over a new bridge crossing of the river (Bridge Option 13) or continue south into the Wild Rose B segment.

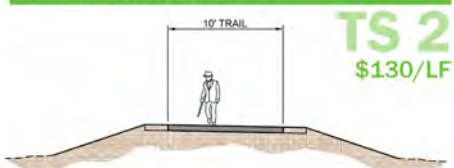
PROPERTY OWNERSHIP/JURISDICTION: Pitkin County's Filoha Meadows. The Filoha Meadows Management Plan was adopted in 2008. The plan identifies this area as the Filoha Meadows Nature Preserve for its scenic, natural and wildlife habitat values as well as the Penny Hot Springs, which is a popular recreational attraction. The management goals for the property include: studying, protecting and enhancing the ecological communities with particular emphasis on those that are unique and rare; enhancing the outstanding wildlife habitat values (particularly for bighorn sheep and elk); providing low-impact environmental education; and offering sustainable recreation that will not adversely impact the property's conservation values. While there are two travel corridors and a visitor use area, the property is subject to a strict and extended seasonal closure from October 1 through June 30. Dogs are prohibited at all times. OST works with other organizations to provide educational programming on the property during the summer months.

* Alignment A was selected as the recommended alignment.

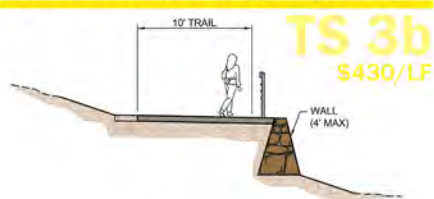


TYPICAL SECTIONS A:

TS 2: Moderate Grading



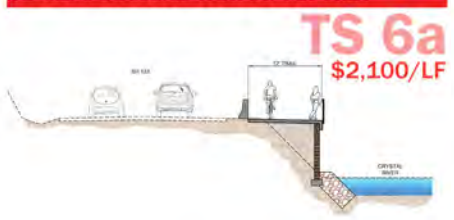
TS 3b: Moderate Grading/Minor Fill Wall



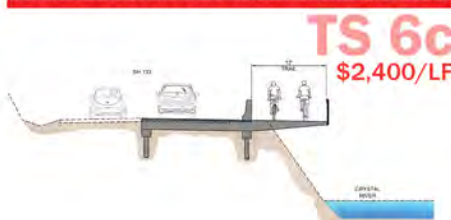
TS 5b: Attached Trail/Minor Fill Walls/Guardrail



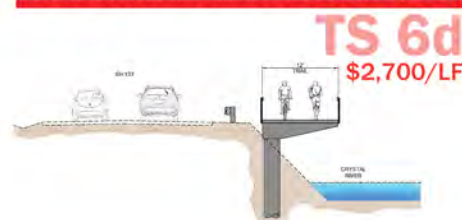
TS 6a: Structural Trail on Fill Wall



TS 6c: Structural Trail-Cantilevered Slab

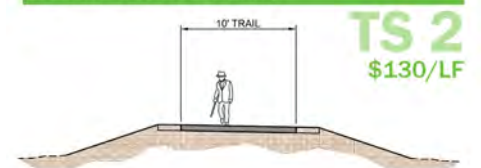


TS 6d: Structural Trail-Precast Slab/Pier



TYPICAL SECTIONS B:

TS 2: Moderate Grading



FILOHA A



ENVIRONMENTAL

- **Wildlife:** Minor impact to elk winter range and highway crossing
- **Vegetation/Wetlands:** Vegetation is disturbed, and no new impacts to vegetation communities would occur.
- **Cultural Resources:** No impact



USER EXPERIENCE

- **Safety/Comfort:** Trail users would be directly adjacent to highway traffic lane.
- **Trail User Types:** Proximity to highway may limit use by equestrians
- **Scenic Quality/Ambiance:** Views across the river and up the pass would be nice, proximity to highway traffic would be impactful
- **Seasonal Use:** Proximity to highway would make winter use difficult, OST property could potentially provide a location for separation from highway



ENGINEERING

- **Design Difficulty:** Mix of low to high sections; Penny Hot Springs likely most difficult location. 28% TS 2; 3% TS 3; 30% TS 5; 38% TS 6.
- **Geotechnical:** Many unknowns until drilled; potential rockfall hazards from opposite side of highway at Penny Hot Springs
- **Potential for adjacent soft surface:** Not where trail is on structure
- **Hydrologic Impact:** Possible in isolated areas



ESTIMATED COSTS

- **Construction Costs:** \$10,474,103 - Mix of simple and difficult sections; Penny Hot Springs likely most difficult location
- **Maintenance:** Low to moderate, depending on barrier type between highway (to control road debris)
- **Property/Easement Acquisition:** CDOT ROW, USFS, OST property

FILOHA B



ENVIRONMENTAL

- **Wildlife:** Impact to undisturbed habitat and bighorn mineral lick
- **Vegetation/Wetlands:** Alignment follows existing trail/RR grade through degraded vegetation community dominated by non-native species and noxious weeds. Previous disturbances and the distance from wetlands/riparian areas would minimize impacts to vegetation community. Weed control BMPs would be used, and revegetation/restoration after construction would use native vegetation. This may have the potential to improve vegetation community characteristics.
- **Cultural Resources:** Moderate impact to Rock Creek County Road and stage stop
- **Mitigation:** A combination of detailed documentation (e.g. measured drawings of significant features and photographs) and interpretive signage would likely mitigate any potential impacts to these resources.



USER EXPERIENCE

- **Safety/Comfort:** Trail user would have separate route on the east side of the river
- **Trail User Types:** All users
- **Scenic Quality/Ambiance:** Extremely scenic trail corridor, through large meadow, views up pass
- **Seasonal Use:** Seasonally closed for wildlife protection, Oct. 1 - June 30



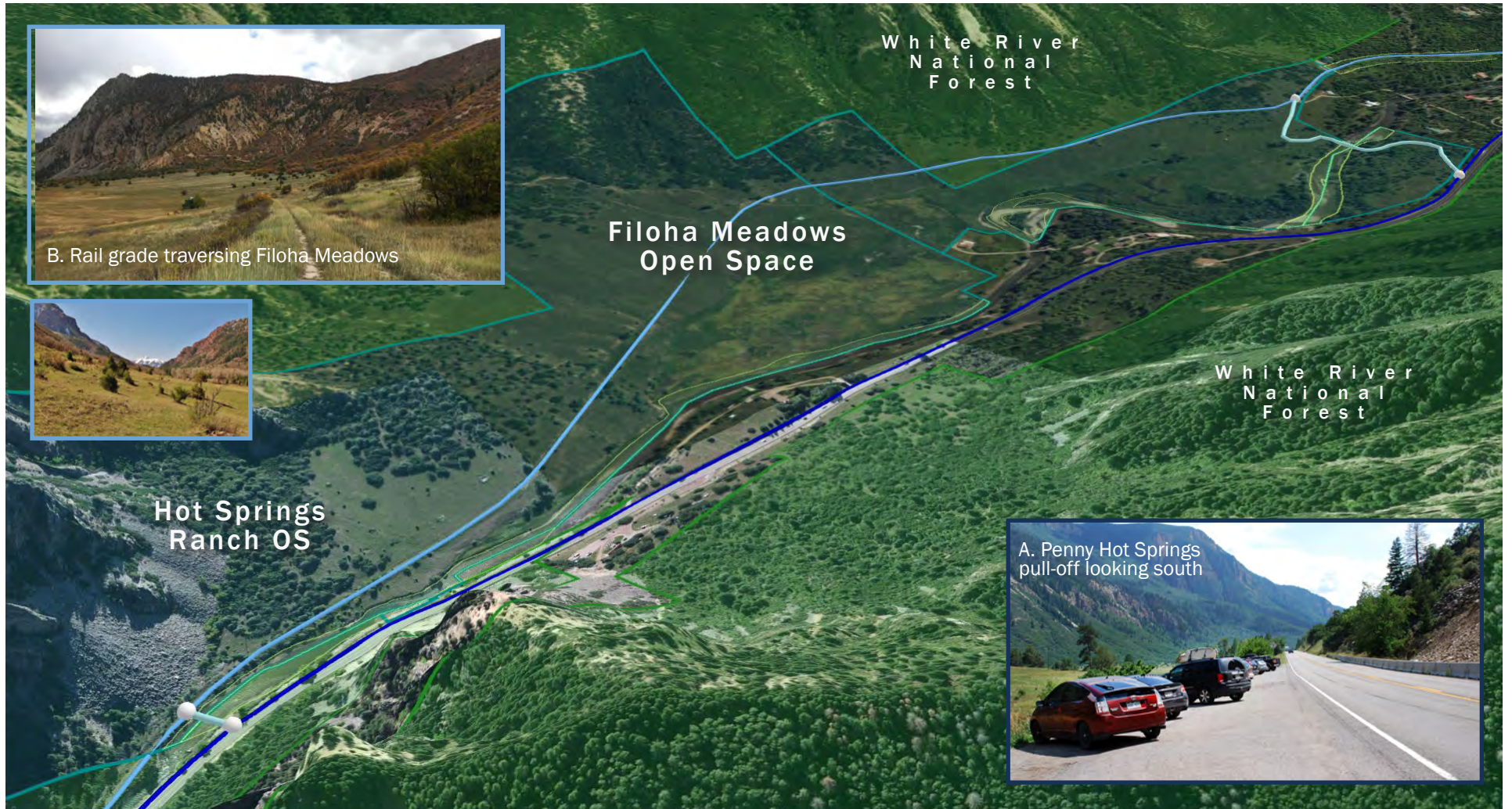
ENGINEERING

- **Design Difficulty:** Low. Typical Sections: 100% TS 2.
- **Geotechnical:** None
- **Potential for adjacent soft surface:** Yes
- **Hydrologic Impact:** None



ESTIMATED COSTS

- **Construction Costs:** \$1,460,428 - Low
- **Maintenance:** Low (no maintenance needed during seasonal closure)
- **Property/Easement Acquisition:** OST property



WILD ROSE SEGMENT ALTERNATIVES

WILD ROSE A

MULTI-USE TRAIL MILES: 1.22 miles

OVERVIEW: The Wild Rose A trail alternative runs between Hwy. 133 and the west side of the Crystal River. The northern half of this segment follows a relatively wide highway shoulder that transitions into a sloped embankment lined with dense vegetation. Moderately difficult trail sections on fill walls are combined with some easier at-grade trail sections traversing this section, which has a number of residential driveway crossings. The southern half of this alternative would traverse another of the most challenging sections in the Crystal Valley through a very constrained corridor where available space behind the guardrail is little to none, and the slopes to the river below are exceedingly steep and rocky. This area is also plagued by mud and debris flows and rockfall from the opposite side of the highway. The trail here is likely to be on a complex, reinforced concrete structure. The construction is likely to be very difficult due to the narrow and physically constrained highway, rockfall hazard, and boulders that may be encountered in excavation. Once beyond this difficult stretch, there is more room between the highway and river and the trail can be constructed behind the existing guardrail in front of the trees near the top of the slope.

CONTINUATION: This segment ends at the roadway bridge for Redstone Boulevard; the trail would share this bridge and continue south on the road.

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way with the southern portion of the right-of-way over WRNF land.

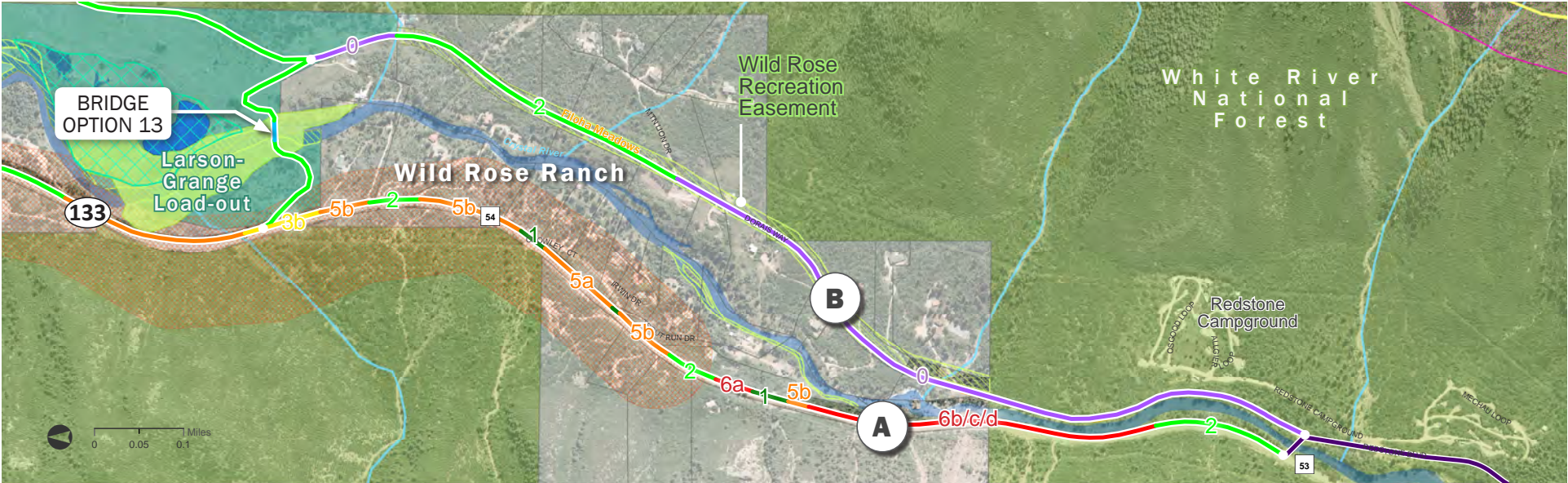
WILD ROSE B

MULTI-USE TRAIL MILES: 1.27 miles

OVERVIEW: The Wild Rose B trail alternative generally follows the unpaved local Wild Rose subdivision road, Dorais Way, which was formerly the old railroad grade for the length of the segment. Trail users would share the road with neighborhood vehicles through the low-density subdivision, crossing a number of residential driveways. The northern two-thirds of the trail meander through highly vegetated areas, while the southern one-third parallels the east bank of the Crystal River. This alternative would require minimal grading along the soft-surfaced subdivision and the U.S. Forest Service roads. The road could be resurfaced with asphalt depending on what surface type is desired. Minor drainage improvements, roadway signing and driveway tie-ins may also be required.

CONTINUATION: This segment connects to Redstone Boulevard, where the trail would continue south on the existing road.

PROPERTY OWNERSHIP/JURISDICTION: Pitkin County's Wild Rose trail easement provides access to Filoha Meadows Nature Preserve along the Historic Crystal River Railroad grade. Paving of the right-of-way is allowed according to the easement language. The county will confirm easement locations along the southern portion of Dorais Way and explore alternative routes if needed.



<ul style="list-style-type: none"> Open Space and Trail Parcels US Forest Service Lands Private Property Recreation Easement Existing Redstone Alignment Existing Trails Mile Markers 	<p>Environmental Evaluation</p> <ul style="list-style-type: none"> High Quality Habitat Areas High Quality Riparian/Wetland High Quality Upland General Riparian 	<ul style="list-style-type: none"> Bighorn Production Area Bighorn Migration Corridor Bighorn Mineral Lick Bighorn Severe Winter Range Bighorn Winter Concentration Bighorn Winter Range 	<ul style="list-style-type: none"> Elk Production Area Elk Hwy Crossing Elk Severe Winter Range Elk Winter Concentration <p>*Elk Winter Range is not shown, this range covers the majority of the Crystal River Valley.</p>	<p>Typical Sections</p> <ul style="list-style-type: none"> TS-0 TS-1 TS-2 TS-3 TS-4 TS-5 TS-6 TS-7 (Boardwalk) TS-7 (Roadway Bridge)
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TYPICAL SECTIONS A:

<p>TS 1: Natural Bench/Minor Grading</p> <p>TS 1 \$90/LF</p>	<p>TS 2: Moderate Grading</p> <p>TS 2 \$130/LF</p>	<p>TS 3b: Moderate Grading/Minor Fill Wall</p> <p>TS 3b \$430/LF</p>
<p>TS 5a: Attached Trail/Minor Cut Walls/Guardrail</p> <p>TS 5a \$390/LF</p>	<p>TS 6a: Structural Trail on Fill Wall</p> <p>TS 6a \$2,100/LF</p>	<p>TS 5b: Attached Trail/Minor Fill Walls/Guardrail</p> <p>TS 5b \$480/LF</p>
		<p>TS 6c: Structural Trail-Cantilevered Slab</p> <p>TS 6c \$2,400/LF</p>
		<p>TS 6b: Structural Trail on Cut Concrete I-Wall</p> <p>TS 6b \$2,500/LF</p>
		<p>TS 6d: Structural Trail-Precast Slab/Pier</p> <p>TS 6d \$2,700/LF</p>

TYPICAL SECTIONS B:

<p>TS 0 - Trail shares existing road</p> <p>TS 0 \$110/LF</p>
<p>TS 2: Moderate Grading</p> <p>TS 2 \$130/LF</p>

WILD ROSE A



ENVIRONMENTAL

- **Wildlife:** Minor impact to elk highway crossing and potential lynx habitat
- **Vegetation/Wetlands:** Vegetation is disturbed, and no new impacts to vegetation communities would occur.
- **Cultural Resources:** No impact



USER EXPERIENCE

- **Safety/Comfort:** Trail users would be directly adjacent to highway traffic lane
- **Trail User Types:** Proximity to highway may limit use by equestrians
- **Scenic Quality/Ambiance:** Overlook of rapids below (could offset proximity to highway and noise from highway)
- **Seasonal Use:** Proximity to highway would make winter use difficult



ENGINEERING

- **Design Difficulty:** Structural options are available. Typical Sections: 7% TS 1; 22% TS 2, 5% TS 3; 30% TS 5; 36% TS 6.
- **Geotechnical:** Rockfall hazards from opposite side of highway; mudslides
- **Potential for adjacent soft surface:** Not where trail is on structure
- **Hydrologic Impact:** Possible in some areas on south end where highway is closer to river; more analysis needed



ESTIMATED COSTS

- **Construction Costs:** \$13,615,192 - High, due to limited space and complex structural options
- **Maintenance:** Moderate to high; yearly rockfall and mudflow are anticipated
- **Property/Easement Acquisition:** CDOT ROW, USFS property

WILD ROSE B



ENVIRONMENTAL

- **Wildlife:** Minor impact to elk winter range and potential lynx habitat
- **Vegetation/Wetlands:** Alignment follows existing road where vegetation is disturbed, and no new impacts to vegetation communities would occur.
- **Cultural Resources:** Least Impactful



USER EXPERIENCE

- **Safety/Comfort:** Trail users would share a road and bridge with local subdivision use
- **Trail User Types:** All users
- **Scenic Quality/Ambiance:** Scenic neighborhood and views up the pass
- **Seasonal Use:** Year-round use



ENGINEERING

- **Design Difficulty:** Low-moderate, quite narrow in some areas. Typical Sections: 72% TS 0; 28% TS 2.
- **Geotechnical:** Likely none
- **Potential for adjacent soft surface:** Yes
- **Hydrologic Impact:** Not at river; replacing road with asphalt surface will slightly increase runoff



ESTIMATED COSTS

- **Construction Costs:** \$1,321,909 - Low; due to road/trail platform already in place
- **Maintenance:** Low to moderate depending on the seasonal use
- **Property/Easement Acquisition:** Recreation easement held by Pitkin County



REDSTONE

MULTI-USE TRAIL MILES: 1.5 miles

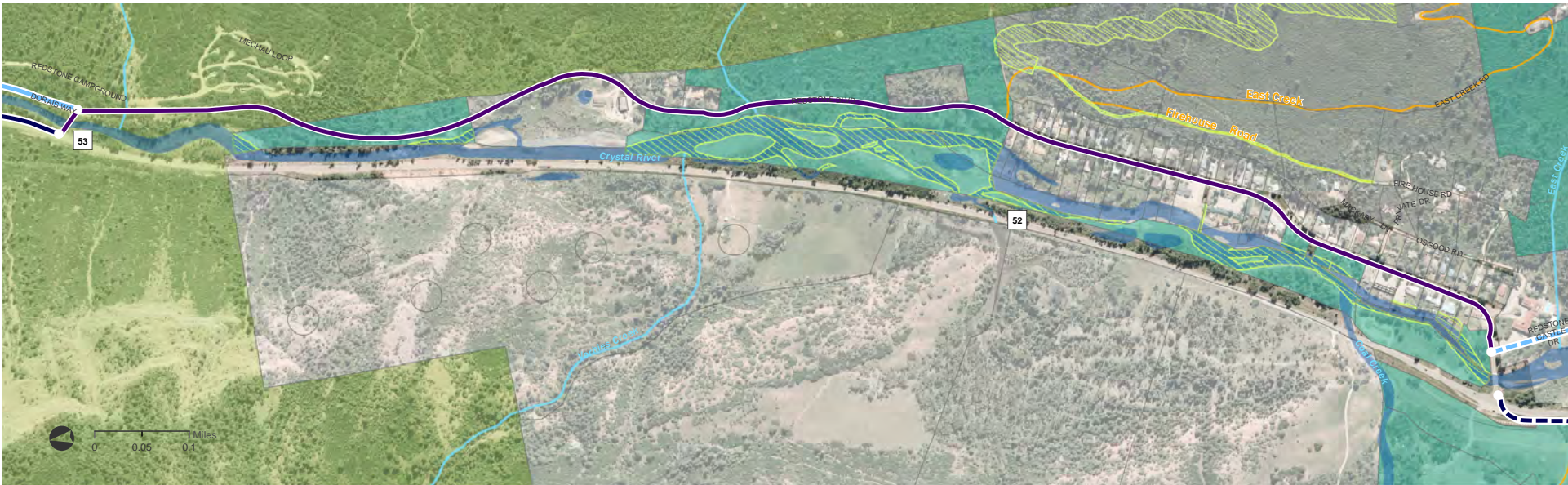
OVERVIEW: The Redstone trail segment will share Redstone Boulevard with vehicles for the next 1.5 miles on the east side of the Crystal River. The boulevard is paved and approximately 20 feet wide. The northern half of the boulevard is highly vegetated along both sides of the road and several driveways serve homes, businesses and a campground. The southern half is lined on both sides of the road with homes and businesses, with the Redstone Inn at the far south end. Several speed humps help to calm traffic. Minor roadway signing may be necessary along the road, in addition to possible pavement markings, to formalize the trail route through this segment.

CONTINUATION: From the Redstone's South Bridge, the trail can continue on the Castle B alternative or cross the bridge to follow the Castle A alignment adjacent to the highway.

PROPERTY OWNERSHIP/JURISDICTION: County road right-of-way through the unincorporated town of Redstone. This route connects a number of Pitkin County's existing open space and parklands including Redstone River Parcel, Redstone Boulders, Redstone Park and Elk Park, as well as the tourist hub of downtown Redstone.



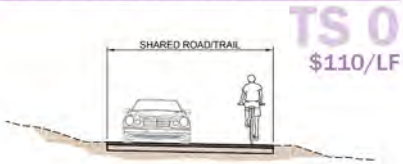
The trail will utilize Redstone Boulevard, pictured in the foreground. It passes through the commercial center of the historic town, where there are shopping, lodging and dining opportunities available.

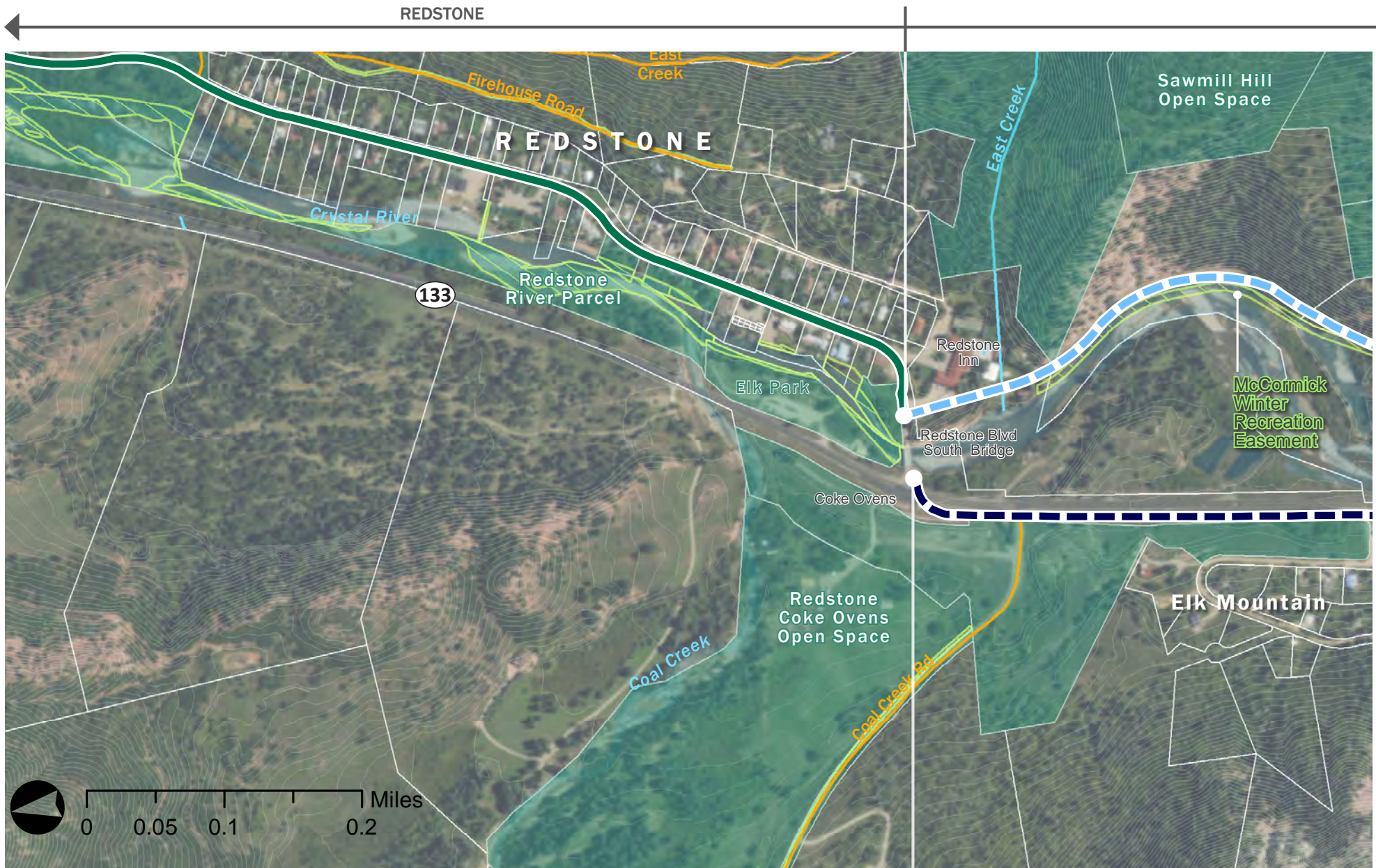


- Open Space and Trail Parcels
- US Forest Service Lands
- Private Property
- Recreation Easement
- Existing Redstone Alignment
- Existing Trails
- Mile Markers

TYPICAL SECTION:

TS 0 - Trail shares existing road





Map 2.29: Alignment Alternatives Impacts Summary - Castle to Hawk Creek

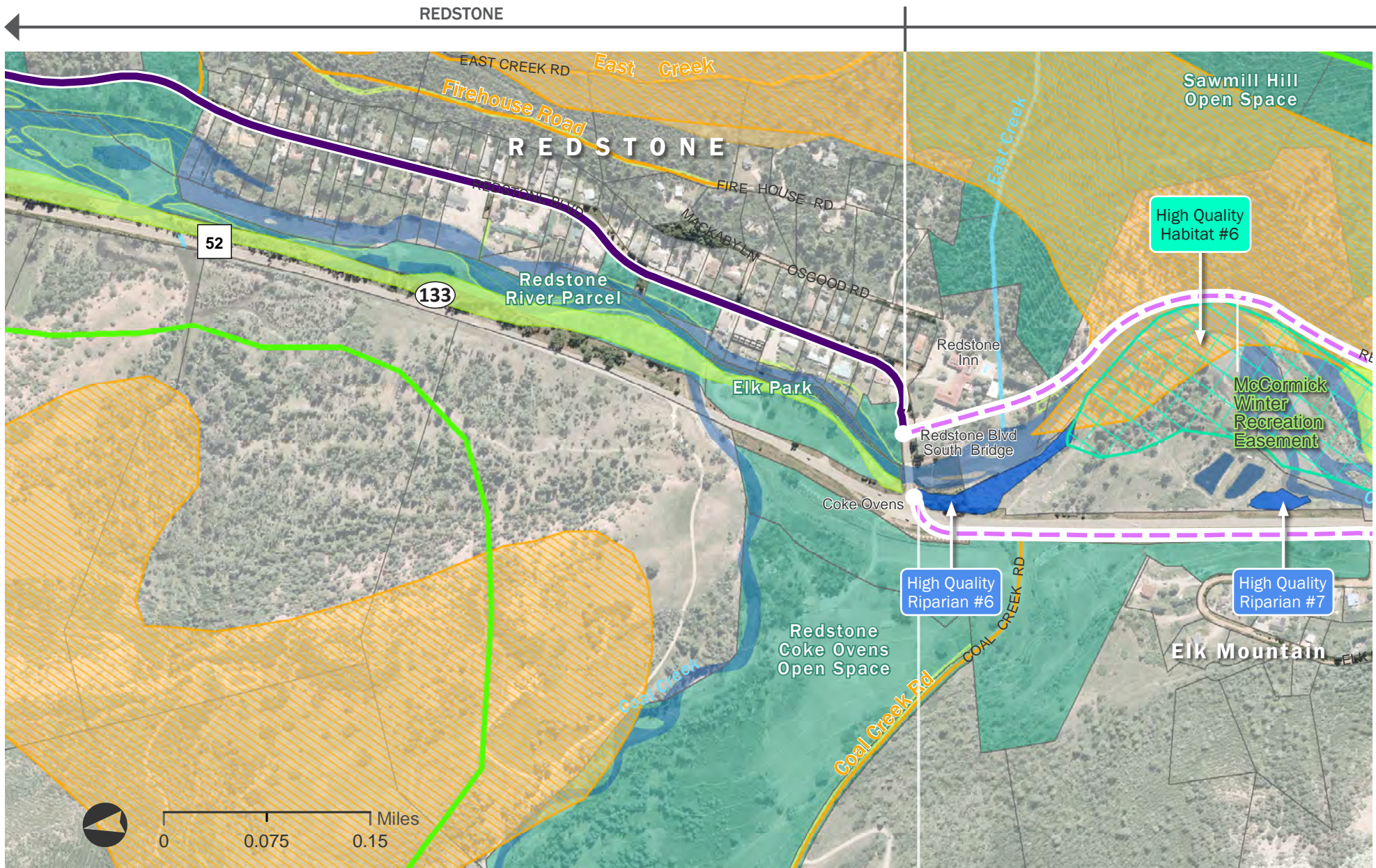


CASTLE

HAWK CREEK



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Com

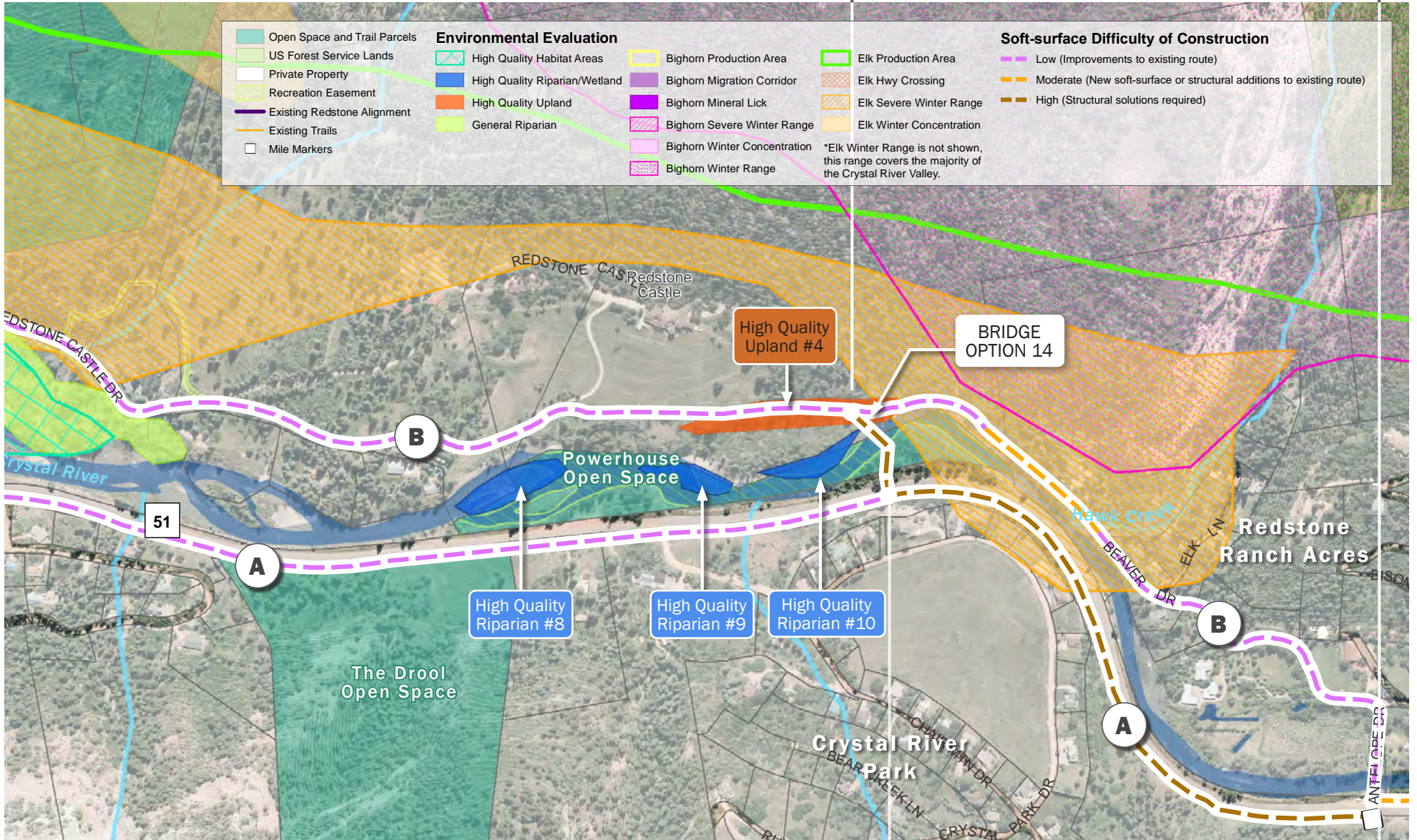


Map 2.30: Environmental and Engineering Summary - Castle to Hawk Creek



CASTLE

HAWK CREEK



CASTLE SEGMENT ALTERNATIVES

CASTLE A

SOFT-SURFACE TRAIL MILES: 0.98 miles

OVERVIEW: At this point, the trail is envisioned as a soft-surface trail for the remainder of the Carbondale to Crested Butte corridor. The Castle A segment begins at the southern Redstone Bridge over the Crystal River where an at-grade crossing of the highway would be required to access the west side. The trail would run south along the highway right-of-way or within the parallel county properties, including the Redstone Coke Ovens and the Drool. The trail would traverse several access roads including Coal Creek Road and the neighborhood roads to the Elk Mountain and Crystal River Park subdivisions, as well as one private driveway crossing.

CONTINUATION: At the southern limit of this segment, the trail can either continue south along the highway or cross the highway and river at a new pedestrian bridge (Bridge Option 14) to the east to access the Hawk Creek B alternative.

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way and county parcels adjacent to the highway including the Redstone Coke Ovens Open Space and the Drool.

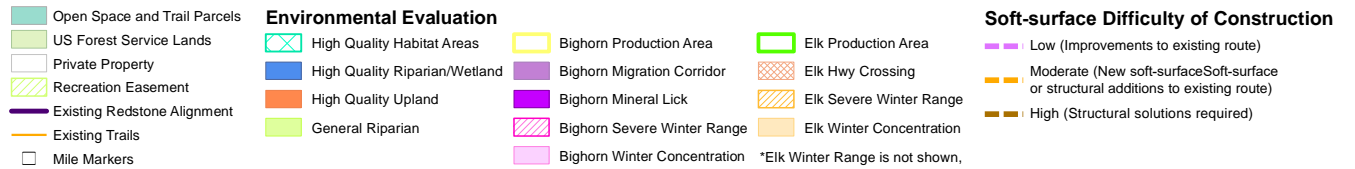
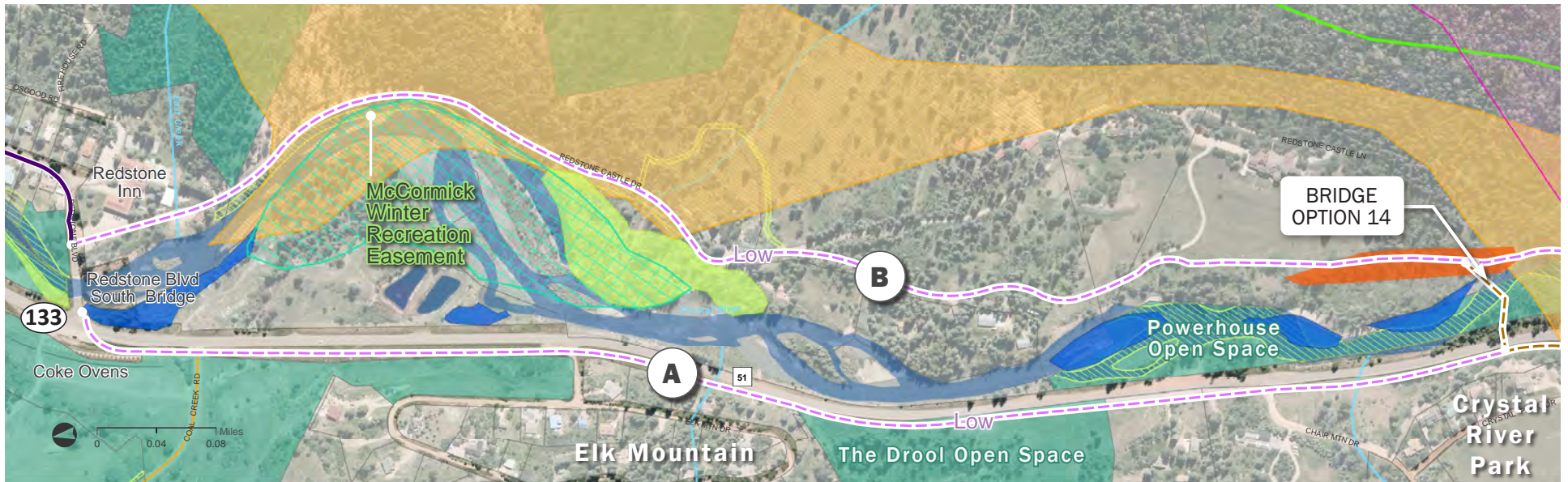
CASTLE B

SOFT-SURFACE TRAIL MILES: 1.01 miles

OVERVIEW: The Castle B segment follows the existing Redstone Castle Drive past the Redstone Inn and then along an unpaved access road that follows the Crystal River. The first part of this segment's existing road skirts along the edge of high-quality habitat where there is a broad floodplain with natural habitat structure of multiple channels, islands and benches with unique conifer wetlands that are frequented by big game. Where the trail approaches the Redstone Castle, it runs on the existing double-track below the castle for the southern part of the segment. At the southern end of the alternative, the trail passes through a vegetated area that was identified as a high-quality upland with a diverse native montane forest. This segment may require some minor improvements to the existing road, repair of damage to the railroad bed, and/or improved drainage.

CONTINUATION: At the southern limits of this segment, the trail either continues south connecting to the Hawk Creek B segment or crosses the river on a new pedestrian bridge to the west (Bridge Option 14) to access the Hawk Creek A segment along the highway.

PROPERTY OWNERSHIP/JURISDICTION: This alignment follows the McCormick Winter Recreational Access Easement that provides ice-climbing access from November 15 through April 15 and then continues on the Castle property, which plans to operate the historic facility as a special events venue with lodging in the future. Use agreements would be required with the two property owners whose property this alternative would utilize.



TYPICAL SECTIONS A:

Typical Section - Improved and New Soft-Surface Trail



TYPICAL SECTIONS B:

Typical Section - Improved and New Soft-Surface Trail



CASTLE A



ENVIRONMENTAL

- **Wildlife:** Minor impact to elk winter range and potential lynx habitat
- **Vegetation/Wetlands:** Vegetation is disturbed, and no new impacts to vegetation communities would occur. A willow riparian area is located adjacent to the trail south of Redstone. Impacts would be minimized or avoided through trail design.
- **Cultural Resources:** No impact

USER EXPERIENCE



- **Safety/Comfort:** Trail users would be in the highway ROW
- **Trail User Types:** Proximity to highway may limit use by equestrians
- **Scenic Quality/Ambiance:** Scenic views of river and Castle; proximity to highway and noise would be a drawback
- **Seasonal Use:** Proximity to highway would make winter use impossible

ENGINEERING



- **Design Difficulty:** Low
- **Geotechnical:** None
- **Hydrologic Impact:** None

ESTIMATED COSTS



- **Construction Costs:** \$128,999 - Low
- **Maintenance:** Moderate
- **Property/Easement Acquisition:** CDOT ROW

CASTLE B



ENVIRONMENTAL

- **Wildlife:** Minor buffer impact to high-quality habitat area
- **Vegetation/Wetlands:** Alignment follows existing road, and existing social trail/RR grade for most of its length. It parallels but avoids wetlands along the river. The alignment goes through a high-quality area, but because it would be contained to existing road and trail, new disturbance would be minimal. No tree and minimal vegetation removal would be required for trail construction.
- **Cultural Resources:** Moderate impact to Redstone Blvd/Road to Cleveholm
- **Mitigation:** A combination of detailed documentation (e.g. measured drawings of significant features and photographs) and interpretive signage would likely mitigate any potential impacts to these resources.

USER EXPERIENCE



- **Safety/Comfort:** Trail users would share an existing, neighborhood dirt road
- **Trail User Types:** All users
- **Scenic Quality/Ambiance:** Scenic neighborhood and views of the Castle and up the pass
- **Seasonal Use:** Year-round use

ENGINEERING

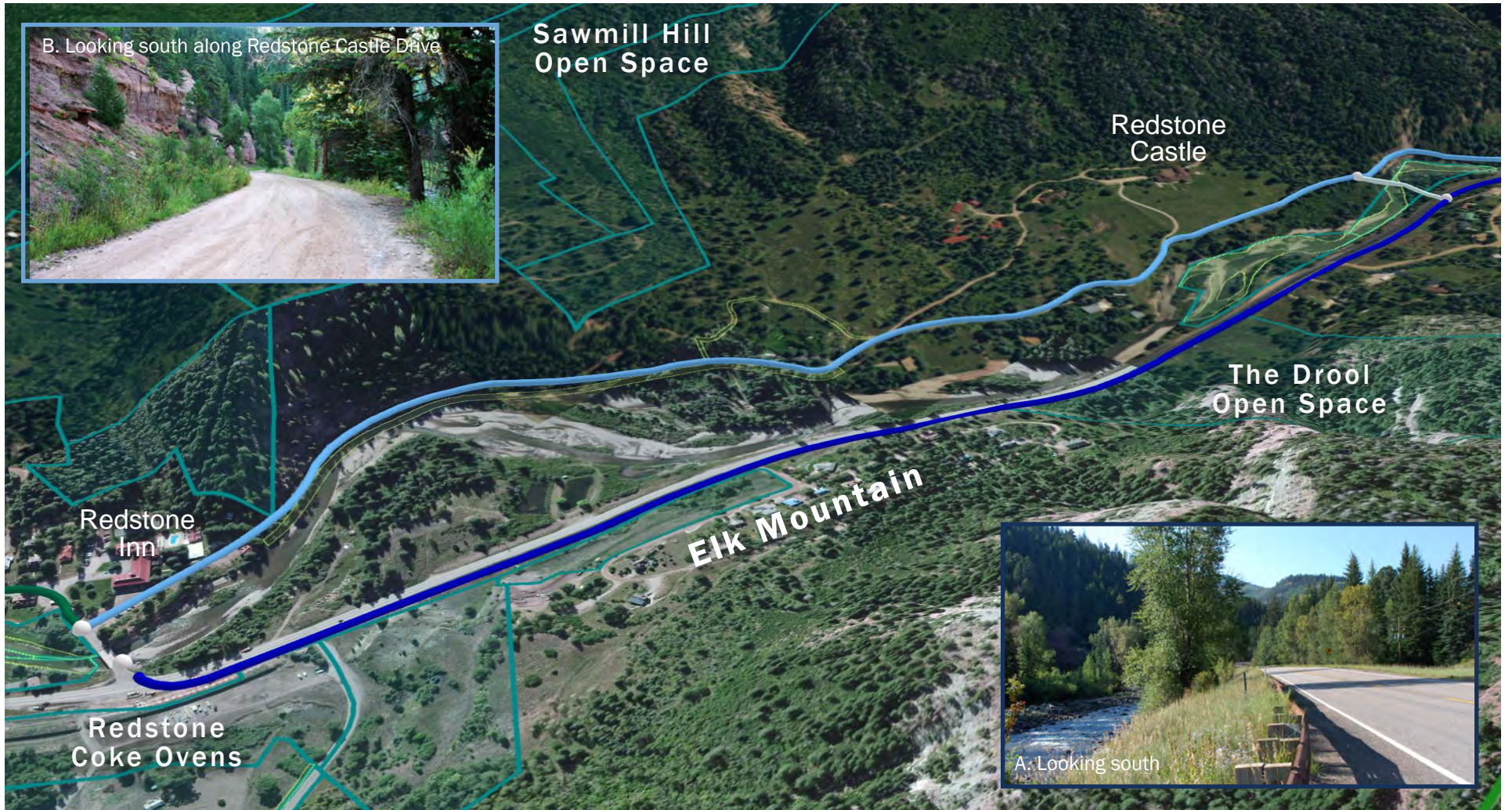


- **Design Difficulty:** Low
- **Geotechnical:** None
- **Hydrologic Impact:** None

ESTIMATED COSTS



- **Construction Costs:** \$32,143 - Low
- **Maintenance:** Low
- **Property/Easement Acquisition:** Would require use agreements between County and road owners



HAWK CREEK SEGMENT ALTERNATIVES

HAWK CREEK A

SOFT-SURFACE TRAIL MILES: 0.48 miles

OVERVIEW: The Hawk Creek A segment begins at the south end of Castle A and follows the west side of Hwy. 133. Most of the trail segment would be rated at a “High” degree of design/construction difficulty. Where the trail approaches a tall cliff along the inside of a curve, the trail could be constructed on a raised structure running below the cliff to provide trail user safety and separation from vehicular traffic. This portion of trail would have a 5- foot trail platform surfaced with crusher fines supported by a concrete guardrail with a pedestrian railing on top.

CONTINUATION: From the southern limit of the trail section, the trail would have an at-grade crossing and then would follow the east side of Hwy. 133 along the Hays Falls A segment where there is only one alternative possible.

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way

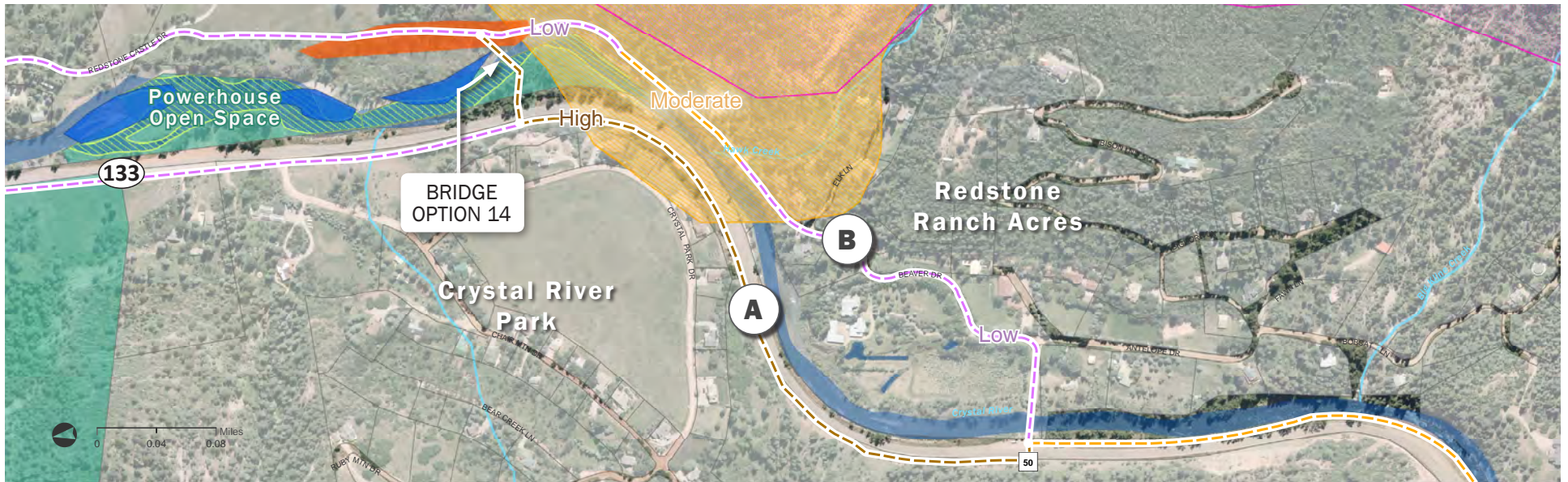
HAWK CREEK B

SOFT-SURFACE TRAIL MILES: 0.53 miles

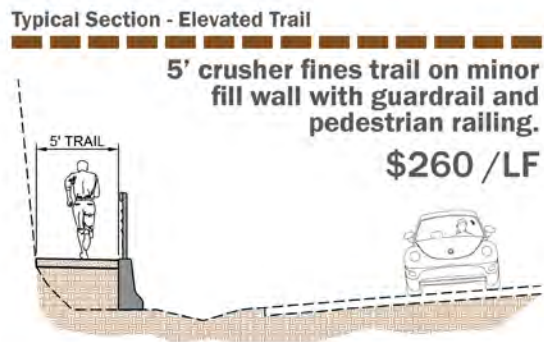
OVERVIEW: The Hawk Creek B segment follows a remnant of Osgood’s historic road that is now a singletrack trail perched along a sandstone cliff before joining a double-track trail and crossing over Hawk Creek within a stretch of privately owned lands. Shortly after crossing Hawk Creek, where a new pedestrian bridge would likely be required, the trail would follow existing, unsurfaced subdivision roads that were dedicated for public use on a subdivision plat - Beaver Drive and Antelope Drive - before connecting back to Hwy. 133 over the existing bridge. This route would require a combination of “Low” and “Moderate” design/construction difficulty sections in addition to a bridge structure to cross Hawk Creek.

CONTINUATION: At the southern terminus of the Hawk Creek B segment, the trail would cross the existing bridge and continue along the east side of Hwy. 133 on the Hays Falls A segment.

PROPERTY OWNERSHIP/JURISDICTION: Private property and public subdivision roads. The portion on private lands would involve use agreements between the county and the landowners.



TYPICAL SECTIONS A:



TYPICAL SECTIONS B:



HAWK CREEK A



ENVIRONMENTAL

- **Wildlife:** Minor impact to elk winter range and potential lynx habitat
- **Vegetation/Wetlands:** Vegetation is disturbed and no new impacts to vegetation communities would occur.
- **Cultural Resources:** No impact



USER EXPERIENCE

- **Safety/Comfort:** Trail users would be in the highway ROW, limited trail clearance
- **Trail User Types:** Proximity to highway may limit use by equestrians
- **Scenic Quality/Ambiance:** Scenic views of river and canyon; proximity to highway and noise would be a drawback
- **Seasonal Use:** Proximity to highway would make winter use impossible



ENGINEERING

- **Design Difficulty:** Highway pinch point may require structural section and roadway crossing may need to be designed
- **Geotechnical:** None
- **Hydrologic Impact:** None



COSTS

- **Construction Costs:** \$221,845 - Moderate, due to limited space and complex structural options
- **Maintenance:** Moderate to high, depending on barrier type between highway (to control road debris)
- **Property/Easement Acquisition:** CDOT ROW and OST property

HAWK CREEK B



ENVIRONMENTAL

- **Wildlife:** Minor impact to elk winter range and potential lynx habitat
- **Vegetation/Wetlands:** Alignment follows existing road where vegetation is disturbed, and no new impacts to vegetation communities would occur.
- **Cultural Resources:** No impact



USER EXPERIENCE

- **Safety/Comfort:** Trail users would share an existing, neighborhood dirt road, may pass very close to one house
- **Trail User Types:** All users
- **Scenic Quality/Ambiance:** Scenic east side of the river separated from the highway
- **Seasonal Use:** Year-round use



ENGINEERING

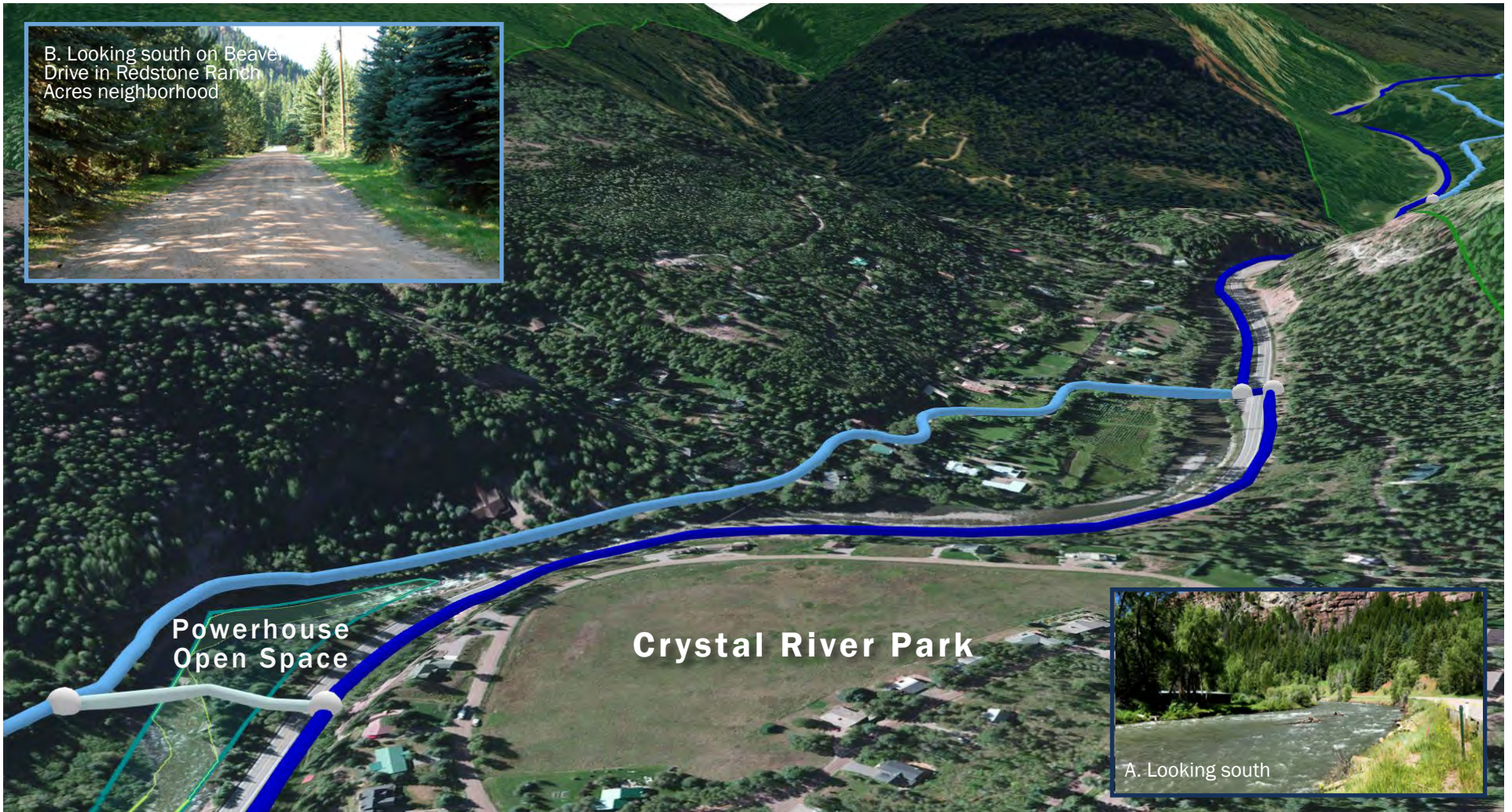
- **Design Difficulty:** Low; may require one small bridge crossing
- **Geotechnical:** None
- **Hydrologic Impact:** None



ESTIMATED COSTS

- **Construction Costs:** \$72,016 - Low
- **Maintenance:** Low
- **Property/Easement Acquisition:** Would require use agreements between County and private owners

* No on-the-ground surveys occurred across private property



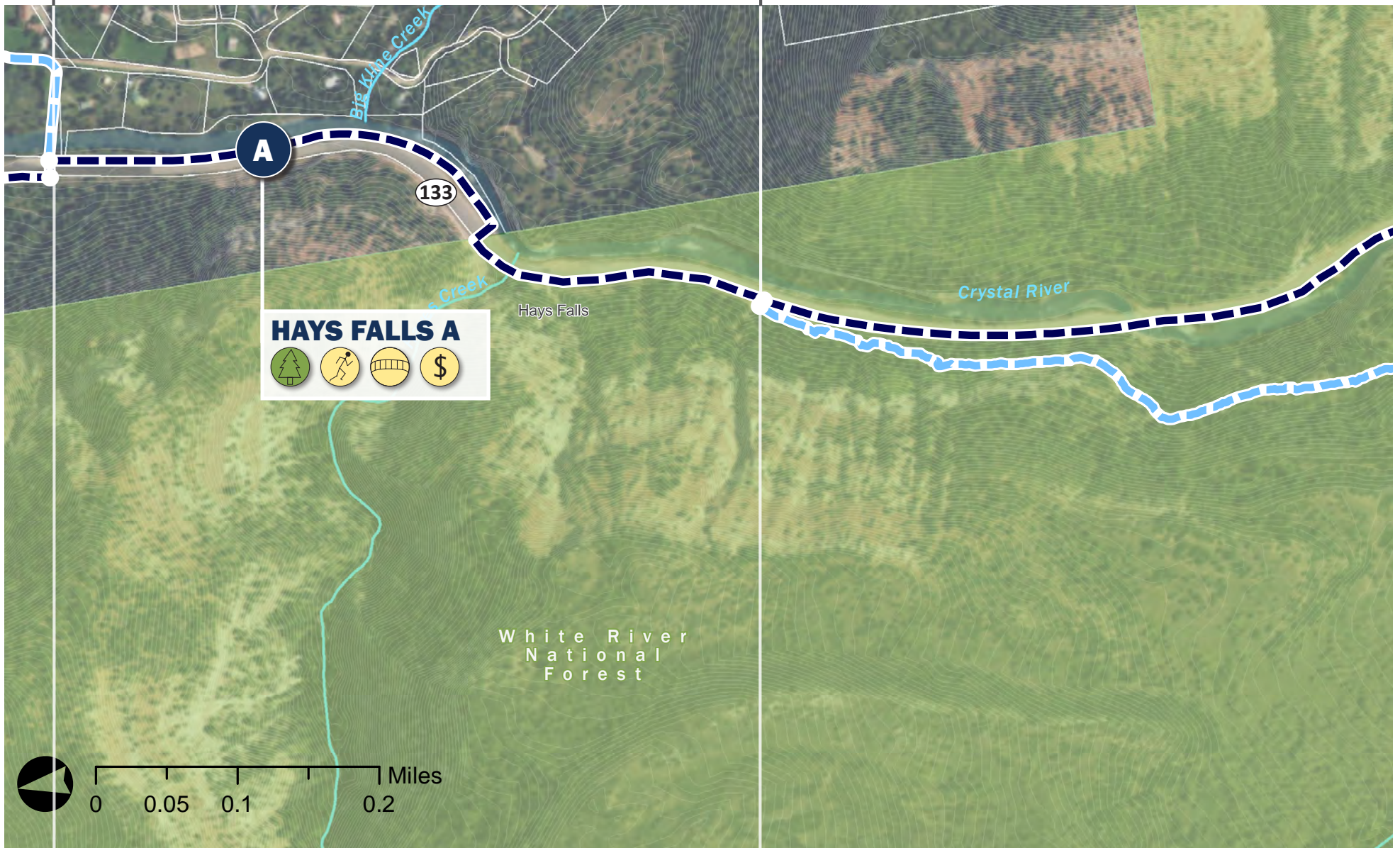
B. Looking south on Beaver Drive in Redstone Ranch Acres neighborhood

Powerhouse Open Space

Crystal River Park

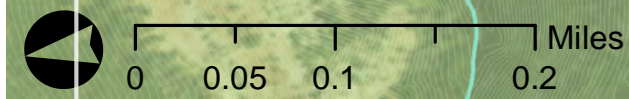
A. Looking south

HAYS FALLS



HAYS FALLS A

-
-
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Map 2.33: Alignment Alternatives Impacts Summary - Hays Falls to Bear Creek

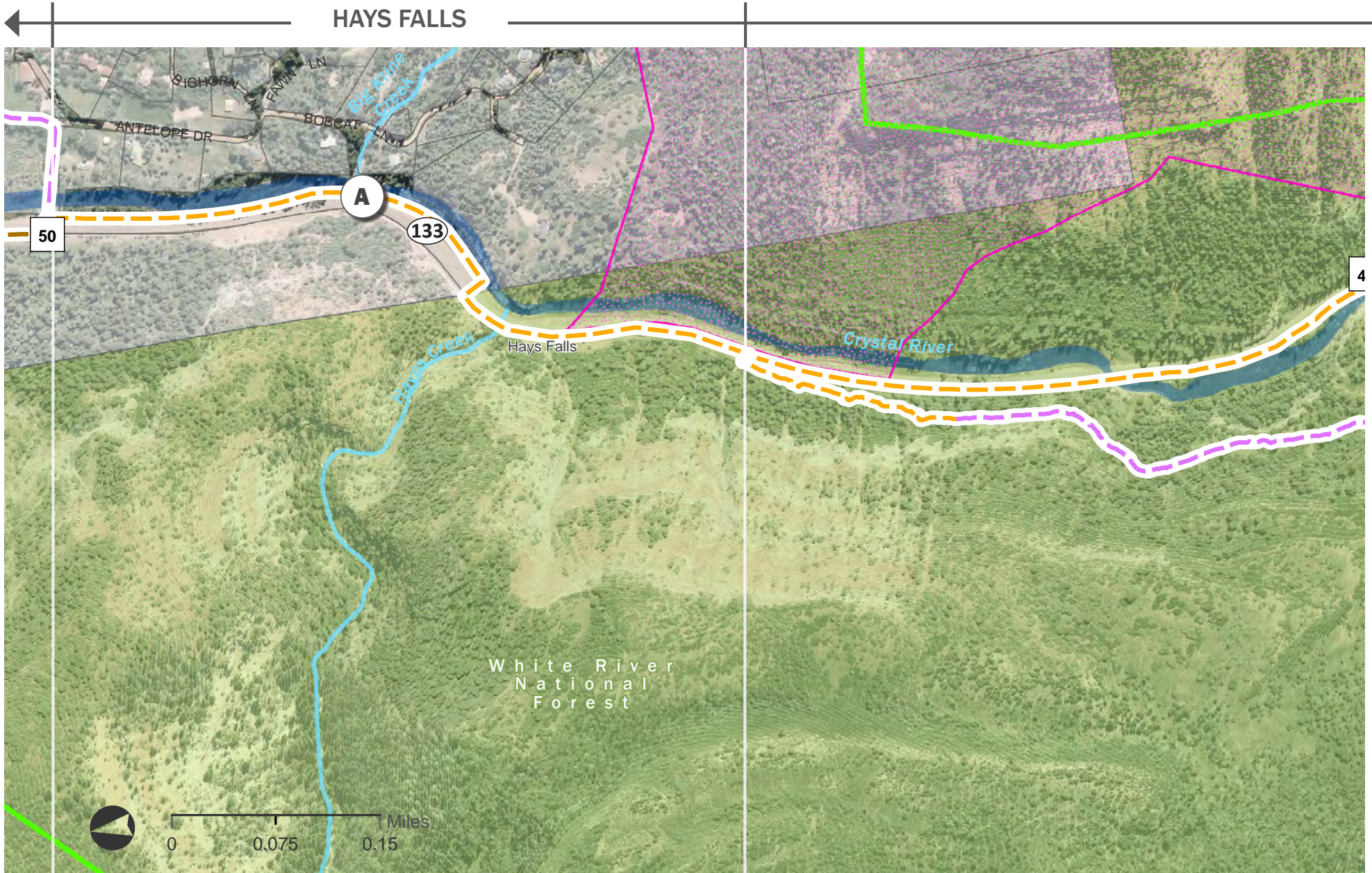


BEAR CREEK

PLACITA



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User

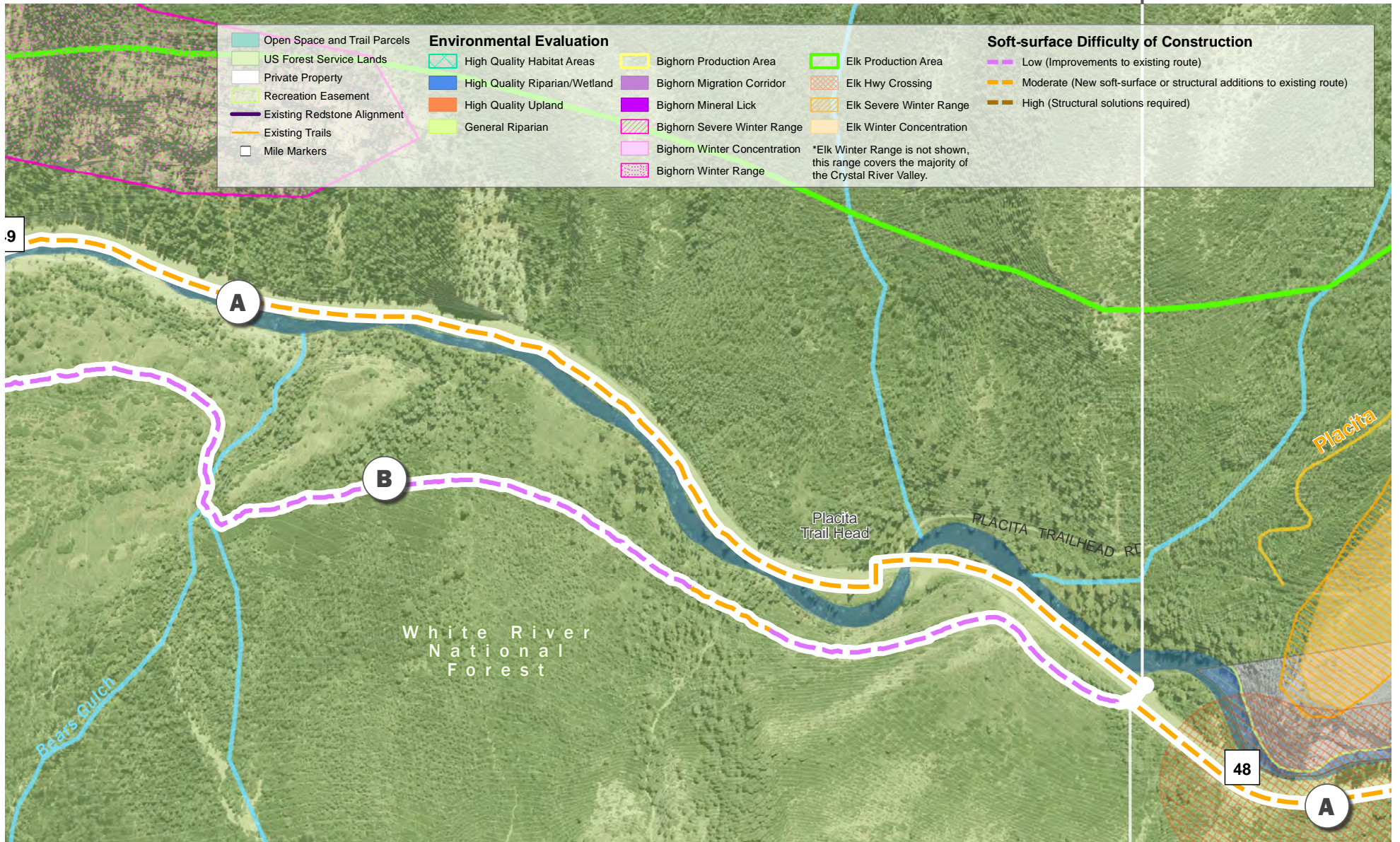


Map 2.34: Environmental and Engineering Summary - Hays Falls to Bear Creek



BEAR CREEK

PLACITA



HAYS FALLS SEGMENT

HAYS FALLS

SOFT-SURFACE TRAIL MILES: 0.57 miles

OVERVIEW: The Hays Falls A alignment follows Hwy. 133 beginning on the east and side of the highway between the road and the river. Approximately midway through this segment, where the road curves, an at-grade crossing of Hwy. 133 would be needed just north of Hays Falls. Following this crossing, the trail runs along the west side of the highway to the end of the segment. The trail would be of “Moderate” difficulty design/construction, requiring hand-build methods to construct new trail within the highway right-of-way. There is no Alternative B alternative for this segment. OST staff looked for a potential off-highway alternative beginning from Hays Creek to connect to the Bear Creek segment to the west of the highway on U.S. Forest Service lands; however, the steep side slope and terrain do not support an off-highway alternative for this section.

CONTINUATION: From the southern limit of this segment, the route could continue along the highway following Bear Creek A or could pull away from the highway to the west along Bear Creek B.

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way, portions through WRNF lands



ENVIRONMENTAL

- **Wildlife:** Minor impact to elk winter range and potential lynx habitat
- **Vegetation/Wetlands:** Vegetation is disturbed, and no new impacts to vegetation communities would occur.
- **Cultural Resources:** No impact



USER EXPERIENCE

- **Safety/Comfort:** Trail users would be in the highway ROW, limited trail clearance
- **Trail User Types:** Proximity to highway may limit use by equestrians
- **Scenic Quality/Ambiance:** Scenic views of river and canyon; proximity to highway and noise would be a drawback
- **Seasonal Use:** Proximity to highway would make winter use impossible



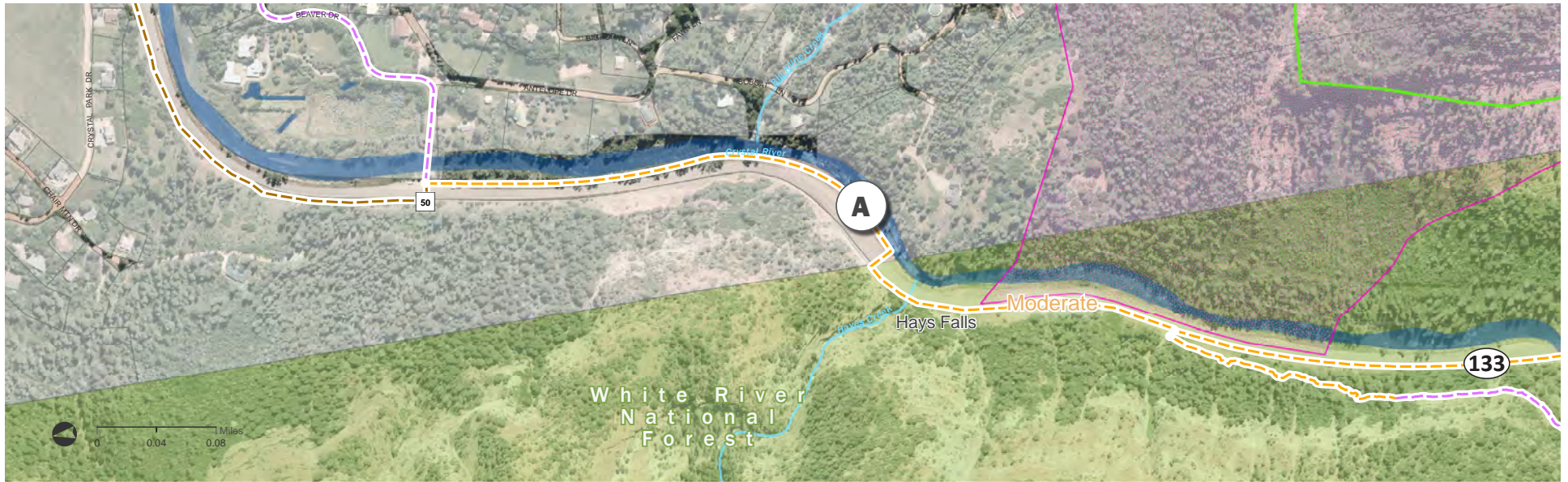
ENGINEERING

- **Design Difficulty:** Highway pinch point may require structural section and roadway crossing will need to be designed
- **Geotechnical:** None
- **Hydrologic Impact:** None



ESTIMATED COSTS

- **Construction Costs:** \$90,841 - Medium
- **Maintenance:** Moderate
- **Property/Easement Acquisition:** CDOT ROW



TYPICAL SECTIONS A:

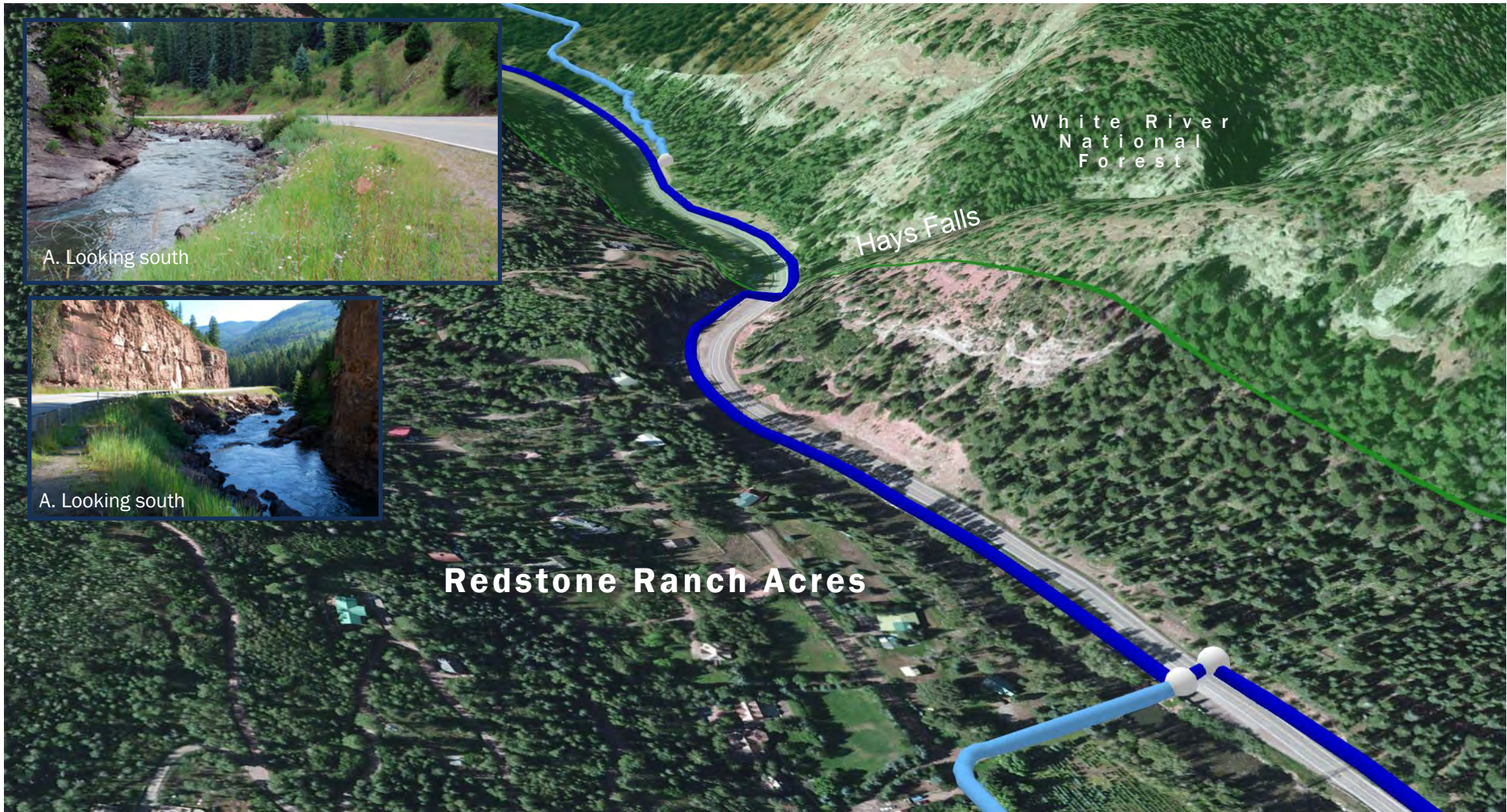
Typical Section - Improved and New Soft-Surface Trail



3' new or improved natural surface trail.

\$6 - \$30/LF

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White River
National
Forest

Hays Falls

Redstone Ranch Acres

A. Looking south

A. Looking south

BEAR CREEK SEGMENT ALTERNATIVES

BEAR CREEK A

SOFT-SURFACE TRAIL MILES: 1.40 miles

OVERVIEW: The Bear Creek A segment follows the west side of Hwy. 133, midway through the segment. The Crystal River crosses under the highway at both the north and south ends of the alternative. For the middle stretch, the trail is positioned between the river and the highway. This section would require a “Moderate” to “High” degree of difficulty to construct due to the steep side slope and challenging construction environment adjacent to the highway.

CONTINUATION: From the southern end of this segment, the trail could cross Hwy. 133 at grade and continue along the west side on the Placita alternative.

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way within WRNF lands

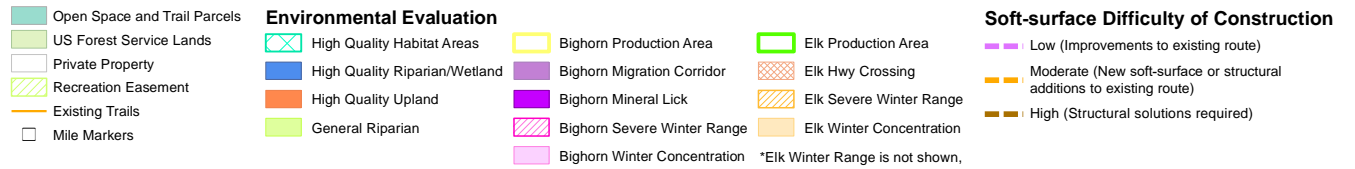
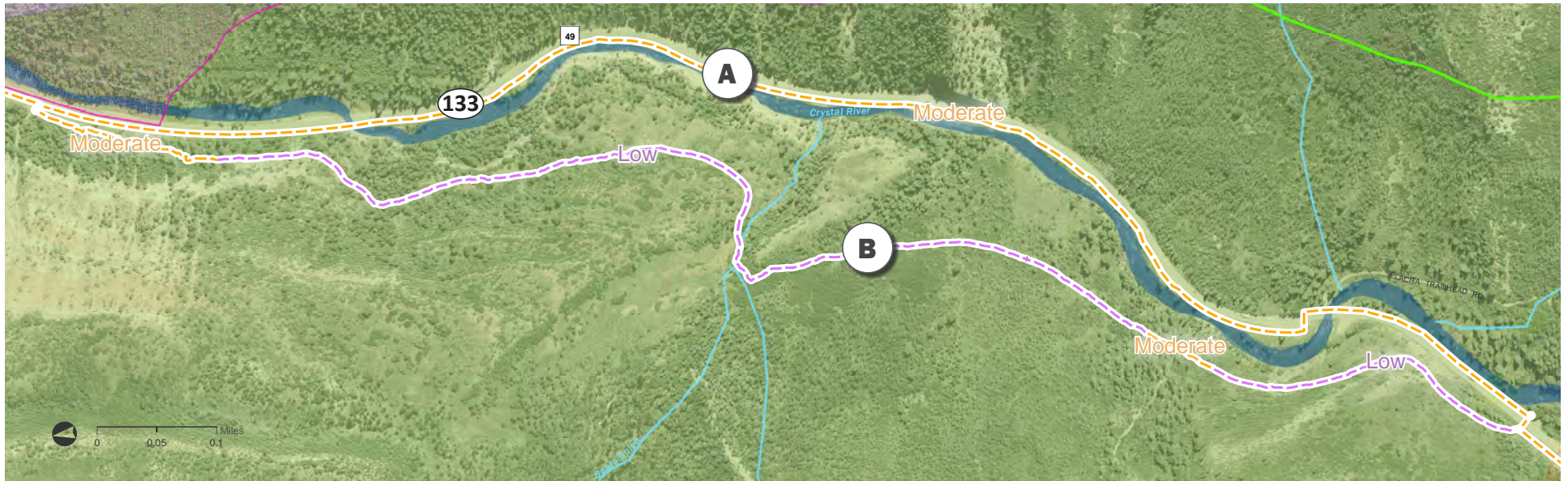
BEAR CREEK B

MULTI-USE TRAIL MILES: 1.45 miles

OVERVIEW: The Bear Creek B segment follows the existing Rock Creek County Road cut on the slope above and west of Hwy. 133. The route follows a decommissioned U.S. Forest Service route that still sees social use, though it is not an officially maintained trail. The first section passes three major washes and one minor wash, which would require bridge structures to pass comfortably. Due to the structural needs of the bridges, this first portion of the trail is characterized with a “Moderate” design/construction difficulty rating. An additional portion of “Moderate” trail is located toward the southern end of the segment, where a narrow bench passes along a steep side slope, requiring some retaining or support walls on the downhill side. The rest of the segment would require minimal improvements and is largely usable in its current condition; the slopes range from moderate and flat to 5-15% grades in some sections. A bridge may be constructed at the Bear Creek crossing; however, it is also possible to easily cross at grade. In the future, a full road-to-trail conversion could be implemented to enhance the trail experience.

CONTINUATION: From the southern end of this segment, the trail would continue along the west side of Hwy. 133 on the Placita A alternative; there is no Alternative B through Placita.

PROPERTY OWNERSHIP/JURISDICTION: WRNF lands



TYPICAL SECTIONS A:

Typical Section - Improved and New Soft-Surface Trail



3' new or improved natural surface trail.

\$6 - \$30/LF

TYPICAL SECTIONS B:

Typical Section - Improved and New Soft-Surface Trail



3' new or improved natural surface trail.

\$6 - \$30/LF

BEAR CREEK A



ENVIRONMENTAL

- **Wildlife:** Minor impact to elk winter range and potential lynx habitat
- **Vegetation/Wetlands:** Vegetation is disturbed and no new impacts to vegetation communities would occur.
- **Cultural Resources:** No impact



USER EXPERIENCE

- **Safety/Comfort:** Trail users would be in the highway ROW
- **Trail User Types:** Proximity to highway may limit use by equestrians
- **Scenic Quality/Ambiance:** Scenic views of river and canyon, proximity to highway and noise would be a drawback
- **Seasonal Use:** Proximity to highway would make winter use impossible



ENGINEERING

- **Design Difficulty:** Highway pinch point may require structural section and roadway crossing may need to be designed
- **Geotechnical:** None
- **Hydrologic Impact:** None



COSTS

- **Construction Costs:** \$259,044 - Medium
- **Maintenance:** Moderate
- **Property/Easement Acquisition:** CDOT ROW

BEAR CREEK B



ENVIRONMENTAL

- **Wildlife:** Buffer impact to potential lynx/FSS habitat
- **Mitigation:** Clearance surveys for species of concern, work with Forest Service and Fish and Wildlife and review lynx data
- **Vegetation/Wetlands:** Alignment follows existing social trail/railroad grade through a diverse vegetation community where habitat for FSS Harrington's penstemon is present (but no individuals were observed during surveys). Disturbance would be limited to existing trail footprint, and little if any vegetation would be removed.

- **Cultural Resources:** Minor impact to Rock Creek Wagon Road



USER EXPERIENCE

- **Safety/Comfort:** Trail users would use existing Rock Creek County Road cut, fully separated from highway
- **Trail User Types:** All users
- **Scenic Quality/Ambiance:** Very scenic trail through the forest with beautiful view up the pass
- **Seasonal Use:** Year-round use



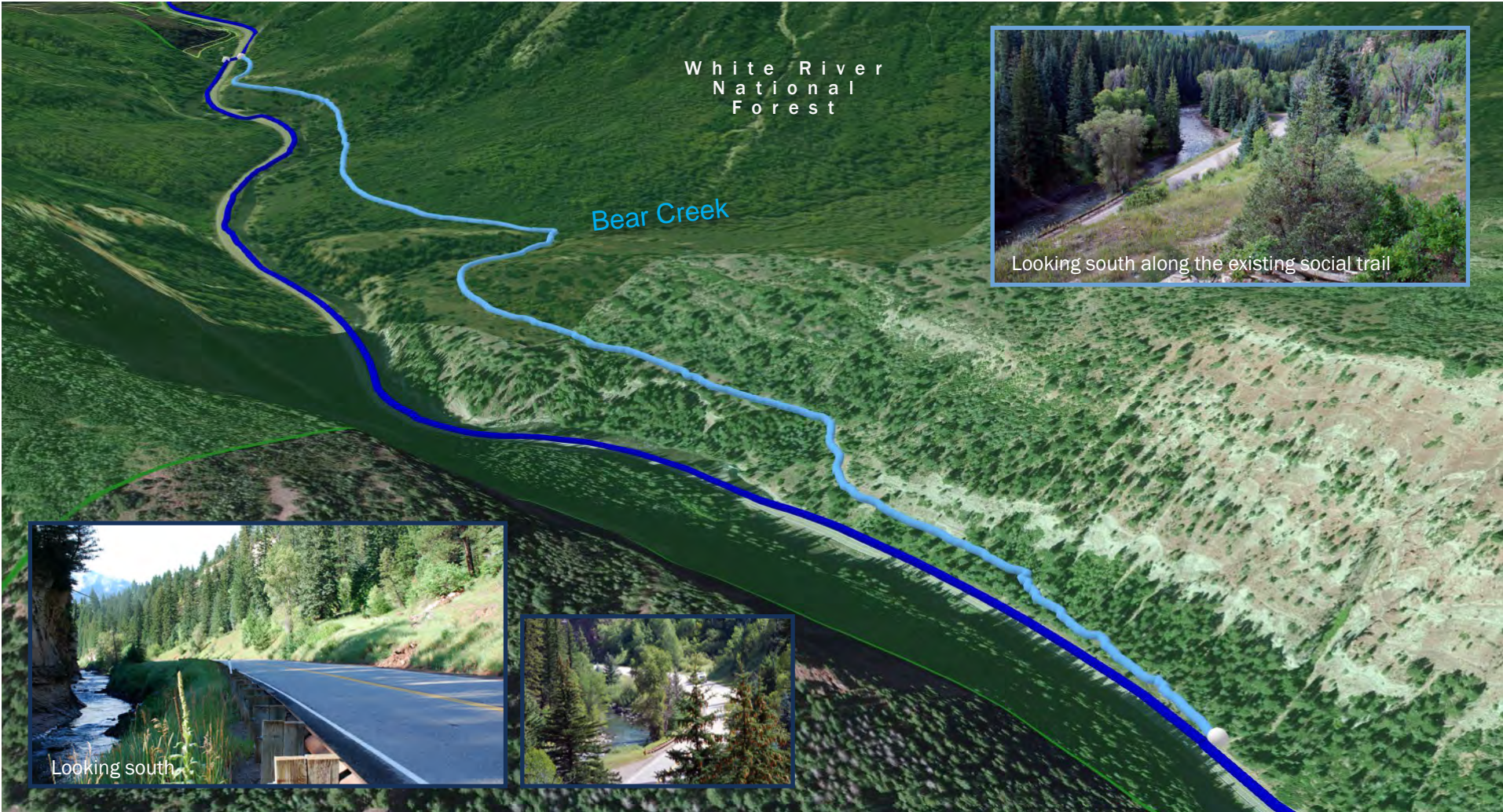
ENGINEERING

- **Design Difficulty:** Low; may require a few trail bridge crossing
- **Geotechnical:** A few chutes that may need to be bridged
- **Hydrologic Impact:** None



ESTIMATED COSTS

- **Construction Costs:** \$209,031 - Low
- **Maintenance:** Low
- **Property/Easement Acquisition:** USFS property

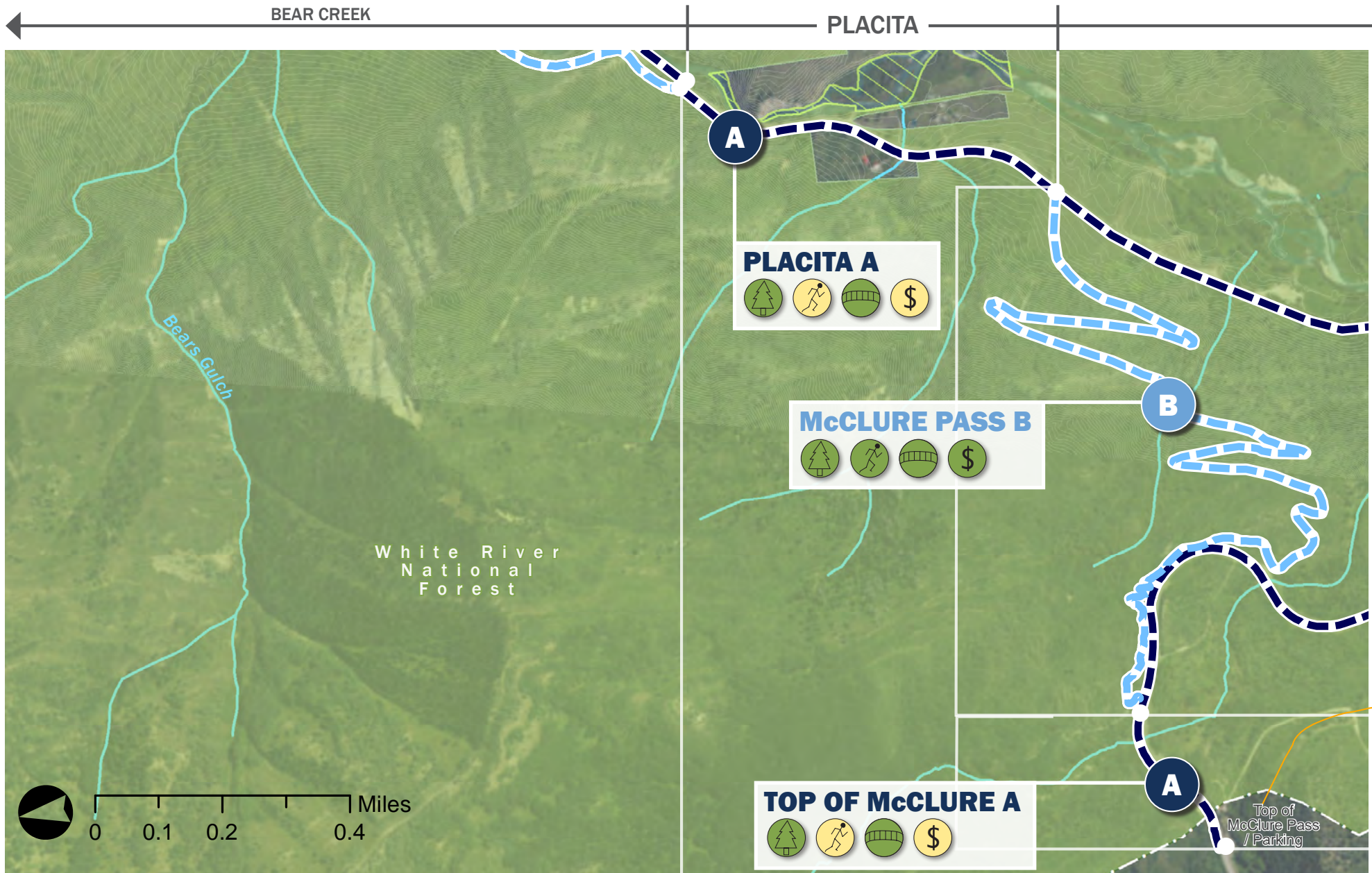


White River
National
Forest

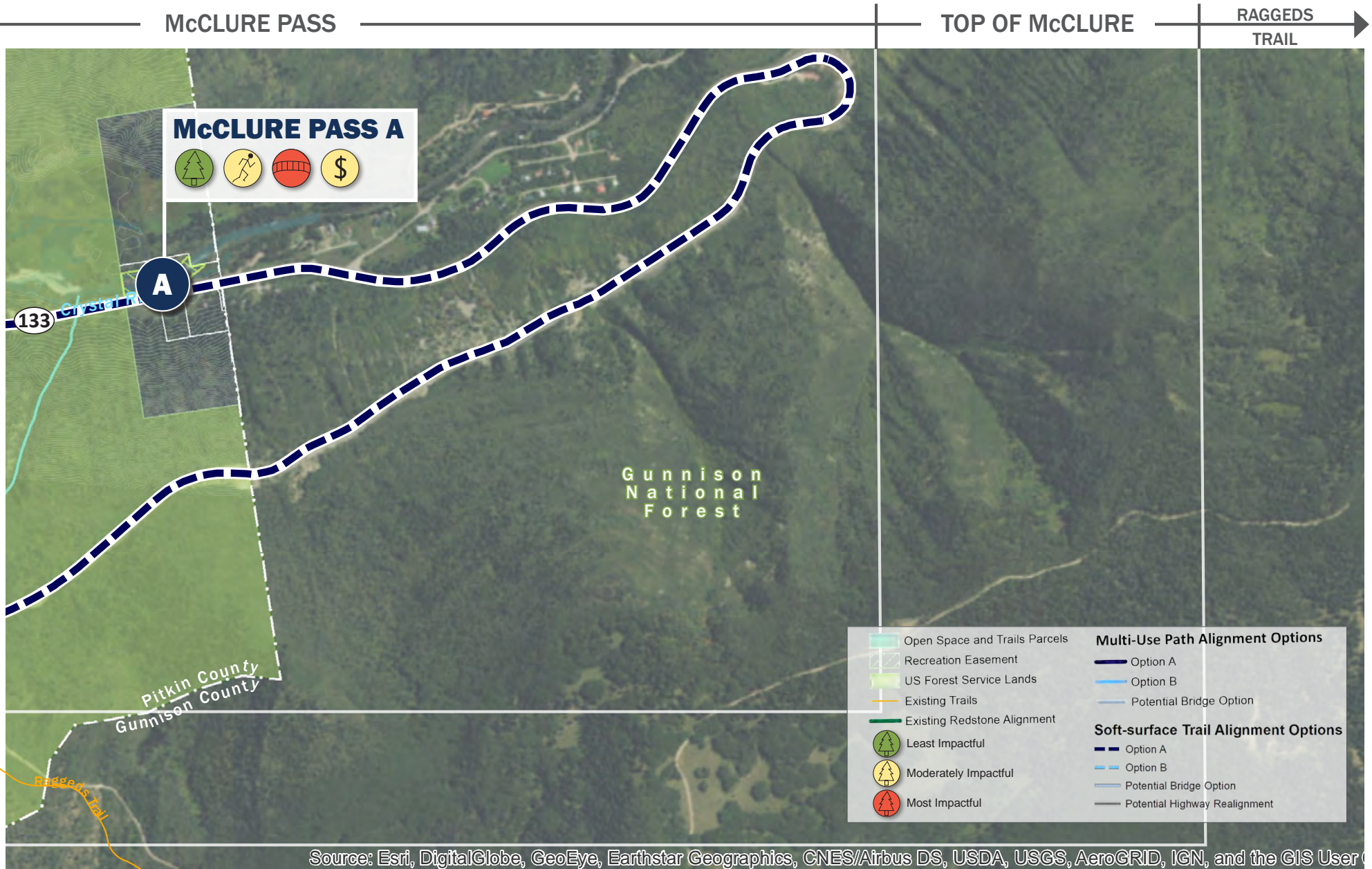
Bear Creek

Looking south along the existing social trail

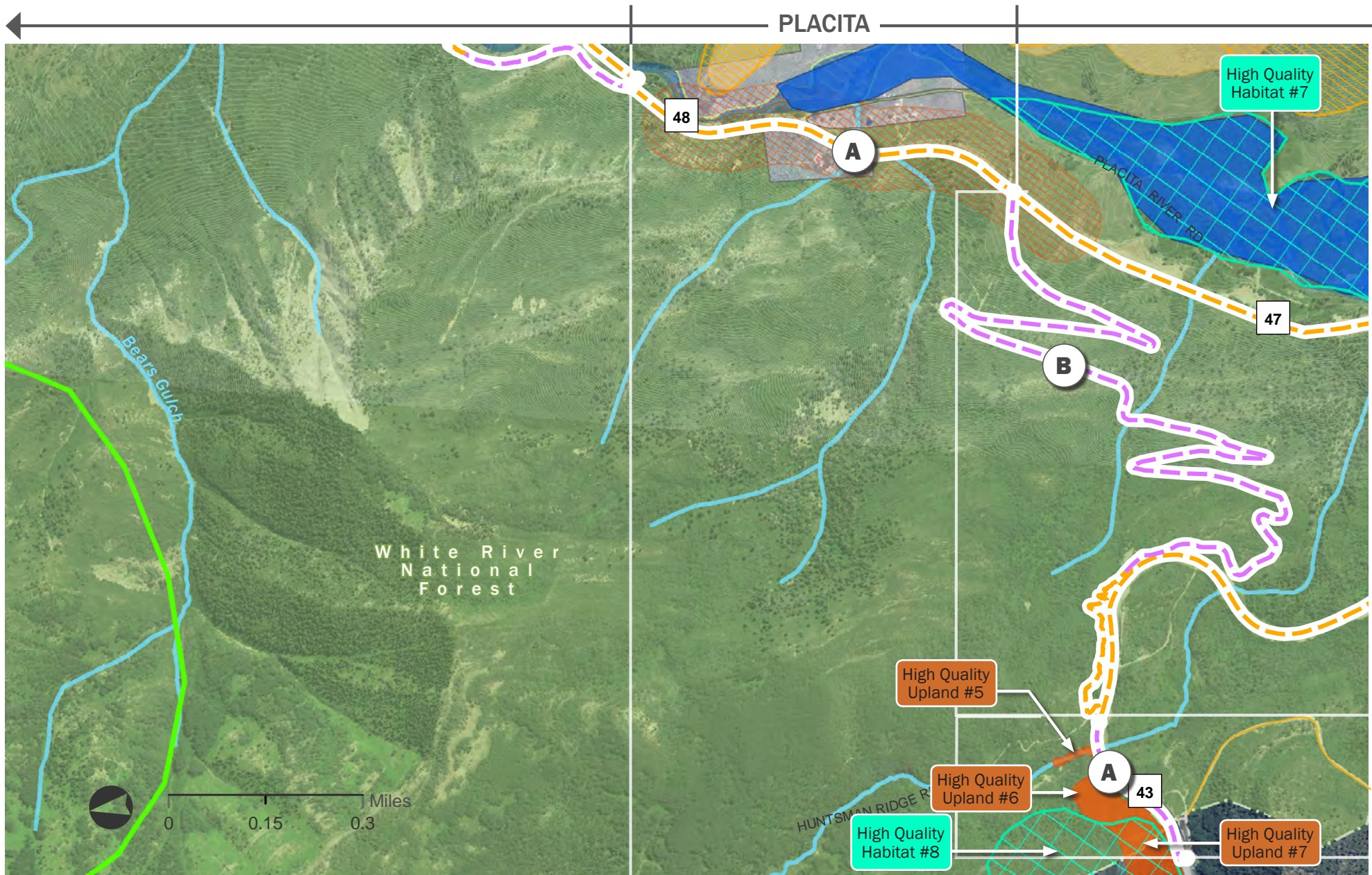
Looking south



Map 2.37: Alignment Alternatives Impacts Summary - Placita to Top of McClure



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User



PLACITA SEGMENT

PLACITA

SOFT-SURFACE TRAIL MILES: 0.64 miles

OVERVIEW: The Placita A segment would follow the west side of Hwy. 133. There is no Alternative B alternative for this segment. This segment is identified as a “Moderate” difficulty design/construction project due to the need for new trail within a tight highway corridor.

CONTINUATION: From the southern terminus of this segment, the route could follow McClure Pass A along the highway or could turn to the east to follow McClure Pass B, which follows the existing Rock Creek County Road alternative.

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way within WRNF lands.



ENVIRONMENTAL

- **Wildlife:** Minor impact to elk winter range and potential lynx habitat
- **Vegetation/Wetlands:** Vegetation is disturbed and no new impacts to vegetation communities would occur.
- **Cultural Resources:** No impact



USER EXPERIENCE

- **Safety/Comfort:** Trail users would be in the highway ROW
- **Trail User Types:** Proximity to highway may limit use by equestrians
- **Scenic Quality/Ambiance:** Scenic views of river and Placita area and pass; proximity to highway and noise would be a drawback
- **Seasonal Use:** Proximity to highway would make winter use impossible



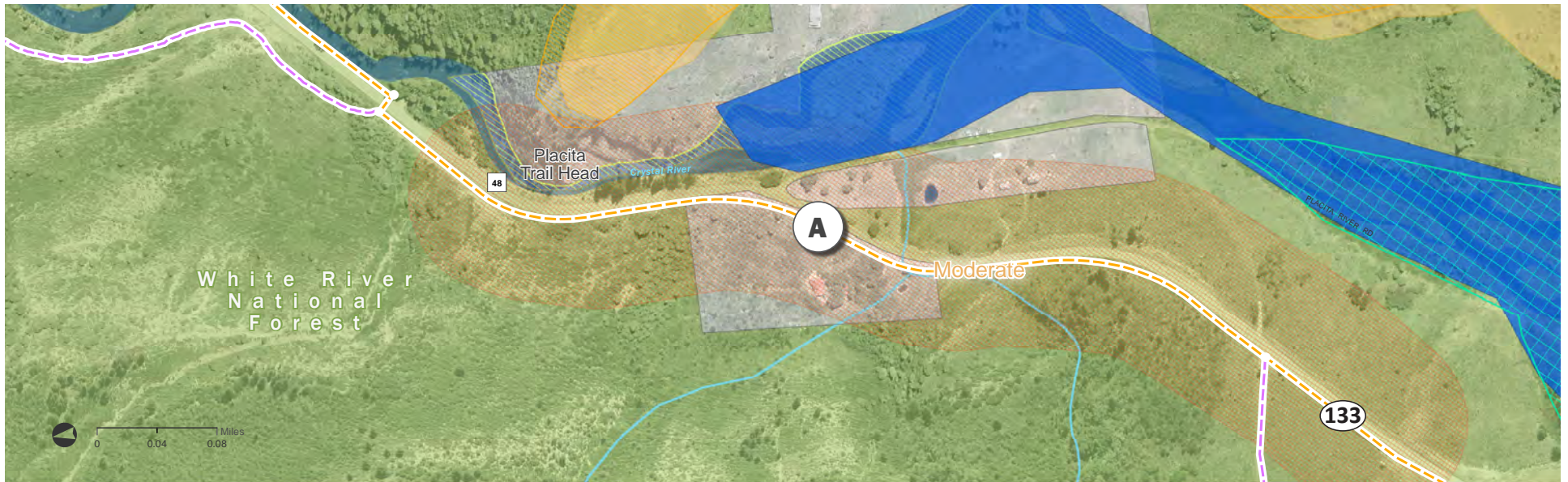
ENGINEERING

- **Design Difficulty:** Low
- **Geotechnical:** None
- **Hydrologic Impact:** None



COSTS

- **Construction Costs:** \$84,757 - Low
- **Maintenance:** Moderate
- **Property/Easement Acquisition:** CDOT ROW



TYPICAL SECTIONS A:

Typical Section - Improved and New Soft-Surface Trail



3' new or improved natural surface trail.

\$6 - \$30/LF

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McCLURE PASS SEGMENT ALTERNATIVES

McCLURE PASS A

SOFT-SURFACE TRAIL MILES: 4.27 miles

OVERVIEW: The McClure Pass A segment is approximately 4.27 miles long and follows the west side of Hwy. 133 past the Pitkin County boundary into Gunnison County past the turnoff to Marble, after which the road switchbacks from south to north and re-enters Pitkin County. This segment would follow the uphill traffic lane. The segment is ranked as “Moderate” design/construction difficulty due to the need for new trail construction. Alternatively, a larger shoulder for the climbing route may be an acceptable alternative to a soft-surface trail if this alternative is chosen. The gradual highway grades make for a substantially longer trail than the Alternative B alignment for this segment.

CONTINUATION: From the top of this segment the route would continue seamlessly to the on the Top of McClure alternative following the highway.

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way within WRNF lands

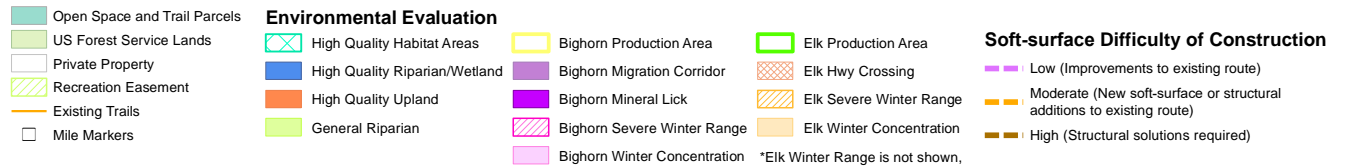
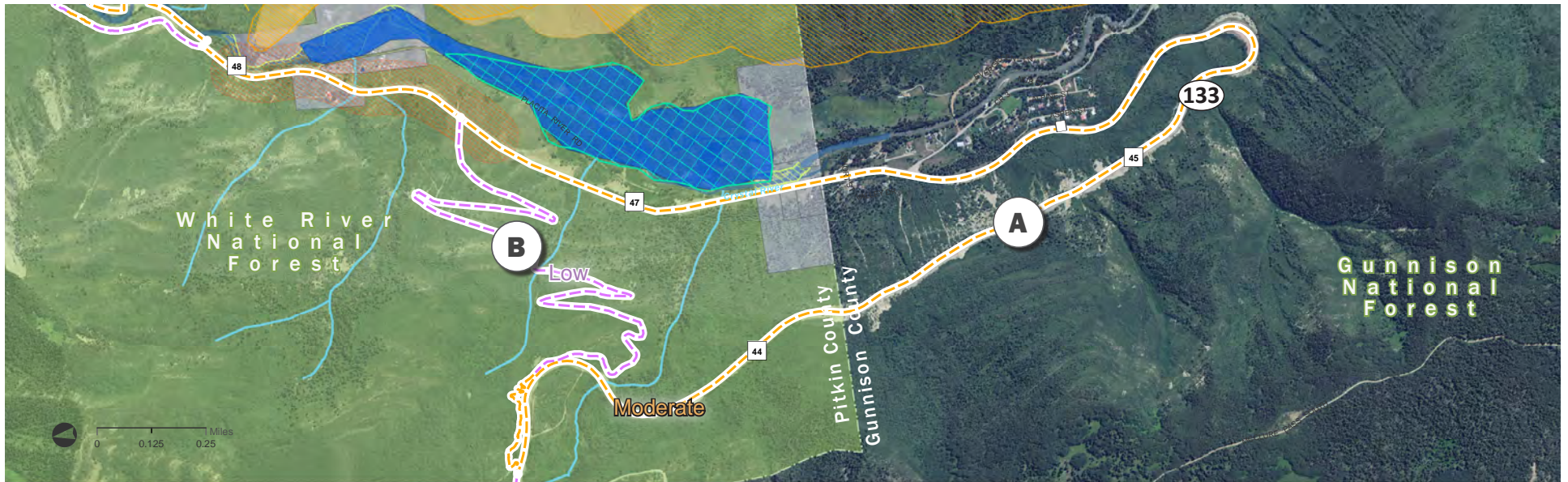
McCLURE PASS B

SOFT-SURFACE TRAIL MILES: 2.52 miles

OVERVIEW: The McClure Pass B segment is approximately 2.52 miles long and follows the old Hwy. 133 switchbacks up the west hillside to where the historic alternative meets the existing Hwy. 133. The existing route is ranked with a “Low” design/construction difficulty as the route is already used as a trail and would require minimal improvements to make a more sustainable trail platform. In the future, a full road-to-trail conversion, introducing choke and corral features, undulation, and revegetation could enhance the trail experience, though this would require a greater investment. From the pullout to the east side of the top of the pass, where the existing grade meets Hwy. 133, the trail would pull away to the north/east of the highway on a new soft-surface alternative where a series of switchbacks allow for a reasonable grade to be achieved before the trail descends back to the highway at Huntsman Ridge Road to avoid a steep drainage.

CONTINUATION: From the end of this segment, the route would follow the Top of McClure A segment to the top of the pass.

PROPERTY OWNERSHIP/JURISDICTION: WRNF lands



TYPICAL SECTIONS A:

Typical Section - Improved and New Soft-Surface Trail



3' new or improved natural surface trail.

\$6 - \$30/LF



TYPICAL SECTIONS B:

Typical Section - Improved and New Soft-Surface Trail



3' new or improved natural surface trail.

\$6 - \$30/LF



McCLURE PASS A



ENVIRONMENTAL

- **Wildlife:** Minor to potential lynx habitat
- **Vegetation/Wetlands:** Vegetation is disturbed and no new impacts to vegetation communities would occur.
- **Cultural Resources:** No impact

USER EXPERIENCE



- **Safety/Comfort:** Trail users would be in the highway ROW
- **Trail User Types:** Proximity to highway may limit use by equestrians
- **Scenic Quality/Ambiance:** Scenic views of river and canyon; proximity to highway and noise would be a drawback
- **Seasonal Use:** Proximity to highway would make winter use impossible

ENGINEERING



- **Design Difficulty:** Highway pinch point may require structural section and roadway crossing may need to be designed
- **Geotechnical:** Rock fall areas on the pass
- **Hydrologic Impact:** None

COSTS



- **Construction Costs:** \$451,601 - Moderate-High due to the distance required
- **Maintenance:** Moderate
- **Property/Easement Acquisition:** CDOT ROW

McCLURE PASS B



ENVIRONMENTAL

- **Wildlife:** Minor impact to elk migration corridor and potential lynx habitat
- **Vegetation/Wetlands:** Alignment follows existing trail/wagon road grade for most of its length. It would cross Harrington's penstemon habitat. None were observed during surveys. Impacts would be minimized or avoided by trail design criteria.
- **Cultural Resources:** No impact

USER EXPERIENCE



- **Safety/Comfort:** Trail users would use existing old highway cut, fully separated from existing highway
- **Trail User Types:** All users
- **Scenic Quality/Ambiance:** Very scenic trail with beautiful views of the valley floor
- **Seasonal Use:** Year-round use

ENGINEERING



- **Design Difficulty:** Low
- **Geotechnical:** None
- **Hydrologic Impact:** None

ESTIMATED COSTS

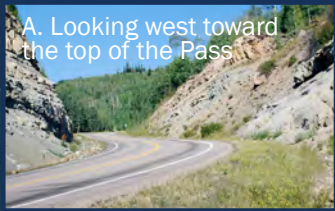


- **Construction Costs:** \$79,905 - Low
- **Maintenance:** Low
- **Property/Easement Acquisition:** USFS

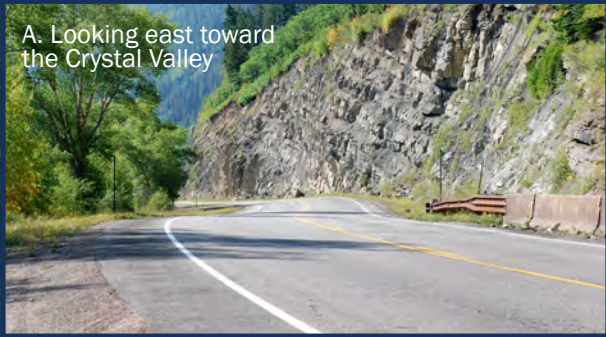
Gunnison
National
Forest

White River
National
Forest

A. Looking west toward
the top of the Pass



A. Looking east toward
the Crystal Valley



A. Looking southeast
toward Marble



TOP OF McCLURE SEGMENT

TOP OF McCLURE A

SOFT-SURFACE TRAIL MILES: 0.27 miles

OVERVIEW: The Top of McClure A segment follows the west side of Hwy. 133 along a section of roadway with a generous shoulder. There is no Alternative B alternative for this segment. The trail may require a physical barrier to separate the trail user from vehicular traffic and would utilize the existing road platform to cross the creek near the top of the pass.

CONTINUATION: A highway crossing would take place at the existing parking area just past the county boundary at top of the pass where the route would continue along the McClure Pass South Road before connecting to the Raggeds Trail in the Gunnison National Forest.

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way within WRNF lands



ENVIRONMENTAL

- **Wildlife:** Minor impact to habitat for lynx and FSS species
- **Vegetation/Wetlands:** Alignment would avoid new disturbance to vegetation in this high-quality and biologically diverse area. Design criteria would reduce or eliminate impacts to Grand Mesa penstemon and large flower globemallow. It is not likely that these would be found within the alignment.

- **Cultural Resources:** No impact



USER EXPERIENCE

- **Safety/Comfort:** Trail users would be in the highway ROW
- **Trail User Types:** Proximity to highway may limit use by equestrians
- **Scenic Quality/Ambiance:** Proximity to highway and noise would be a drawback
- **Seasonal Use:** Proximity to highway would make winter use impossible



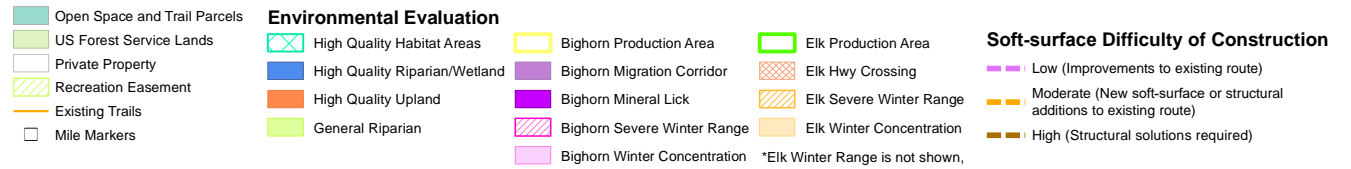
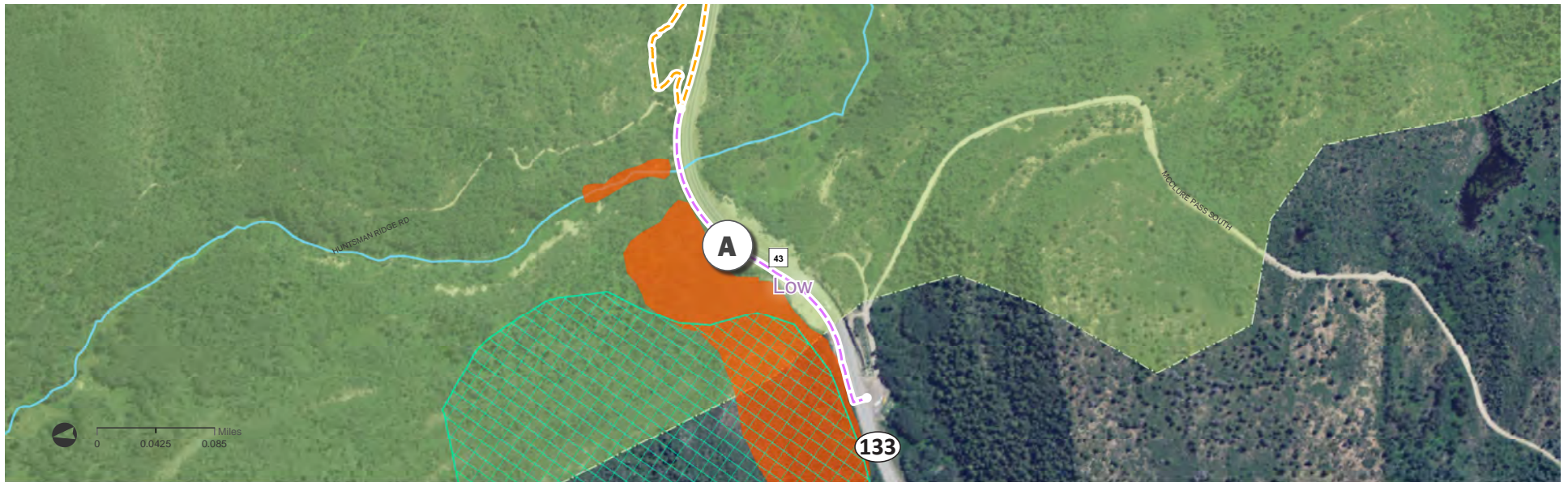
ENGINEERING

- **Design Difficulty:** Low
- **Geotechnical:** None
- **Hydrologic Impact:** None



COSTS

- **Construction Costs:** \$28,974 - Low
- **Maintenance:** Moderate
- **Property/Easement Acquisition:** CDOT ROW and USFS



TYPICAL SECTIONS A:

Typical Section - Improved and New Soft-Surface Trail



3' new or improved natural surface trail.

\$6 - \$30/LF

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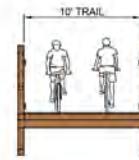
POTENTIAL BRIDGES:

Bridge crossings will be a critical element of the Carbondale to Crested Butte Trail as the trail alignment is likely to be a combination of A and B alignments, crossing the river between potential segments as needed. The bridge crossing options include existing publically accessible and private roadway bridges, replacements of existing roadway bridges, and potential new pedestrian/bicycle bridges.

Where new bridges may be needed, they have been identified at locations where the river is as narrow as possible in order to reduce the span length of the bridge, thereby reducing the costs and aesthetic impact. The location must also be conducive to the physical construction of a new bridge, its abutments and erecting the bridge superstructure. Other important considerations included the river behavior and geomorphology. The goal is to ensure that no negative impacts to the river or floodplain are created due to a new bridge structure; in some areas, older bridges may be modified to improve the river's natural flow.

The potential bridges include either a new 10-foot-wide pedestrian/bicycle bridge, reuse of existing vehicular bridge or replacement of existing vehicular bridge. The pricing also includes the approaches to the bridge, which in some cases can replace significant stretches of trail. The ultimate alignments and approaches will be refined if/when a bridge option is needed based on the recommended alignment. In addition to the bridges listed below, county bridges including the Redstone North and South bridges and the bridge to the Redstone Ranch Acres subdivision are being considered as linkages between potential trail alignments.

TS 7a: Prefabricated Single Span Pedestrian Bridge



TS 7a
SINGLE SPAN
\$2,400/LF

TS 7b: Prefabricated Multi-Span Pedestrian Bridge



TS 7b
MULTI-SPAN
COMPLEX
INSTALLATION
\$3,500/LF



Example of a bridge representing Typical Section 7A, from the Peaks to Plains Trail in Jefferson, County, CO.

Bridge Option 1 – Existing Vehicular Bridge

This bridge option connects the existing Crystal Valley Trail to the 7 Oaks/Sewell Tracts B alignment. The existing roadway bridge is in poor condition and is likely in need of replacement or significant maintenance in the coming years. The environmental study found that no new impacts to stream habitat would occur with this bridge option. If/when the bridge is replaced, there is the opportunity to enlarge the existing bridge to reduce the current floodplain constriction.

PROPERTY OWNERSHIP/JURISDICTION: 7 Oaks Subdivision Bridge Association/HOA ownership and management. With the purchase of Track 116, Pitkin County OST is now part of the subdivision bridge association.

ESTIMATED COST: \$1,513,187 (Vehicular Bridge)

Bridge Option 2 – New Pedestrian Bridge

This bridge option is a unique bridge crossing compared to others in that it stretches the length of the Crystal River Parcel B trail segment following the old railroad grade after bridging across the river. This option would connect 7 Oaks/Sewell Tracts A to Nettle Creek B, and is unlikely to be used if 7 Oaks/Sewell Tracts B is selected. Further investigation into this bridge crossing should occur during final design if this bridge is identified as a recommended route. This bridge option will likely have some impact on the riparian vegetation though the extent is undefined with the current conceptual level of design.

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way, Pitkin County's Ruben Open Space and Crystal River Parcel 1 Open Space.

ESTIMATED COST: \$954,427 (includes most the of the trail on Crystal River Parcel B)

Bridge Option 3 – New Pedestrian Bridge

This bridge option connects the A and B alignments between the Crystal River Parcel segment and the Nettle Creek segment. This option will likely have some impact on the riparian vegetation though the extent is undefined with the current conceptual level of design.

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way and Pitkin County's Crystal River Parcel 1 Open Space.

ESTIMATED COST: \$709,919

Bridge Option 4 – New Pedestrian Bridge

This bridge option connects the A and B alignments between the Nettle Creek segment and the Red Wind Point. This option is included as a separate pedestrian bridge to the north of an existing vehicular bridge

PROPERTY OWNERSHIP/JURISDICTION: CDOT right-of-way within WRNF lands.

ESTIMATED COST: \$365,976

Bridge Option 5 – New Pedestrian Bridge

This bridge option connects the A and B alignments between Red Wind Point and the Crystal River Country Estates segment. This option would parallel the existing paved bridge providing access to the Crystal River Country Estates neighborhood.

PROPERTY OWNERSHIP/JURISDICTION: Private property, CDOT right-of-way within WRNF lands, and a portion of Crystal River Flats Trail Easement.

ESTIMATED COST: \$477,563

Bridge Option 5.5 – New Pedestrian Bridge

This bridge option through Crystal River Country Estates. This possible mid-segment bridge crossing within the Crystal River Country Estates neighborhood would bypass the southernmost portion of the Crystal River Country Estates Alignment B to connect to Alignment A. South of the bridge location, Alignment B faces significant challenges in achieving an ADA appropriate grade through difficult terrain and is located in very close proximity to existing residential structures. It would not be recommended to use this bridge to go from Alignment A to Alignment B.

PROPERTY OWNERSHIP/JURISDICTION: Private Property and CDOT right-of-way within WRNF lands.

Estimated Cost: \$526,996

Bridge Option 6 – New Pedestrian Bridge

This bridge option connects the A and B alignments between the Crystal River Country Estates segment and the Andrews segment.

PROPERTY OWNERSHIP/JURISDICTION: Tract 116 Open Space/ Mertz Trail Easement and CDOT right-of-way within WRNF lands.

ESTIMATED COST: \$659,604

Bridge Option 7 – New Pedestrian Bridge

This bridge option connects the A and B alignments between the Andrews segment and the Perham segment. This bridge option would likely have impacts within the streambed with the addition of wall, riprap or piers; however there are no wetlands present.

PROPERTY OWNERSHIP/JURISDICTION: Private Property and CDOT right-of-way.

ESTIMATED COST: \$484,691

Bridge Option 8 – New Pedestrian Bridge

This bridge option connects the A and B alignments between the Perham segment and the Janeway North segment.

PROPERTY OWNERSHIP/JURISDICTION: WRNF and CDOT right-of-way within WRNF lands.

ESTIMATED COST: \$1,016,320

Bridge Option 9 – New Pedestrian Bridge

This bridge option connects the A and B alignments between the Janeway North segment and the Janeway South segment.

PROPERTY OWNERSHIP/JURISDICTION: WRNF and CDOT right-of-way within WRNF lands.

ESTIMATED COST: \$778,029

Bridge Option 10 – Existing Vehicular Bridge (Avalanche Creek Road)

This bridge option connects the A and B alignments between the Janeway South segment and the Avalanche segment. Bridge Option 10 is an existing roadway bridge on Avalanche Creek Road that is likely to require upgrades in order to accommodate trail usage, including deck and railing work. A full inspection of the existing bridge structure should be performed if this bridge is part of the ultimate trail alignment. If/ when the bridge is replaced there is the potential to enlarge the span to reduce floodplain constriction.

PROPERTY OWNERSHIP/JURISDICTION: WRNF.

ESTIMATED COST: \$366,029

Bridge Option 11 – New Pedestrian Bridge

This bridge option connects the A and B alignments between the Avalanche segment and the Narrows segment.

PROPERTY OWNERSHIP/JURISDICTION: WRNF and private property.

ESTIMATED COST: \$1,242,334

Bridge Option 12 – New Pedestrian Bridge

This bridge option connects the A and B alignments between the Narrows segment and the Filoha segment.

PROPERTY OWNERSHIP/JURISDICTION: WRNF, CDOT right-of-way within WRNF lands, and Hot Springs Ranch Open Space.

ESTIMATED COST: \$606,373

Bridge Option 13 – New Pedestrian Bridge

This bridge option connects the A and B alignments between the Filoha segment and the Wild Rose segment. This bridge option would likely have impacts within the streambed with the addition of wall, riprap or piers.

PROPERTY OWNERSHIP/JURISDICTION: Filoha Meadows Open Space and CDOT right-of way.

ESTIMATED COST: \$871,193

Bridge Option 14 – New Pedestrian Bridge

This bridge option connects the A and B alignments between the Castle segment and the Hawk Creek segment. This bridge option would likely have impacts within the streambed with the addition of wall, riprap or piers.

PROPERTY OWNERSHIP/JURISDICTION: Private Property, Power House Open Space Lands, and CDOT right-of-way.

ESTIMATED COST: \$300,000, based on 150 linear feet, single span bridge

H. PLANNING PROCESS AND STAKEHOLDER ENGAGEMENT SUMMARY

This draft plan for the Carbondale to Crested Butte Trail represents an extensive effort in outreach by Pitkin County Open Space and Trails and an extraordinary level of response from hundreds of citizens.

A 23-month planning process, from January 2017 through December 2018, has included open houses and presentations; staff involvement at meetings of community organizations, neighborhood groups and the Crystal River Caucus; public meetings convened by the Board of County Commissioners; and email updates to a list of recipients that now numbers more than 1,000 individuals. Open Space and Trails (OST) also employed social media, public radio spots and media press releases to keep the public informed about the project and the planning process. Throughout the planning process, staff met one-on-one with a number of individual landowners, HOAs, and interested stakeholders to walk the potential alignments or segments that were evaluated in the environmental and engineering studies. OST staff and the consultant team met periodically with representatives from the Colorado Department of Transportation, Colorado Parks and Wildlife and the White River National Forest to discuss opportunities and concerns specific to the Crystal Valley.

In addition to outreach efforts focused on the Crystal Valley, OST staff traveled to Crested Butte and Gunnison County on multiple occasions to coordinate with staff and elected officials there and keep them informed about the ongoing process in Pitkin County.

Draft Plan Development

Locally, public engagement formally began in January 2017 with a pair of open houses, one in Redstone and one in Carbondale that, collectively, drew roughly 130 attendees. The intent of this initial meeting was to introduce the preliminary trail concept and to collect feedback on the planning process and initial interests and concerns. A 6-question survey garnered 51 responses and helped guide the planning process that has occurred to date. The survey asked questions about the data inputs to the plan and engagement opportunities, as well as what would influence



Public meeting/open house held at the Redstone Inn on September 6, 2017.



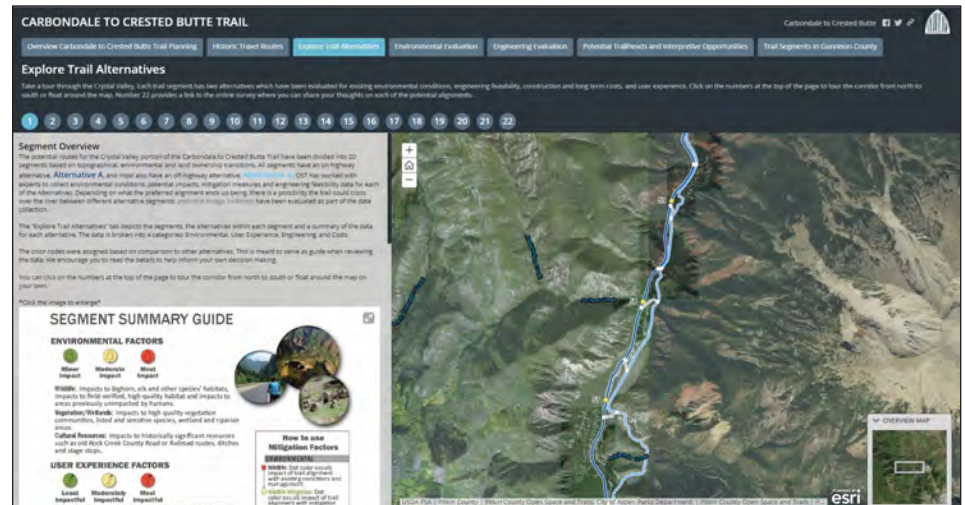
Public meeting/open house held at in Carbondale on September 7, 2017.

the success of the trail. In regards to the planning process and data needs, respondents wanted to better understand the potential impacts of a trail on the local environment and wildlife; the fiscal impacts of the trail and on-going maintenance needs through engineering and cost estimates; and the potential impacts to private property, requesting that landowners be engaged throughout the process. In determining the success of the Carbondale to Crested Butte Trail, common values included preserving the environmental and cultural attributes that make the valley and the trail unique, maintaining the rural feeling of the valley, protecting the Crystal River; and creating a quality, safe, multi-use trail experience. In August 2017, OST mailed a letter to about 575 Crystal Valley property owners to provide an update on what had occurred to date and the anticipated schedule of meetings yet to come, including a pair of open houses in September. At the September sessions, environmental and engineering consultants for the project presented the data they had collected regarding various potential trail alignments and were available to answer questions from attendees.

In late August, roughly 140 people turned out for a presentation in Carbondale on the history of travel in the Crystal Valley. Presentations by the environmental and engineering teams in both Redstone and Carbondale in early September drew more than 130 people in all. The two events kicked off a public comment period intended to inform development of a draft plan. A comment deadline of Oct. 2nd was extended to Oct. 30th and then to Nov. 15th to allow adequate time for citizens to digest the data compiled by the consultants and to make comments. In addition, roughly 150 people attended an Oct. 17th meeting of the Pitkin County Board of County Commissioners, Open Space and Trails Board and Carbondale Town Council, where citizens asked questions and made comments about the proposed trail; 39 people elected to speak at the session.

Draft Plan Review/Public Comment

Following the release of the draft plan, a third round of public meetings was held in May 2018 to present the action items and draft alignment. Presentations were held in Redstone (39 attendees), Carbondale (46 attendees), and Aspen (13 attendees). Additionally, 77 community



To enable the public to dig into the analysis of each of the segments and trail alternatives Pitkin County launched an informative website that allowed users to navigate through the corridor, with pages focused on the environment, engineering, and other factors

members attended the Public Listening Session held on June 26. The public comment period was open from June 1 – July 27. Also during this time, OST staff met with collaborating agencies, partners, and stakeholders including CPW, CDOT, USFS, Crystal River Caucus, Rocky Mountain Bighorn Society, Wilderness Workshop, RFMBA, CVEPA, Scenic Byway, the Biodiversity Initiative, Roaring Fork Conservancy and local environmental advocates.

PLAN REVISIONS AND ADOPTION

The action items within this plan are shaped by robust public input, as well as expert assessment of the Crystal Valley’s ecology and its landscape. The plan’s action items strive to seek a balance among divergent interests and opinions, and recognizes areas where further consideration is necessary. Following the comment periods during the Plan Development and Draft Plan Review stages, the OSTB and the BOCC reviewed comments and provided direction to update the action items. The comments from the public and the boards have been incorporated into the final plan adopted December 19, 2018.

Figure 8: Planning Process Timeline as of March, 2017





Stakeholder Outreach

Throughout the planning phase, OST maintained a web page at www.pitkinOSTprojects.com to keep the public abreast of project information, scheduled meetings and data as it became available. Links to videos of two presentations – featuring the historical retrospective on travel routes in the valley, and the consultants sharing their findings – were also posted. Citizens could also sign up for email updates through a link on the web page.

The project website was also used to launch an interactive approach to inform interested citizens about potential trail alignments. The interactive map divided the Crystal Valley corridor into 20 segments; citizens were able to click on each segment and study the environmental data and engineering feasibility associated with each of them. Potential trail alignments along Hwy. 133, west of the Crystal River, and on the county’s historic wagon road and a former railroad bed east of the Crystal River were identified for consideration in most segments. An accompanying survey allowed citizens to provide input, segment by segment, and express a preference for one alignment or the other in its entirety, or to select some segments along the highway and some to the east of the river, with identified bridge locations to connect the segments.

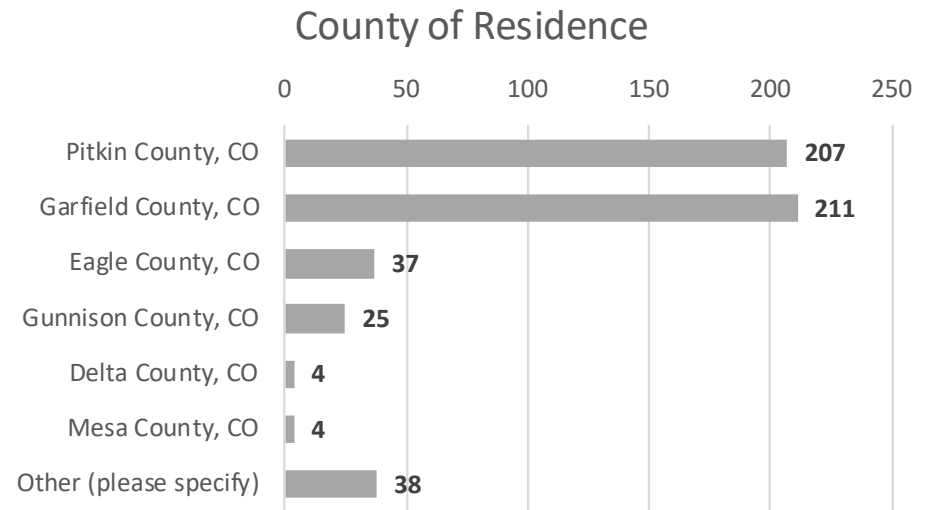
PUBLIC INPUT SUMMARY

Draft Plan Development Public Input Summary

In all, 526 respondents took the time to answer an on-line survey regarding alignment of the trail. Another 58 letters regarding the project are included in the record of public comment. Letters submitted came from individuals, landowners, neighborhood groups and various OST partners and non-profit organizations.

Among survey respondents, roughly 17 percent supported a trail but did not identify a preferred alignment; about 13 percent supported a combination of a trail locations – along the highway and east of the Crystal River; 22 percent advocated a trail exclusively in the highway corridor; close to 30 percent preferred the off-highway alignment east of the river (though some made exceptions for sensitive areas); close to 8

Figure 9: County of residence survey response



percent opted for no trail whatsoever; while about 4 percent preferred no trail at all, but advocated a trail along the highway if no trail is not an option. The remaining 6 percent of respondents offered comments that did not clearly fall into any classification of trail preference. All of the public input on the draft plan development is available to review in [Appendix D](#).

Who responded to the survey?

The majority of responses came from Pitkin and Garfield County residents. “Other” responses came from a mix of in-state areas such as Jefferson, Boulder and Larimer counties, as well as a few from out of state. Those who specified that they were a Crystal Valley resident were included in the Pitkin County group.

Survey Themes

Staff reviewed all of the responses and sorted them into seven categories based on the responses to the general comments and the overall responses to the segment questions. The seven categories included: Supportive of a trail, no preferred alignment; Supportive of

a Combination of A/B Alignments; Alignment A preferred; Alignment B preferred; No trail; No trail, but highway if none is not an option; and Other. Throughout each of the categories and across geographic areas, wildlife and environmental qualities of the Crystal Valley were noted as important elements to consider in choosing the preferred alignment. Other considerations that were voiced by a number of survey respondents include cost considerations, safety, trail experience and impacts on residents. Within the seven sub-categories identified by staff, some general themes are summarized below.

Alignment Preferences

- **Supportive of a trail** – no preferred alignment. This category captured individuals who generally felt there was a need for or supported a trail through the Crystal Valley; however, they did not identify a preferred alignment or segments.

Comment themes:

- » Many simply stated their support for the trail concept in general.
 - » Many respondents in this category identified the importance of protecting wildlife and environmental qualities, some specifically identifying the need to protect Filoha Meadows.
 - » The value of connecting communities, the destination quality of the valley and the potential trail, and the economic potential of the trail were all common themes heard from this group of respondents.
 - » Safety was identified as both a reason to support a trail and a value that should be considered in the preferred route selection.
 - » Cost considerations was another common theme respondents voiced as a factor in the selection of a preferred alignment.
- **Supportive** – Combination of A/B. This category captured responses from individuals who were supportive of the trail and identified a combination of A and B segments as their preferred route.

Comment themes:

- » Many in this category selected routes or voiced a preference for a route that balanced the environmental and wildlife

needs with recreation needs.

- » A common theme of responses in this category was to consider the impacts on residents, including private property and privacy concerns.
- » Trail experience and safety were values people expressed.
- » Cost considerations was another common theme respondents voiced as a factor in the selection of a preferred alignment.

- **Alignment A Preferred** – This category captured those respondents who felt that Alignment A was the preferred choice.

Comment themes:

- » Wildlife impacts and riparian health were common concerns/ considerations voiced by this group.
- » There was a desire among the respondents who selected the A alignment to have other options considered for a trail alignment, including the potential for an alignment on the west side of Hwy. 133 as well as the option to widen shoulders in place of a separated trail alignment.
- » Among this group, there was a concern about private property including the potential impact to current residents by providing more access to non-residents and impacting their properties.
- » A desire to avoid eminent domain or condemnation for trail development was a theme in this group of responses.

- **Alignment B Preferred** – These respondents identified a preference for Alignment B where possible or feasible; some exceptions are noted for specific trail segments, including Filoha Meadows.

Comment themes:

- » Trail experience including accommodating various users; a focus on creating a quality user experience away from highway traffic; and a preference to utilize the varied, scenic and landscape qualities within the Crystal Valley.
- » Cost considerations were viewed as an important value with a preference for the more conservative trail option in terms of cost voiced by many in this category.
- » Separation from the highway is important from a safety perspective.

- » There is concern among this group to avoid wildlife impacts, as was seen with other groups, however, generally this group is supportive of mitigation efforts including seasonal closures where needed or utilizing Alternative A in specific places such as Filoha.
- » Some of these respondents voiced a preference for singletrack.
- **No Trail** – These respondents were generally against any trail alignment going through the Crystal Valley.
 - Comment themes:
 - » Wildlife impacts were one of the top reasons people in this category cited for not supporting a trail. Many voiced a concern about the effectiveness of seasonal closures as a mitigation strategy.
 - » The character and privacy of the valley were cited as some of the primary reasons individuals in this group were against developing a trail. There was also a sentiment that more people would negatively affect current residents and/or environmental qualities.
- » Cost considerations as well as the view that a trail is not needed were referenced as reasons not to build a trail.
- » Some in this group felt widened shoulders along Hwy. 133 would be an adequate option.
- **No trail, but HWY if none is not an option** – These respondents were against any trail alignment going through the Crystal Valley, though they acknowledged that should a trail be developed, it should follow Alignment A.
 - Comment Themes:
 - » The comment themes for this group were largely the same as the “No Trail” group.
 - **Other** – These respondents provided comments on the trail that did not fall clearly into one of the classifications above.
 - Comment Themes:
 - » Many in this category stated a concern for wildlife impacts being a driving factor in the selection of a preferred alternative alignment.
 - » Many did not specify whether one alignment or the other would be preferred.

Figure 10: Preferred alternative survey response summary chart

	Pitkin County		Eagle County		Garfield County		Gunnison County		Delta/Mesa Counties		Other Counties		TOTAL	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Supportive of a Trail (No preferred alignment)	36	17.4%	8	21.6%	32	15.2%	6	24.0%	3	37.5%	4	10.5%	89	16.9%
Supportive - Combination of A/B	16	7.7%	21	56.8%	28	13.3%	1	4.0%	2	25.0%		0.0%	68	12.9%
Alignment A	52	25.1%	2	5.4%	44	20.9%	5	20.0%	3	37.5%	13	34.2%	119	22.6%
Alignment B (Supportive of majority Alignment B - some deviations for areas like Filoha)	51	24.6%	3	8.1%	88	41.7%	6	24.0%	0	0.0%	8	21.1%	156	29.7%
No trail	24	11.6%	3	8.1%	8	3.8%	4	16.0%	0	0.0%	1	2.6%	40	7.6%
No trail, but HWY if none is not an option	17	8.2%	0	0.0%	5	2.4%	1	4.0%	0	0.0%		0.0%	23	4.4%
Other	11	5.3%	0	0.0%	6	2.8%	2	8.0%	0	0.0%	12	31.6%	31	5.9%
Total	207	100%	37	100%	211	100%	25	100%	8	100%	38	100%	526	100%

Surface Type

In addition to polling the public on alignment preferences, respondents were asked: “What trail surface type(s) do you feel would be most appropriate from Carbondale to Redstone? How would you feel about the off-highway alternative being only a soft surface?”

Similar responses were divided into categories ranging from those who preferred soft-surface to those who preferred hard-surface trail types. Among responses, there was support for both hard and soft surfaces as well as a handful of respondents who supported a combination of hard and soft surfaces to accommodate a diversity of users.

Respondents who favored a soft surface indicated they believe a soft surface is less disruptive to wildlife and the environment, would limit user speeds and be more compatible with the landscape.

Those who favored a hard-surface reasoned there is a need to accommodate all users, particularly road bikers, and want the trail to provide a safe alternative to riding on Hwy. 133. Another subset of respondents said they prefer a soft surface with Alignment B (a trail east of the river) and a hard-surface for Alignment A (a trail alongside the highway). Some of the respondents who had previously voiced a preference for the highway alignment preferred this route be a paved trail or widened shoulders. Among those who completed the survey, not everyone responded to this question and some expressed no preference or opinion regarding surface type.

Trailheads / Interpretive Opportunities

The survey also asked: “Do you have comments on trailhead and interpretation locations?”

Among the 344 responses, some advocated interpretation to enhance the user experience while others saw no need for more signage. Others asked that new signage be kept to a minimum. Some respondents said adequate parking is important while others did not desire more parking areas. Some respondents advocated restrooms along the trail.

Respondents who advocated interpretive signage supported information on trail etiquette, nature and the environment, and the history of the area. Some asked that signage be provided at trailheads and bridges, or

that it be kept along the highway.

Respondents who favored parking suggested it be placed near existing parking or where other impacts already exist. Some asked that parking not be added at subdivision entrances. Habitat and wildlife should be considered in selecting sites for parking and signage, respondents said.

PARTNER AGENCY COMMENTS

Among the comment letters received on the project, the three from partner agencies in the project are summarized below.

- **Town of Carbondale:** A majority of the Carbondale Board of Trustees expressed support for a non-motorized Carbondale to Crested Butte Trail with careful regard for wildlife protection. Trustees noted opportunities for riparian and land management enhancements, as well as historical and ecological interpretation/education as part of the project. The town also acknowledged the trail’s potential economic benefit. Trustees urged a slower, more detailed public process and the individual consideration of even smaller segments of the proposed trail as the project planning moves forward.
- **Colorado Parks and Wildlife (CPW):** Colorado Parks and Wildlife expressed a preference for a trail alignment along Hwy. 133, but provided detailed comments for both alignments in order to partner on the project and create a “mutually agreeable trail alignment” that benefits both CPW’s and OST’s constituents. CPW’s comments contain a strong emphasis on education, the use of seasonal closures, dog on leash or no-dog areas, greater enforcement, and appropriate construction windows. CPW indicated their primary concerns are off-trail recreation use, seasonal closure violations and enforcement. User-created routes are also a special concern for CPW. In closing, CPW believes we can work together to find creative solutions to new and unusual issues and concerns that come with a project of this magnitude.
- **West Elk Loop Scenic and Historic Byway:** The West Elk Loop Scenic and Historic Byway Steering Committee expressed a preference for Alignment B, east of the Crystal River, for a paved trail to Redstone, and a gravel path between Redstone and the top of McClure Pass. Alignment B is an off-road alternative that would provide an exceptional user experience in terms of both nature and safety. Such a trail would provide an economic boost and is more doable from a financial standpoint, the committee said.

Draft Plan Public Input Summary:

Following the public comment on the possible alignment options, Staff drafted recommended planning actions and a draft trail alignment (Chapter 3: Crystal Valley Corridor Planning Actions). The draft actions were grouped into four sections: Biodiversity Preservation and Enhancement; Recreational Amenities; Maintenance, Management Enforcement and Outreach; and Trail Alignment. The plan also included implementation phasing and a summary of costs.

During the comment period from June 1 through July 27, a total of 252 completed survey responses were collected (an additional 219 individuals filled out the demographic information on the survey but did not respond to the survey questions). Staff also received letters or emails from 32 individuals, seven (7) of whom also responded to the online survey. Nine (9) comment letters were received from partnering agencies and advocacy groups, HOA and citizen groups.

Response Summary

- 487 Individual Log-ins (470 individual log-ins to the survey, 16 repeat individuals)
 - » 219 Filled out demographic information but not the survey questions
 - » 252 Respondents completed at least one survey question (one hard-copy submitted)
- 32 Letters or emails were received; eight (8) came from individuals who also submitted a survey
- 37 Individuals spoke at the June 26th Public Hearing, 12 also submitted a survey, 2 also submitted letters (but did not respond to the survey)
- 4 Individuals spoke at the meeting, submitted a letter and responded to the survey

The full survey responses and submitted letters can be found in [Appendix E. Draft Plan Public Comments](#).

PARTNER AGENCY COMMENTS:

- **White River National Forest (WRNF):** Staff met with the WRNF staff in July 2018 to review the Draft Plan. Discussion included seasonal closures for sections of trail, winter expansion for the Forest Protection Officer, timing for Avalanche Campground improvements, and maintenance of Forest Service sections of trail. WRNF is carrying the first portion of NEPA forward to their 2019 work plan.
- **Colorado Parks and Wildlife (CPW):** Staff met with CPW staff in July 2018 to discuss the Draft Plan. CPW subsequently submitted a letter with formal comments. The letter stressed the common interests between OST and CPW and a willingness to achieve an outcome that best suits all of our constituents. CPW emphasized that a trail in Alignment A would be their preferred route, but their letter then goes to call out specific segments and mitigation comments for Alignment B. CPW was supportive of the habitat improvement projects and monitoring in the draft plan. They emphasized looking at historically important ranges, even if the herd numbers are currently down. They also noted they look forward to working together on seasonal closures, enforcement officers, educational campaigns and commercial and special-use permits.
- **Town of Carbondale:** The Town of Carbondale did not submit a comment letter on the draft plan. Carbondale Trustees submitted comments prior to the development of the Draft Plan, which are summarized in the preceding section and included in [Appendix D](#).
- **Colorado Department of Transportation (CDOT):** Staff met with CDOT staff in August 2018. The draft plan was discussed and, overall, CDOT was extremely supportive of the plan and effort to date. Permitting requirements and time frames for potential trail routes were discussed, as were details regarding ADA, phasing, shoulders and operating agreements.

Figure 11: Draft Plan Survey county of residence

County of residence:	Survey Count	Crystal Valley Property Owner or Resident
Delta County, CO	3	1
Eagle County, CO	15	2
Garfield County, CO	96	39
Gunnison County, CO	9	4
Mesa County, CO	3	0
Other (please specify)	12	5
Pitkin County, CO	114	76
Total	252	127

**One hard copy survey received*

Crystal Valley Resident Response % (Pitkin and Garfield County) 50%
 Crystal Valley Resident Response % (Pitkin County) 30%

Survey Summary:

Biodiversity Preservation and Enhancement

Survey Question: Please provide your input on the Biodiversity Preservation and Enhancement Action Items.

77% question response rate (193 responses / 59 no response)

The majority of respondents to this question agree with the recommended action items A1.1 – A1.7. Respondents across the board feel strongly about the need to preserve and enhance the environment and biodiversity within the Crystal Valley through the action items put forth. A number of respondents commented on the importance of these actions regardless of the development of a trail. The comments relating to this question voiced general support for biodiversity; opinions relating to the effectiveness of seasonal closures (those who believe they work well and those who are concerned about their effectiveness); the need to improve the quality and functions of the Crystal River; and comments relating to funding. A portion of the responses commented on the preferred alignment, among these responses were those who advocated against Alignment B or were opposed to a trail on either alignment. A handful of these respondents noted their support for Action Items A1.1 – A1.6, but against the development of the trail and therefore the need for Action Item A1.7 (Best Management Practices for Trail Construction).

Recreation Amenities

Survey Question: Please provide your input on the Recreation Amenity Action Items.

67% question response rate (170 responses / 82 no response)

Respondents were generally supportive of the recreation action items, with some comments supporting the need to preserve rural character with minimal, low-impact and context-sensitive amenities, while others believed that additional amenities including parking would be needed and welcomed. Some respondents felt that recreation actions should be secondary to conservation actions. There were also responses from people who stated general support for the concept of a trail, those who were opposed to a trail within the Crystal Valley, some who supported shoulder improvements as an alternative to a trail; and those who made comments on their preferred alignment being either A or B.

Maintenance, Management, Enforcement and Outreach

Survey Question: Please provide your input on the Maintenance, Management, Enforcement and Outreach Action Items.

65% question response rate (164 responses / 88 no response)

Many respondents to this question were supportive of the Maintenance, Management, Enforcement and Outreach action items; though some respondents expressed their preference for one alignment over the other, general opposition to the action items or to the trail in general. Respondents emphasized the importance of seasonal closures and effective enforcement of the rules and regulations. Comments also addressed the need to ensure sufficient and long-term funding is allocated to enforcement staff. A handful of comments expressed concern that the enforcement action item is insufficient or that a lack of effective enforcement will lead to negative effects on wildlife habitat and the environment.

Trail Alignment

Survey Question: Please provide your input on the Trail Alignment Action Items. www.pitkinostprojects.com/carbondale-to-crested-butte-trail-plan.html. The main goal, for the Pitkin County stretch of trail, is to create a corridor for non-motorized, public trail access from Carbondale to the top of McClure Pass. Please share your thoughts on each segment, including if you feel there should not be a trail. Thirteen (13) segments have a recommended alignment, while seven (7) segments need additional information and collaboration prior to establishing a recommended alignment.

92% Response Rate (232 responses / 20 no response)

While some respondents (approximately 22%) still advocate that no trail be constructed up the Crystal Valley, the majority of respondents are supportive of a trail and offered comments regarding their preferred alignment or parts of the alignment they would like to change. A number of respondents remain in support of either the A or B alignment for the entirety of the trail, while others are supportive of the direction of the Trail Alignment action items, which utilize both the A and B alignments to optimize trail user experience, difficulty/cost, and environmental considerations. Some respondents made recommendations for changes to different segments. For example, requesting the Red Wind Point, Bear Creek and McClure Pass alignments be reconsidered and changed from Alignment B to Alignment A. While no decision has been made for Janeway South and Avalanche, some respondents voiced a preference to use Alignment A for these areas, while others preferred Alignment A in segments where Alignment B traversed subdivisions or private property. A number of respondents supported the single-track alignment from Redstone to McClure. Many responses highlight the importance of wildlife, respecting private property, and the health of the river.

3. CRYSTAL VALLEY CORRIDOR PLANNING ACTIONS



A. ACTION ITEMS

Planning for the Carbondale to Crested Butte Trail opened a much larger discussion on the recreation and environmental issues facing the Crystal Valley and the entire Roaring Fork watershed. Open Space and Trails has completed a comprehensive environmental review of the corridor and is already working with the Forest Service and Colorado Parks and Wildlife to address biodiversity preservation and enhancement, and recreation management in the Crystal Valley. This planning process has also spurred a citizen effort to assist OST with a current project, working with the Colorado Natural Heritage Program on collecting all of the existing natural resource data in the Roaring Fork watershed, as well as to create a valleywide initiative to enhance biodiversity and wildlife connectivity.

The Corridor Planning Actions have been developed after review of environmental reports, engineering reports, right-of-way surveys, cost estimates and themes heard in the public and partner agencies' comments. The actions are divided into four sections: Biodiversity Preservation and Enhancement, Recreational Amenities, Maintenance, Management, Enforcement and Outreach, and Trail Alignment. This section outlines the phasing for implementation of the actions. These actions can be amended by the Board of County Commissioners with continuing community input over time, as scientific knowledge expands and opportunities evolve and change.




This planning process has provided an opportunity to have a broader community conversation about the Crystal Valley corridor now and into the future. Many of the public comments highlighted the need for natural resource protections that should happen regardless of a trail. This plan creates an opportunity for the county to work with our partners and stakeholders including the Crystal River Caucus to facilitate projects with a renewed energy and focus to benefit the Crystal Valley.

The Trail Alignment Action Items present a phased approach with the next steps outlined. The general goal is to establish a public trail connecting the current end of the Crystal Trail to the top of McClure Pass. The trail surface, beyond soft surface or native soils, can be revisited in future discussions after a recommended route has been determined. The desired surface type for each segment may be phased over time.



ACTION ITEMS:

The action items are grouped into four categories: Biodiversity Preservation and Enhancement; Recreational Amenities; Maintenance, Management, Enforcement and Outreach; and Trail Alignment. The action items which address specific locations throughout the Crystal Valley corridor are identified using the following symbols. Other action items are either corridor-wide or do not have specific locations identified at this stage of planning. The alignments and icons for specific action items are included on Maps 3.2 - 3.29.

A1. BIODIVERSITY PRESERVATION AND ENHANCEMENT

-  A1.1 Habitat Enhancement Projects
 - A1.2 Crystal River Resource Enhancements
-  A1.3 Wildlife Monitoring
 - A1.4 Bighorn Resiliency
-  A1.5 Seasonal Closures of Potential Trail Routes
 - A1.6 Conservation Easements
 - A1.7 Best Management Practices (BMPs) for Trail Construction

A2. RECREATIONAL AMENITIES

-  A2.1 Trailheads and Parking Locations
-  A2.2 Interpretation
 - A2.3 Signage
 - A2.4 Work with CDOT on increasing the paved shoulder widths on Hwy. 133
 - A2.5 Avalanche Campground Improvements

A3. MAINTENANCE, MANAGEMENT, ENFORCEMENT AND OUTREACH

A3.1 Maintenance Staff and Equipment

A3.2 Weed Control

A3.3 Management and Regulations

A3.4 Enforcement Staff

A3.5 Educational Campaign Partnership with CPW

A3.6 Commercial and Special Use Permits

A4. TRAIL ALIGNMENT

CONSISTENCY WITH THE COMMUNITY VISION AND GUIDING POLICIES

The planning process for the Crystal Valley Trail has raised concern among some of the valley's residents regarding the potential impacts the development of a non-motorized trail and increased visitation may bring to the rural character of the valley. It is important that future actions and decisions be guided by the County's Community Vision to "continue to be a healthy, safe, vibrant and sustainable community, enhancing the quality of life for everyone who lives, works and visits here, while conserving the natural environment as the basis for our community success." This Community Vision is supported by three Core Focus Areas and Success Factors described the county's Strategic Plan which include:

- Flourishing Natural and Built Environment
 - » Conserved natural resources and environment
 - » Responsibly maintained and enhanced county assets
 - » Ease of mobility via safe and efficient transportation systems
 - » Well-planned and livable built environment
- Livable and Supportive Community
 - » A sense of personal and community safety
 - » Diverse and livable housing options

- » Self-sufficient individuals and families
- » Access to recreation, education, arts and culture
- » Improved community engagement and participation

- Prosperous Economy
 - » Sustainable economy and employment
 - » Affordable and quality health-care options
 - » High-performing county leaders, teams and employees
 - » Responsible and accountable stewardship of county assets

In addition to ensuring future actions support the county's vision and strategic plan, actions will also be guided by the Open Space and Trails Biodiversity Policy which states that it is incumbent on the Open Space program to manage human uses in a manner that preserves and protects native biodiversity.

A1. BIODIVERSITY PRESERVATION AND ENHANCEMENT ACTION ITEMS

The environmental review and meetings with land managers and specialists, including the White River National Forest and Colorado Parks and Wildlife (CPW), raised concerns regarding a number of ecological challenges facing the Crystal Valley. Ecological concerns range from the declining numbers and disease facing the valley's beloved bighorn sheep herd that winters along the valley's eastern cliffs and meadows, to a degraded and impacted river and riparian system. Pitkin County is uniquely positioned to help coordinate efforts and foster partnerships that span ownership boundaries to improve wildlife habitat, restore riparian and wetland ecological function, and protect and promote biodiversity on a landscape level throughout the Crystal Valley. Public input showed overwhelming support to protect wildlife and the environment, with particular emphasis on the bighorn sheep. The following action items focus on enhancing our understanding of wildlife's presence and patterns within the Crystal Valley and beyond to help support future management strategies, as well as partnering on activities that have been previously identified to help enhance habitat functions and support a resilient ecological system. Additional action items that will contribute to ecological improvements include enforcement and education actions that are included in subsequent sections.

A1.1 Habitat Enhancement Projects

The county will continue to work with our partners to improve habitat conditions for bighorn sheep, elk and mule deer in the Crystal Valley. The county, CPW and WRNF have collaborated in the past on habitat improvement projects in the Crystal Valley to benefit bighorn sheep and elk, both to improve forage and increase sight connections between forage and terrain to escape from predators. The county will also work with private property owners to enhance habitat during forest fire fuel reduction projects. In addition to the currently planned burn projects, the county will seek to continue projects like these including, but not limited to, the following:

- 20 acres of vegetation thinning near Penny Hot Springs. The project would focus on 30-50% removal of pinon-juniper and oak brush. Implementation after August 1 to minimize disturbance to wildlife.
- 10 acres of vegetation thinning at Red Wind Point Open Space. This project is focused on the upper bench and would include 30-50% removal of pinon-juniper and oak brush. Implementation after August 1 to minimize disturbance to wildlife.
- Research on cheatgrass control in pinon-juniper woodlands. Cheatgrass is a noxious weed of concern in Colorado. It colonizes dry, warm sites after disturbance which are often used by big game as important winter range. The weed is extremely difficult to control and will crowd out native grasses and flowering plants. Research on its control has been done in the interior West, but little work has been done on the Western Slope. The need for effective control treatments is important if winter range habitat improvements are to occur in pinon-juniper woodlands, a common vegetation community in the low elevations of the Crystal Valley and elsewhere in Pitkin County. Addressing cheatgrass proactively in the Crystal Valley, where it is not as pervasive as in other parts of the West, is important to protecting the integrity of the valley's habitats. The funds would be used to contract a study of control methods associated with cheatgrass removal in pinon-juniper for the purpose of developing techniques to be employed with future habitat improvement projects.

IMPLEMENTATION TIME FRAME: Ongoing

ESTIMATED COSTS: 2019 – Filoha - \$13,000, Red Wind Point - \$6,500, Cheatgrass study - \$30,000 (could be extended up to 3 years)



The upper bench of Red Wind Point is one of the areas identified for Habitat Enhancement Projects to thin vegetation. (Photo: Todd Patrick, 2006)

Annual Costs - \$90,000 contribution to WRNF habitat improvement projects for prescribed fire (\$30,000 in 2018 and \$20,000 in 2021, 2024, and 2027 - approximate years)

POTENTIAL PARTNERS: WRNF, CPW, Rocky Mountain Bighorn Society, Watershed Biodiversity Initiative, Sheriff's Office, private landowners

A1.2 Crystal River Resource Enhancements

Open Space and Trails, Healthy Rivers and Streams, and Roaring Fork Conservancy will collaborate on improving the current state and health of the Crystal River's riparian areas and in-stream habitats. The partnership seeks to identify opportunities to improve the river's resiliency by reconnecting floodplains and restoring riparian areas. Initially, the partnership could help facilitate a one-day workshop centered on the Crystal River. The workshop would be a starting point to determining locations for more in-depth studies and on-the-ground improvement projects. Other potential partners include: Colorado Parks

and Wildlife, White River National Forest, Crystal Valley Environmental Protection Association, and Wilderness Workshop.

IMPLEMENTATION TIME FRAME: Fall 2018 Workshop

ESTIMATED COSTS: One-time cost - \$5,000
Future Project Implementation - To be determined

POTENTIAL PARTNERS: HRSB, RFC, WRNF, CPW, CVEPA, WW

A1.3 Wildlife Monitoring

In order to gain further understanding of wildlife presence and habits, the county will work with CPW and the WRNF to conduct the following surveys and monitoring activities in the Crystal Valley corridor. If the scientific findings demonstrate the need to revisit management practices in the Crystal Valley, the county will work with our partners to adapt management.

- **Bighorn Lambing** – The county will work with our partners to monitor yearly for bighorn sheep production in the following areas: Red Wind Point, Avalanche, Narrows and Filoha. The locations for monitoring can be expanded or reduced based on findings and scientific needs of the partnership. Data collected will inform management and can lead to adaptive management of seasonal closures on county properties.
- **Raptor Nests** – The county will work with our partners to monitor for active raptor nests within a ½-mile buffer of proposed trail segments every two years. Surveys will be conducted during the breeding season. Information gathered will be provided to CPW for use in their raptor nest database.
- **Elk Calving** – The county will work with our partners to monitor yearly for elk production within ¼-mile of Bear Creek Alignment B Trail Segment. Based on findings, the county can work with the WRNF on adaptive management.

IMPLEMENTATION TIME FRAME: 2019 - Ongoing

ESTIMATED COSTS: \$10,000 for year one and \$4,000 annual costs.

POTENTIAL PARTNERS: WRNF, CPW, Watershed Biodiversity Initiative, Rocky Mountain Bighorn Society



There is potential to improve the riparian area along Janeway.



Bighorn sheep are commonly sighted along the eastern slopes of the Crystal Valley.

A1.4 Bighorn Resiliency

The county will work with its partners to prevent the disappearance of the Crystal Valley's bighorn sheep herd, restore it to health and restore its population to healthy numbers, as determined by Colorado Parks and Wildlife. This may need to be a landscape-level effort and can include working on habitat enhancement projects, outlined in action A1.1, better enforcement of existing closures, outlined in action item A3.4, weed management, outlined in action A3.2, and working with grazing lessees to ensure that native and domestic sheep are not coming into contact. Knowledge from past land managers, who worked with a herd that was more robust, will supplement current efforts and to monitor the behaviors of a smaller herd. This may also include partnerships with adjacent private landowners for habitat treatments that extend beyond the forest boundary onto private lands. Monitoring for project success would be part of any undertaking.

IMPLEMENTATION TIME FRAME: 2019

ESTIMATED COSTS: To be determined based on the outcomes of the partner discussions.

POTENTIAL PARTNERS: WRNF, CPW, Rocky Mountain Bighorn Society, Watershed Biodiversity Initiative, private landowners

A1.5 Seasonal Closures of Potential Trail Routes

Depending on the specific route selected, OST will work with its partners to mitigate impacts to wintering wildlife through the management and enforcement of seasonal closures, where recommended, along potential B alignments. Physical barriers, including full gates, will be utilized at bridges and other appropriate locations to mark seasonal closures. On county lands, OST has direct enforcement ability and is exploring ways to share this responsibility on Forest Service (USFS) lands (Action Item 3.4). Recommended seasonal closures are described below for each of the possible off-highway trail segments; however, existing seasonal closures within the Crystal Valley also remain in effect. Additional seasonal wildlife closures could be worked out with the White River National Forest (WRNF) or private landowners at a future date. Seasonal closures on segments that cross Forest Service lands can be discussed as a part

* Revised per 2024 Amendment to remove Avalanche B alignment

of the NEPA process on any of the following alternative B segments if pursued. OST will monitor and report on the effectiveness of seasonal closures throughout the Crystal Valley.

The following seasonal closures, at a minimum, would be needed if Alternative B is chosen through these segments:

- **Red Wind Point Trail Alternative B** – Closed December 1 through April 30 (This is a clarification of the language in the Red Wind Point Management Plan)
- **Janeway South Trail Alternative B** – Closed November 15 through April 30
- ~~**Avalanche Alternative B** – Closure November 15 to May 1 (possibly through June 30 if lambing is present)~~
- **Narrows Trail Alternative B** - Closed December 1 through April 30 (possibly through June 30 if lambing is present)

The combination of physical barriers (gates at access points/bridges), camera monitoring, education and enforcement of seasonal closures can be an effective way to protect wildlife and create a recreational amenity and non-motorized transportation alternative. Continued funding is also a critical component to the success of closures.

IMPLEMENTATION TIME FRAME: Ongoing on existing OST properties and will be implemented in the future once access or trail segments are built. The intent is for seasonal closures to be in place for the life of the trail.

ESTIMATED COSTS: Costs would result from additional signage and staffing for enforcement addressed in Action Item A2.3 and Action Item A3.4.

POTENTIAL PARTNERS: WRNF, CPW



Seasonal closures have been effective on other open space properties and trails such as Sky Mountain Park and the Rio Grande Trail.

A1.6 Open Space Acquisitions and Conservation Easements

Pitkin County will work with property owners to further the goals of the Crystal Valley Caucus Master Plan and the OST department’s mission to conserve lands within the Crystal Valley. Parcels considered for conservation are those that meet OST’s mission to preserve lands with recreational, wildlife, agricultural, scenic and access purposes. Specific emphasis will be placed on protecting important habitats. Strategies for conservation may include a variety of acquisition methods including conservation easements, trail/fishing/access easements, fee purchase, gifts or grants of land, or other innovative land acquisition techniques that balance conservation and recreation objectives within the valley.

IMPLEMENTATION TIME FRAME: Ongoing

ESTIMATED COSTS: Varies depending on acquisition method and parcel

POTENTIAL PARTNERS: Aspen Valley Land Trust, Roaring Fork Conservancy, CPW, GOCO

CRYSTAL VALLEY DEVELOPMENT FORECAST:

There remains substantial potential for additional residential development within the Pitkin County portion of the Crystal Valley. As the residential development of the Crystal Valley continues, the lack of pedestrian and bicycle safety along the corridor will be an increasing concern. In 2014, the Pitkin County Community Development Department completed a buildout analysis for the Crystal River Valley which evaluated the existing zoning, conserved parcels and both the maximum and likely remaining buildout. The analysis found that approximately 351 additional dwelling units are likely to be constructed in the valley, adding to the existing 435 units over time. Lands with high resource values can be protected through open space acquisition and conservation easements. (2014 Buildout Analysis)

The upper Crystal Valley, from Highway 133 to north of the Townsite of Schofield, is part of Gunnison County. This area includes both unincorporated areas, mostly comprised of forest service lands, as well as the Town of Marble. Within the unincorporated Gunnison County area, there are 210 existing residential properties, with another 392 vacant parcels. 212 of the lots are one-acre or larger and 18 are remote mining claims above Beaver Lake. The majority of the 162 sub one-acre vacant parcels are 1/3-acre parcels in the Marble Ski Area filings, which require a legal lot-clustering process to achieve a conforming one-acre parcel that can be developed. The County requirement requires a one-acre or larger parcel for installation of an on-site wastewater treatment system. A review of the Gunnison County permit database indicates that six building permits have been issued in the last five years for single-family residential construction, indicating that development pressure and growth in the upper Crystal is minimal. In the last 10 years, there have been no subdivision applications in the upper Crystal Valley and the county does not anticipate any new subdivisions or significant residential growth in the foreseeable future. The challenges of assembling multiple lots, access constraints, the limited availability of water and the remote setting, contribute to relatively slow growth in this area of the valley. The Town of Marble and the three-mile planning area share similar development constraints (individual sewage disposal system, mud flows, and unstable slopes) and have had a relatively stable population of approximately 130 people over the last decade following significant growth in the 1990s.

A1.7 Best Management Practices for Trail Construction

The following best management practices outline measures that should be taken regardless of trail location or phasing of implementation, for the protection of wildlife and habitats.

- No construction during seasonal wildlife closures.
- Work with CPW and WRNF on restoration seed mixes appropriate for habitat zones.
- Work with CPW and WRNF on riparian area design techniques and tools during implementation and project construction.
- In-stream construction should only occur Aug 15th – Sept 30th to avoid impacts to native fish spawning.
- Sediment containment during construction.
- Stabilize exposed banks with native materials and vegetation.
- Minimize the construction of new fences, retaining walls and barriers to reduce impacts to wildlife passage and migration corridors.
- All fences must be wildlife friendly.

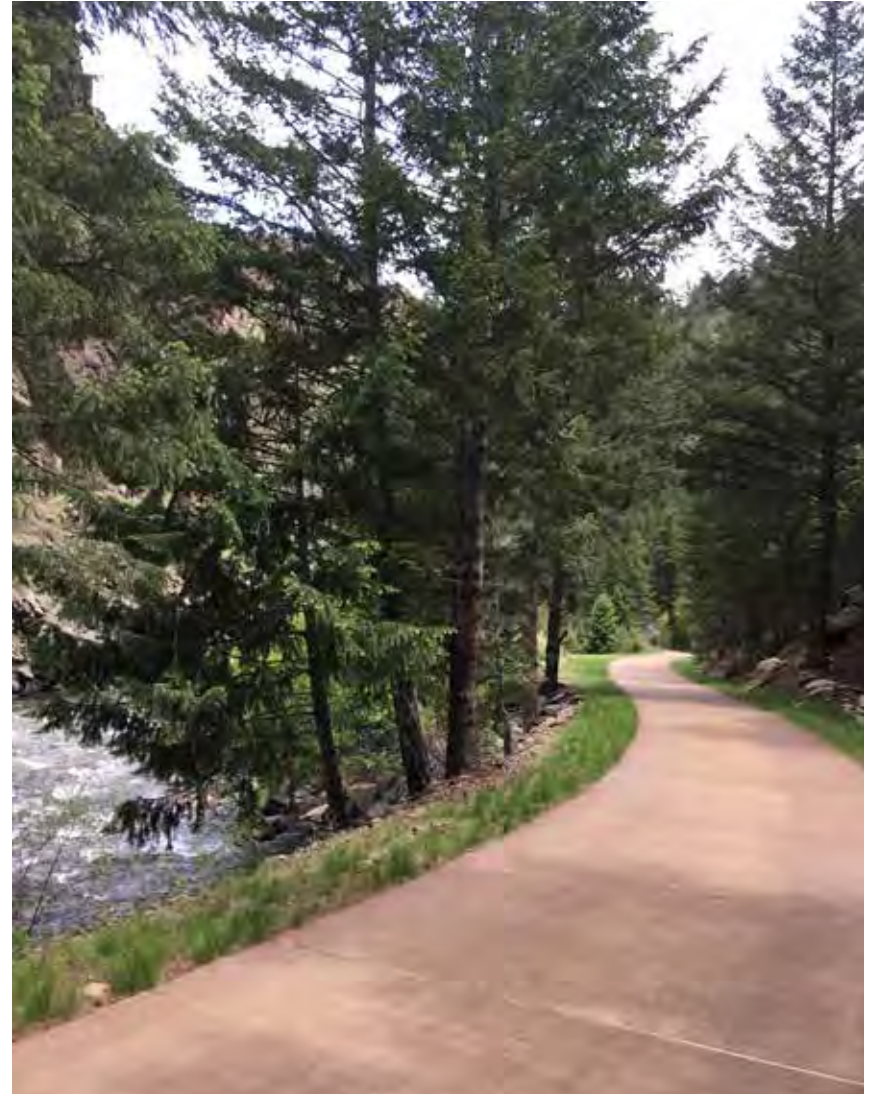
BRIDGE AND TRAIL DESIGN

- Design bridges with the maximum feasible length across the river to minimize floodplain constriction and promote channel migration, hydrological balance and riparian habitat succession;
- Replace existing narrow bridges with wider structures to withstand bankfull flows and minimize flow deflection;
- Avoid and minimize the use of impermeable materials along the riverbank to support hydrological balance; and
- Design piers and bridges so that flow deflection from pilings or structures is minimized.
- For any Alternative A trail locations, look at the potential realignment of Hwy. 133 to allow for more trail construction space between the highway and the river. If it is possible to realign the highway, this could facilitate less complex trail structures and minimize impacts to the river.
- Incorporate gates where needed on bridges or other access points as a physical barrier marking seasonal closures.

IMPLEMENTATION TIME FRAME: During design and construction

ESTIMATED COSTS: To be determined

POTENTIAL PARTNERS: CPW, CDOT, WRNF



The Peaks to Plains Trail in Jefferson County utilized a number of best management practices and innovative construction materials and techniques to build a trail with as small of a footprint as possible - one that is compatible with the natural surroundings of the area.

A.2 RECREATIONAL AMENITIES ACTION ITEMS

A2.1 Trailheads & Parking Locations

Properly located, designed and managed trailheads are a critical part of the discussion of trail alignments. Regardless of trail location, the county would work with our partners on the following key trailhead locations for the Carbondale to Crested Butte Trail within Pitkin County. As planning moves forward, standards will be established for the trailheads/parking areas to define a hierarchy and amenities that will be included. ADA parking and accessibility standards will be integrated into the designs where possible. Any new amenities or improvements will seek to be consistent and compatible with the rural and scenic character of the Crystal Valley.

- **7 Oaks/Sewell Tracts** –The county will work with CDOT and 7 Oaks HOA on potentially improving the existing parking area and designating the intersection of 7 Oaks Road and Hwy. 133 as a trailhead with approximately seven spaces.
- **Perham Creek** – The existing Perham Creek trailhead is currently managed by OST and offers approximately four parking spaces in addition to trailer parking. In the future, it can also be utilized as trailhead for the Carbondale to Crested Butte Trail as well as Perham Creek and may be expanded. The existing seasonal closure of the parking area, Dec. 1 through March 31, would still apply.
- **Avalanche Creek** – The county would like to work with the WRNF on managing the current winter closure gate parking area as a trailhead location for the Carbondale to Crested Butte Trail. This may require expansion of the current parking area. This can be looked at as part of the Avalanche trail segment discussion.
- **Penny Hot Springs** – As part of the discussion on the Penny Hot Springs’ design and access, the county will work with CDOT on the appropriate location and amount of parking to serve both the hot springs and the trail. Currently, the pull-off accommodates 10-15 vehicles.
- **Redstone East Creek** – The county owns and manages the East Creek trailhead along Redstone Boulevard. As part of the discussion for the initial trail segments, the county will evaluate the current parking and look at ways to organize and expand the existing East Creek parking area, which currently accommodates approximately eight vehicles.

- **Elk Park** – Elk Park is an existing Open Space parking area in Redstone that accommodates approximately 20 parking spaces, including ADA spaces. This parking area can be utilized for trailhead parking.
- **Bear Creek** – The county will work with CDOT and WRNF on formalizing the current parking area where the Bear Creek trail meets Hwy. 133. There are approximately ten existing parking spaces. This parking area also utilizes the platform created by the Rock Creek County Road.
- **Base of McClure** - The county will work with the USFS and CDOT on potentially improving and modestly expanding the existing parking pull-out at the base of the old McClure Pass switchbacks; it currently accommodates 2 to 3 vehicles.
- **Top of the Pass** – The top of McClure Pass has an existing parking area used year-round by recreationalists. This could also serve as a trailhead parking area. The parking area has approximately 10 parking spaces with some room for potential expansion. Additionally, a secondary pull-off area to the east is used for overflow parking.

IMPLEMENTATION TIME FRAME: Begin in 2019, phasing will take place as adjacent sections of trail are designed and constructed.

ESTIMATED COSTS: To be determined depending on the level of design and engineering requirements.

POTENTIAL PARTNERS: WRNF, CDOT

A2.2 Interpretation

One of the initial goals for the Carbondale to Crested Butte Trail was to “expand opportunities for education, interpretation, and appreciation of the unique natural, cultural and historical resources along the corridor.” The trail will offer a unique perspective on all of the interesting elements that make the Crystal Valley so special.

The county will work with our partners on an interpretation plan for the Crystal Trail portion of the Carbondale to Crested Butte Trail. Topics may include:

- **Natural History** – Geology of the valley, Hays Creek, and other locations

- **Historic Sites** – Tracing the Ute history, Red Wind Point rail grade, Janeway, Avalanche, Rock Creek County Road, Filoha Meadows, Redstone Coke Ovens, Redstone Castle and Placita
- **Wildlife / Environmental Education** – Bighorn sheep and elk at Filoha, how to have respect for and a positive viewing experience with wildlife (bighorn sheep, bears, moose, etc.), and reptiles and amphibians at riparian areas

IMPLEMENTATION TIME FRAME: Begin plan in 2020.

ESTIMATED COSTS: To be determined.

POTENTIAL PARTNERS: WRNF, CPW, RFC, West Elk Loop Scenic and Historic Byway

A2.3 Signage

In the Crystal Valley, all regulatory, wayfinding and trailhead signage will follow OST sign standards. If and when signage may be located on WRNF property, the design and content will be done in collaboration with the WRNF. In the future, the Carbondale to Crested Butte Trail may undergo its own branding signage, but that should wait until the majority of the trail is completed.

Trail and trailhead signage can include, but is not limited to: maps, seasonal closure information, use restrictions, contact information for emergencies, positive wildlife interaction information, partnering agency logos, and rules/regulations. Signage will be compatible with the rural character of the Crystal Valley.

IMPLEMENTATION TIME FRAME: As trail segments are opened.

ESTIMATED COSTS: To be determined.

POTENTIAL PARTNERS: WRNF, CDOT

A2.4 Work with CDOT on increasing the paved shoulder widths on Hwy. 133

The county will continue to advocate for wider shoulders along Hwy. 133. The goal should be a 4-foot shoulder beside each travel lane, though this may not be feasible in all locations. Cyclists must follow the



A cyclist on Hwy. 133, where there are minimal and uneven shoulders.

traffic laws and ride with the direction of traffic. Increased shoulder widths would not serve the diversity of user types that a fully separated trail would, but it will increase safety for both the more experienced road bikers and highway motorists. Due to plowing and winter maintenance requirements of the highway, the use of larger shoulders would be limited seasonally. Additional improvements may include "share the road" and "ride single file" signage.

IMPLEMENTATION TIME FRAME: As opportunities arise. However, pursuant to CDOT's repaving schedule and the recent repaving undertaken on Hwy. 133 in 2018, additional shoulders are unlikely to be added by CDOT, even with funding from Pitkin County, until after 2030.

ESTIMATED COSTS: To be determined.

POTENTIAL PARTNERS: CDOT

A2.5 Avalanche Campground Improvements

The Avalanche Campground is a beloved location in the Crystal Valley. It is also a critical, designated camping area for future users along the Carbondale to Crested Butte Trail. The WRNF has proposed improvements to the campground including: upgrading of existing sites, decommissioning of two sites and construction of four new sites. These improvements were in the 2014 Avalanche Campground Healthy Forest Campsite Relocation Environmental Assessment with purposes of visitor safety, forest and riparian health, and maintaining a high level of scenic integrity. The WRNF has been unable to secure funding to make these improvements come to fruition and OST feels it is critical to partner with WRNF to keep Avalanche Campground open and managed sustainably. The funding will be contingent on an agreement establishing a commitment on behalf of the WRNF to ensure the campgrounds within the Crystal Valley remain open for a period of time.

IMPLEMENTATION TIME FRAME: Fall 2019

ESTIMATED COSTS: \$73,500 (Half of the full project cost)

POTENTIAL PARTNERS: WRNF

Figure 12: Avalanche Campground



A3. MAINTENANCE, MANAGEMENT, ENFORCEMENT AND OUTREACH ACTION ITEMS

A3.1 Maintenance Staff and Equipment

The Carbondale to Crested Butte Trail in the Crystal Valley will expand the assets and maintenance responsibilities of the Open Space and Trail Department. This, in addition to the existing properties in the Crystal, could require the phased increase of seasonal maintenance staff. In addition to new or improved trails on open space properties, Open Space and Trails would assume maintenance responsibility for the trail segments that traverse White River National Forest lands. A maintenance agreement will be discussed as a part of the NEPA process. Maintenance needs may be achieved by either the funding of Forest Service staff or adding open space staff dedicated to the Crystal Valley. The Roaring Fork Mountain Bike Association has also expressed interest and is well positioned to assist with trail maintenance on the soft-surface/ singletrack segments to the south of Redstone, much of which is located within the WRNF. Maintenance responsibilities can include, but are not

limited to: weed spraying, mowing, seeding, park irrigation and trail and property maintenance.

Additional crew members would be phased in with trail implementation. Initial phases may require 1 to 2 additional crew members who could also take on the maintenance of existing OST assets in the Crystal Valley. As more trail is completed, the crew can continue a phased growth with no more than 4 additional crew members anticipated at full trail buildout.

OST may also look for a location in the Crystal Valley to store smaller pieces of maintenance equipment in order to decrease the amount of hours crew members spend traveling and increase the time spent on the ground. Machine purchases may be needed in the future for the proper maintenance of the trail. The actual needs will vary depending on the trail surface type and other factors.

No winter maintenance is proposed for the trail on either the off-highway or highway alignments at this time.

IMPLEMENTATION TIME FRAME: First additional Crew member to be brought on in 2023 (will depend on actual implementation timing).

ESTIMATED COSTS: Costs for additional maintenance staff/needs will be determined when new sections of trail are added.

USFS Seasonal Crew Member = \$25,000 (annual expense) or

OST Seasonal Crew Person = \$30,000 (annual expense);

Additional maintenance equipment = \$50,000 (one time cost with 10-year replacement plan)

POTENTIAL PARTNERS: WRNF, RFMBA

A3.2 Weed Control

The county will partner with the WRNF on vigilant, long-term weed control, both along recreation corridors and in important habitat areas. Weed treatments in Bulldog Creek, Avalanche Creek drainage (including Duley Park), Filoha Meadows (including adjacent national forest lands), and Placita would need to occur on a yearly basis; as well as around the Avalanche, Bogan Flats, and Redstone campgrounds. A large-scale, 3- to 5-year push to treat *Linaria vulgaris* (yellow toadflax), *Absinthium* (Absinth wormwood) and other noxious weeds in the Marble Valley, including Lily Lake to North Fork, is needed in important habitat areas. Weed treatment success will be monitored and the management approach adapted over time.

IMPLEMENTATION TIME FRAME: 2019

ESTIMATED COSTS: \$13,000 per year, additional \$25,000 for the Marble Valley (3- to 5-year project)

POTENTIAL PARTNERS: WRNF, Rocky Mountain Bighorn Society, WW, CPW, Gunnison County, Volunteers

A3.3 Management and Regulations

The county would like to work with CPW and WRNF on appropriate locations for specific rules and regulations. The county's Title 12 requires that dogs are leashed on OST assets unless otherwise stated. We would like to work with our partners on this regulation and others, such as:

- Trail segments where no dogs should be allowed
- Trail segments where trail users should be restricted to the trail
- No camping or sleeping at trailheads
- Seasonal closures of trail segments
- Pack in/Pack out – no trash receptacles proposed (bear conflict prevention)
- Camping restrictions

IMPLEMENTATION TIME FRAME: Ongoing

ESTIMATED COSTS: None at this time.

POTENTIAL PARTNERS: CPW, WRNF, CDOT

A3.4 Enforcement Staff

The county would like to work with our partners to create an enforcement officer position with jurisdiction on all lands in the Crystal Valley spanning from Prince Creek to the top of McClure Pass. There is existing need for seasonal enforcement in both the summer and winter seasons. When additional trail segments are constructed, additional staff will be added. This position would focus on enforcing the current rules, regulations and laws, including seasonal closures. The individual would also help monitor and enforce on user-created routes. The Crystal Valley has existing enforcement challenges that this position could address in the near term as well as addressing future enforcement needs as the trail is implemented in the future.

IMPLEMENTATION TIME FRAME: 2020

ESTIMATED COSTS: \$50,000 - annual costs for summer and winter officer to meet existing needs through 2030. Costs would increase as needed with the development of additional trail segments to employ additional staff or provide year-round presence for the life of the trail.

POTENTIAL PARTNERS: CPW, WRNF, BLM, Rocky Mountain Bighorn Society

A3.5 Educational Campaign Partnership with CPW

The county would like to create an education campaign with CPW focused on healthy wildlife interactions, sustainability and public awareness of human impacts. These topics may include, but are not limited to:

- How to have a positive wildlife viewing experience
- Recreational impacts on wildlife and how to be a positive trail user
- How to handle bear, moose, bighorn sheep, coyote and mountain lion interactions
- Respect for seasonal closures
- Proper trash disposal and individual responsibility

Additionally, it will be important to work with and educate neighbors on the importance of respecting seasonal closures.

IMPLEMENTATION TIME FRAME: Ongoing, 2019 start a focused campaign

ESTIMATED COSTS: \$50,000 for graphic design and \$2,500 for annual ad placements

POTENTIAL PARTNERS: CPW, Rocky Mountain Bighorn Society

A3.6 Commercial and Special Use Permits

The county will work with WRNF, CDOT and the county Community Development Department on appropriate ways to permit, appropriate use levels and the best ways to manage Commercial and Special Uses. Items to discuss include, but are not limited to: Group size, guided tours, races and events, shuttles, day and time restrictions, fees and jurisdictions. The goal is to create a seamless system.

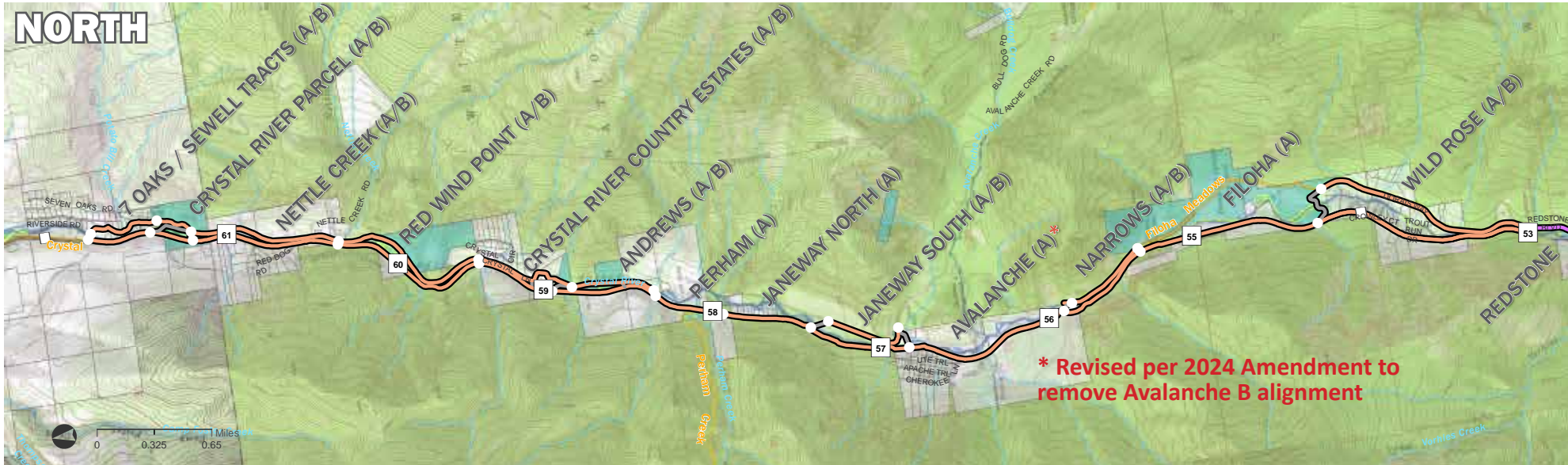
IMPLEMENTATION TIME FRAME: Ongoing

ESTIMATED COSTS: None at this time.

POTENTIAL PARTNERS: WRNF, CDOT, Pitkin County Community Development Department, Gunnison County

TITLE 12

Title 12 Open Space and Trails is the section of the county's code that governs public use of Pitkin County Open Space and Trails. The regulations included in the code apply to all fee-simple open space and trails properties as well as those where public access is provided in trail and conservation easements held by the county. The rules outlined in Title 12 define the allowed uses of open space properties including defining the allowed users, prohibiting trespass onto adjacent private lands, prohibiting camping and fires, regulating dogs on leash and waste pickup, limiting commercial activities, and other regulations to protect resources, wildlife, and public health and safety on OST properties. Title 12 also outlines the enforcement authority for violations of the rules and regulations and the associated penalties.



A4. TRAIL ALIGNMENT ACTION ITEMS

*See committment #1 on page iii, which is an addition to this plan document following the NEPA process for the Redstone to McClure portion of the trail.

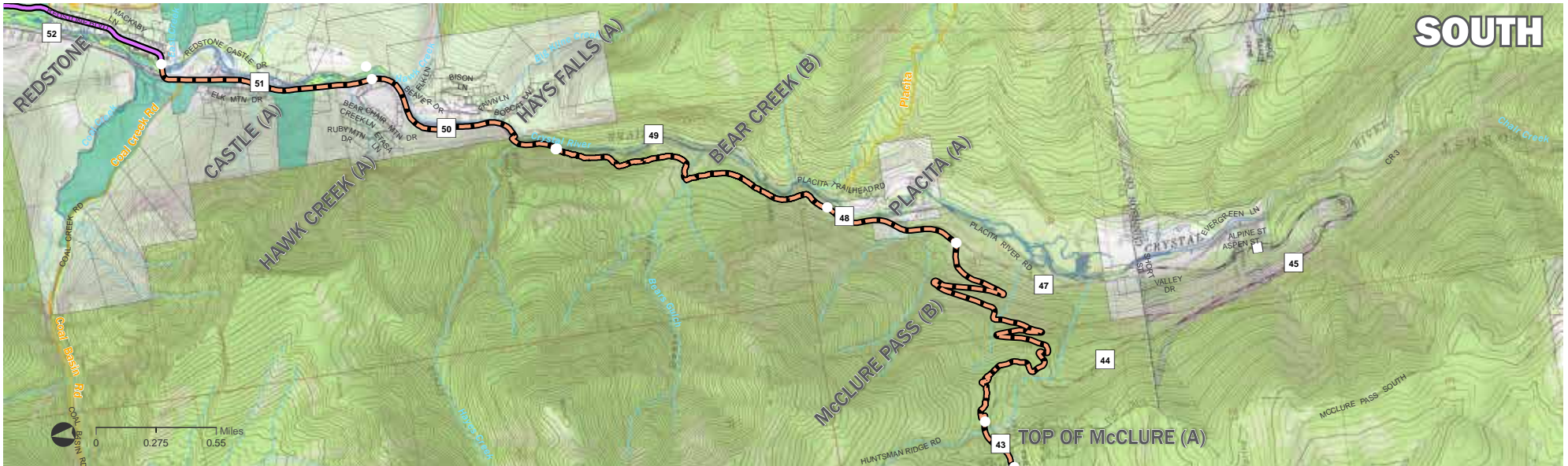
The Carbondale to Crested Butte trail alignment concept for the Crystal Valley is a vision that identifies and explores the possible trail alignments to connect a trail from the terminus of the existing trail at 7 Oaks/Sewell Tracts to the top of McClure Pass. While a recommended route has not been identified for all of the trail segments, this document lays out the initial feasibility and constraints for each one based on environmental and engineering studies and two rounds of public comments. The plan and information enclosed provides a starting point for additional analysis, planning and engagement. The implementation time frame for this project is projected well into the future, from 2018 to 2040 and beyond.

The following section reviews each segment of the trail within Pitkin County and identifies the next steps and phasing priority. The overarching goal is to establish a corridor for non-motorized public trail

access from Carbondale to the top of McClure Pass. In the future, once the corridor linkages are being planned, a conversation around surface type can be revisited. Regardless of the alignment, special care will be taken to maintain trail character and associated amenities that fit in with the rural landscape.

Additional planning, permitting and review processes will include CDOT approvals as well as NEPA for segments within the right-of-way and Forest Service lands respectively. While segments will be implemented in a phased approach, the NEPA process will evaluate the cumulative impacts of the trail from its current terminus at South Bill Creek Road to Redstone. Similarly, the segments south of Redstone to the top of McClure Pass will be evaluated together, rather than as separate segments. The NEPA process will include an initial public scoping period prior to the draft plan and an additional public comment period on the draft plan and associated analysis, regardless of whether both public comment opportunities are required under NEPA. As a part of future analysis and planning, including NEPA, additional routes and modifications to the existing routes should all be considered in order to

Map 3.1: Crystal Trail - Potential Alignment



achieve the best possible alignment that balances the environmental factors, user experience, engineering feasibility and costs.

North of Redstone: The plan identifies three segments to the north of Redstone where the engineering and environmental data and public feedback has informed a recommended alignment. Alignment A, adjacent to the highway, is recommended for the Perham, Janeway North, **Avalanche** and Filoha segments to avoid sensitive habitats and natural resources. The remaining 10 segments to the north of Redstone have two possible alignments that will be evaluated further in the future to determine the appropriate location for a trail or whether a trail is desired. These segments will require additional information and collaboration as well as direction from future OST Board and/or BOCC members before a recommended alignment is selected to pursue.




Each of these segments are grouped into phases creating trail sections that can stand alone or have relevance independent of the other segments. For example, the segments Wild Rose and Filoha would serve to connect Redstone with the popular destination of Penny Hot Springs, creating out-and-back possibilities. As each of these segments are

considered in the future, additional studies as well as public engagement will help to inform the preferred alignment.

South of Redstone: South of Redstone, a recommended alignment is articulated in this plan. The public land ownership and the natural surface trail type enable the trail to move forward to the next steps of planning more readily. Each of the seven segments to the south of Redstone have a recommended trail alignment. The route is primarily within the CDOT right-of-way or across Forest Service lands. These segments will move forward into the CDOT planning and NEPA processes which will look at all possible alignments, including a "no build" option.

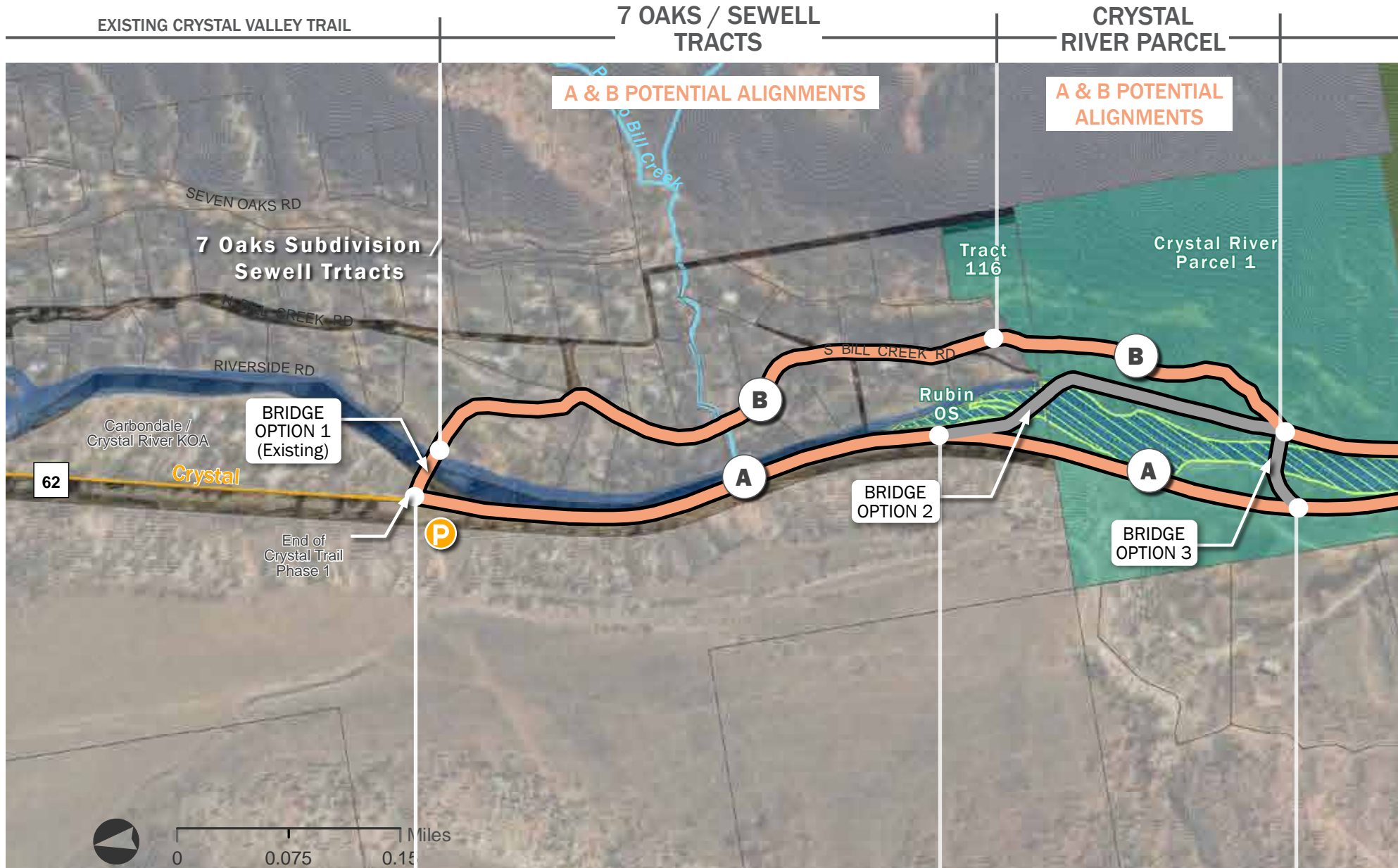
Wider Shoulders: The need for wider shoulders as a potential alternative to a separated trail or in addition to a trail was a theme that emerged in the public comments. Wider shoulders are an improvement that should be advocated for, regardless of trail location. Wider shoulders provide additional safety for motorists, as well as for more confident road bikers who choose to ride with traffic. Shoulders do not serve the diversity of user types who would utilize a fully separated trail.

ACTION ITEMS:

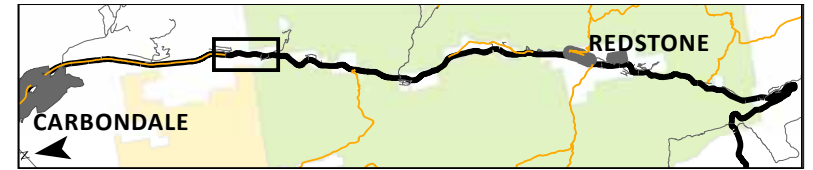
- P** A2.1 Trailheads
-  A4.1 7 Oaks/Sewell Tracts
-  A4.2 Crystal River Parcel
-  A4.3 Nettle Creek

CORRIDOR-WIDE ACTIONS:

- A1.2 Crystal River Enhancements
- A1.4 Bighorn Resiliency
- A1.7 BMPs for Trail Construction
- A2.3 Signage
- A2.4 Address paved shoulder widths
- A3.2 Weed Control
- A3.3 Management and Regulations
- A3.4 Enforcement Staff
- A3.5 CPW Educational Campaign



Map 3.2: Action Item Summary - 7 Oaks/Sewell Tracts to Nettle Creek



A4.1 7 OAKS / SEWELL TRACTS TRAIL SEGMENT

There are two potential trail alignments identified for 7 Oaks / Sewell Tracts at this time due to the need for further discussion of public access and stakeholder engagement prior to determining the recommended alignment. The county has completed the acquisition of “Tract 116” and is now a member of the Crystal Oaks Bridge Association, which will help facilitate this conversation. Alternative A and Alternative B would both have low environmental impacts. Alt. A could potentially have river impacts on an already heavily impacted stretch of river. No winter maintenance is anticipated for Alignment A due to proximity to the highway, plowing requirements and safety concerns. The engineering and costs required for Alt A. would be significantly higher than Alt. B., however Alt. B needs further evaluation to determine if this route could be used.

Alignment B, as depicted through the 7 Oaks / Sewell Tracts Trail Segment, identifies a potential trail alignment, portions of which may utilize subdivision roads over which Pitkin County does not currently have an existing agreement for public access.

TRAIL MILEAGE:

0.36 miles (Alternative A) to 0.42 miles (Alternative B)

NEXT STEPS:

OST will work with the stakeholders to determine a recommended alignment.

IMPLEMENTATION TIME FRAME:

Long Term

ESTIMATED IMPLEMENTATION COSTS:

\$935,910 (Alt. B) to \$5,828,861 (Alt. A) (Hard-Surface Estimate)

POTENTIAL ADDITIONAL COSTS:

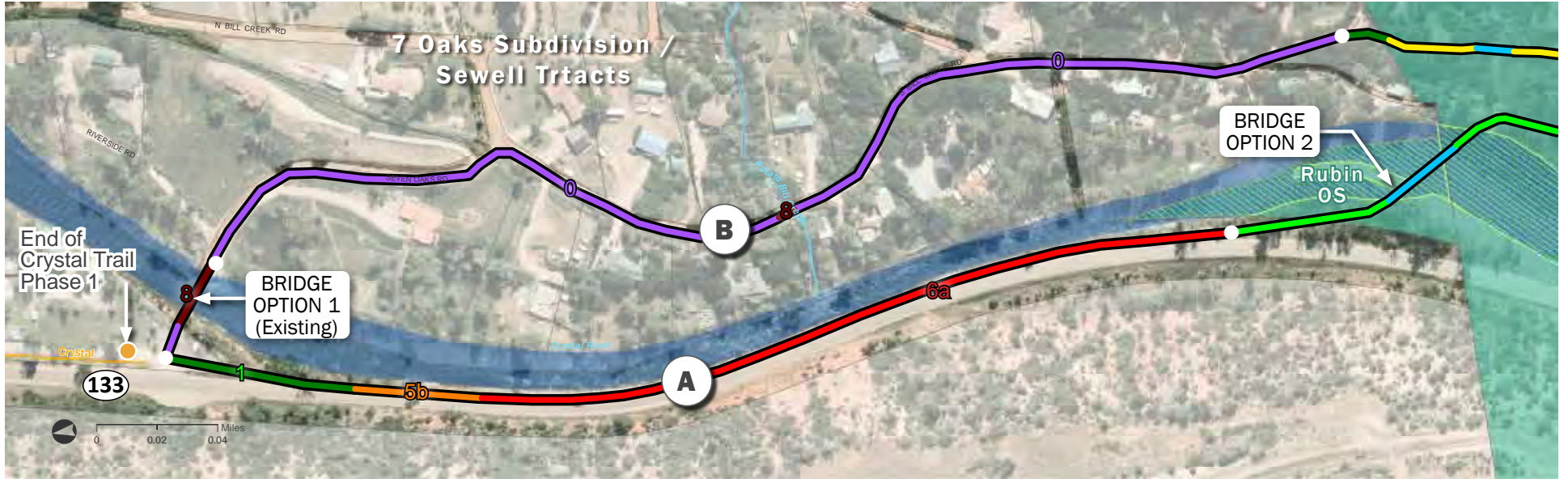
Road bridge replacement to connect end of existing Crystal Trail to Alt. B alignment and easement acquisition for Alt. B alignment



Alternative A: Looking south along the highway



Alternative B: Looking west toward the Hwy. 133 intersection

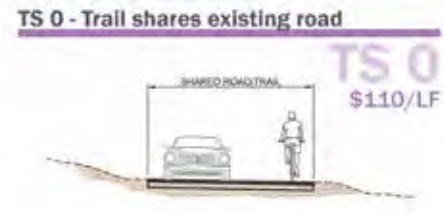


- Open Space and Trail Parcels
 - US Forest Service Lands
 - Private Property
 - Recreation Easement
 - Existing Trails
 - Mile Markers
- Typical Sections**
- TS-0
 - TS-3
 - TS-6
 - TS-1
 - TS-4
 - TS-7
 - TS-2
 - TS-5
 - TS-7 (Boardwalk)
 - TS-7 (Roadway Bridge)

TYPICAL SECTIONS A:



TYPICAL SECTIONS B:



A4.2 CRYSTAL RIVER PARCEL TRAIL SEGMENT

There are two potential trail alignments identified for the Crystal River Parcel trail segment at this time. The discussion for the most appropriate route through the Crystal River Parcel will be paired with discussions on the 7 Oaks/Sewell Tracts and the Nettle Creek trail segments. It should be noted that A trail on Alternative B would follow existing social trails currently used year-round by the neighboring residents and can follow parts of the historic Rock Creek County Road and Crystal River Railroad grade. The county acquired this property from the BLM and has committed to protect the public use and enjoyment thereon. No winter maintenance is anticipated for Alignment A due to proximity to the highway, plowing requirements and safety concerns.

TRAIL MILEAGE:

0.29 (Alternative A) to 0.22 miles (Alternative B)

NEXT STEPS:

This trail segment should be discussed with the decision on the 7 Oaks/Sewell Tracts trail segment and/or Nettle Creek trail segment.

IMPLEMENTATION TIME FRAME:

Near Term - Staff will monitor the use of the Crystal River Parcel and manage according to Title 12. (Any future management plan for the property may affect the actions in this Trail Plan.)

Long Term – Further trail discussion to be bundled with 7 Oaks/Sewell Tracts Alternative and/or Nettle Creek trail segment.

ESTIMATED IMPLEMENTATION COSTS:

\$799,635 (Alt. B - Hard-Surface Estimate) to \$1,976,876 (Alt. A - Hard-Surface Estimate)

POTENTIAL ADDITIONAL COSTS:

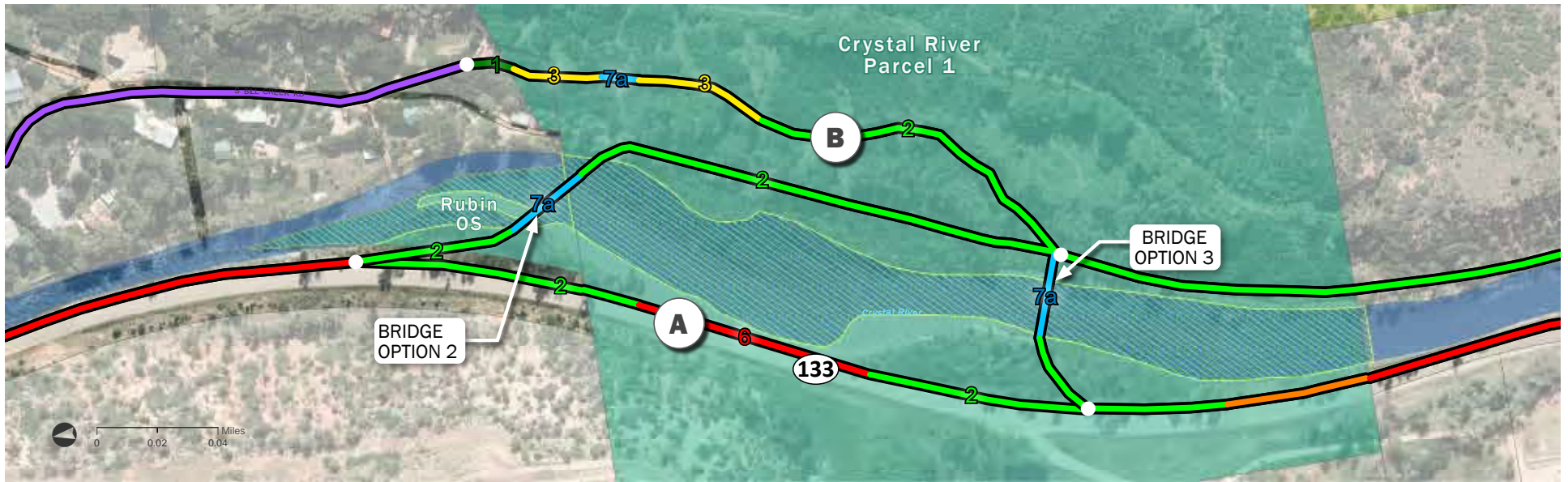
Depending which Alternative is decided for the 7 Oaks/Sewell Tracts segment, a bridge may be necessary to connect 7 Oaks/Sewell Tracts Alt. A to Crystal River Parcel Alt. B. This should be engineered if, or when, 7 Oaks/Sewell Tracts Alt. A is engineered.



Alternative A: Looking south

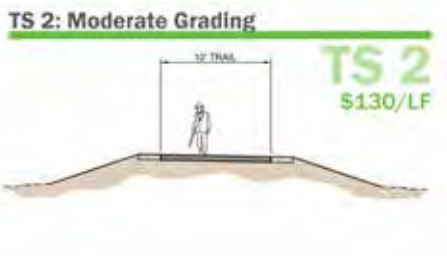


Alternative B: Looking north along the existing trail.

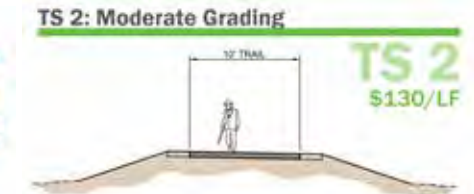
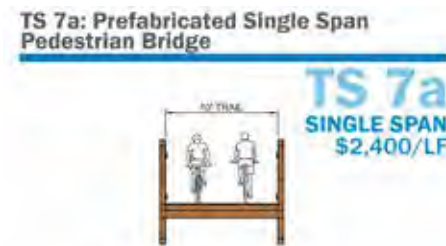
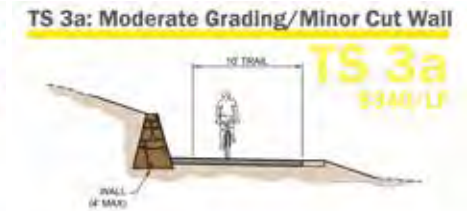
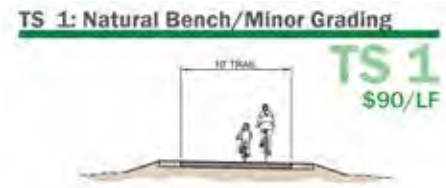


- | | |
|------------------------------|-------------------------|
| Open Space and Trail Parcels | Typical Sections |
| US Forest Service Lands | TS-0 |
| Private Property | TS-3 |
| Recreation Easement | TS-1 |
| Existing Trails | TS-4 |
| Mile Markers | TS-2 |
| | TS-5 |
| | TS-7 (Boardwalk) |
| | TS-6 |
| | TS-7 (Roadway Bridge) |

TYPICAL SECTIONS A:



TYPICAL SECTIONS B:



A4.3 NETTLE CREEK TRAIL SEGMENT

There are two potential trail alignments identified for the Nettle Creek trail segment at this time; further discussion of public access is needed prior to determining a recommended alignment. Alternative A and Alternative B would both have low environmental impacts. Alt. A could potentially have river impacts on an already heavily impacted stretch of river. No winter maintenance is anticipated for Alignment A due to proximity to the highway, plowing requirements and safety concerns. Alignment B traverses land along the old Rock Creek Road that is used year-round by residents. Trail construction on the Alt. B alignment could impact the Town of Carbondale's municipal water infrastructure. Any impacts would be addressed and mitigated through agreements with the town. The engineering and costs required for Alt. A. would be significantly higher than Alt. B.; however, Alt. B needs further evaluation of access.

Alignment B, as depicted through the Nettle Creek Trail Segment, identifies a potential trail alignment, portions of which may utilize property over which Pitkin County does not currently have an existing agreement for public access.

TRAIL MILEAGE:

0.84 miles (Alternative A) to 0.86 miles (Alternative B)

NEXT STEPS:

OST will work with the stakeholders to determine a recommended alignment.

IMPLEMENTATION TIME FRAME:

Long Term

ESTIMATED IMPLEMENTATION COSTS:

\$943,521 (Alt. B) to \$9,908,676 (Alt. A) (Hard-Surface Estimate)

POTENTIAL ADDITIONAL COSTS:

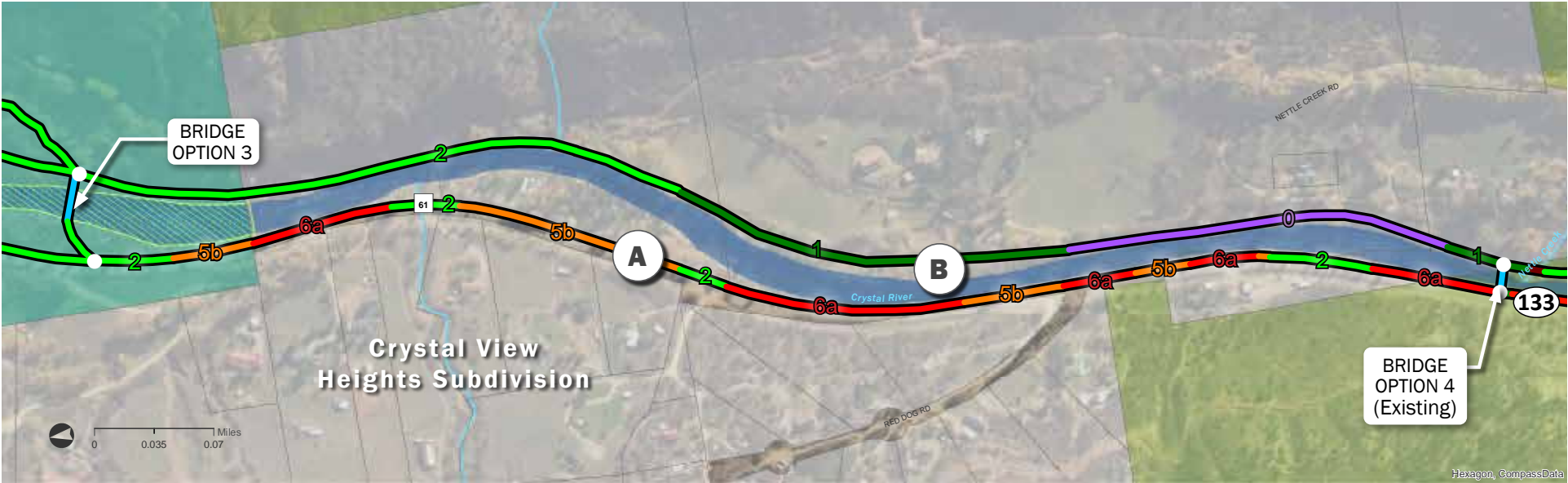
If Alt. A is recommended, a trail bridge connection from the south end of Crystal River Parcel Alt. B to the Nettle Creek Alt. A would be required. Easement acquisition costs may be required for Alt. B alignment.



Alternative A: Looking north along the highway

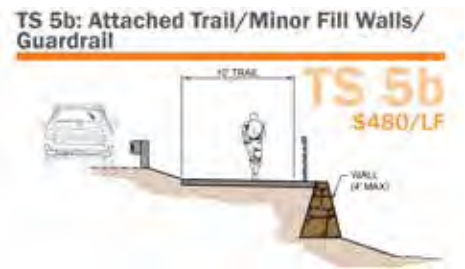


Alternative B: Looking south from the property line of Crystal River Parcel Open Space

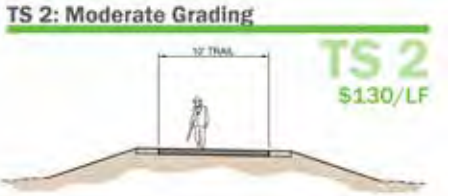
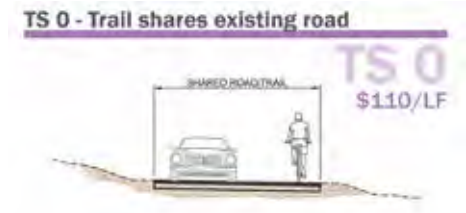
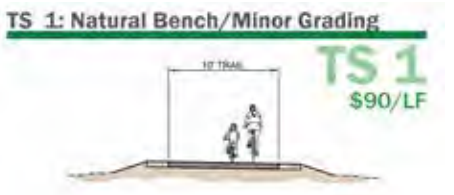


- Open Space and Trail Parcels
 - US Forest Service Lands
 - Private Property
 - Recreation Easement
 - Existing Trails
 - Mile Markers
- Typical Sections**
- TS-0
 - TS-3
 - TS-6
 - TS-1
 - TS-4
 - TS-7
 - TS-2
 - TS-5
 - TS-7 (Boardwalk)
 - TS-7 (Roadway Bridge)








TYPICAL SECTIONS A:

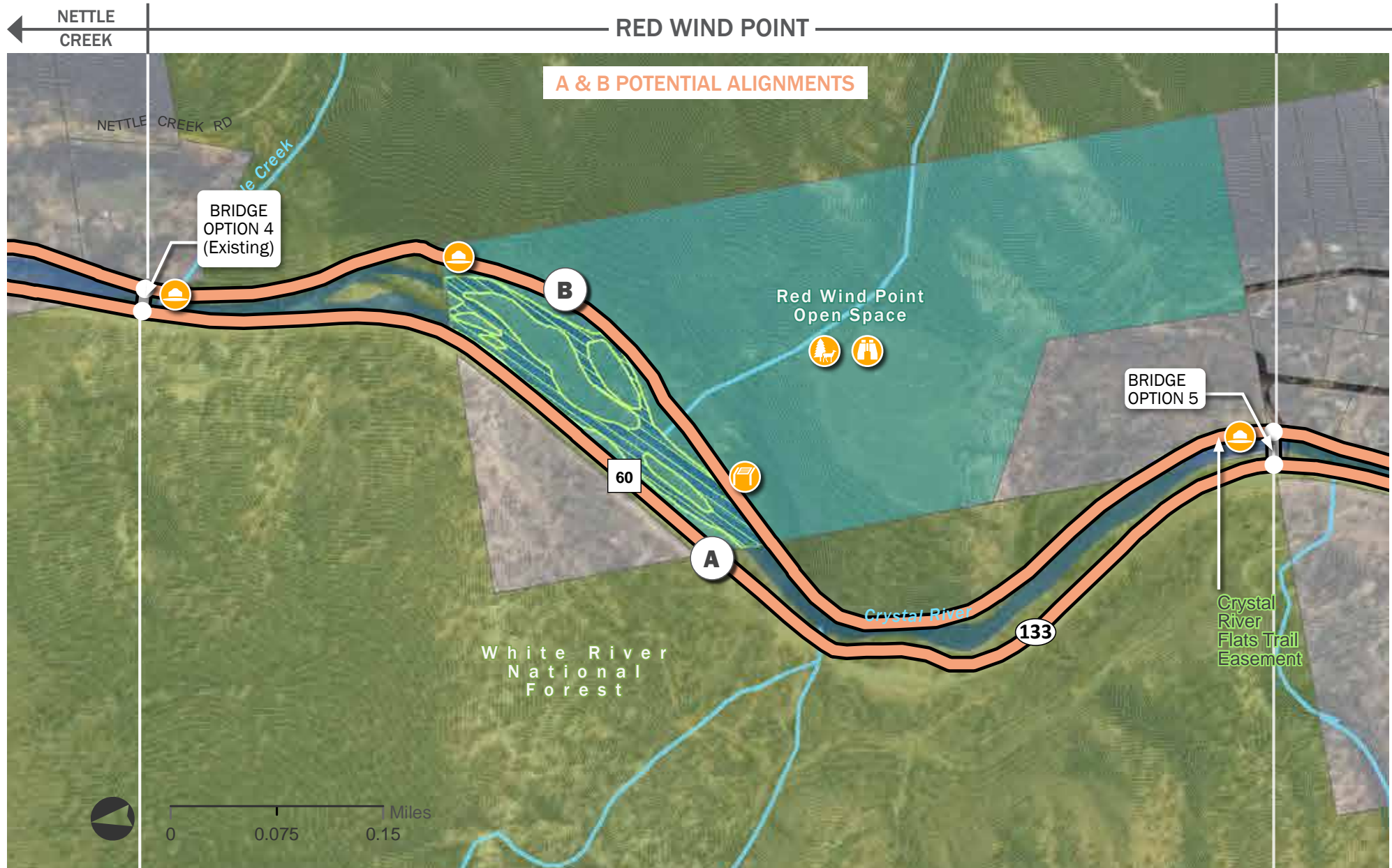


TYPICAL SECTIONS B:



ACTION ITEMS:

-  A1.1 Habitat Enhancement Projects
-  A1.3 Wildlife Monitoring
-  A1.5 Seasonal Closures of Potential Routes
-  A2.2 Interpretation
-  A4.4 Red Wind Point
-  A4.5 Crystal River Country Estates
-  A4.6 Andrews

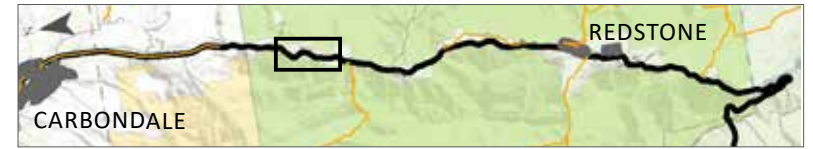


Map 3.6: Action Item Summary - Red Wind Point to Andrews

CORRIDOR-WIDE ACTIONS:

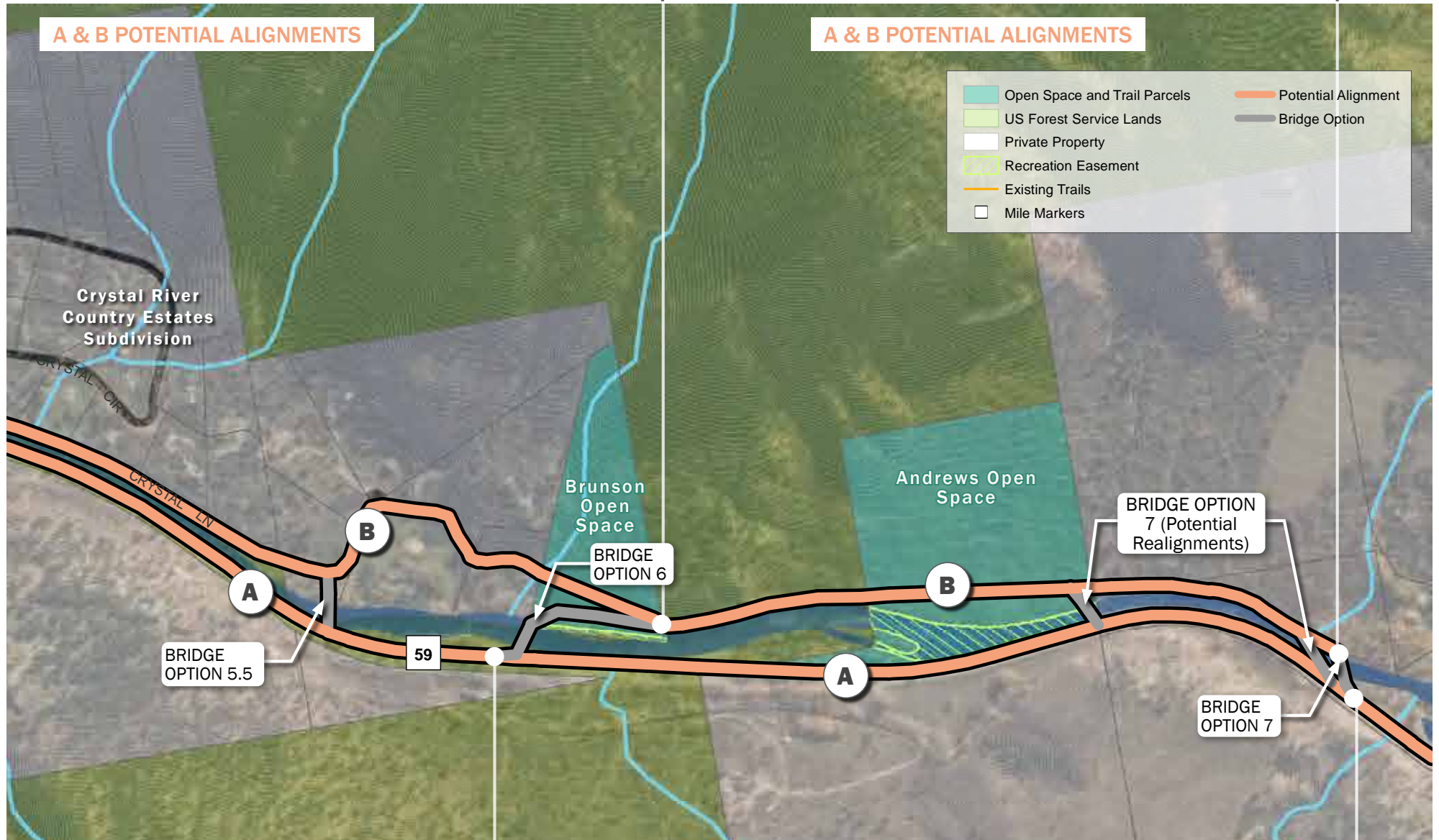
- A1.2 Crystal River Enhancements
- A1.4 Bighorn Resiliency
- A1.7 BMPs for Trail Construction
- A2.3 Signage
- A2.4 Address paved shoulder widths

- A3.2 Weed Control
- A3.3 Management and Regulations
- A3.4 Enforcement Staff
- A3.5 CPW Educational Campaign



CRYSTAL RIVER COUNTRY ESTATES

ANDREWS



A4.4 RED WIND POINT TRAIL SEGMENT

There are two potential trail alignments identified for the Red Wind Point trail segment at this time. Alt. A follows the west side of the Crystal River through a significantly constrained section where fill wall of various heights will be required to create a trail platform. Alt. B through this segment follows the historic Crystal River Railroad grade and is currently used as a trail by the neighboring residents. The engineering and costs required for Alt. A. would be significantly higher than Alt. B., however, Alt. B needs further evaluation to determine the role the rail platform plays in bighorn sheep migration during the summer months and shoulder seasons when the trail would be open, as well as the impacts of potential bridge connections. Alt. B through this segment has an existing seasonal closure from December 1 through April 30.

Next Steps: Both the A and B alternatives would go through a NEPA process as portions of each traverse Forest Service lands. If Alt. B is chosen, the open space property will continue to be managed per the Red Wind Point Management Plan. This includes the continuation of the year-round closure on the mesa, and the seasonal closure along the railroad grade. No winter maintenance is anticipated for Alignment A due to proximity to the highway, plowing requirements and safety concerns. This segment may have opportunities to enhance riparian habitat by reconnecting the floodplain in specific areas (see Crystal River Resource Enhancements Action Item). Reconnecting the floodplain will not compromise the ability to locate a trail on Alternative B. Monitoring for bighorn sheep use and calving is included as part of the Biodiversity Preservation and Enhancement Action Items.

TRAIL MILEAGE:

0.93 miles (Alternative A) to 0.95 miles (Alternative B)

IMPLEMENTATION TIME FRAME:

Near Term – The Alt. B trail segment will continue to be used as it is today and managed per the Red Wind Management Plan.

Long Term – Surface type would be decided in conjunction with adjacent segments. Any required NEPA would occur at that time.



Alternative A: Looking North



Alternative B: Existing trail on Red Wind Point Open Space

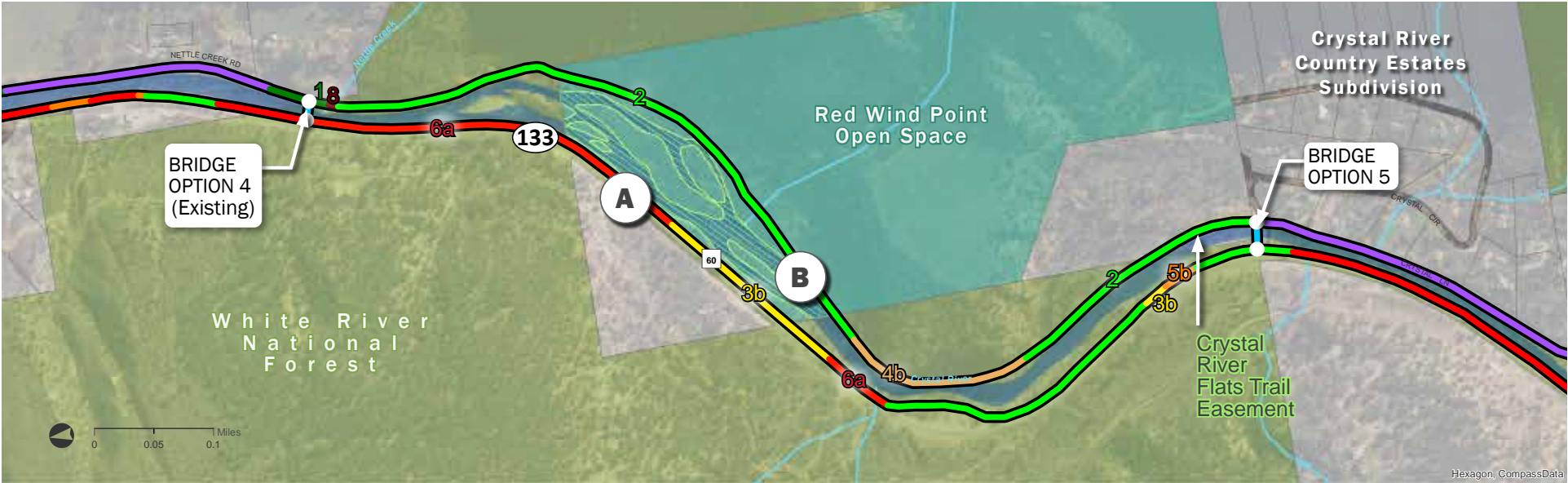
ESTIMATED IMPLEMENTATION COSTS:

\$9,810,034 (Alt. A - Hard-Surface Estimate)

\$2,255,690 (Alt. B - Hard-Surface Estimate)

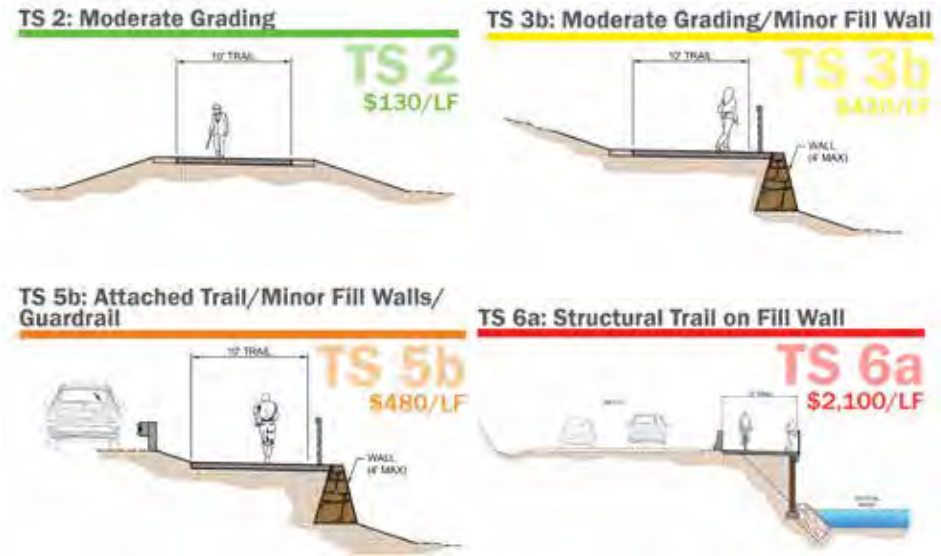
POTENTIAL ADDITIONAL COSTS:

Depending which alternative is decided for the Nettle Creek segment, bridge improvements may be necessary to the existing Nettle Creek Bridge to connect Nettle Creek Alt. A to Red Wind Point Alt. B.

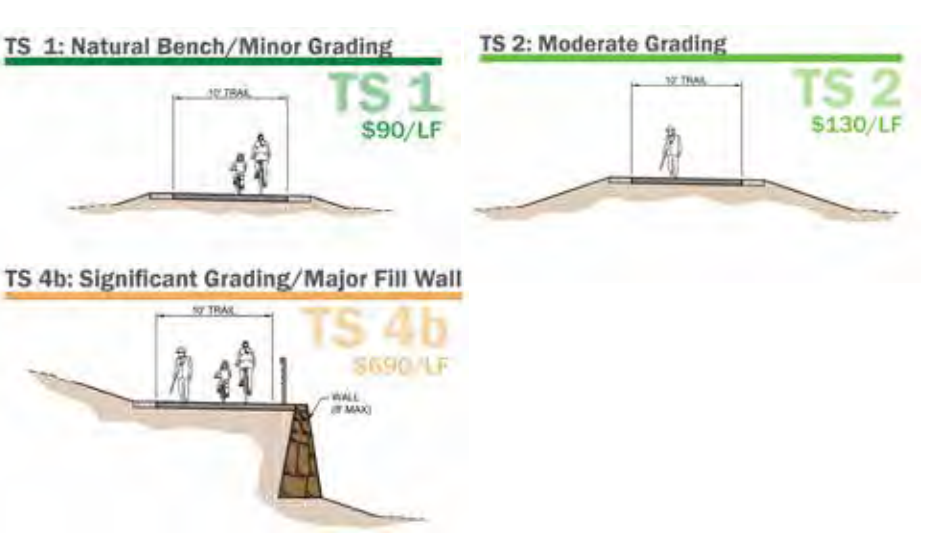


- Open Space and Trail Parcels
 - US Forest Service Lands
 - Private Property
 - Recreation Easement
 - Existing Trails
 - Mile Markers
- Typical Sections**
- TS-0
 - TS-3
 - TS-6
 - TS-1
 - TS-4
 - TS-7
 - TS-2
 - TS-5
 - TS-7 (Boardwalk)
 - TS-7 (Roadway Bridge)

TYPICAL SECTIONS A:



TYPICAL SECTIONS B:



A4.5 CRYSTAL RIVER COUNTRY ESTATES TRAIL SEGMENT

There are two potential trail alignments identified for Crystal River Country Estates at this time due to the need for a further discussion of public access prior to determining the recommended alignment. Alt. A and Alt. B would both have low environmental impacts. Alt. A could potentially have river impacts on an already heavily impacted stretch of river. No winter maintenance is anticipated for Alignment A due to proximity to the highway, plowing requirements and safety concerns. The engineering and costs required for Alt. A. would be significantly higher than Alt. B., however Alt. B needs further discussion of public access.

Based on public comment, in order to achieve ADA and to make sustainable trail grades, a realignment in the Alignment B route could occur. The addition of a bridge 5.5 over to Alt. A, would allow for the trail to follow the Hwy. 133 right-of-way for approximately 91 feet before bridging back to connect to the Andrews segment. This realignment can be discussed as part of the larger conversation to determine a recommended alternative.

Alignment B, as depicted through the Crystal River Country Estates Trail Segment, identifies a potential trail alignment, portions of which may utilize private property over which Pitkin County does not currently have an existing agreement for public access with the underlying property owner(s) or subdivision roads.

TRAIL MILEAGE:

0.45 miles (Alternative A) to 0.61 miles (Alternative B)

NEXT STEPS:

OST will work with the stakeholders to determine a recommended alignment.

IMPLEMENTATION TIME FRAME:

Long Term

ESTIMATED IMPLEMENTATION COSTS:

\$856,118 (Alt. B) to \$8,144,590 (Alt. A) (Hard-Surface Estimate)

POTENTIAL ADDITIONAL COSTS:

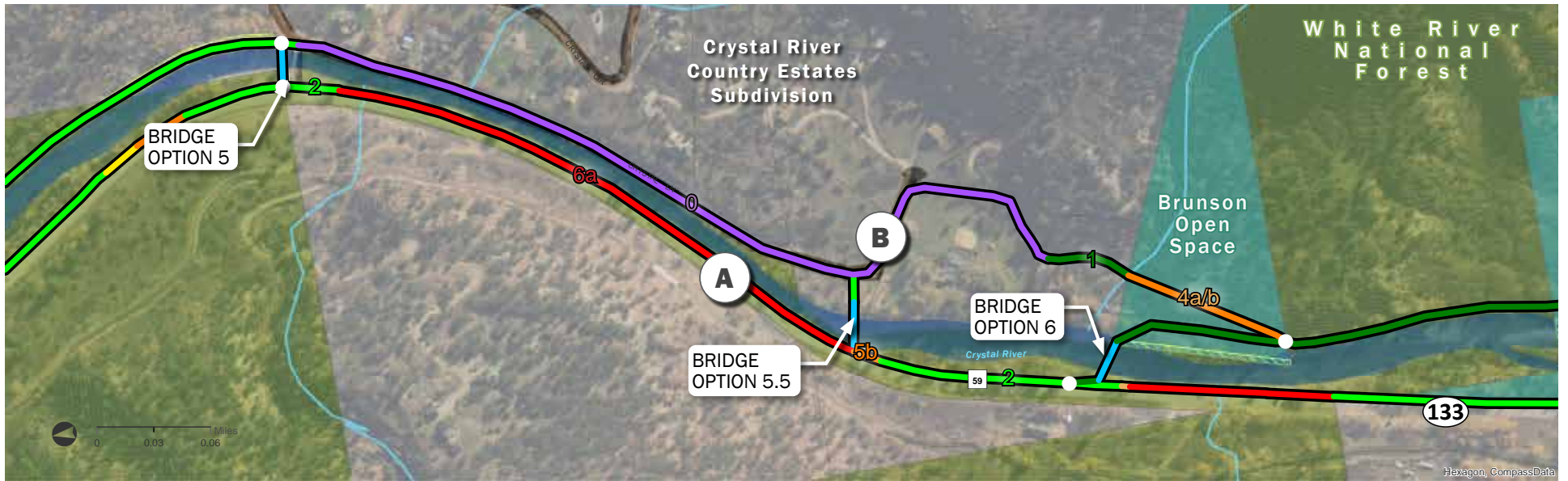
Realigned Alt. B could cost \$528,996, but would have cost saving from the original Alt. B. Depending which alternative is decided for the Crystal River Country Estates segment, a bridge may be necessary to connect Red Wind Point Alt B. to Crystal River Country Estates Alt. A. This should be engineered if, or when, Crystal River Country Estates Alt. A is engineered. Easement acquisition costs may be required for Alt. B alignment.



Alternative A: Looking south along Hwy. 133

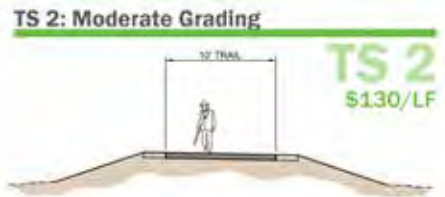


Alternative B: Looking toward the road platform on the east side of the river

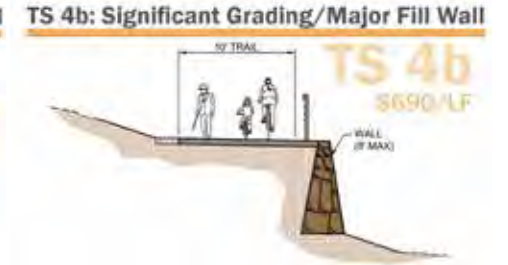
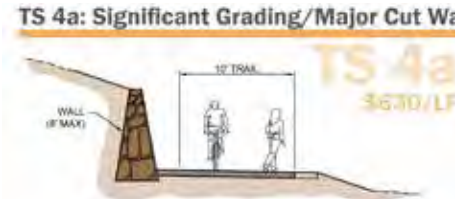
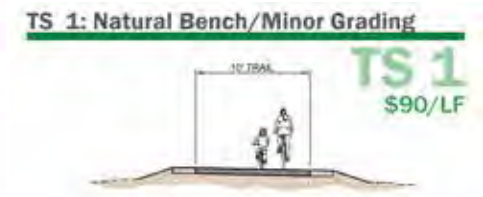
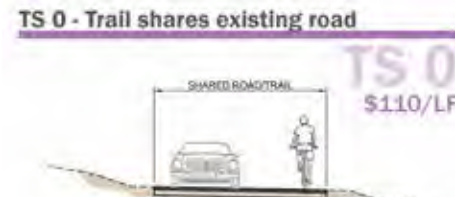


- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> Open Space and Trail Parcels US Forest Service Lands Private Property Recreation Easement Existing Trails Mile Markers | <p>Typical Sections</p> <ul style="list-style-type: none"> TS-0 TS-3 TS-6 TS-1 TS-4 TS-7 TS-2 TS-5 TS-7 (Boardwalk) TS-7 (Roadway Bridge) |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

TYPICAL SECTIONS A:



TYPICAL SECTIONS B:



A4.6 ANDREWS TRAIL SEGMENT

Both Alt. A and Alt. B are potential alignments for the Andrews trail segment. Alt. A runs between the highway and the west side of the Crystal River and requires complex engineering solutions for the majority of the segment. No winter maintenance is anticipated for Alignment A due to proximity to the highway, plowing requirements and safety concerns. Alternative B follows the historic Crystal River Railroad grade currently enjoyed as a social trail by the neighboring residents and utilizes the Andrews Open Space Parcel, the Brunson Open Space and White River National Forest lands. Further study of the potential alternatives should include additional bridge locations between the A and B segments. Additional bridge locations at the southern boundary of Andrews Open Space may provide an opportunity to connect between the two potential alignments to avoid private property. Potential alternative crossings are depicted on Map 3.9. To facilitate one of the options utilizing the Alt. B alignment, the county would need to work with the property owner to facilitate an easement traversing the northwestern corner of the private property. Extending this segment to the south utilizing the B alignment for approximately 950 feet to reach a better landing area for a future bridge has the potential for substantial cost savings.

Alignment B, as depicted through the Andrews Trail Segment, identifies a potential trail alignment, portions of which may utilize private property over which Pitkin County does not currently have an existing agreement for public access with the underlying property owner.

TRAIL MILEAGE:

0.48 miles (Alt. A) to 0.61 miles (Alt. B)

NEXT STEPS:

This trail segment should be implemented as a bundle with the adjoining segments.

IMPLEMENTATION TIME FRAME:

Near Term – Staff will monitor the use of Andrews Open Space and manage according to Title 12. (Any future management plan for the property may affect the actions in this Trail Plan)

Long Term – Any further trail implementation to be bundled with Crystal River Country Estates Alternative decision or with the Perham trail segment. Any required NEPA and CDOT coordination would occur at that time.

ESTIMATED IMPLEMENTATION COSTS:

\$9,410,595 (Alt. A)

\$793,859 (Alt. B) to \$2,793,859 (Hybrid) (Hard-Surface Estimate) in addition to undetermined bridge costs (Combination of Alt. A/B.)

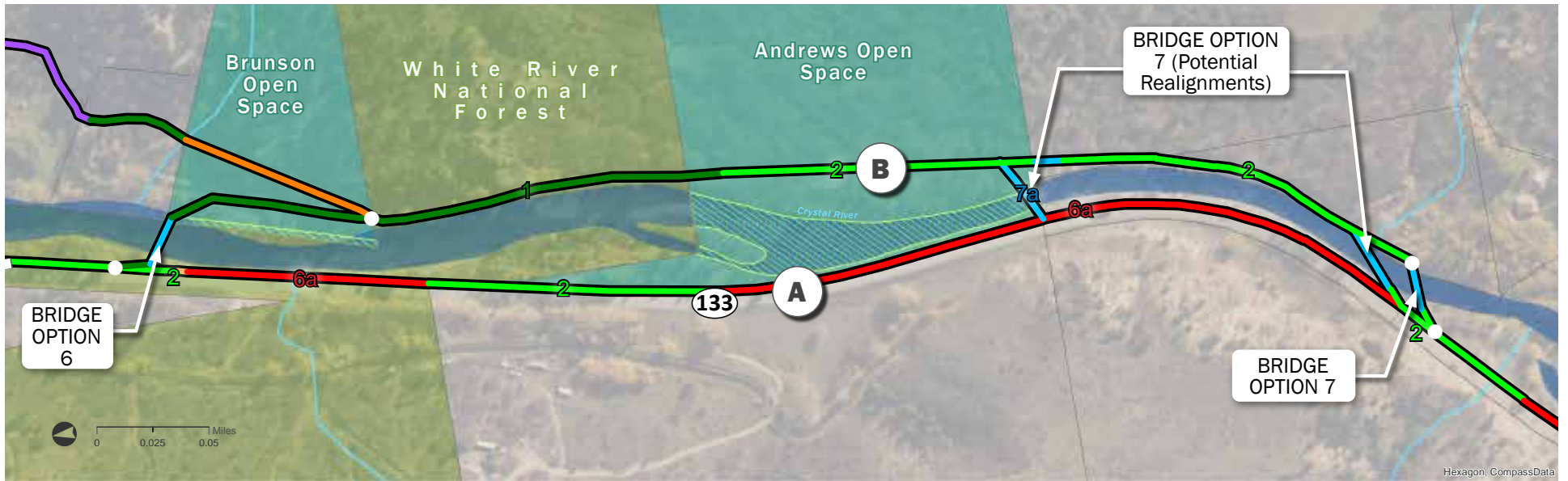
POTENTIAL ADDITIONAL COSTS: If an agreement can be worked out with the private property owner easement acquisition costs may be required.



Alternative A: Looking North

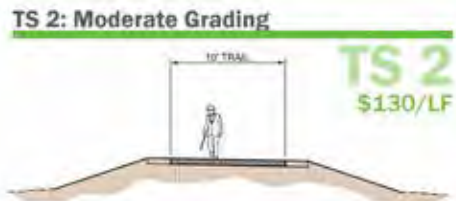


Alternative B: Looking south down the historic railroad grade

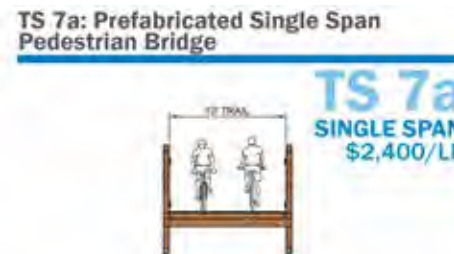
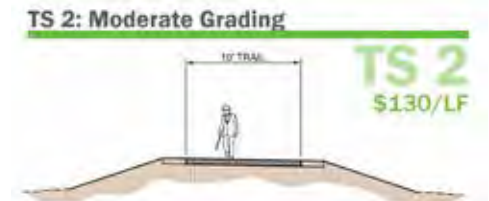
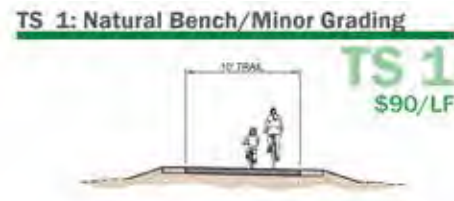


- Open Space and Trail Parcels
 - US Forest Service Lands
 - Private Property
 - Recreation Easement
 - Existing Trails
 - Mile Markers
- Typical Sections**
- TS-0
 - TS-3
 - TS-6
 - TS-1
 - TS-4
 - TS-7
 - TS-2
 - TS-5
 - TS-7 (Boardwalk)
 - TS-7 (Roadway Bridge)







TYPICAL SECTIONS A:



TYPICAL SECTIONS B:

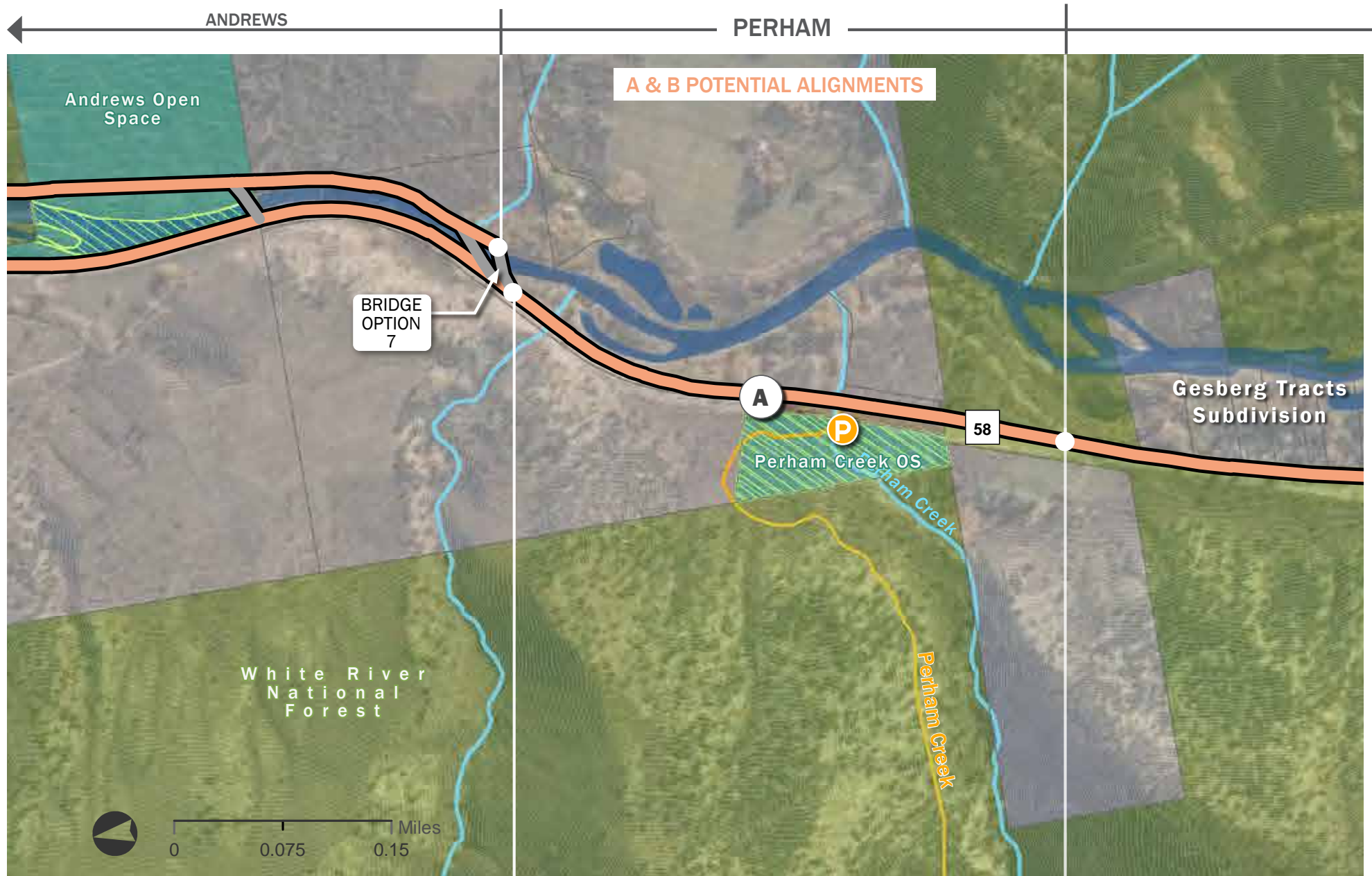


ACTION ITEMS:

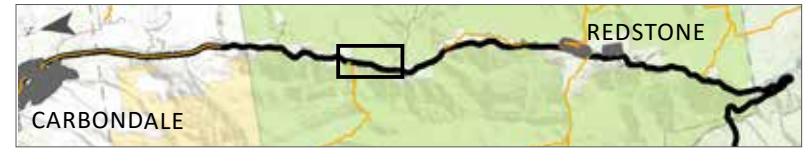
-  A1.5 Seasonal Closures of Potential Routes
-  A2.1 Trailheads
-  A2.2 Interpretation
-  A4.7 Perham
-  A4.8 Janeway North
-  A4.9 Janeway South

CORRIDOR-WIDE ACTIONS:

- A1.2 Crystal River Enhancements
- A1.4 Bighorn Resiliency
- A1.7 BMPs for Trail Construction
- A2.3 Signage
- A2.4 Address paved shoulder widths
- A3.2 Weed Control
- A3.3 Management and Regulations
- A3.4 Enforcement Staff
- A3.5 CPW Educational Campaign



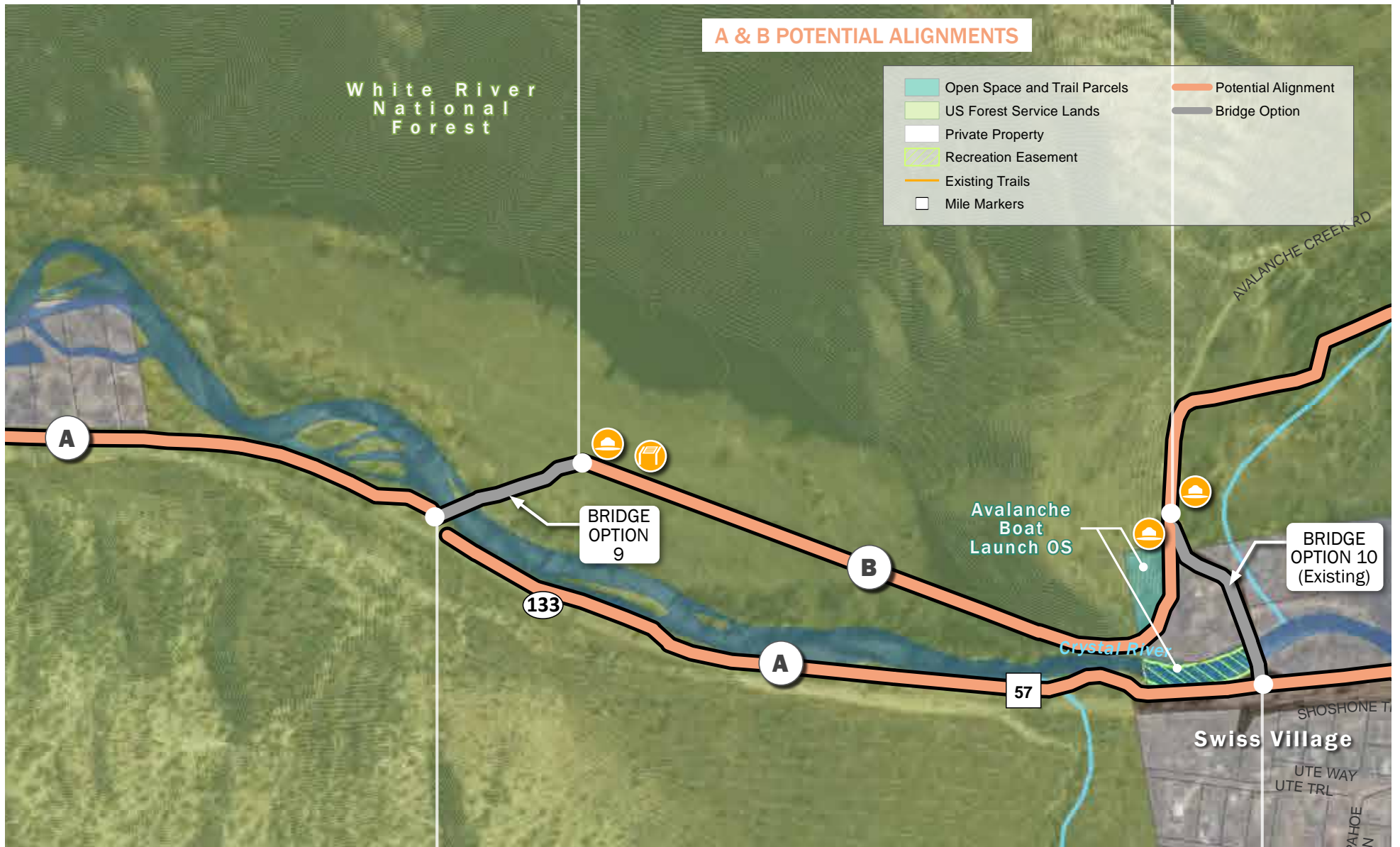
Map 3.10: Action Item Summary - Perham to Janeway South



JANEWAY NORTH

JANEWAY SOUTH

AVALANCHE



A4.7 PERHAM TRAIL SEGMENT

Based on existing conditions the recommended route for the Perham trail segment follows Alternative A. This segment of trail utilizes a slightly wider highway shoulder than seen on the segments to the north and allows for a less steep transition to the Alt. A alignment in the Janeway North segment. No winter maintenance is anticipated due to proximity to the highway, plowing requirements and safety concerns.

TRAIL MILEAGE:

0.40 miles (Alternative A)

NEXT STEPS:

This trail segment should be implemented as a bundle with the decision on the Andrews trail segment or the Janeway North trail segment.

IMPLEMENTATION TIME FRAME:

Long Term – Any further trail implementation to be bundled with the Andrews Alternative decision or with the Janeway North trail segment. Any required NEPA and CDOT coordination would take place at that time.

ESTIMATED IMPLEMENTATION COSTS:

\$2,185,668 (Alt. A - Hard-Surface Estimate)

POTENTIAL ADDITIONAL COSTS:

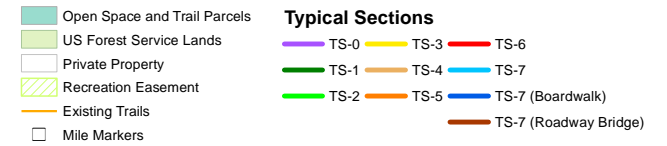
None at this time.



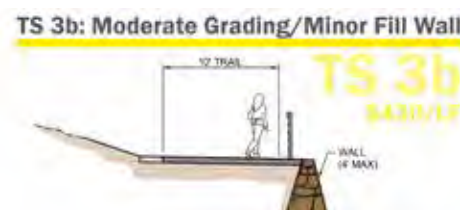
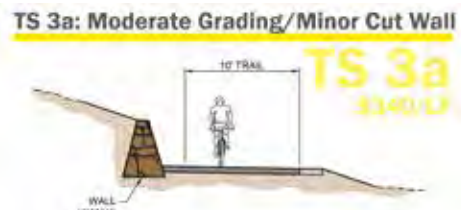
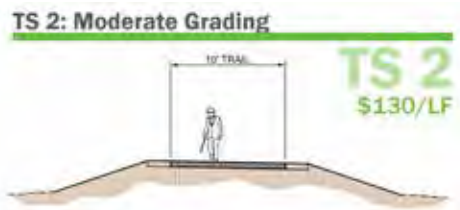
Alternative A: Looking south along the highway



Alternative A: Looking north along the highway



TYPICAL SECTIONS A:



A4.8 JANEWAY NORTH TRAIL SEGMENT

Based on high-quality habitat, existing impacts, engineering and cost estimates, the recommended route for the Janeway North trail segment would follow Alternative A. This segment of trail utilizes a wider highway shoulder than seen on the segments to the north and it avoids a high-quality habitat area along Alt. B. No winter maintenance is anticipated due to proximity to the highway, plowing requirements and safety concerns.

TRAIL MILEAGE:

0.51 miles (Alternative A)

NEXT STEPS:

This trail segment should be implemented as a bundle with the Perham trail segment.

IMPLEMENTATION TIME FRAME:

Long Term – Any further trail implementation to be bundled with the Perham trail segment or Janeway South. Any required NEPA and CDOT coordination would take place at that time.

ESTIMATED IMPLEMENTATION COSTS:

\$2,199,618 (Alt. A - Hard-Surface Estimate)

POTENTIAL ADDITIONAL COSTS:

None at this time.



Alternative A: Looking north along the highway

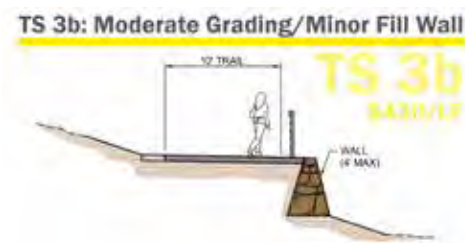
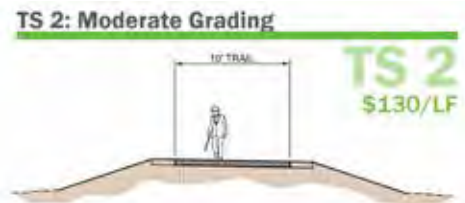
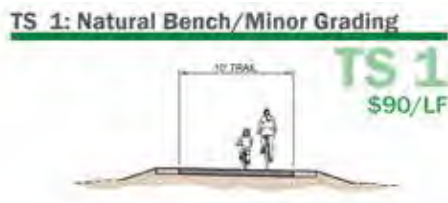


Alternative A: Looking north along the highway where the trail would cross a number of driveways



- Open Space and Trail Parcels
 - US Forest Service Lands
 - Private Property
 - Recreation Easement
 - Existing Trails
 - Mile Markers
- Typical Sections**
- TS-0
 - TS-3
 - TS-6
 - TS-1
 - TS-4
 - TS-7
 - TS-2
 - TS-5
 - TS-7 (Boardwalk)
 - TS-7 (Roadway Bridge)

TYPICAL SECTIONS A:



A4.9 JANEWAY SOUTH TRAIL SEGMENT

There are two potential trail alignments identified for the Janeway South trail segment at this time. A decision for the best location of the Janeway South trail will be made in conjunction with the discussion for the Avalanche Creek trail segment. No winter maintenance is anticipated for Alignment A due to proximity to the highway, plowing requirements and safety concerns. If the trail segment is located on Alternative B, Janeway South would need to go through the NEPA process. If chosen, the county would work with the WRNF to seasonally close the Janeway South Alt. B trail segment from November 15 through May 1 and would work with our enforcement personal to restrict off-trail travel and access and potential dog restrictions. Please refer to Action Item A1.5 for more detail on the seasonal closures and enforcement action items.

TRAIL MILEAGE:

0.59 miles (Alternative A) to 0.48 miles (Alternative B)

NEXT STEPS:

~~OST would wait until the Avalanche trail segment discussion begins to determine a trail solution. Then~~ The county will work with CDOT and/or the WRNF to move forward with the final design and engineering for the trail and the bridge connection **in conjunction with the Avalanche trail segment.**

IMPLEMENTATION TIME FRAME:

Long Term – Any further trail implementation to be bundled with the Avalanche trail segment. Any required NEPA and CDOT coordination would take place at that time.

ESTIMATED IMPLEMENTATION COSTS:

\$8,097,627 (Alt. A - Hard Surface Estimate) to \$1,355,195 (Alt. B - Hard-Surface Estimate) \$778,029 bridge connection to Janeway North segment.

POTENTIAL ADDITIONAL COSTS:

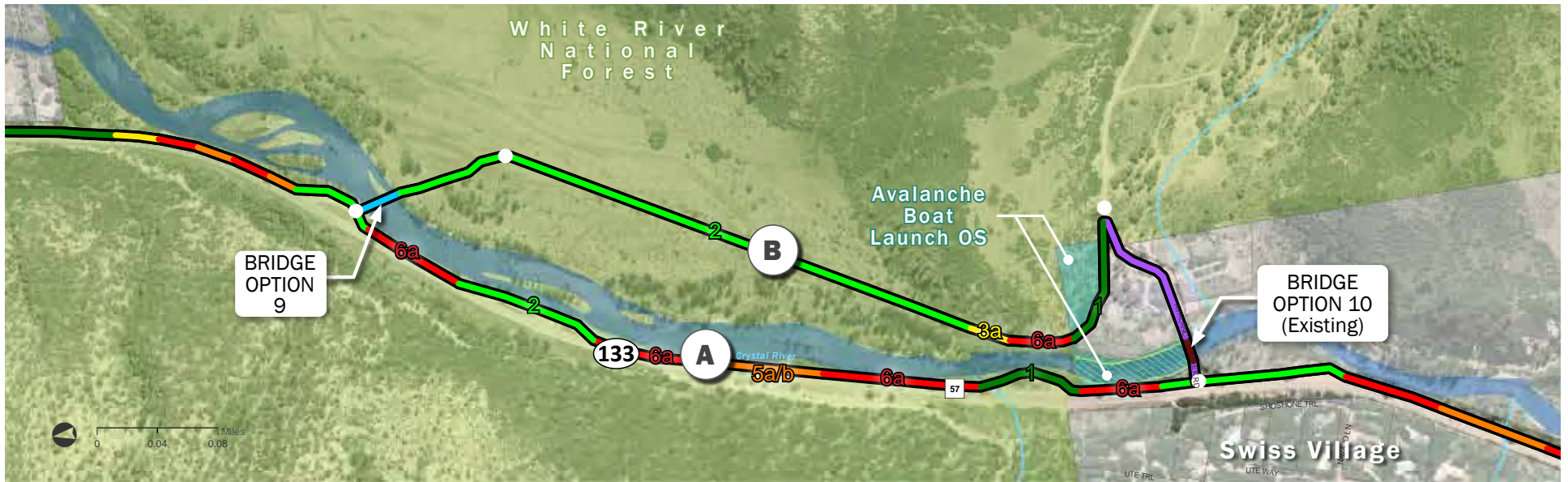
\$778,029 bridge connection to Janeway North segment.



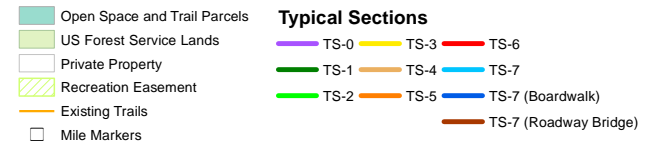
Alternative A: Looking north



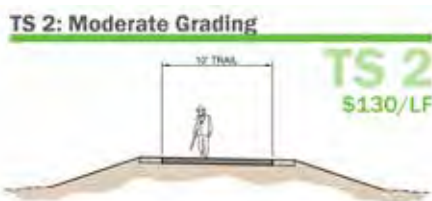
Alternative B: Looking south down the old Rock Creek County Road platform and historic rail grade



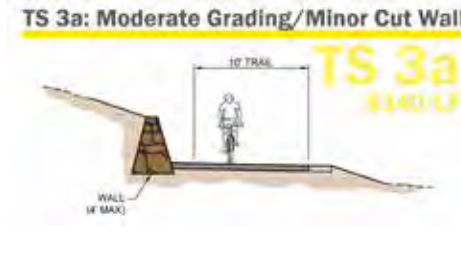
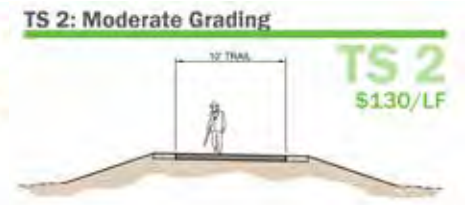
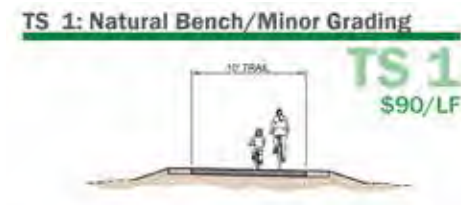
* Map Revised Per 2024 Amendment to remove Avalanche B alignment







TYPICAL SECTIONS A:





TYPICAL SECTIONS B:



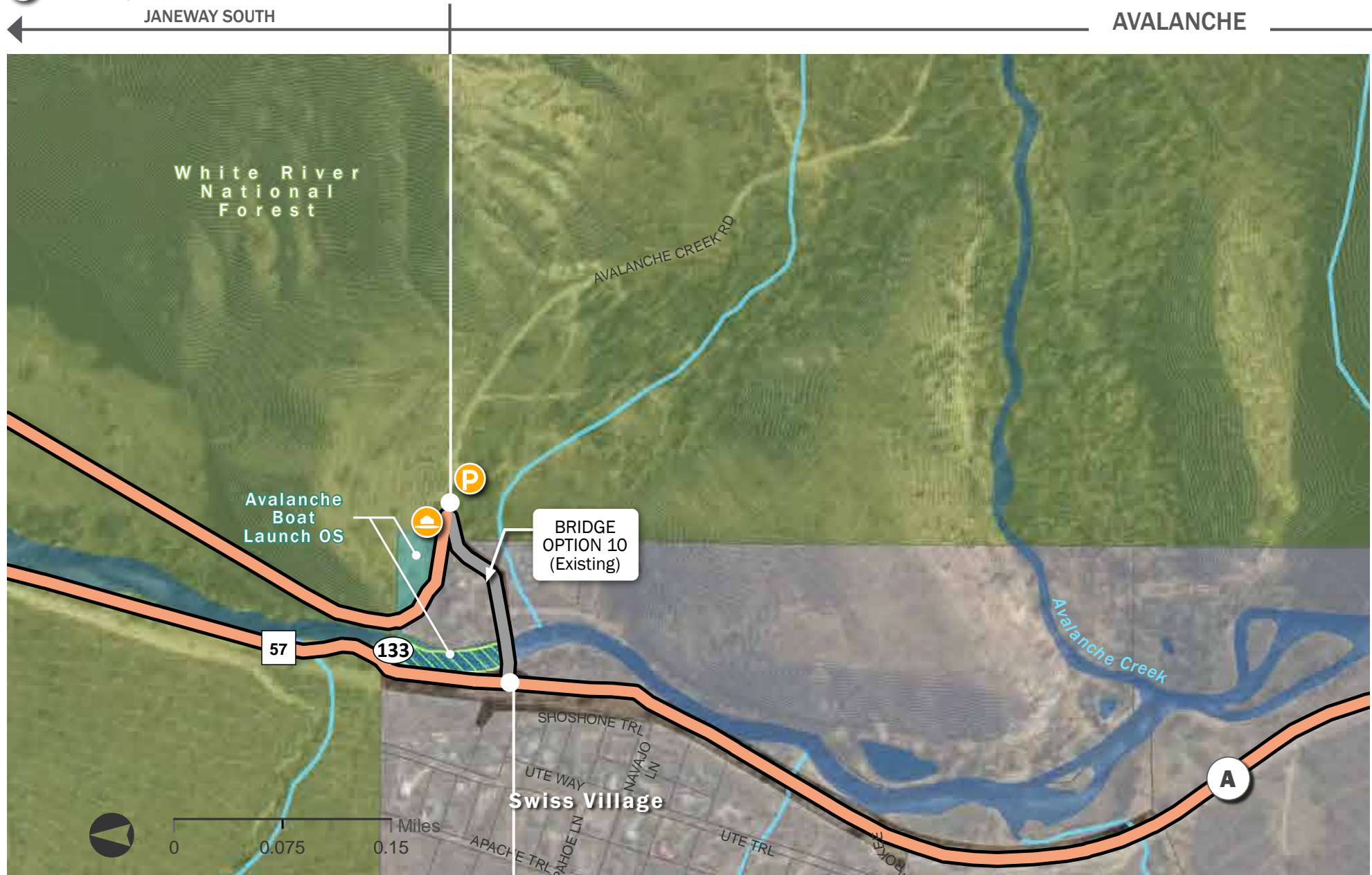
ACTION ITEMS:

-  A1.3 Wildlife Monitoring
-  A1.5 Seasonal Closures of Potential Routes
-  A2.1 Trailheads
-  A2.2 Interpretation

-  A4.10 Avalanche
-  A4.11 Narrows

CORRIDOR-WIDE ACTIONS:

- A1.2 Crystal River Enhancements
- A1.4 Bighorn Resiliency
- A1.7 BMPs for Trail Construction
- A2.3 Signage
- A2.4 Address paved shoulder widths
- A3.2 Weed Control
- A3.3 Management and Regulations
- A3.4 Enforcement Staff
- A3.5 CPW Educational Campaign



Map 3.14: Action Item Summary - Avalanche to the Narrows

* Map revised per 2024 Amendment to remove Avalanche B alignment



A4.10 AVALANCHE TRAIL SEGMENT

Following the WRNF's NEPA process for the Redstone to McClure portion of the trail and the ecological information reinforced by the Watershed Biodiversity Initiative mapping, the recommendation for the Avalanche trail segment is to follow Alignment A. The county proposes to partner with the WRNF on the enforcement of existing wildlife closures and improved signage at the closure in order to gain compliance prior to opening any new trail routes. No winter maintenance is anticipated for Alt. A due to proximity to the highway, plowing requirements and safety concerns.

~~Based on environmental data, costs estimates, engineering and existing use patterns, the county will undertake additional review of the Avalanche segment prior to adopting a recommended alternative. The county will also undertake further study of the ecological resources and the engineering options for a recommended route. Additional study could include: further evaluation of plant resources, wildlife use, highway alignment engineering, etc. If the recommended trail alignment were to be located on Alt. B, the county would also like to work with the WRNF to restrict users to the trail and to close the trail to dogs south of Avalanche Creek. Any portion of the Avalanche segment on the WRNF would require a NEPA process. Seasonal closure of the Alt. B alignment would take place from November 15 through May 1; if Bighorn lambing is present the closure could extend through June 30.~~

Alignment B, as depicted through the Avalanche Segment, identifies a potential trail alignment, a small portion of which may utilize property over which Pitkin County does not currently have an existing agreement for public access with the underlying property owner(s).

TRAIL MILEAGE:

0.97 miles (Alternative A) to 1.35 miles (Alternative B)

NEXT STEPS:

The county will seek to partner with the WRNF on improved seasonal closure signage and enforcement as well as beginning additional analysis of the Avalanche Creek segment.

* Revised per 2024 Amendment to remove Avalanche B alignment

IMPLEMENTATION TIME FRAME:

Near term actions – OST partnership with the WRNF on improved enforcement and signage of the existing Avalanche Creek closures and begin additional studies.

Long term – ~~Recommended trail alignment determination, associated final engineering, NEPA process and/or CDOT approvals.~~

ESTIMATED IMPLEMENTATION COSTS:

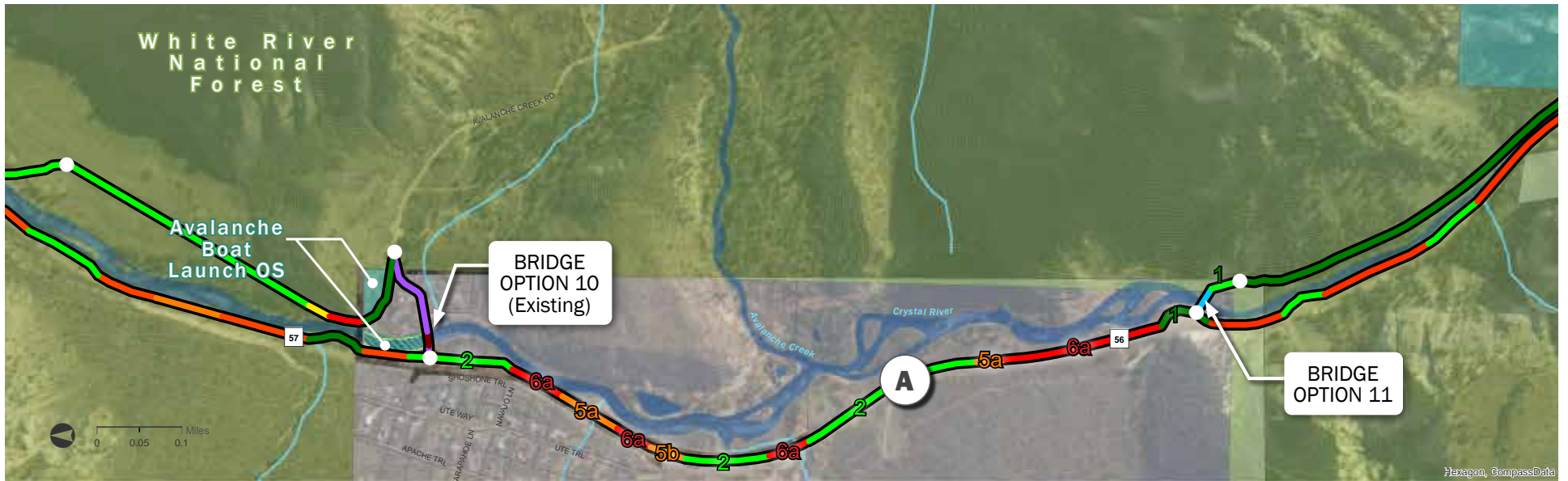
~~\$5,058,441 (Alt. B) to \$8,155,968 (Alt. A) (Hard-Surface Estimate)~~

POTENTIAL ADDITIONAL COSTS:

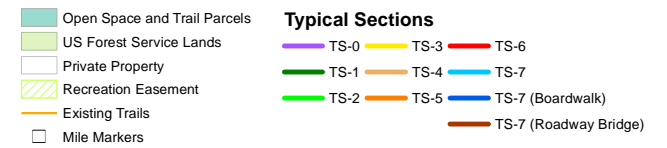
~~If Alt. A is chosen, Improvements to the existing Avalanche Creek vehicular bridge may be required. If Alt. B is chosen, easement acquisition costs may be required.~~



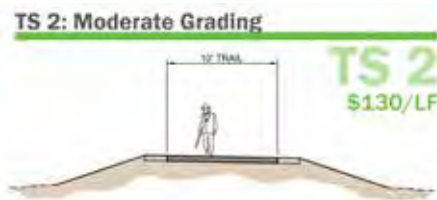
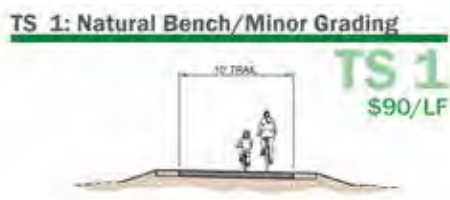
Alternative A: Looking south along the river



* Revised per 2024 Amendment to remove Avalanche B alignment



TYPICAL SECTIONS A:



A4.11 NARROWS TRAIL SEGMENT

There are two potential trail alignments identified for the Narrows segment. Alt. A through this stretch of the Crystal Valley is one of the more challenging sections, requiring highly engineered, cantilevered sections to traverse the narrowest and most constrained terrain along the valley floor. The Alt. B alternative could follow one of two existing platforms, either the old rail grade or the old County Rock Creek Road, requiring relatively simple trail engineering. If the Alt. B alignment is utilized, a bridge connection between the Narrows and Filoha Alternative A would be required and a NEPA process would be followed. The county would work with the USFS to close the trail along Alt. B seasonally from November 15 through May 1 (possibly extended through June 30 if Bighorn lambing is present) for the protection of wintering wildlife, to restrict users to the trail and close the trail to dogs. No winter maintenance is anticipated for Alt. A due to proximity to the highway, plowing requirements and safety concerns.

TRAIL MILEAGE:

0.58 (Alternative A) to 0.50 miles (Alternative B)

NEXT STEPS:

The Narrows trail segment would wait until the recommended route for the Avalanche trail segment is determined. The NEPA/CDOT coordination and engineering for the Narrows section of trail would be bundled with the NEPA for the Avalanche and/or the Janeway South section of trail. **The county will work to determine a recommended route for this segment.**

IMPLEMENTATION TIME FRAME:

Long Term

ESTIMATED IMPLEMENTATION COSTS:

\$10,834,585 (Alt. A - Hard-Surface Estimate)

\$442,822 (Alt. B - Hard-Surface Estimate), \$606,372 for the potential bridge connection to Filoha Alt. A.

POTENTIAL ADDITIONAL COSTS:

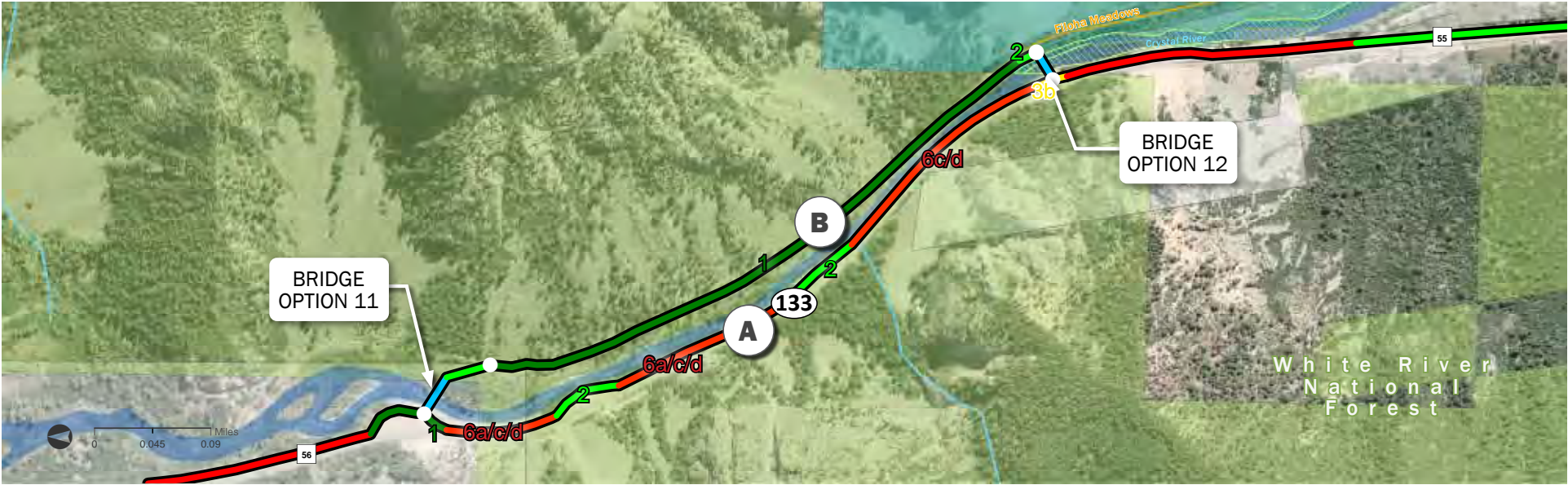
If Alt. B is chosen, the bridge connection between Avalanche Alt. A and Narrows Alt. B is estimated at \$1,242,334.



Alternative A: Looking north



Alternative B.: Looking south along the old railroad grade








- Open Space and Trail Parcels
 - US Forest Service Lands
 - Private Property
 - Recreation Easement
 - Existing Trails
 - Mile Markers
- Typical Sections**
- TS-0
 - TS-3
 - TS-6
 - TS-1
 - TS-4
 - TS-7
 - TS-2
 - TS-5
 - TS-7 (Boardwalk)
 - TS-7 (Roadway Bridge)

TYPICAL SECTIONS A:

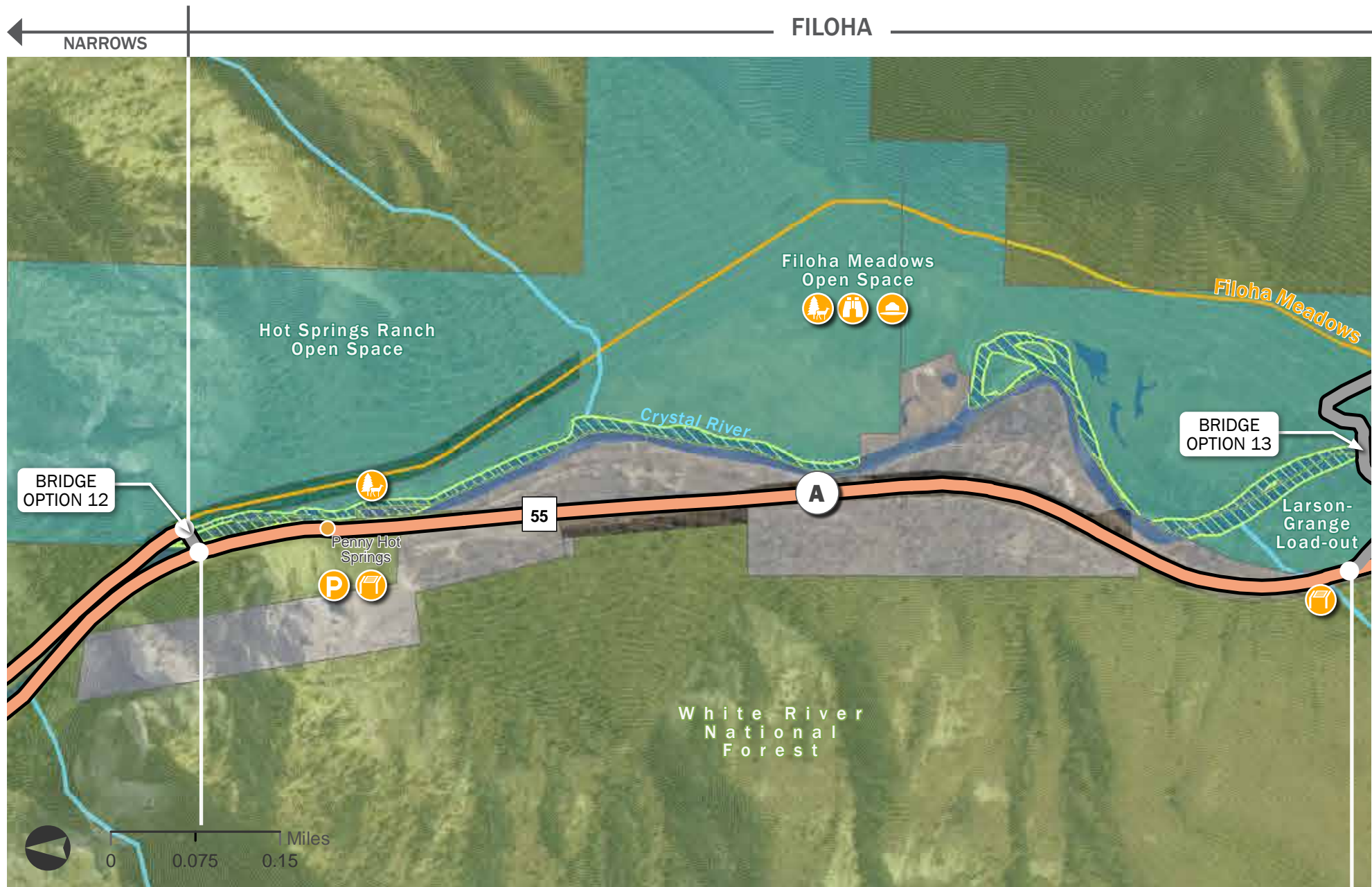


ACTION ITEMS:

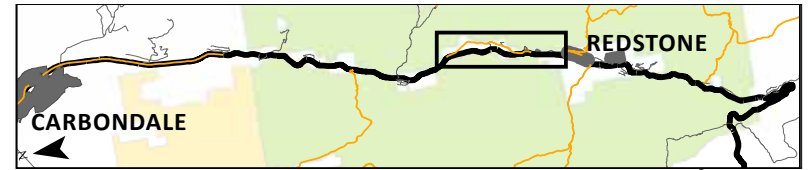
-  A1.1 Habitat Enhancement Projects
-  A1.3 Wildlife Monitoring
-  A1.5 Seasonal Closures of Potential Routes
-  A2.1 Trailheads
-  A2.2 Interpretation

CORRIDOR-WIDE ACTIONS:

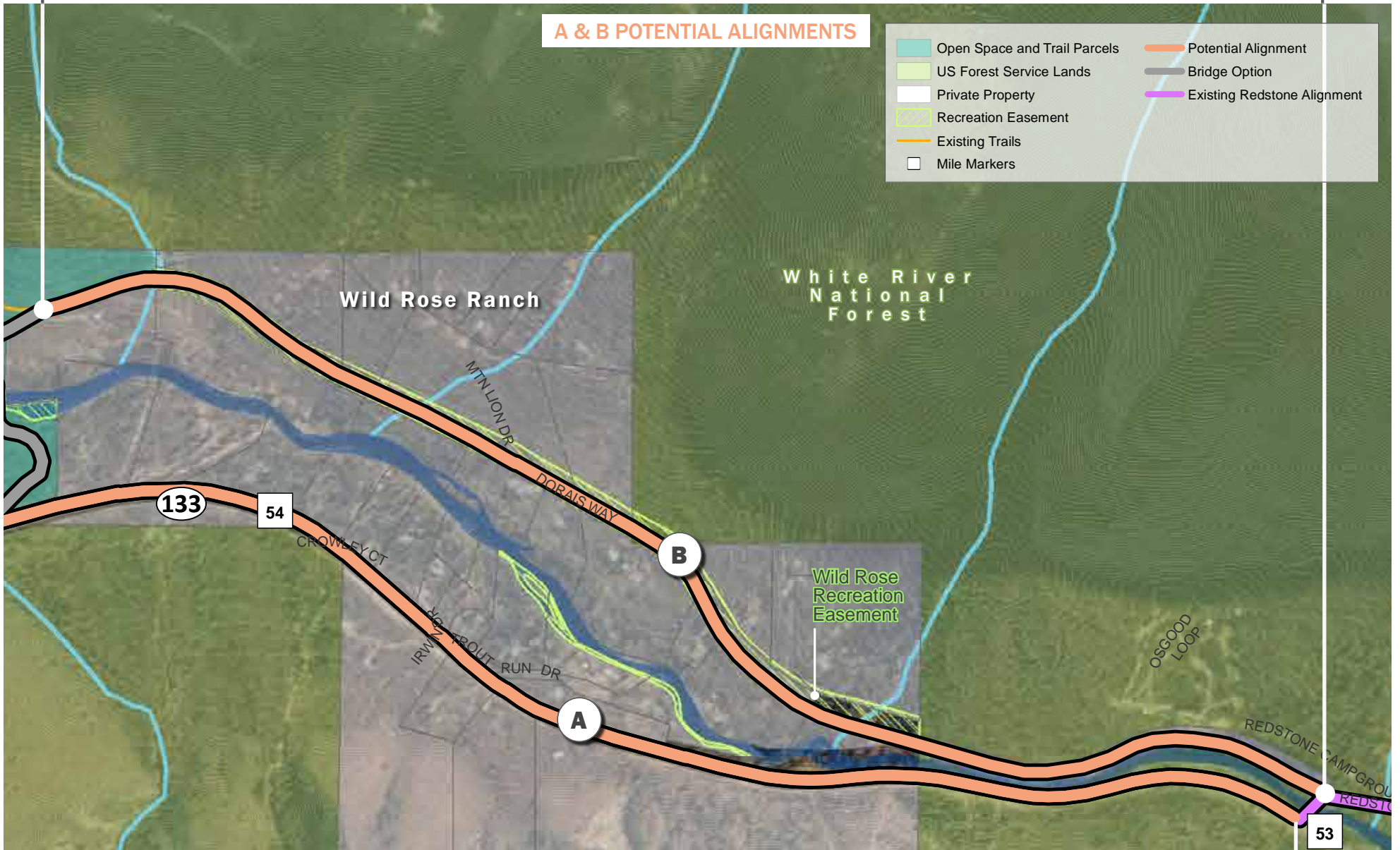
- A1.2 Crystal River Enhancements
- A1.4 Bighorn Resiliency
- A1.7 BMPs for Trail Construction
- A2.3 Signage
- A2.4 Address paved shoulder widths
- A3.2 Weed Control
- A3.3 Management and Regulations
- A3.4 Enforcement Staff
- A3.5 CPW Educational Campaign



Map 3.17: Action Item Summary - Filoha to Wild Rose



WILD ROSE



A4.12 FILOHA TRAIL SEGMENT

Based on discussions of existing conditions, environmental concerns, user experience, cost estimates, public comment and engineering, the recommended route for the Filoha trail segment follows Alternative A. This would facilitate a direct connection of the trail between Redstone and Penny Hot Springs, and allow the opportunity to address how Penny Hot Springs access and parking function. During trail design and implementation of this segment, OST will work with CDOT to ensure that pull-offs remain functional to accommodate the maintenance requirements for Hwy. 133. With the substantial seasonal closure in place on Filoha Meadows Nature Preserve to protect wildlife, Alt. A will allow a longer season of use than the three months when Filoha Meadows is open to public access. No winter maintenance is anticipated due to proximity to the highway, plowing requirements and safety concerns. The rail grade on Filoha Meadows would remain open for public access three months of the year per the Management Plan.

TRAIL MILEAGE:

1.04 miles (Alternative A)

NEXT STEPS:

The county will work with CDOT and the public on the final design of a trail within the highway right-of-way. The access and management of Penny Hot Springs will also be addressed through this discussion. Any required NEPA for a trail along the highway through WRNF will be also be undertaken.

IMPLEMENTATION TIME FRAME:

Near Term – begin in 2020

ESTIMATED IMPLEMENTATION COSTS:

\$10,474,103 (Alt. A. and Penny Hot Springs improvements - Hard-Surface Estimate).

POTENTIAL ADDITIONAL COSTS:

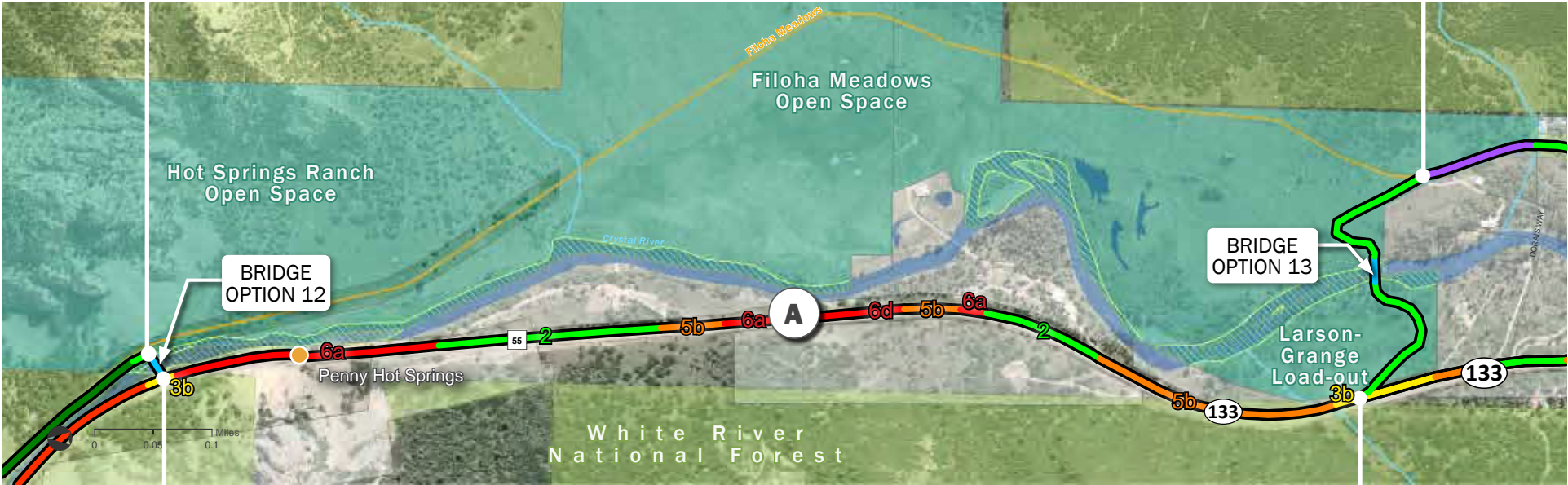
None at this time.



Alternative A: Looking north along the Filoha A trail alignment

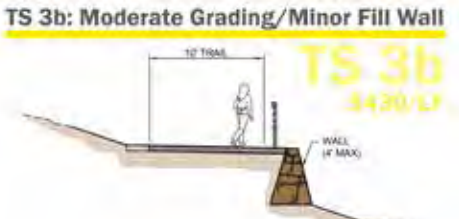
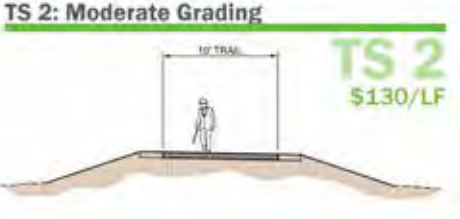


Alternative A: Looking south from the Penny Hot Springs pull-out



- Open Space and Trail Parcels
 - US Forest Service Lands
 - Private Property
 - Recreation Easement
 - Existing Trails
 - Mile Markers
- Typical Sections**
- TS-0
 - TS-3
 - TS-6
 - TS-1
 - TS-4
 - TS-7
 - TS-2
 - TS-5
 - TS-7 (Boardwalk)
 - TS-7 (Roadway Bridge)

TYPICAL SECTIONS A:



A4.13 WILD ROSE TRAIL SEGMENT

There are two potential trail alignments identified for the Wild Rose trail segment. Alt. A follows the east side of the highway, requiring a combination of moderate to increasingly complex trail engineering moving from north to south. The southern half of Alt. A would entail some of the most challenging sections of the trail, with a constrained, steep and rocky corridor that is subject to frequent rockfall. No winter maintenance is anticipated for Alignment A due to proximity to the highway, plowing requirements and safety concerns. Alt. B follows an existing recreation easement conveyed to the county along the historic Crystal River Railroad grade, now used as a neighborhood roadway. The county will work with property owners along the route and the Rock Creek Association to confirm easement locations and, if needed, look at alternative routes. If Alt. B is selected, the county will look at options for connecting the Wild Rose Alternative B to Filoha Alternative A that avoid utilizing the Larson Grange Load-out and Filoha Meadows Open Space properties. If Alt. A is selected, the existing Redstone North Bridge would be used to cross to Redstone Boulevard at the southern end of the segment.

TRAIL MILEAGE:

1.22 miles (Alternative A) to 1.27 miles (Alternative B)

NEXT STEPS:

The county will work to determine a recommended route for this segment.

IMPLEMENTATION TIME FRAME:

Near Term – begin in 2020

ESTIMATED IMPLEMENTATION COSTS:

\$13,615,192 (Alt. A. - Hard-Surface Estimate)

\$1,321,909 (Alt. B. - Hard-Surface Estimate)

POTENTIAL ADDITIONAL COSTS:

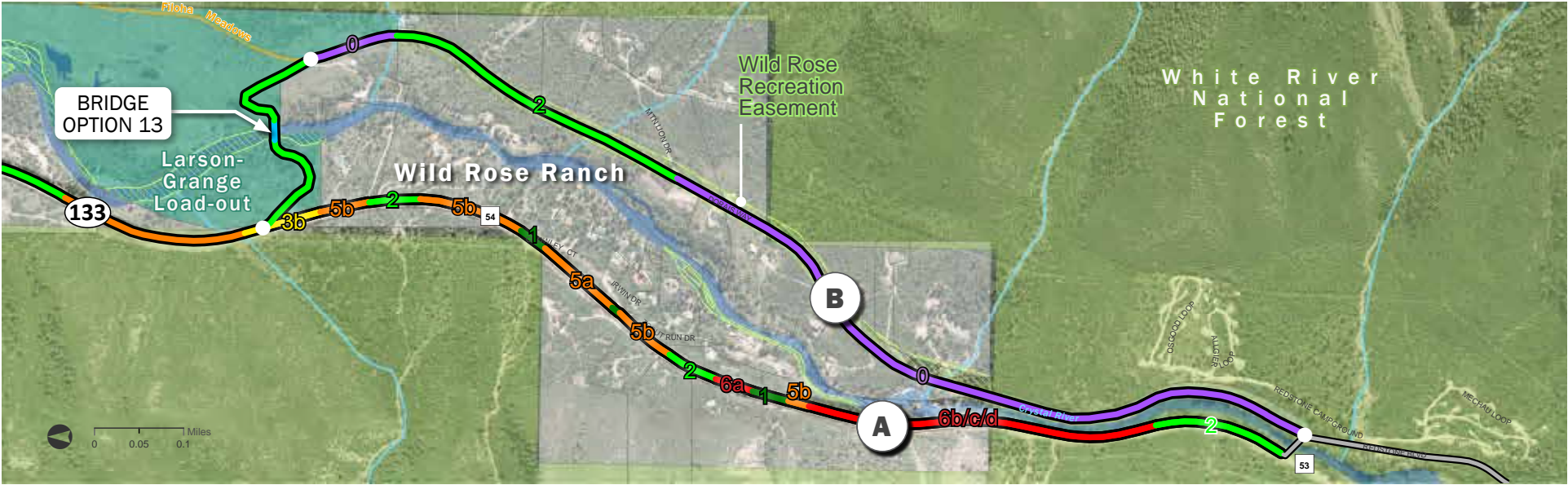
Any alternative connection acquisitions fees.



Alternative A: Looking south

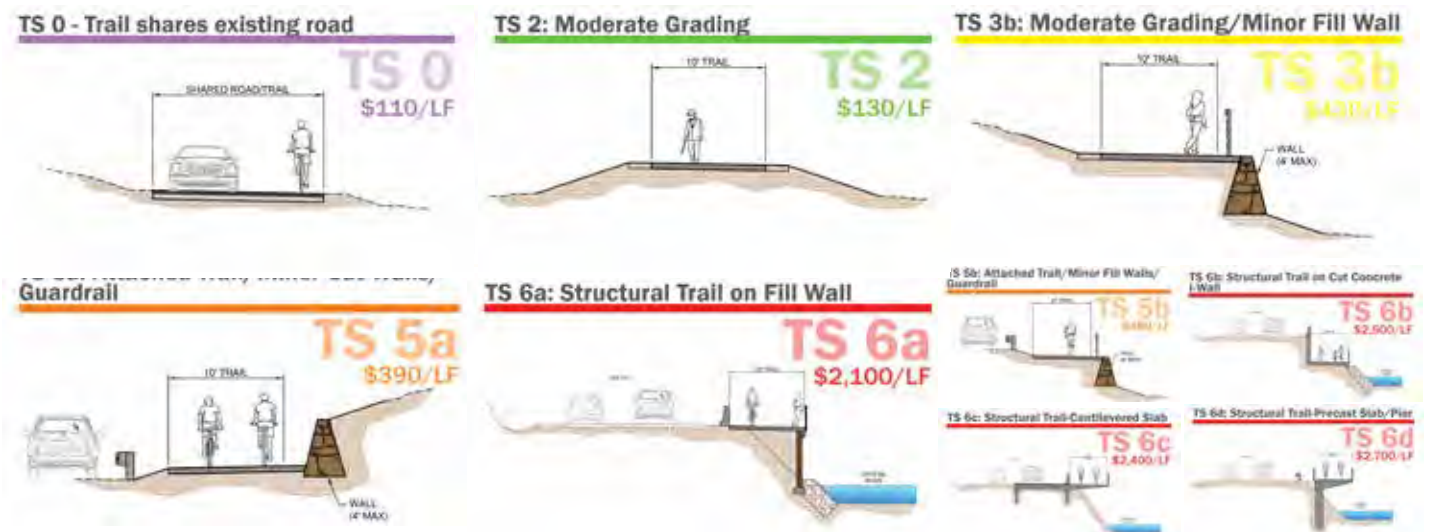


Alternative B: Looking north along Dorais Way within the Wild Rose Subdivision / existing access to Filoha Meadows Nature Preserve

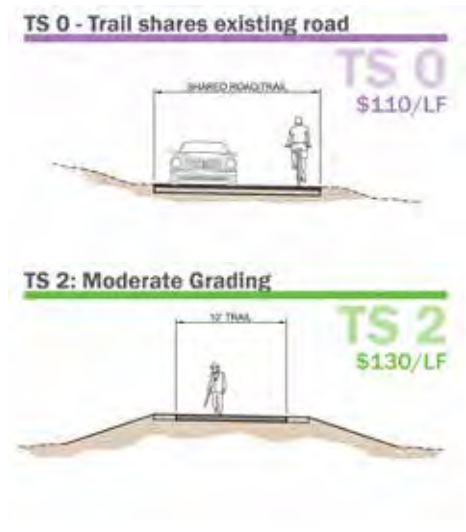


- Open Space and Trail Parcels
 - US Forest Service Lands
 - Private Property
 - Recreation Easement
 - Existing Trails
 - Mile Markers
- Typical Sections**
- TS-0
 - TS-3
 - TS-6
 - TS-1
 - TS-4
 - TS-7
 - TS-2
 - TS-5
 - TS-7 (Boardwalk)
 - TS-7 (Roadway Bridge)

TYPICAL SECTIONS A:



TYPICAL SECTIONS B:

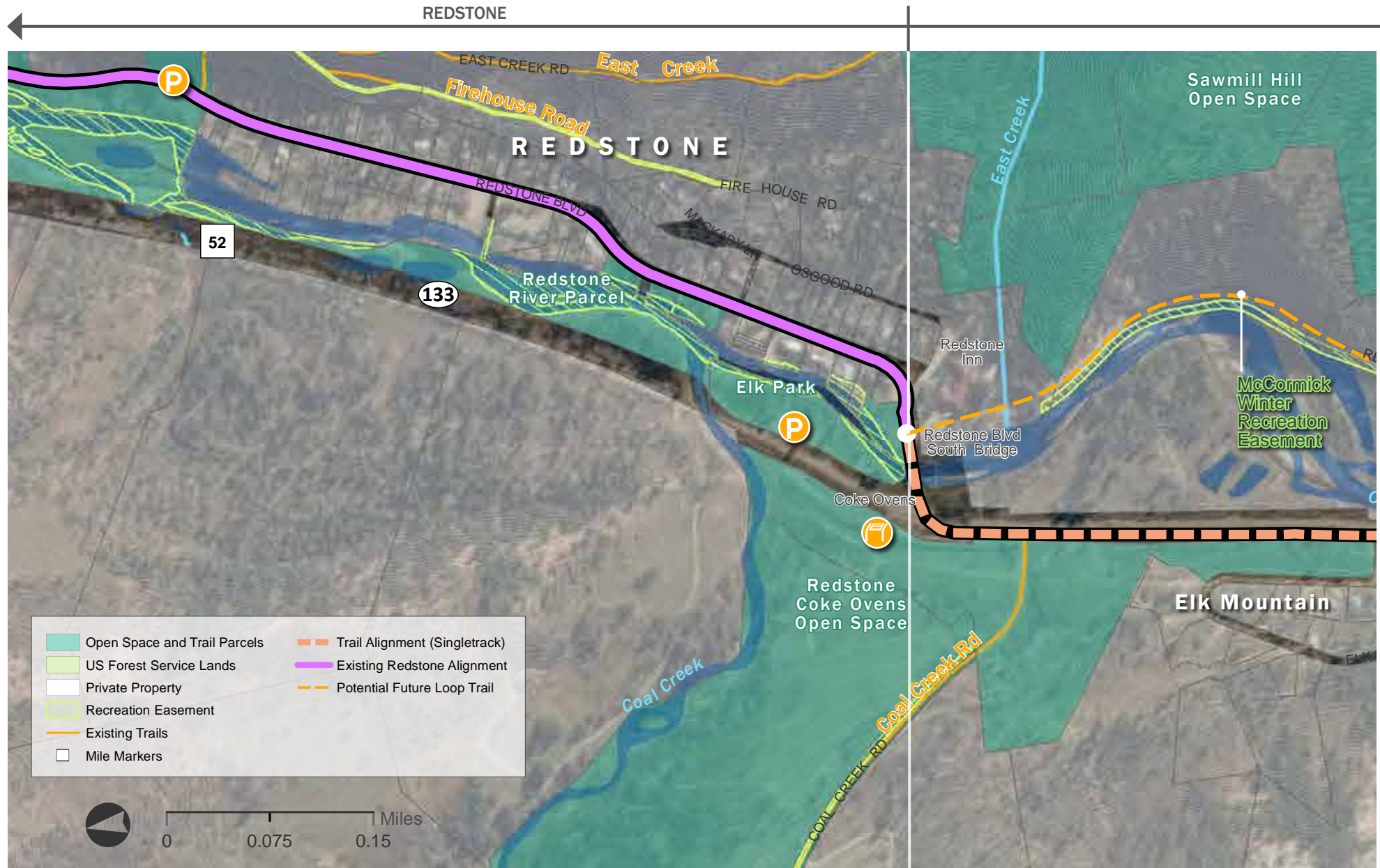


ACTION ITEMS:

- A2.1 Trailheads
- A2.2 Interpretation
- A4.14 Castle
- A4.15 Hawk Creek

CORRIDOR-WIDE ACTIONS:

- A1.2 Crystal River Enhancements
- A1.4 Bighorn Resiliency
- A1.7 BMPs for Trail Construction
- A2.3 Signage
- A2.4 Address paved shoulder widths
- A3.2 Weed Control
- A3.3 Management and Regulations
- A3.4 Enforcement Staff
- A3.5 CPW Educational Campaign

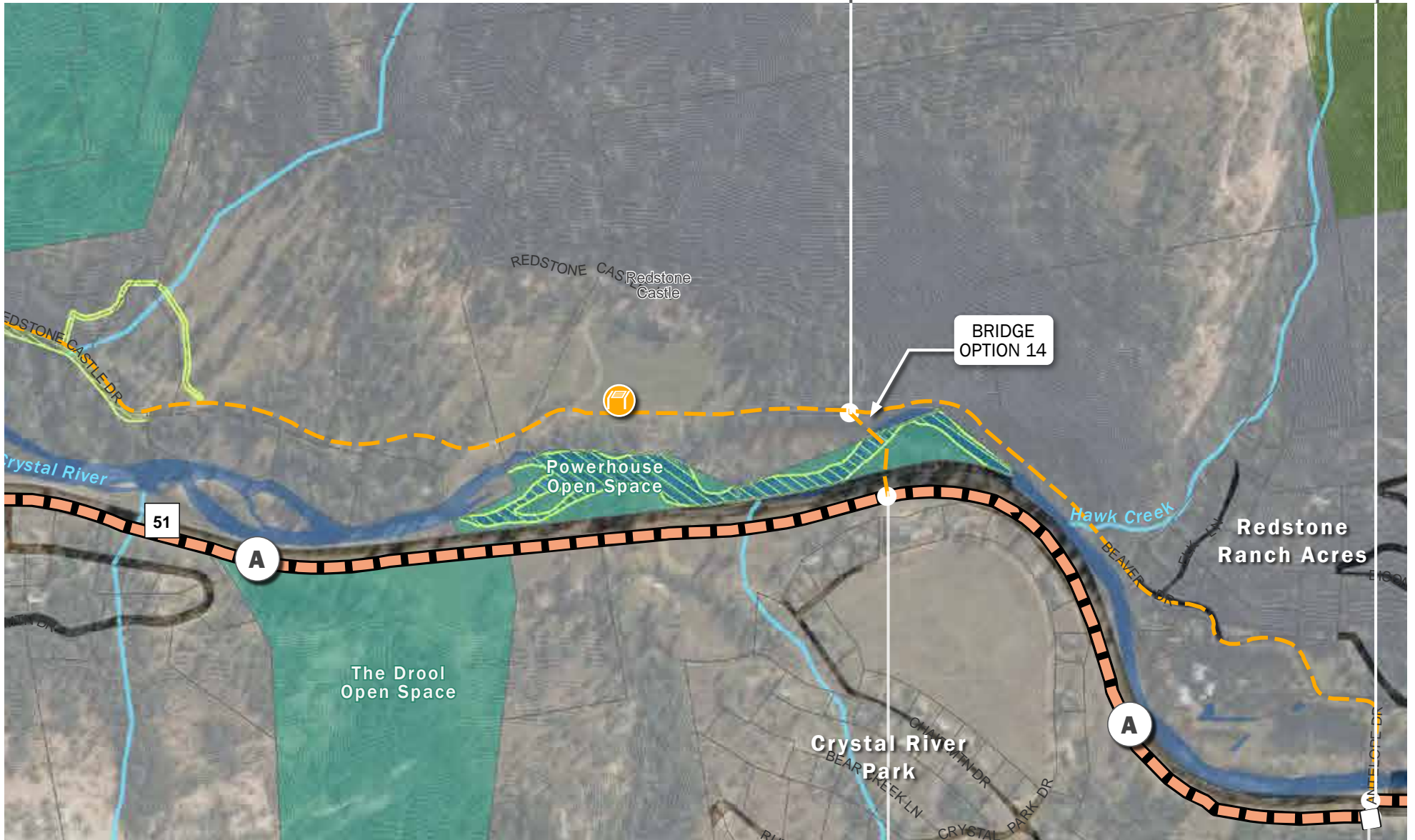


Map 3.20: Action Item Summary - Castle to Hawk Creek



CASTLE

HAWK CREEK



A4.14 CASTLE TRAIL SEGMENT

Without public access across the historic Castle property, Alignment A is recommended for this section. Alt. A utilizes Open Space and Trails property and the CDOT right-of-way following the west side of Hwy. 133.

The Alt. B alignment, while not recommended as part of the Crystal Valley Trail, could be a recreational amenity providing a future loop trail connecting to Redstone. This potential secondary route utilizes private property over which Pitkin County does not currently have an existing agreement for public access with the underlying property owner(s). There is merit to continuing discussions with existing and future private property owners along this alignment to establish public access along this route. The 1993 Redstone Master Plan identifies future trails in largely the same locations as the Alternative B alignment.

TRAIL MILEAGE:

0.98 (Alternative A)

Next steps:

OST will begin the CDOT process and next steps of public engagement to determine the appropriate trail width and character along this segment, which not only serves the regional trail needs of the Crystal Valley Trail, but also provides local trail connectivity for the neighborhoods south of Redstone and a connection to Hays Falls.

IMPLEMENTATION TIME FRAME:

Near Term – begin discussions once plan is adopted.

ESTIMATED IMPLEMENTATION COSTS:

\$325,477 (Alt. A - 3'-5' Natural Surface or Crusher Fine Trail Estimate)

POTENTIAL ADDITIONAL COSTS:

None identified at this time.

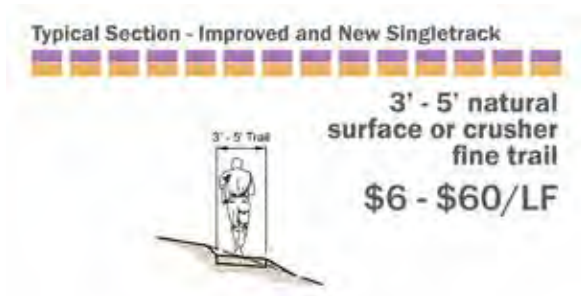


Alternative A: Looking south, the trail would likely follow the west side of the highway



- Open Space and Trail Parcels
- US Forest Service Lands
- Private Property
- Recreation Easement
- Existing Trails
- Mile Markers
- Potential Future Loop Trail
- Trail Design/Construction Difficulty**
- Low (Improvements to existing route)
- Moderate (New singletrack or structural additions to existing route)
- High (Structural solutions required)

TYPICAL SECTIONS B:



A4.15 HAWK CREEK TRAIL SEGMENT

To maintain consistency and minimize road crossings, the recommended alignment for Hawk Creek follows the west side of Hwy. 133 on Alignment A. This section requires some creative engineering at the base of the vertical rock wall.

Similar to the Castle segment, a secondary trail through Redstone Ranch Acres may be desirable to pursue in the future to create loop opportunities. However, no actions are recommended to pursue the Alt. B alignment at this time. If it is desired in the future, discussions for public access will be required with the private property owner at the end of Beaver Drive; the remainder would provide access along the public neighborhood road.

TRAIL MILEAGE:

0.48 miles (Alternative A)

NEXT STEPS:

OST will begin the CDOT process and next steps of public engagement to determine the appropriate trail width and character along this segment, which not only serves the regional trail needs of the Crystal Valley Trail, but also provides local trail connectivity for the neighborhoods south of Redstone and a connection to Hays Falls.

IMPLEMENTATION TIME FRAME:

Near Term

ESTIMATED IMPLEMENTATION COSTS:

\$221,845 (Alt. A) (3'-5' Natural Surface or Crusher Fine Trail Estimate)

POTENTIAL ADDITIONAL COSTS:

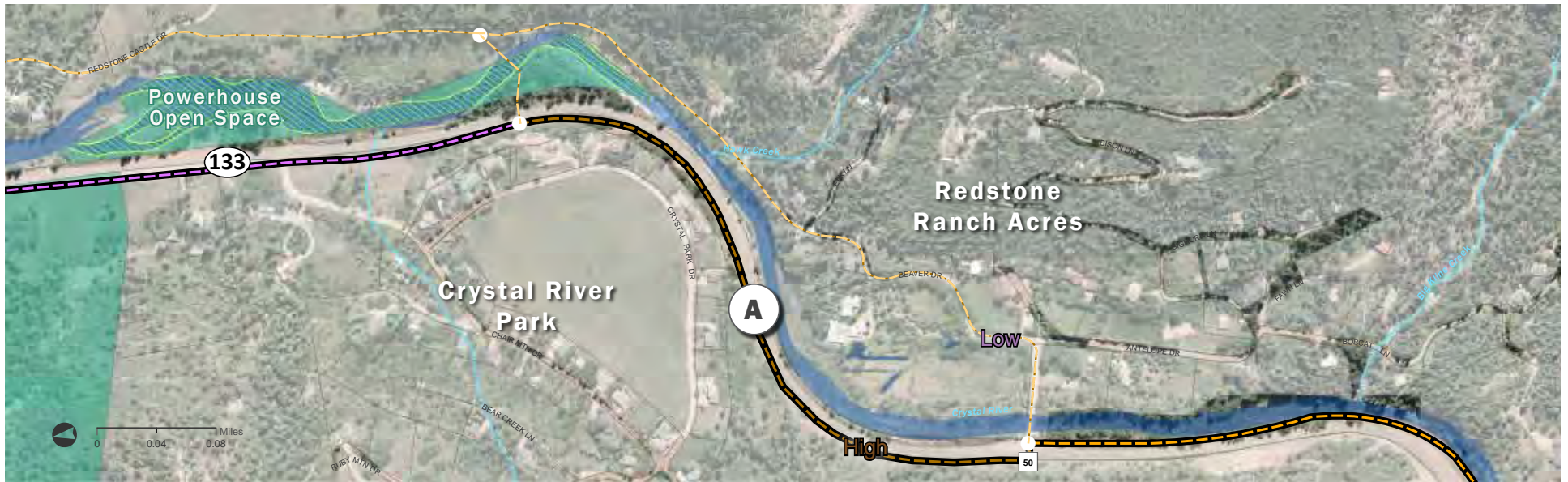
Possible roadway crossing and/or traffic calming infrastructure to meet CDOT requirements.



Alternative A: Looking south along the highway where a trail would hug the vertical rock wall



Alternative B: Looking south along Beaver Drive



- Open Space and Trail Parcels
- US Forest Service Lands
- Private Property
- Recreation Easement
- Existing Trails
- Mile Markers
- Potential Future Loop Trail
- Trail Design/Construction Difficulty**
- Low (Improvements to existing route)
- Moderate (New singletrack or structural additions to existing route)
- High (Structural solutions required)

TYPICAL SECTIONS A:

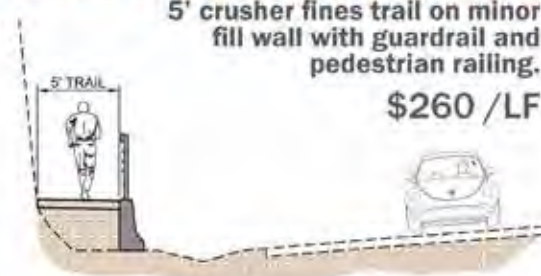
Typical Section - Improved and New Singletrack



3' - 5' natural surface or crusher fine trail
\$6 - \$60/LF




TYPICAL SECTIONS B:



Typical Section - Elevated Trail



5' crusher fines trail on minor fill wall with guardrail and pedestrian railing.
\$260 /LF

ACTION ITEMS:

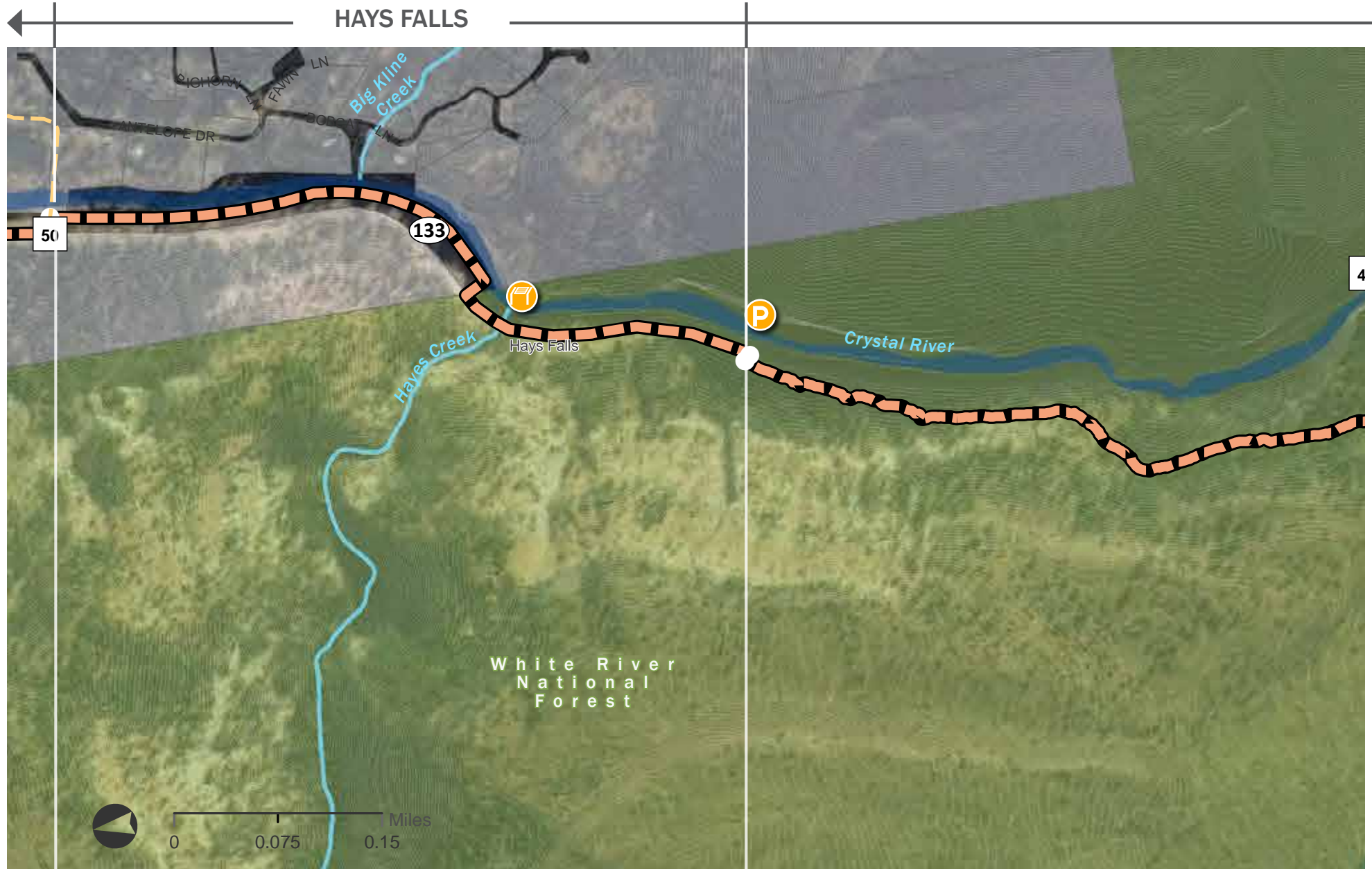
-  A1.3 Wildlife Monitoring
-  A2.1 Trailheads
-  A2.2 Interpretation

-  A4.16 Hays Falls
-  A4.17 Bear Creek

CORRIDOR-WIDE ACTIONS:

- A1.2 Crystal River Enhancements
- A1.4 Bighorn Resiliency
- A1.7 BMPs for Trail Construction
- A2.3 Signage
- A2.4 Address paved shoulder widths

- A3.2 Weed Control
- A3.3 Management and Regulations
- A3.4 Enforcement Staff
- A3.5 CPW Educational Campaign

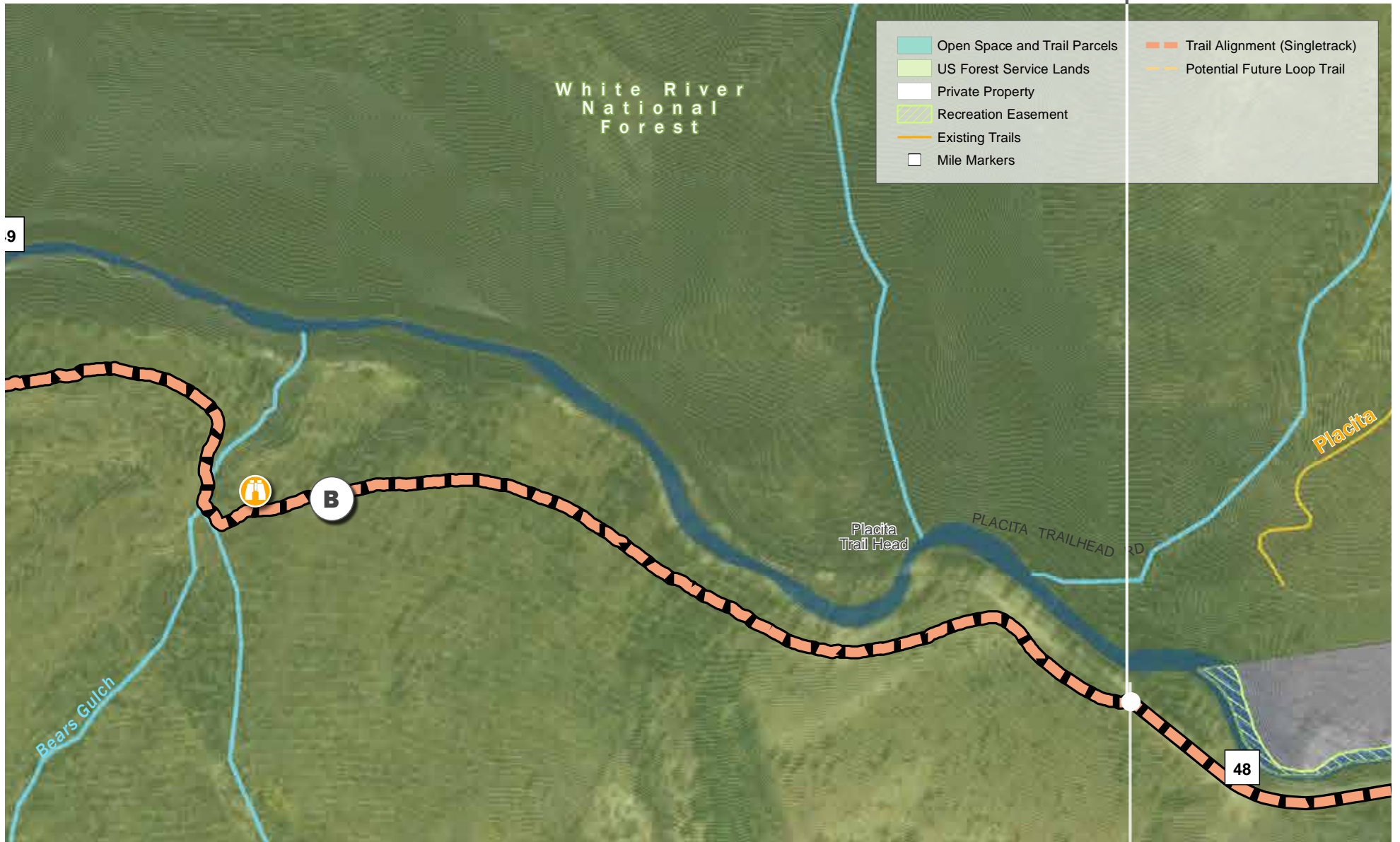


Map 3.23: Action Item Summary - Hays Falls to Bear Creek



BEAR CREEK

PLACITA



A4.16 HAYS FALLS TRAIL SEGMENT

Due to geological constraints, the Hays Falls trail segment has only one potential alignment option. The county will begin work with CDOT on trail planning, road crossing and construction in the highway right-of-way. The trail from Redstone to Hays Falls will be designed to accommodate a wide range of users as it could serve as a popular out-and-back trail to provide non-motorized access to the popular sight-seeing destination of Hays Falls. The road crossing at Hays Falls and parking around Hays Falls will also be part of the design discussion. Safety improvements at the crossing are likely to include Advance Notice signage and warnings for vehicular traffic approaching Hays Falls. Any NEPA requirements will be discussed with CDOT and the WRNF.

TRAIL MILEAGE:

0.57 miles (Alternative A)

NEXT STEPS:

OST will begin design discussion with CDOT.

IMPLEMENTATION TIME FRAME:

Near Term – begin discussions and NEPA process following plan adoption.

ESTIMATED IMPLEMENTATION COSTS:

\$90,841 to \$180,576 (Alt. A. - Soft-Surface Trail Estimate)

POTENTIAL ADDITIONAL COSTS:

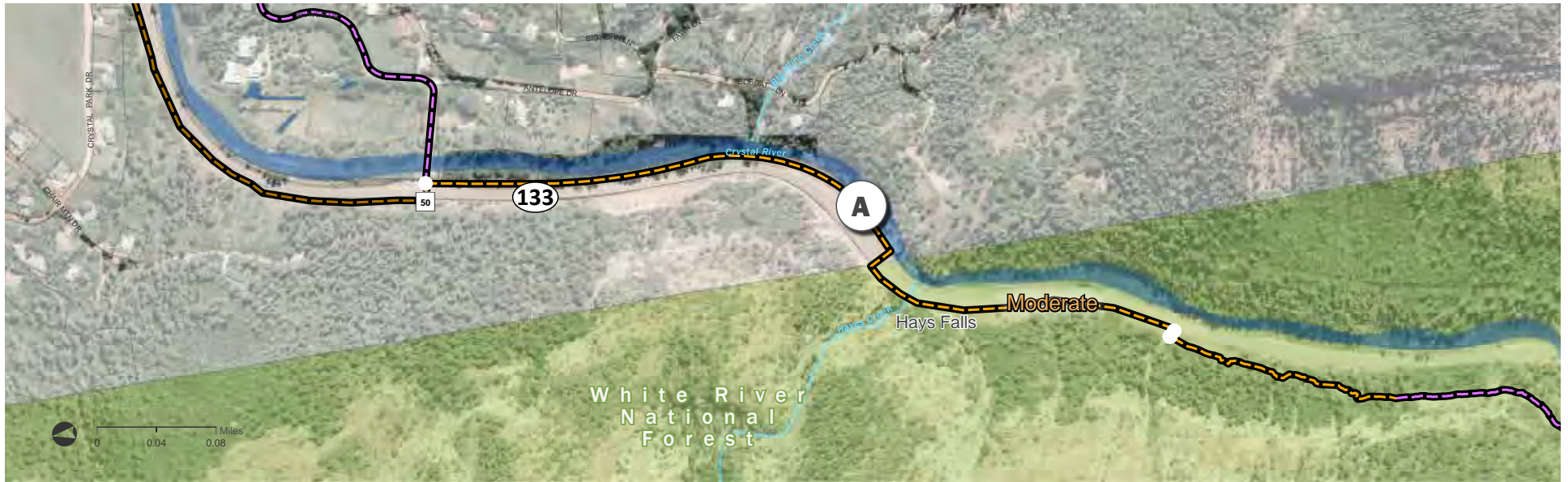
Working with CDOT on the road crossing and parking solutions



Alternative A: Looking south along the southern end of the Hays Falls trail segment



Alternative A: Looking north along the highway



- Open Space and Trail Parcels
 - US Forest Service Lands
 - Private Property
 - Recreation Easement
 - Existing Trails
 - Mile Markers
- Typical Sections**
- TS-0
 - TS-3
 - TS-6
 - TS-1
 - TS-4
 - TS-7
 - TS-2
 - TS-5
 - TS-7 (Boardwalk)
 - TS-7 (Roadway Bridge)

TYPICAL SECTIONS B:

Typical Section - Improved and New Singletrack



3' - 5' natural surface or crusher fine trail
\$6 - \$60/LF

A4.17 BEAR CREEK TRAIL SEGMENT

Based on existing conditions, cost estimates, engineering and existing trail use, the recommended route would follow Alternative B. This alignment follows the route of the Rock Creek County Road. As part of the NEPA process Alternative A (see pages 156/157) will be analysed as well as consideration for seasonal dog restrictions (e.g. no dogs allowed).

TRAIL MILEAGE:

1.45 miles (Alternative B)

NEXT STEPS:

Begin NEPA process with USFS.

IMPLEMENTATION TIME FRAME:

Near Term – Begin NEPA process following plan adoption.

ESTIMATED IMPLEMENTATION COSTS:

\$209,031 (Alt. B. - Soft Surface Trail Estimate)

POTENTIAL ADDITIONAL COSTS:

None at this time.



Alternative B: Looking south following the existing trail above the highway



Alternative B: Looking south the trail follows the Rock Creek County Road



- Open Space and Trail Parcels
 - US Forest Service Lands
 - Private Property
 - Recreation Easement
 - Existing Trails
 - Mile Markers
- Typical Sections**
- TS-0
 - TS-3
 - TS-6
 - TS-1
 - TS-4
 - TS-7
 - TS-2
 - TS-5
 - TS-7 (Boardwalk)
 - TS-7 (Roadway Bridge)

TYPICAL SECTIONS B:



Typical Section - Improved and New Soft-Surface Trail






3' new or improved natural surface trail.

\$6 - \$30/LF

ACTION ITEMS:

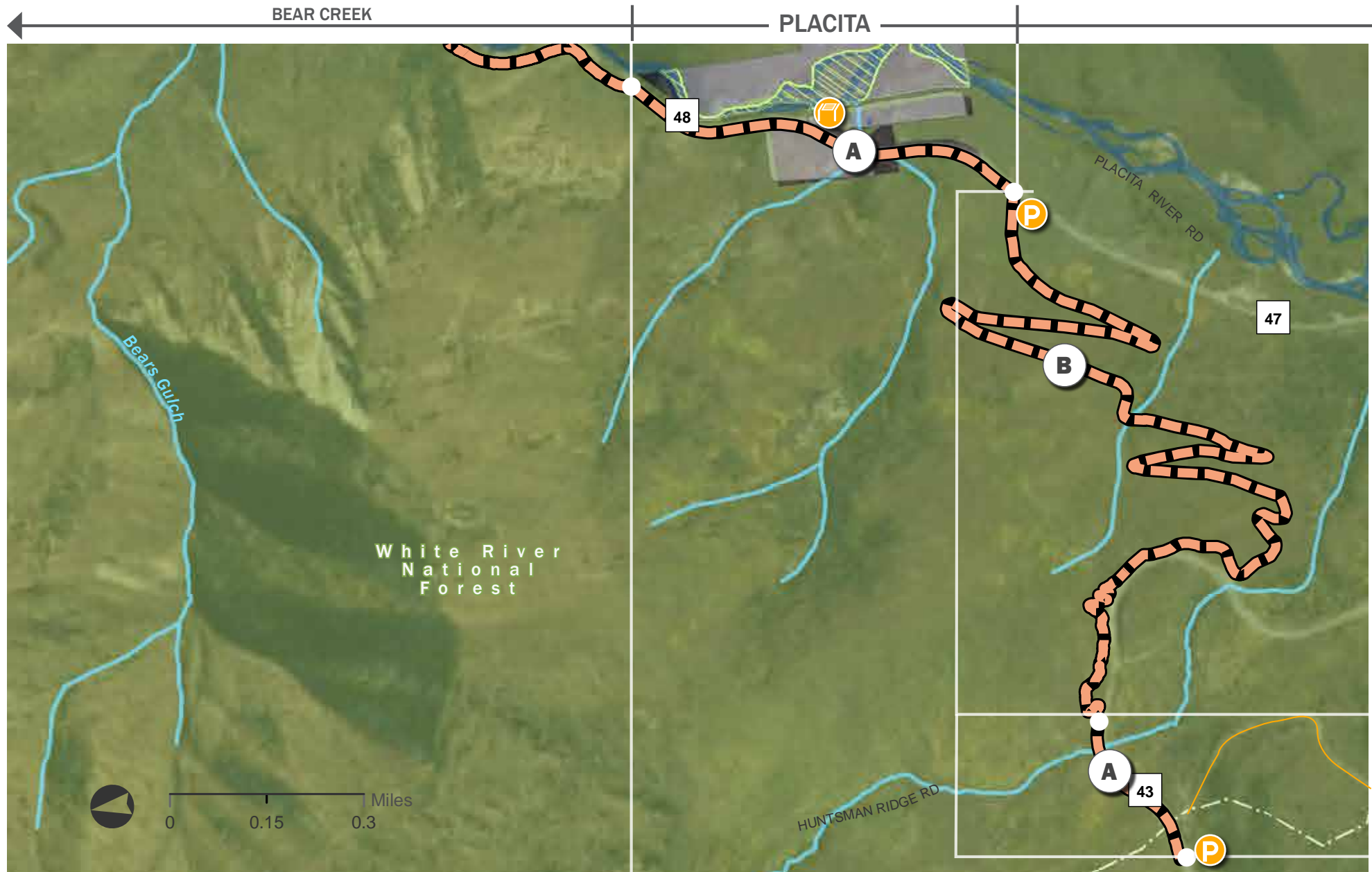
-  A2.1 Trailheads
-  A2.2 Interpretation

-  A4.18 Placita
-  A4.19 McClure Pass
-  A4.20 Top of McClure

CORRIDOR-WIDE ACTIONS:

- A1.2 Crystal River Enhancements
- A1.4 Bighorn Resiliency
- A1.7 BMPs for Trail Construction
- A2.3 Signage
- A2.4 Address paved shoulder widths

- A3.2 Weed Control
- A3.3 Management and Regulations
- A3.4 Enforcement Staff
- A3.5 CPW Educational Campaign



A4.18 PLACITA TRAIL SEGMENT

Only one option, Alt. A, was proposed for the Placita trail segment due to geological constraints. The county will begin work with CDOT on trail planning and construction in the right-of-way. Any NEPA requirements will be coordinated with CDOT and the WRNF.

TRAIL MILEAGE:

0.64 miles (Alternative A)

NEXT STEPS:

OST will begin design discussion with CDOT.

IMPLEMENTATION TIME FRAME:

Near Term – begin discussions and NEPA process once plan is adopted.

ESTIMATED IMPLEMENTATION COSTS:

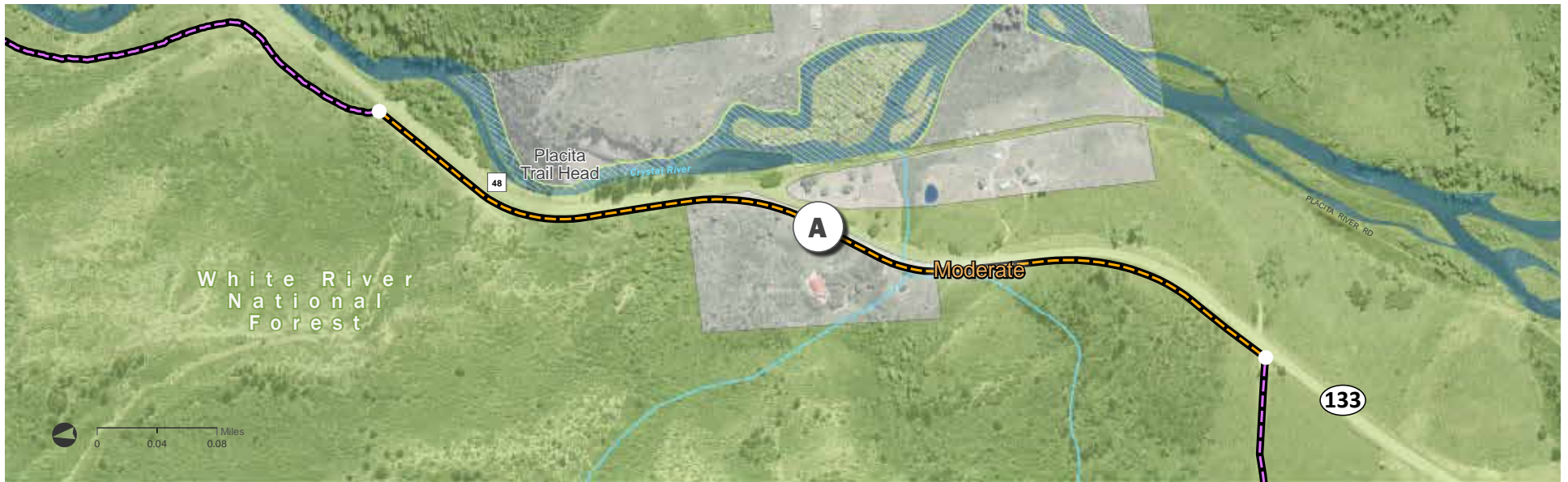
\$84,757 (Alt. A. - Soft Surface Trail Estimate)

POTENTIAL ADDITIONAL COSTS:

None at this time.



Alternative B: Looking north toward the Placita trail segment following the highway



- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
|  Open Space and Trail Parcels | Singletrack Difficulty of Construction |
|  US Forest Service Lands | |
|  Private Property | |
|  Recreation Easement | |
|  Existing Trails | |
|  Mile Markers | |
|  Low (Improvements to existing route) | |
|  Moderate (New singletrack or structural additions to existing route) | |
|  High (Structural solutions required) | |

TYPICAL SECTIONS A:

Typical Section - Improved and New Soft-Surface Trail



3' new or improved natural surface trail.

\$6 - \$30/LF

A4.19 McCLURE PASS TRAIL SEGMENT

Based on existing conditions, cost estimates, engineering and existing trail use, the recommended route follows Alternative B. This alignment follows the old Hwy. 133 route up and over the pass. During the NEPA process Alternative A (see pages 168/169) and other feasible alignments will be evaluated.

TRAIL MILEAGE:

2.52 miles (Alternative B)

NEXT STEPS:

Begin NEPA process with USFS.

PRIORITY:

Near Term – begin NEPA process once plan is adopted.

ESTIMATED IMPLEMENTATION COSTS:

\$79,905 (Alt. B. - Soft Surface Trail Estimate)

POTENTIAL ADDITIONAL COSTS:

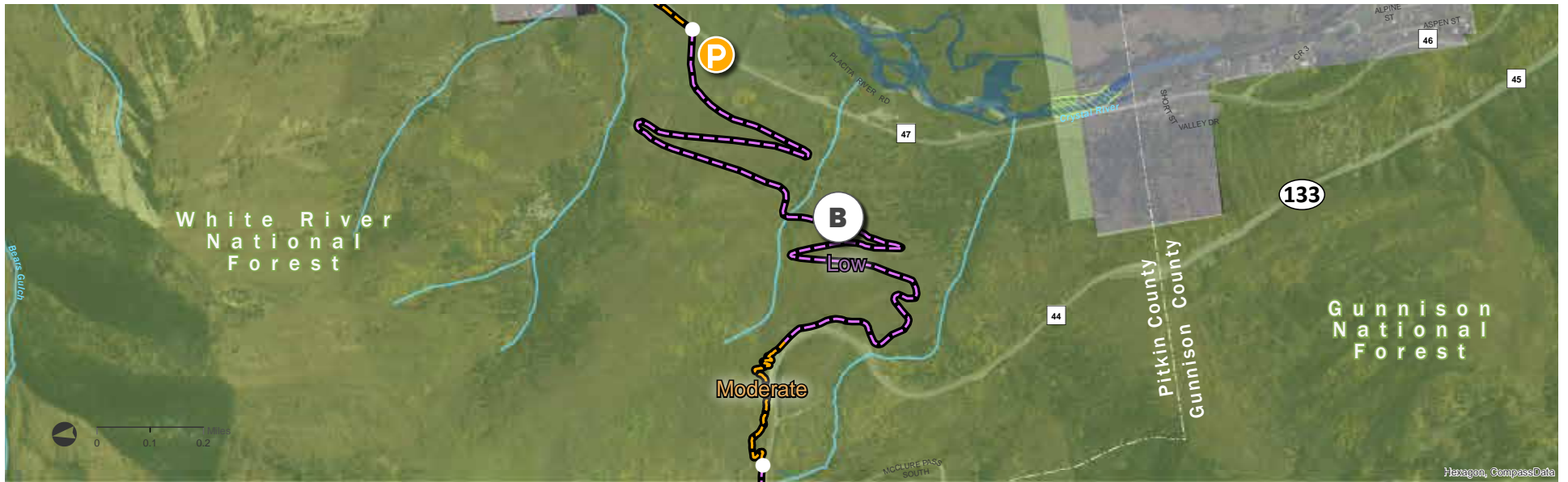
None at this time.



Alternative B: The existing trail following the old McClure Pass switchbacks, looking south toward Chair Mountain



Alternative B: Looking west from below the highway toward the old switchbacks going up McClure Pass



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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> Open Space and Trail Parcels US Forest Service Lands Private Property Recreation Easement Existing Trails Mile Markers | <p>Trail Design/Construction Difficulty</p> <ul style="list-style-type: none"> Low (Improvements to existing route) Moderate (New singletrack or structural additions to existing route) High (Structural solutions required) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

TYPICAL SECTIONS B:

Typical Section - Improved and New Soft-Surface Trail



3' new or improved natural surface trail.

\$6 - \$30/LF

A4.20 TOP OF McCLURE TRAIL SEGMENT

Due to geological constraints, only one potential alignment, Alt. A, is feasible for the Top of the Pass trail segment. The county will begin work with CDOT on trail planning and construction in the right-of-way. Any NEPA requirements will be discussed with CDOT and the WRNF. This will also present an opportunity to formalize the parking along the highway, keeping skier access in mind.

TRAIL MILEAGE:

0.27 miles (Alternative A)

NEXT STEPS:

OST will begin design discussions with CDOT.

IMPLEMENTATION TIME FRAME:

Near Term – begin discussions and NEPA process once plan is adopted.

ESTIMATED IMPLEMENTATION COSTS:

\$84,757 (Alt. A. - Soft Surface Trail Estimate)

POTENTIAL ADDITIONAL COSTS:

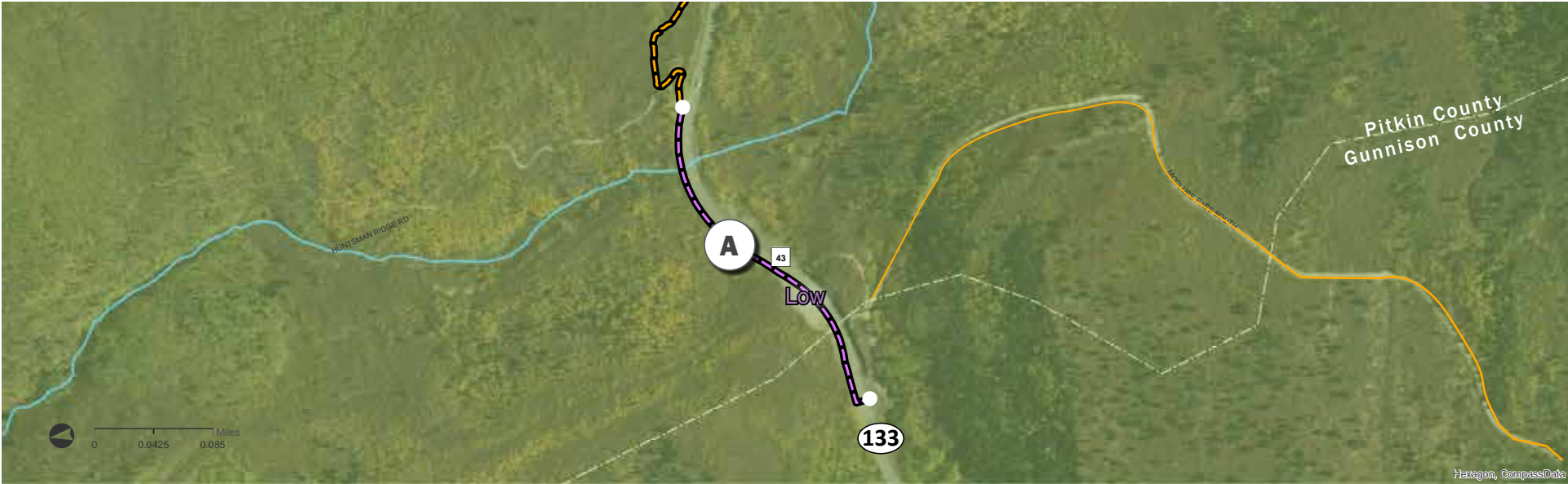
None at this time.



Alternative A: Looking toward Pitkin County from the top of McClure Pass



Alternative A: Approaching the summit of McClure Pass from the Pitkin County side



- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> Open Space and Trail Parcels US Forest Service Lands Private Property Recreation Easement Existing Trails Mile Markers | <p>Trail Design/Construction Difficulty</p> <ul style="list-style-type: none"> Low (Improvements to existing route) Moderate (New singletrack or structural additions to existing route) High (Structural solutions required) |
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TYPICAL SECTIONS B:

Typical Section - Improved and New Soft-Surface Trail

3' new or improved natural surface trail.

\$6 - \$30/LF

B. IMPLEMENTATION TIMING AND COST SUMMARY

IMPLEMENTATION TIMING

The Implementation Time Frame is an estimate of when the Action Items in this plan will begin. Some items recur over the life of the trail, while some may take many years to finish. The Action Items will be phased in over multiple decades. The implementation steps may be shuffled in the future based on opportunities and Board/BOCC direction.

With the adoption of this plan, Staff will move forward on the action items for the years 2018/2019-2021. These include the majority of the Biodiversity Preservation and Enhancement action items and the trail segments to the south of Redstone, which include Action Items A.14 through A.20. Some of the action items identified are already underway, including the initial steps of the Crystal River Resource Enhancements.

The 2019 action items for the trail segments to the south of Redstone (Castle to the Top of McClure) will include initiating the NEPA process

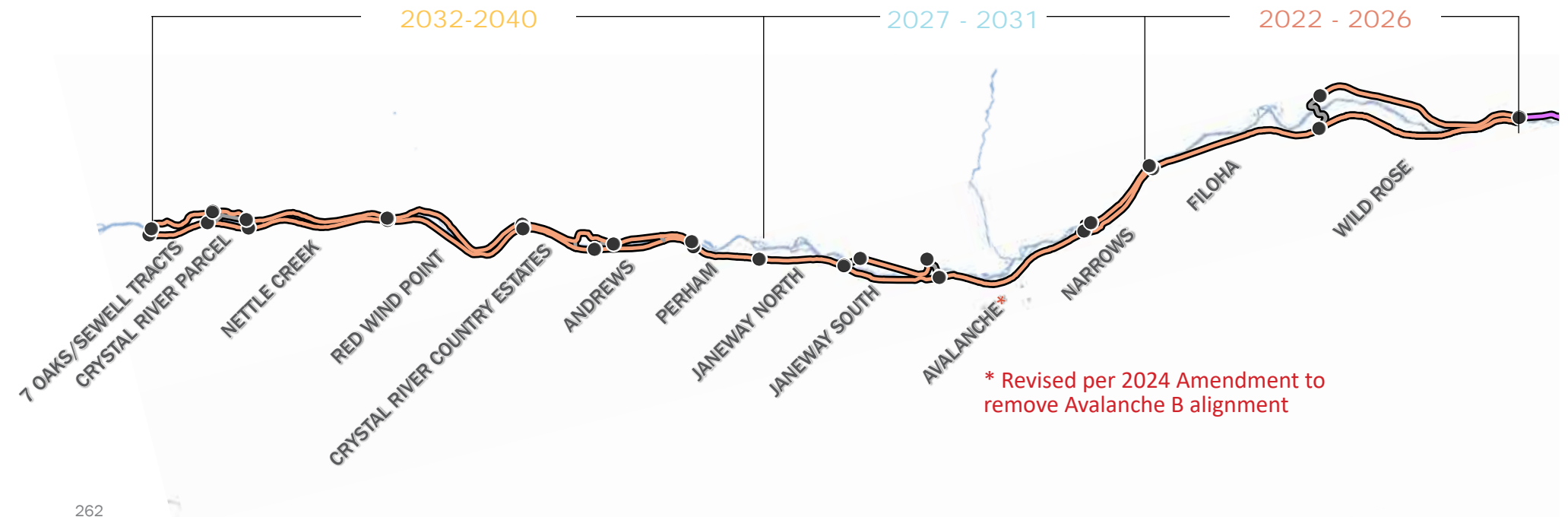
with the WRNF and beginning the approvals and permitting process with CDOT for the segments within the Hwy. 133 right-of-way. These processes will include additional public outreach and engagement, refining the alignments, design and engineering.

Phasing Schedule:

Ongoing

- A1.5 Seasonal Closures
- A2.4 Working with CDOT on Hwy. 133 Shoulders
- A3.5 Educational Campaign Partnership with CPW

Figure 13: Phasing Diagram



2018

A1.2 Crystal River Resource Enhancements

2019 - 2021

A1.1 Habitat Enhancement – Filoha

A1.1 Habitat Enhancement – Cheatgrass Study

A1.3 Wildlife Monitoring – Bighorn Lambing, Raptor Nests, Elk Calving

A1.4 Bighorn Resiliency

A2.5 Avalanche Campground Improvements

A3.2 Weed Control

A3.4 Enforcement Staff

A3.5 Educational Campaign Partnership with CPW (plan)

A4.10 Avalanche Additional Study

A4.14-A4.15 Castle Trail Segment and Hawk Creek Trail Segment (CDOT Planning Process - 2019)

A4.16- A4.20 Hays Falls Trail Segment, Bear Creek, Placita Trail Segment, McClure Pass Trail Segment and Top of the Pass Trail Segment (NEPA / CDOT Planning Process 2019)

A2.1 Bear Creek and Top of the Pass Trailhead

2022-2026

A1.1 Habitat Enhancement – Red Wind Point

A2.2 Interpretation Plan

A4.12 - A4.13 Wild Rose and Filoha Trail Segments, Penny Hot Springs Parking Area (Planning 2021)

2027 - 2031

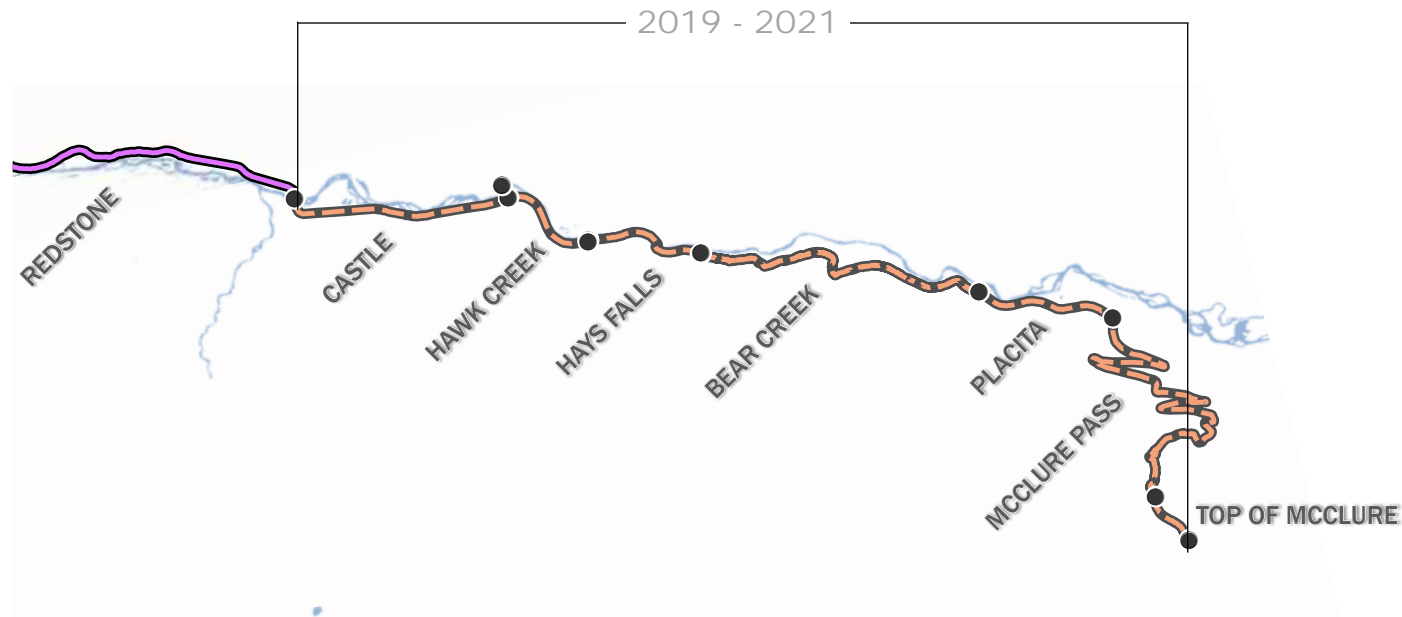
A3.1 Additional Crew Member

A4.8 - A4.11 Janeway North, Janeway South, Avalanche and Narrows Trail Segments (Planning 2026)

A2.1 Avalanche Creek Trailhead

2032 - 2040

A4.1 - A4.6 7 Oaks Trail Segment and Trailhead, Crystal River Parcel Trail Segment, Nettle Creek Trail Segment, Red Wind Point Trail Segment, Crystal River Country Estates Trail Segment, Andrews Trail Segment and Perham Trail Segment (Planning 2031)



COST SUMMARY

The following section describes the potential cost of the Crystal Valley Corridor Planning Action Items. The costs include both corridor-wide enhancements and management efforts that are needed regardless of the implementation of the trail, as well as estimated trail construction cost ranges. Estimates for trail construction are based on hard surface costs to facilitate comparison, however, surface type has not been determined at this stage of planning though the structural requirements of connecting to the highway require the Alignment A to be hard surface. There may be potential cost savings along both alignments depending on the final design and considerations such as surface type (soft surface options along the B alignment may reduce costs), while moving the highway, trail width adjustments and other engineering solutions have the potential to lower costs of Alignment A segments. When segments are planned in the future, the actual engineered costs will be obtained.

It is important to evaluate these potential costs in the context of the long-range financial capacity of the OST Fund and long-term phasing. This Plan does not commit this funding; rather, the purpose is to describe the feasibility of the Plan's vision with reference to the program's long-range capacity through 2040.

Estimates of potential funding from outside sources and partnerships are not projected at this time, however, supplemental funding and partnership support will be important to the plan's implementation. This plan will serve as a tool to attract outside funding. The pace with which Pitkin County seeks to implement the Plan can be adjusted on an ongoing basis to maximize resources from state and federal programs.

Open Space and Trails Fund Capacity and Cost Summary

The ambitious undertaking of the Carbondale to Crested Butte Trail and the potential magnitude of Pitkin County's potential costs to complete the Crystal Trail was one of the most significant variables considered during the 2016 Open Space and Trails reauthorization. With the reauthorization, the Open Space Fund was approved through 2040 with a 3.75 mil levy, as well as increased flexibility in allocating funding between open space, trails and maintenance. The amended Home Rule

Charter for Open Space and Trails allows the percentage of the fund allocated to trails to be increased or decreased within a range of 10-40%. The 2018-2039 average fund annual revenue (less debt service, tax collection fees and general operation costs) is approximately \$9.6 million in 2017 dollars. With the 10-40% allocation flexibility for trail expenditures, the annual average available funds over this 22-year period range from approximately \$959,900 to \$3.84 million.

As illustrated in Figure 14, when phased over time, a hybrid trail approach that balances trail priorities using a combination of the A and B alignments and the required bridges is within the capacity of the Open Space and Trails Fund. With a hybrid approach, OST's annual revenue would allow for other trail projects to be accomplished within the allocated budget range. If Alignment A is utilized exclusively for the segments to the north of Redstone, the cost estimate exceeds the available trail budget and additional funds would be needed. Potential acquisition costs are not included in the estimated costs. The combination of a vision, a flexible implementation schedule, and a track record of maximizing partnerships, are the building blocks for the implementation of the Carbondale to Crested Butte Trail.

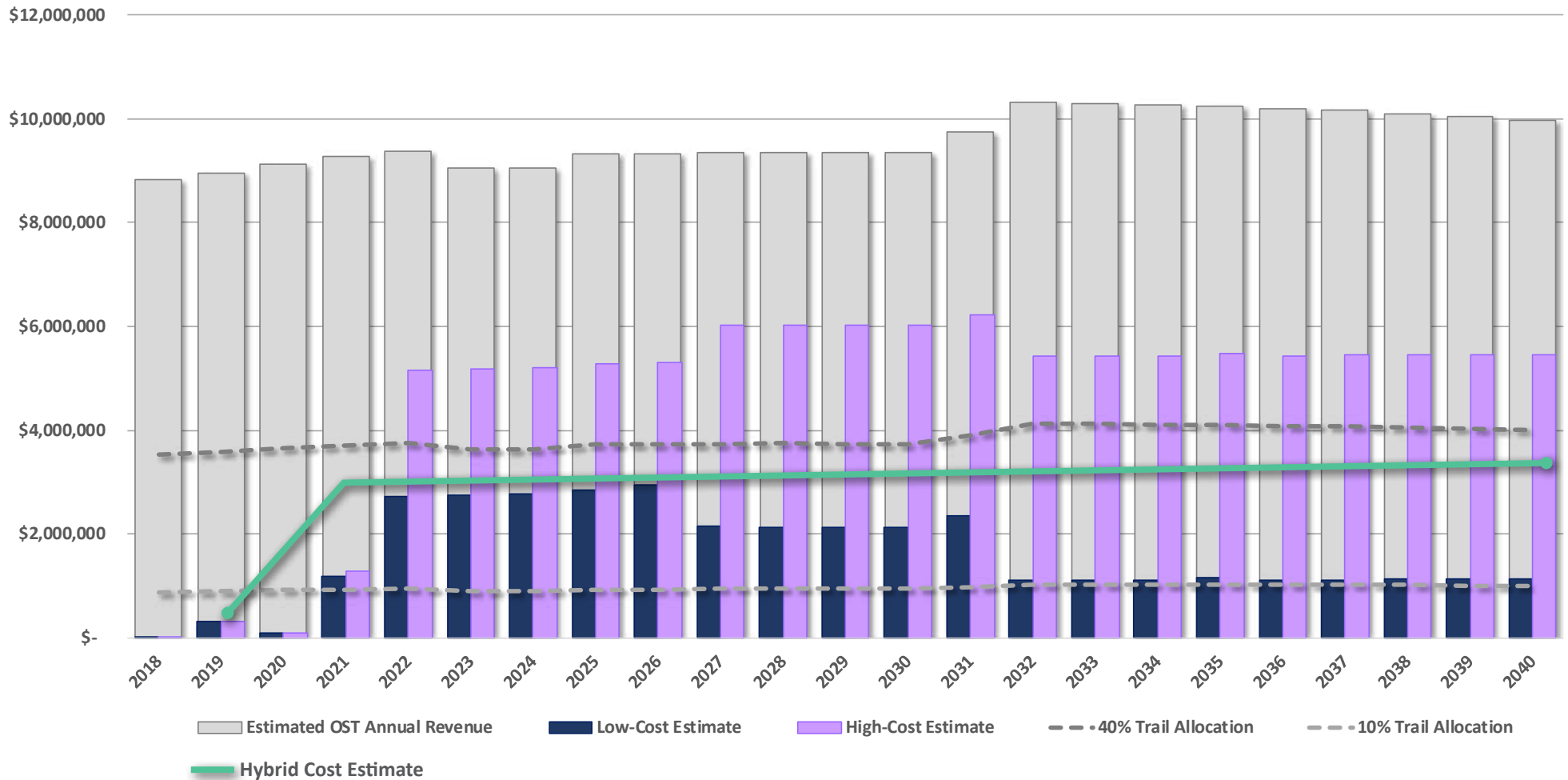
Funding Opportunities and Partnerships:

Grant opportunities and statewide funding sources can be pursued to supplement the county's contribution to the regional trail and environmental projects within the Crystal Valley. Some of the potential funding opportunities include Transportation Alternatives Program (TAP), Federal Lands Access Program (FLAP), Department of Local Affairs (DOLA), and Great Outdoors Colorado. Throughout the life of this Plan, funding sources at the federal and state level are likely to change and potential new sources may become available in the future.

Additionally, partnership funding and volunteers can help share the cost or effort involved in the action items described in the plan. For example, RFMBA has expressed an interest in contributing resources to assist with the construction and maintenance of the soft-surface segments south of Redstone. The county, USFS and RFMBA could continue to build on

successful collaborative efforts that have been undertaken in other parts of the county. Other nonprofit organizations such as the Rocky Mountain Bighorn Society have expressed an interest in partnering on specific action items in the plan and may be able to contribute funds.

Figure 14: Carbondale to Crested Butte Estimated Cost Range Comparison to OST Fund Allocations

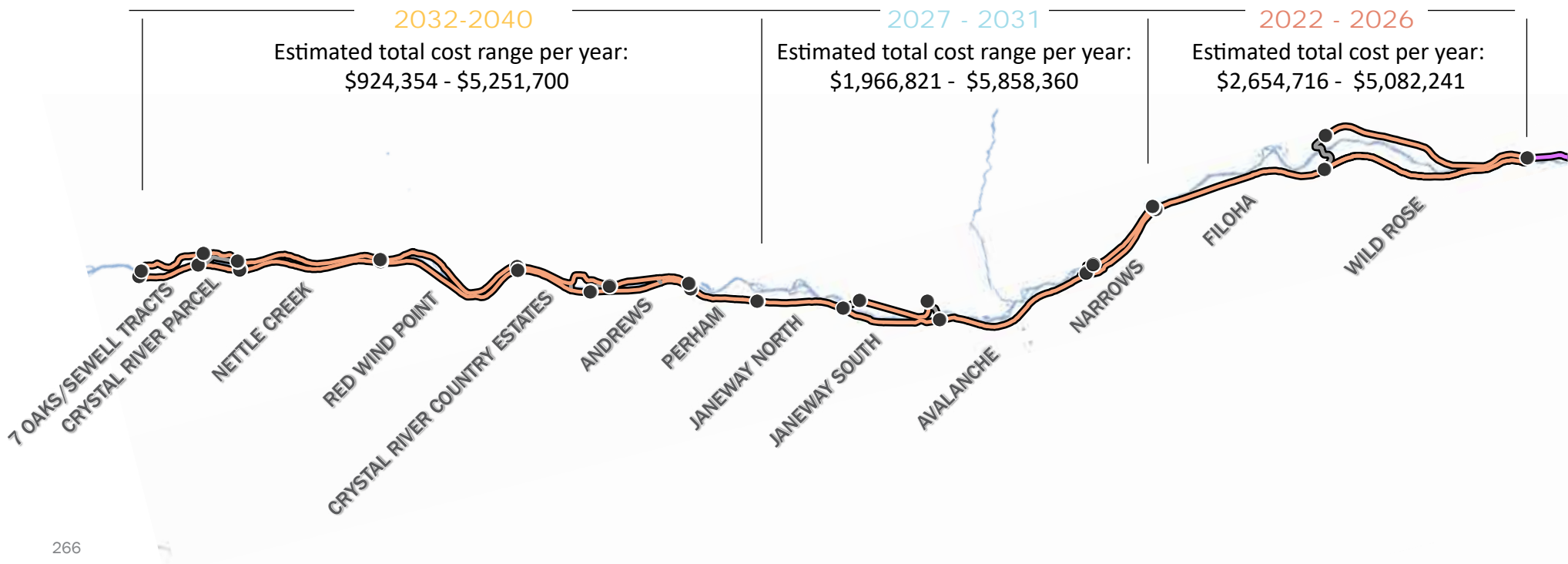


Trail Actions Cost Summary

Action Items A4.1 - A4.20 provide potential alignments for 10 of the 13 trail segments north of Redstone with three recommended alignments where it has been determined through the engineering studies, environmental data and public input that Alignment A is recommended. Along segments where the trail could potentially follow either the A or B alignment, further analysis and collaboration is needed prior to establishing a recommended alignment. To the south of Redstone, all seven of the segments have a recommended alignment to move forward into the next stage of planning with CDOT and NEPA. The estimated trail design and construction costs described in Figure 15 illustrate both a low and a high estimate, which reflects the potential for either the A or B

alignments to be selected as planning progresses. For the entirety of the trail, from the southern terminus of the existing Crystal Trail to the top of McClure Pass, the cost range for a hard surface trail is approximately \$34.9 million to \$103.1 million, including the cost of bridges to connect various segments as needed. Note that cost reductions are feasible depending on the final alignment and surface type.

Figure 15: Trail Construction Cost per Year Estimate by Segment Group



Trail Cost and Surface Type: The trail surface from 7 Oaks/Sewell Tracts to Redstone has not been determined as a part of this plan; however, the cost estimates are based on an asphalt surface to facilitate comparison. If the trail is constructed as a soft-surface (crusher-fine) trail, costs would be substantially reduced for the B alignment. Initial cost estimates in the [Engineering Feasibility Report, Appendix C](#), show that a crusher-fine surface would be approximately 20 percent less than an asphalt surface on Alignment B from 7 Oaks to Redstone. However, along the A alignment, due to the structural requirements of building the trail between the highway and the river, many segments would not support a soft-surface trail or comparable cost reductions, though cost savings may be realized in other ways. The estimates for a soft-surface trail, as well as a concrete trail are provided in [Appendix C](#). There could be additional costs associated with any necessary acquisitions depending on the final trail corridor.

The cost estimates for the Redstone to the Top of McClure segments are based on a natural surface or crusher-fine trail between 3 and 5 feet in width.

Corridor-Wide Actions Cost Summary

The corridor-wide action items, identified in sections A1-A3 and summarized in Table 6 on the following pages, have some initial upfront costs in the short term as well as annual costs for ongoing monitoring, maintenance and enforcement. These ongoing costs increase as portions of the trail are completed and range from approximately \$78,000 in 2020 to \$204,600 in 2040.

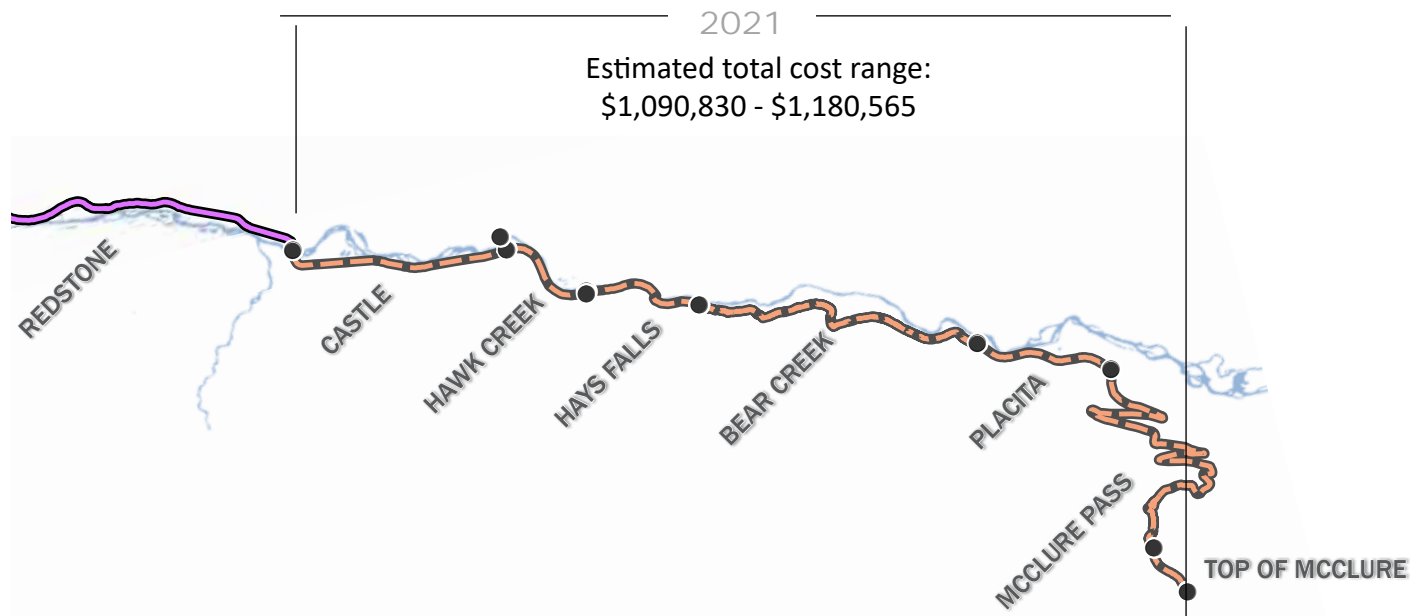
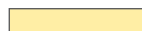


Table 6: Corridor-Wide Action Item Cost Estimates

CORRIDOR-WIDE ACTION	Annual Cost	2018	2019	2020	2021	2022	2023	2024	2025	2026
A1. Biodiversity Preservation and Enhancement Action Items										
A1.1 Habitat Enhancement Projects										
Filoha			\$ 13,000							
Red Wind Point			\$ 6,500							
Cheatgrass Study			\$ 30,000							
Prescribed Burns			\$ 30,000		\$ 20,000			\$ 20,000		
A1.2 Crystal River Resource Enhancements										
Fall 2018 Workshop		\$ 5,000								
Future Identified Projects										
A1.3 Wildlife Monitoring										
Consultant Monitoring of Lambing, Raptors, Calving*	\$ 4,000		\$ 10,000	\$ 4,000	\$ 4,080	\$ 4,161.60	\$ 4,245	\$ 4,330	\$ 4,416	\$ 4,505
A1.4 Bighorn Resiliency	Costs included as A1.1/A3.4/A3.2									
A1.5 Seasonal Closures of Potential Trail Routes	Costs included as A2.3/A3.4									
A1.6 Conservation Easements	Costs will vary and are not directly related to trail improvements									
A1.7 Best Management Practices for Trail Construction	Costs included under trail construction estimates									
A.2 Recreational Amenities Action Items										
A2.1 Trailheads and Parking	Costs based upon final design									
A2.2 Interpretation										
A2.3 Signage										
A2.4 Work with CDOT on HWY 133 paved shoulders										
A2.5 Avalanche Campground Improvements										
Future Identified Projects			\$ 73,500							
A3 Maintenance, Management, Enforcement and Outreach										
A3.1 Maintenance Staff and Equipment										
One seasonal crew person*	\$ 30,000						\$ 30,000	\$ 30,000	\$ 30,600	\$ 31,212
Maintenance Equipment (Crew truck - replaced every 10 years)									\$ 50,000	
A3.2 Weed Control										
Annual Weed Control on OST properties and trail corridor	\$ 13,000			\$ 13,000	\$ 13,260	\$ 13,525	\$ 13,796	\$ 14,072	\$ 14,353	\$ 14,640
Marble Valley 3-year weed project			\$ 8,333	\$ 8,333	\$ 8,333					
A3.3 Management and Regulations										
No associated costs										
A3.4 Enforcement Staff										
Forest Protection Officer with multi-jurisdiction authority*	\$ 50,000			\$ 50,000	\$ 51,000	\$ 52,020	\$ 53,060	\$ 54,122	\$ 55,204	\$ 56,308
A3.5 Educational Campaign Partnership with CPW										
Graphic Design of Campaign Materials			\$ 50,000							
Annual Ad Placement / Marketing	\$ 2,500		\$ 2,500	\$ 2,550	\$ 2,600	\$ 2,650	\$ 2,700	\$ 2,750	\$ 2,800	\$ 2,850
A3.6 Commercial and Special Use Permits										
Potential for Income Generation										
CORRIDOR-WIDE ACTIONS - ANNUAL COST ESTIMATE		\$ 5,000	\$ 223,833	\$ 77,883	\$ 99,273	\$ 72,357	\$ 103,801	\$ 125,273	\$ 157,373	\$ 109,515

 Partnership Funding Opportunities

* 2% Inflation Applied

2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
\$ 20,000													
\$ 4,595	\$ 4,687	\$ 4,780	\$ 4,876	\$ 4,973	\$ 5,073	\$ 5,174	\$ 5,278	\$ 5,383	\$ 5,491	\$ 5,600.97	\$ 5,713	\$ 5,827	\$ 5,944
Costs included as A1.1/A3.4/A3.3 Costs included as A2.3/A3.5 Costs will vary and are not directly related to trail improvements Costs included under trail construction estimates													
Costs based upon final design													
\$ 31,836	\$ 32,473	\$ 33,122	\$ 33,785	\$ 34,461	\$ 35,150	\$ 35,853	\$ 36,570	\$ 37,301	\$ 38,047	\$ 38,808	\$ 39,584	\$ 40,376.05	\$ 41,183.57
								\$ 50,000					
\$ 14,933	\$ 15,232	\$ 15,536	\$ 15,847	\$ 16,164	\$ 16,487	\$ 16,817	\$ 17,153	\$ 17,496	\$ 17,846	\$ 18,203	\$ 18,567	\$ 18,939	\$ 19,317
No associated costs													
\$ 57,434	\$ 58,583	\$ 59,754.63	\$ 102,000	\$ 104,040	\$ 106,120.80	\$ 108,243	\$ 110,408	\$ 112,616	\$ 114,869	\$ 117,166	\$ 119,509	\$ 121,899	\$ 124,337
\$ 2,900	\$ 2,950	\$ 3,000	\$ 3,050	\$ 3,100	\$ 3,150	\$ 3,200	\$ 3,250	\$ 3,300	\$ 3,350	\$ 3,400	\$ 3,450	\$ 3,500	\$ 3,550
Potential for Income Generation													
\$ 131,698	\$ 113,924	\$ 116,194	\$ 159,558	\$ 162,738	\$ 165,981	\$ 169,287	\$ 172,659	\$ 226,097	\$ 179,603	\$ 183,178	\$ 186,824	\$ 190,541	\$ 194,332

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APPENDIX A: GUNNISON COUNTY / GMUG TRAIL PLANNING



Marcellina Mountain, Kebler Pass Road



INTRODUCTION

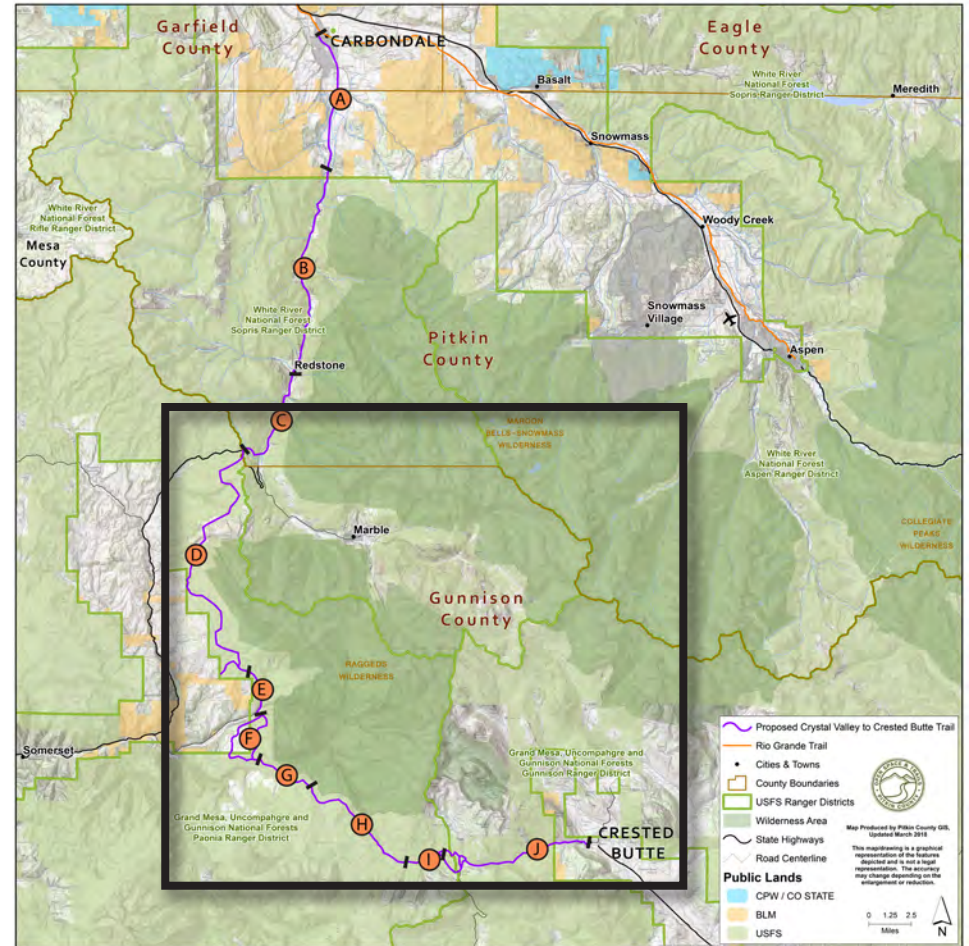
The Gunnison County trail segments are planned primarily as unpaved singletrack, located mainly within the Gunnison National Forest with some segments that would share Kebler Pass Road. The Gunnison County portion of the Carbondale to Crested Butte Trail consists of both existing routes and new alignments that connect from the top of McClure Pass to the Town of Crested Butte.

In 2006, the Pitkin County and Gunnison County Commissioners adopted the *2004 West Elk Loop Scenic Byway Crested Butte to Carbondale Feasibility Report* and signed an Intergovernmental Agreement (IGA) to mutually support the development of the bicycle-pedestrian trail between the two communities. The 2010 Gunnison Basin Federal Lands Travel Management Final Environmental Impact Statement (FEIS) included the possibility of new routes associated with the Carbondale to Crested Butte Trail connection. Each route segment has different needs regarding the NEPA process. Site-specific NEPA is still required on portions of the proposed trail within the Gunnison National Forest.

Notably, the FEIS identifies the "Kebler Wagon Trail (approximately 23 miles), part of the Carbondale to Crested Butte bike trail" as a new route that does not currently exist on the ground. The FEIS includes this new route as a part of the transportation system, but does not authorize the construction of the route, which requires future construction project NEPA compliance.

Local government staff and user group volunteers are working with GMUG staff to refine the recommended route through the national forest and to complete the NEPA requirements. Roadless consultation with the Forest Service Regional Office may be required, as most of the proposed route sections are located in Colorado Roadless Area. Specialist reports will determine the exact trail alignment on the ground, which will determine the mileage, infrastructure needs, costs and implementation needs. The number of stream crossings, trailheads, parking areas, kiosks and interpretation items will be determined in the future. Many of the existing sections were completed through partnerships and teamwork. This collaborative spirit and volunteer efforts will be important to completing the remainder of the trail and maintaining it following construction.

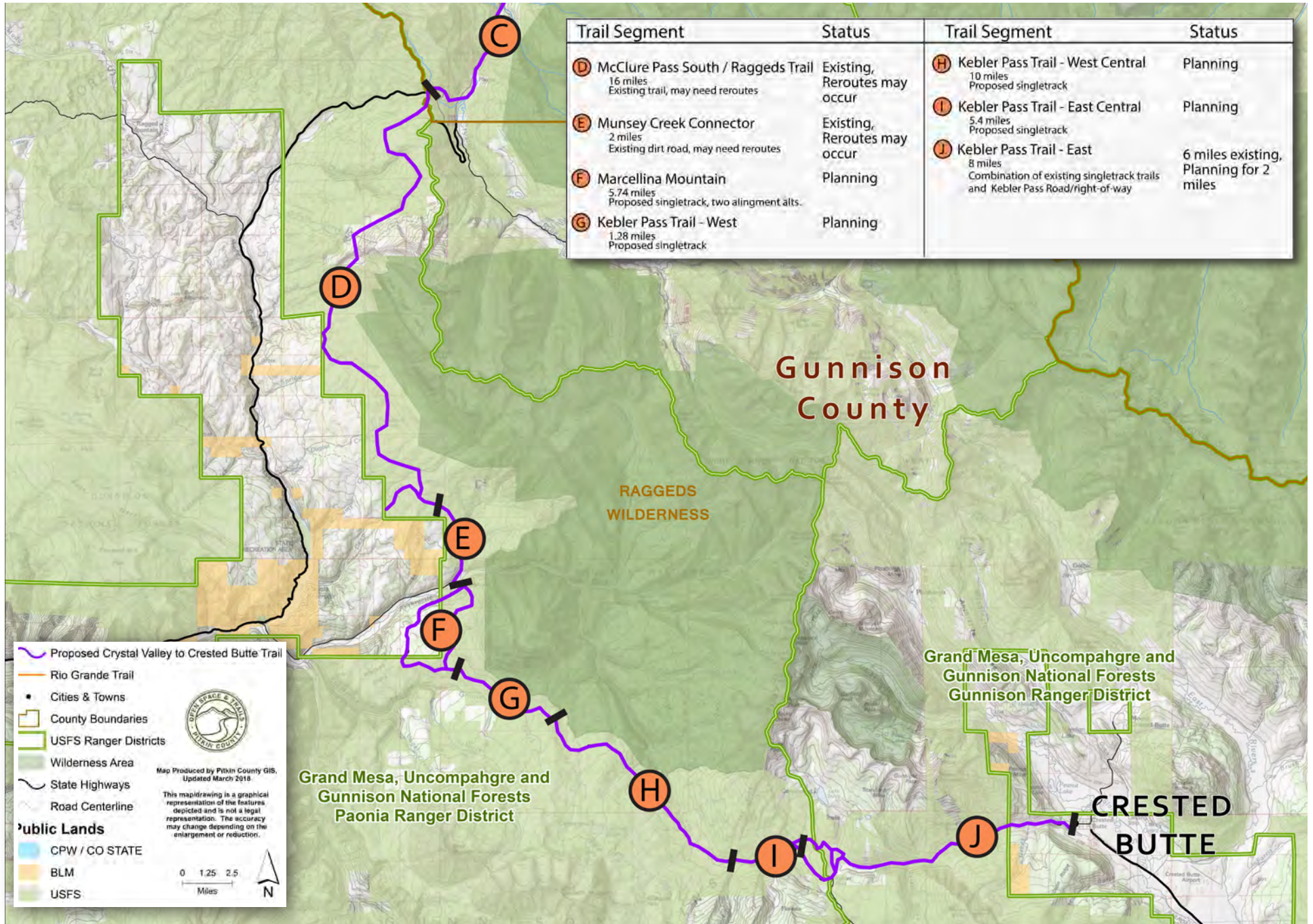
Map 4.1: Gunnison County Context



The following pages outline the general route and status of the trail as it traverses the Gunnison National Forest into the Town of Crested Butte. The segments between Horse Ranch Park and the top of Kebler Pass (Kebler Pass Trail - East Central) will be the next segment to be constructed.

Public comments from the Crystal Valley showed that some Gunnison County residents are interested in an extension of the Crystal Valley Trail from the base of McClure pass to the Town of Marble. This extension could be explored in the future.

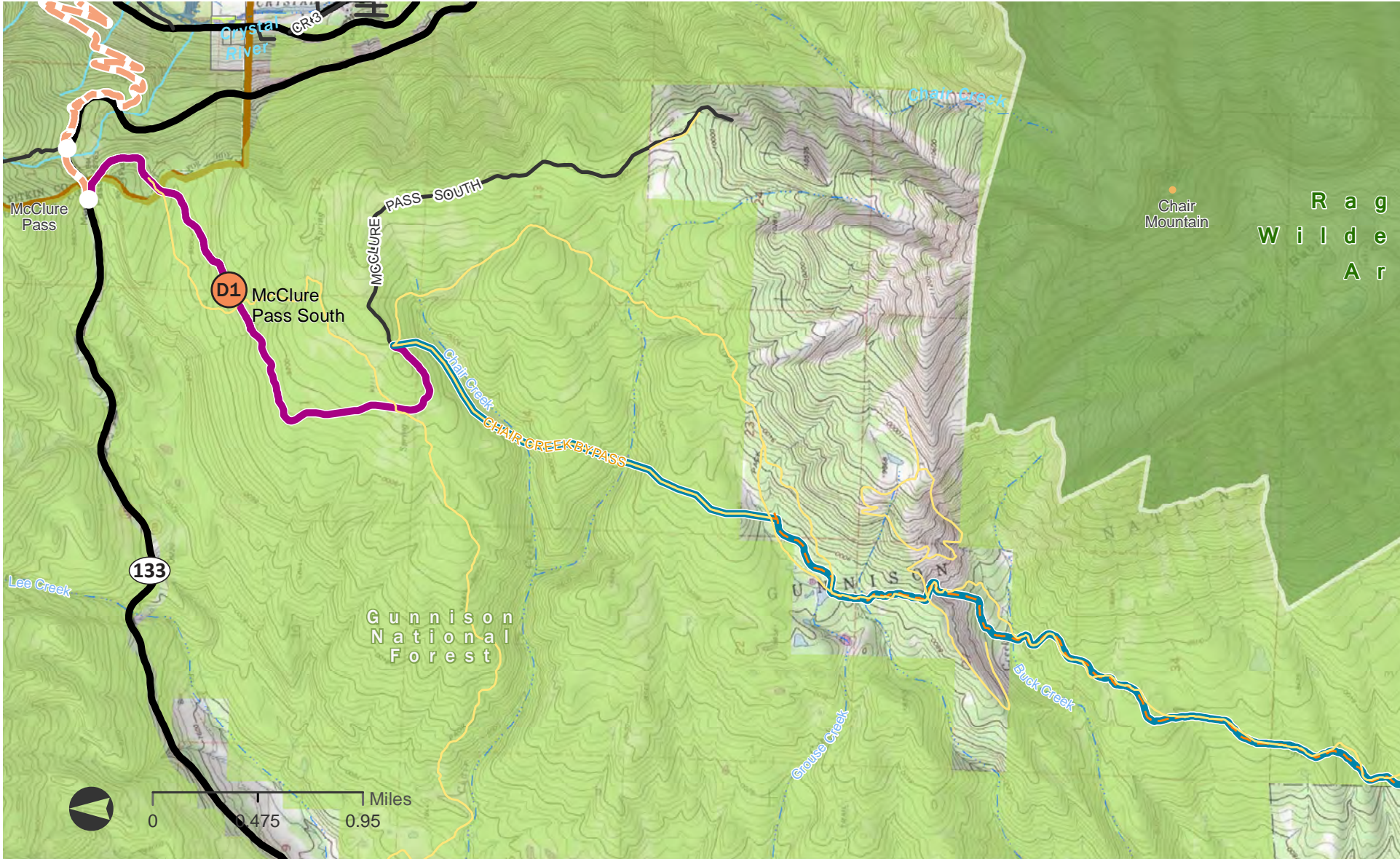
Map 4.2: Gunnison County Study Area



TRAIL SEGMENTS

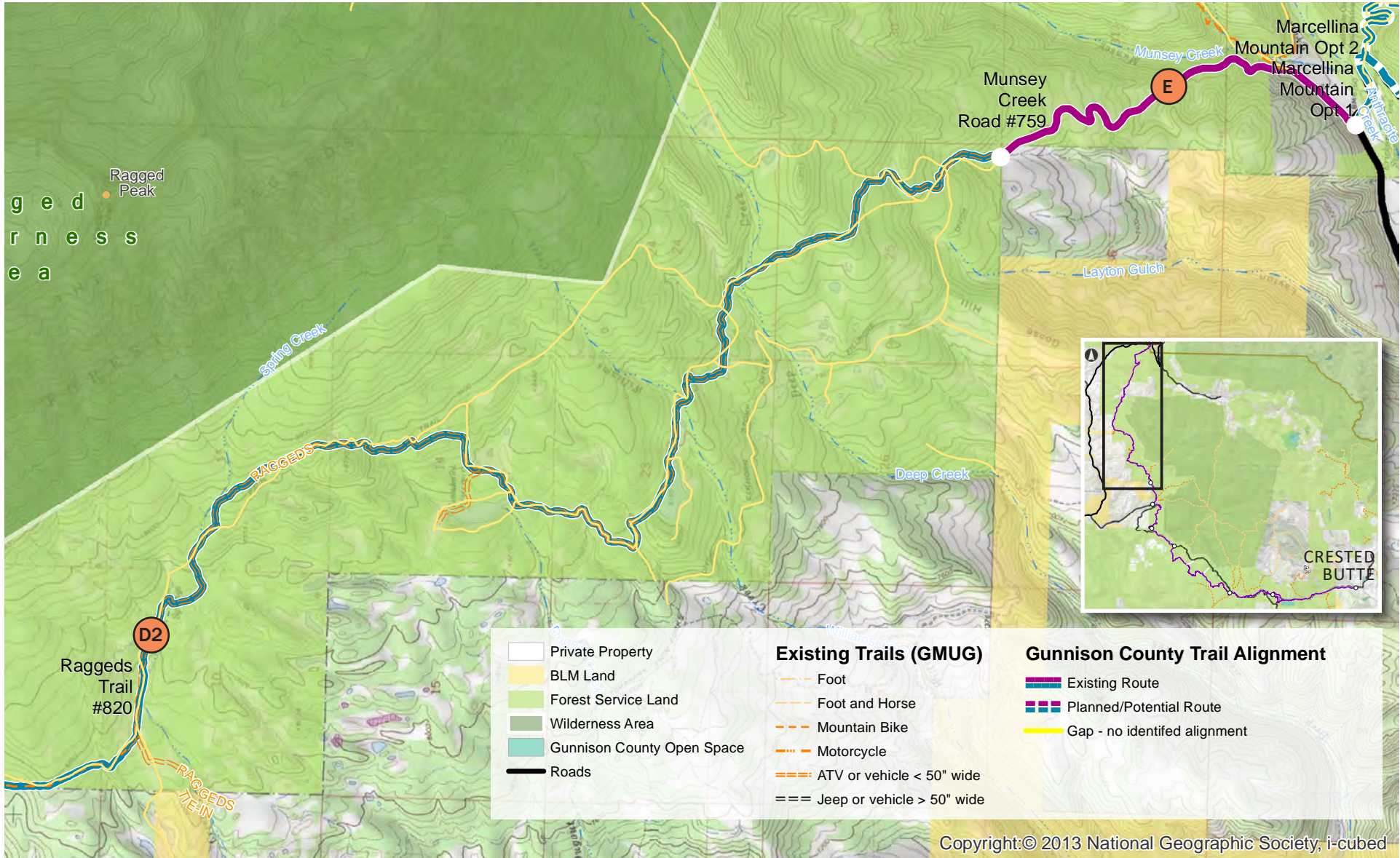
McCLURE
PASS

McCLURE PASS SOUTH / RAGGEDS TRAIL



McCLURE PASS SOUTH / RAGGEDS TRAIL

MUNSEY CREEK CONNECTOR



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McCLURE PASS SOUTH/RAGGEDS TRAIL

McCLURE PASS TO MUNSEY CREEK ROAD

TRAIL MILEAGE AND STATUS:

Total Segment 16.03 miles

D1. McClure Pass South - Existing Dirt Road (2.75 miles)

D2. Raggeds Trail #820 - Existing Singletrack Trail (6.39 miles) transitions to Existing ATV Route (6.89 miles)

DESCRIPTION:

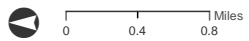
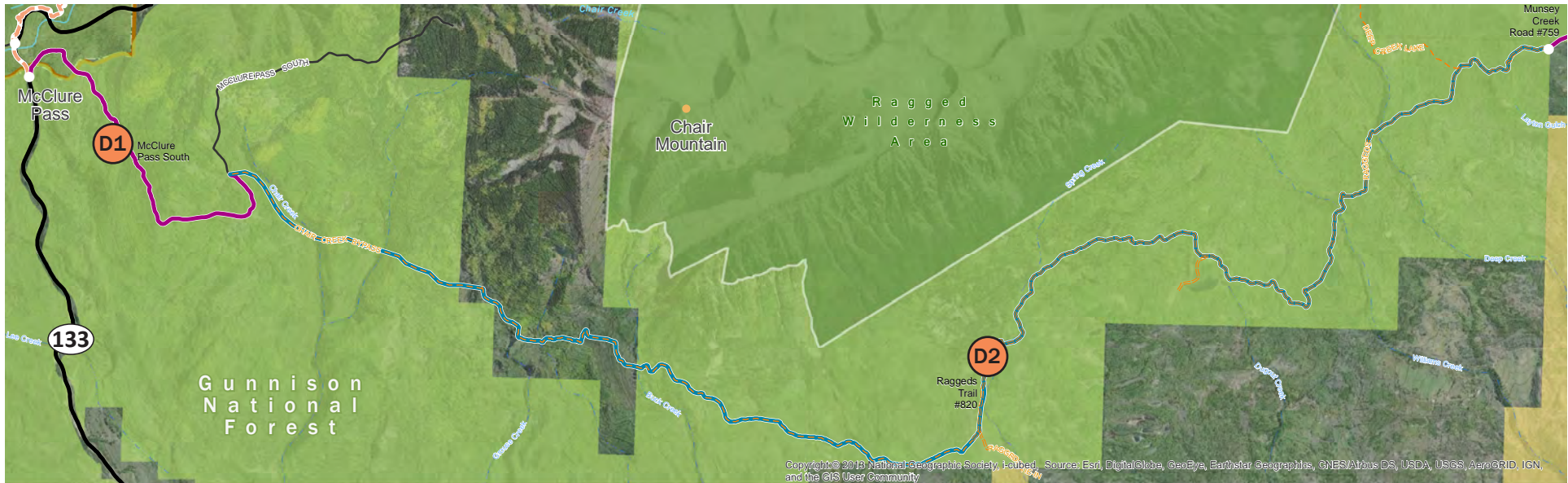
From the top of the McClure Pass parking area, the route follows the existing McClure Pass South Road within the Gunnison National Forest for approximately 2.75 miles before turning to the south on Raggeds Trail #820. After 6.39 miles the trail reaches Spring Creek and transitions from a singletrack mountain bike route to an ATV route, continuing for another 6.89 miles to Munsey Creek Road. This existing route provides a remote backcountry experience with technical and challenging terrain. Future reroutes (not part of the current Forest Service plans) may enhance the trail experience and improve the trail's sustainability.



McClure Pass South existing dirt road from the Top of McClure Pass to the start of the Raggeds Trail



The Raggeds Trail at the base of the Raggeds



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| <ul style="list-style-type: none"> Private Property BLM Land Forest Service Land Wilderness Area Gunnison County Open Space Roads | <p>Existing Trails (GMUG)</p> <ul style="list-style-type: none"> Foot Foot and Horse Mountain Bike Motorcycle ATV or vehicle < 50" wide Jeep or vehicle > 50" wide | <p>Gunnison County Trail Alignment</p> <ul style="list-style-type: none"> Existing Route Planned/Potential Route |
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MUNSEY CREEK CONNECTOR

RAGGEDS TRAIL TO ERICKSON SPRINGS

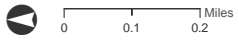
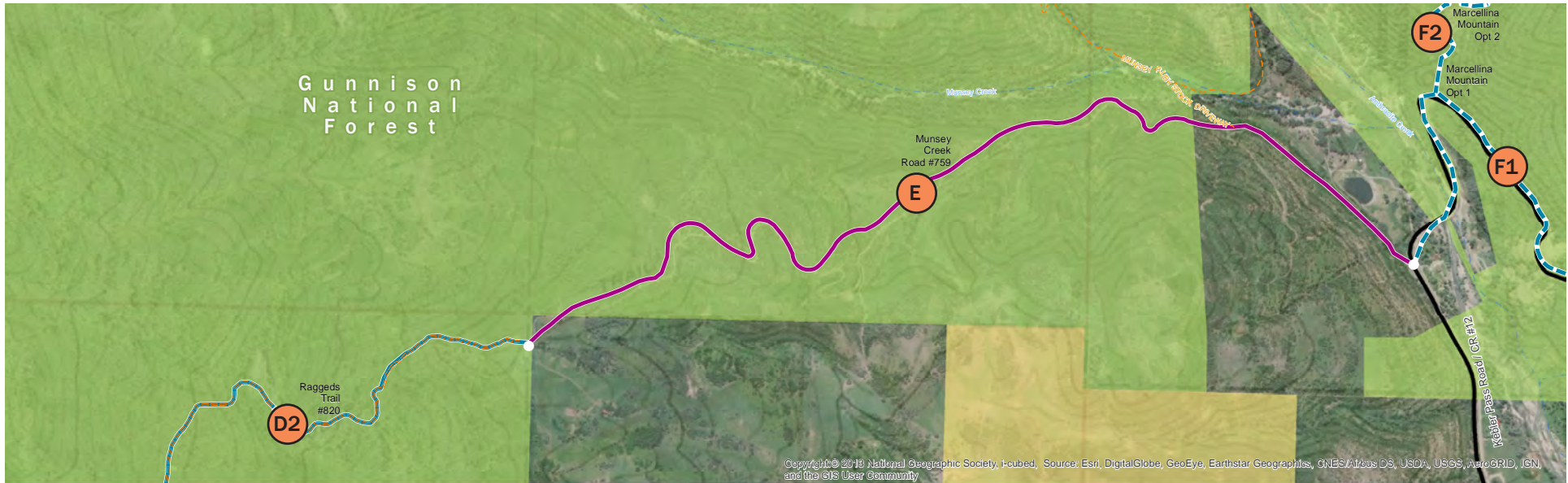
TRAIL MILEAGE AND STATUS:

Total Segment 2.06 miles

E. Munsey Creek Road #759 - Existing Dirt Road (2.06 miles)

DESCRIPTION:

This segment follows the existing Munsey Creek Road #759 from where it begins at the southern end of the Raggeds Trail connecting to CR #12 just west of Erickson Springs. Munsey Creek Road #759 is a dirt road open year round to all vehicles, weather permitting. The road is not recommended for passenger cars. Existing mountain bike users who shuttle the Raggeds Trail leave cars at the Erickson Springs campground and end their ride with this dirt road decent.

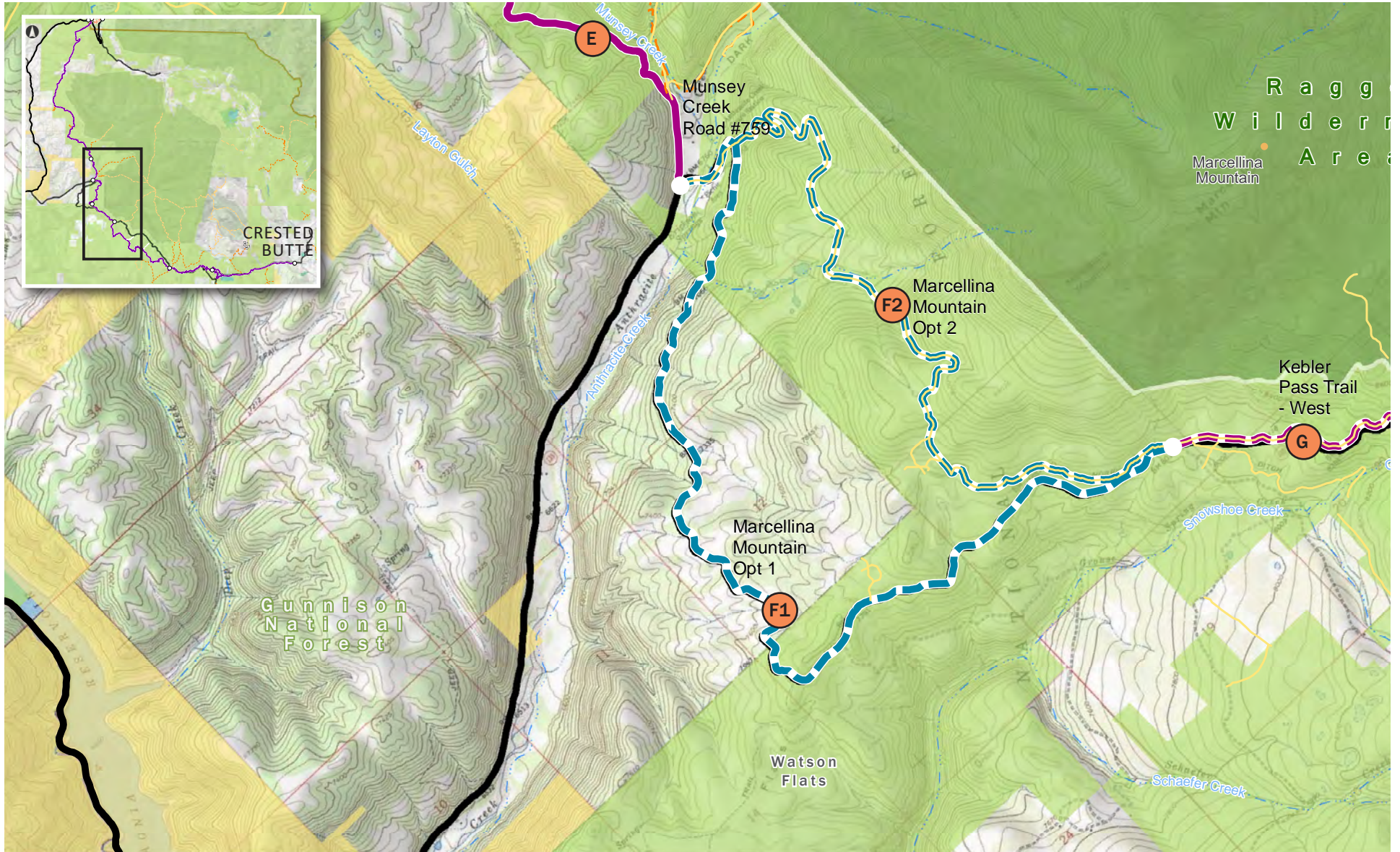


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| <ul style="list-style-type: none"> Private Property BLM Land Forest Service Land Wilderness Area Gunnison County Open Space Roads | <p>Existing Trails (GMUG)</p> <ul style="list-style-type: none"> Foot Foot and Horse Mountain Bike Motorcycle ATV or vehicle < 50" wide Jeep or vehicle > 50" wide | <p>Gunnison County Trail Alignment</p> <ul style="list-style-type: none"> Existing Route Planned/Potential Route |
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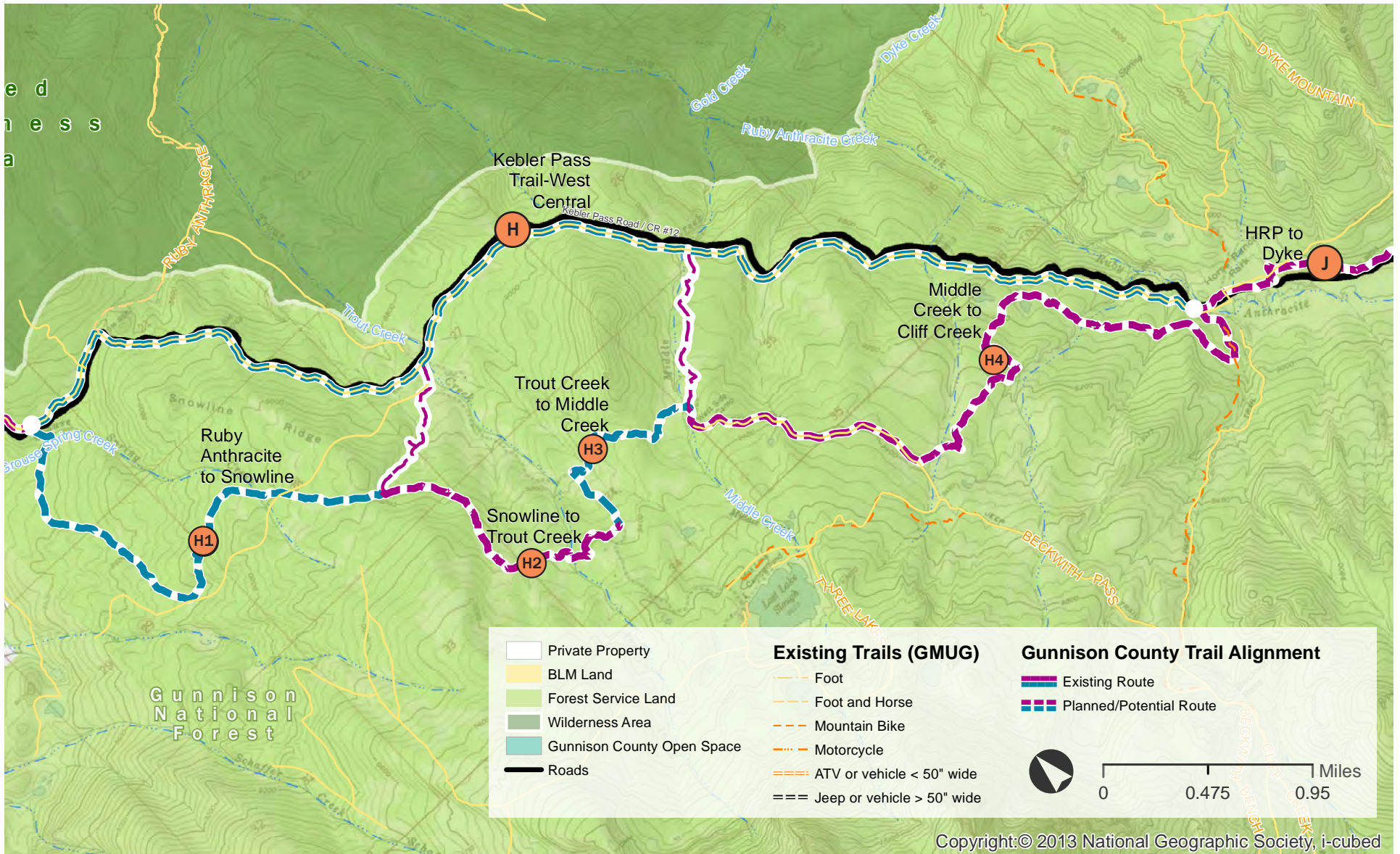
MUNSEY CREEK
CONNECTOR

MARCELLINA
MOUNTAIN

KEBLER PASS
TRAIL - WEST



KEBLER PASS TRAIL - WEST CENTRAL



MARCELLINA MOUNTAIN

ERICKSON SPRINGS TO KEBLER PASS TRAIL WEST

TRAIL MILEAGE AND STATUS:

Total Segment 4.2 to 5.4 miles

F1. Marcellina Mountain Option 1 - Potential Route (5.4 miles)

F2. Marcellina Mountain Option 2 - Potential Route (4.2 miles)

DESCRIPTION:

Due to the steep terrain and private land along this segment, additional studies are required for an alignment outside of the Kebler Road right of way.

Option 1: One possible route links the off-road segments of Munsey Creek to Kebler Trail West following Kebler Pass Road within the right of way.

Option 2: This segment follows the eastern flanks of Marcellina Mountain connecting from Erickson Springs to the Watson Flats Area. This segment is identified in the Travel Management Plan as a part of the Kebler Wagon Trail for non-motorized/mountain bike use. This potential route would need to be verified on the ground as no existing route or improvements currently exist for this segment. The steep terrain will be especially challenging with rocky slopes coupled with wetlands. All NEPA surveys will be required in this area.



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| <ul style="list-style-type: none"> Private Property BLM Land Forest Service Land Wilderness Area Gunnison County Open Space Roads | <p>Existing Trails (GMUG)</p> <ul style="list-style-type: none"> Foot Foot and Horse Mountain Bike Motorcycle ATV or vehicle < 50" wide Jeep or vehicle > 50" wide | <p>Gunnison County Trail Alignment</p> <ul style="list-style-type: none"> Existing Route Planned/Potential Route |
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KEBLER PASS TRAIL - WEST

KEBLER PASS TRAIL WEST TO RUBY ANTHRACITE

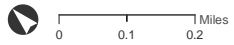
TRAIL MILEAGE AND STATUS:

Total Segment 1.28 miles

G. Kebler Wagon Trail - Potential Route (1.28 miles)

DESCRIPTION:

The trail would likely follow north/east of Kebler Pass Road/CR #12 for approximately 1.28 miles. This section is identified as a non-motorized/mountain bike route in the Travel Management Plan as part of the Kebler Wagon Trail. This potential alignment would need to be verified on the ground in the future. The steep terrain will be especially challenging with rocky slopes coupled with wetlands. All NEPA surveys will be required.



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KEBLER PASS TRAIL - WEST CENTRAL

WEST OF THE RUBY ANTHRACITE TRAIL TO HORSE RANCH PARK (HRP)

TRAIL MILEAGE AND STATUS:

Total Segment 6.4 to 9.8 miles

Option 1

H - Kebler Pass Trail - West Central - Potential Route (6.4 miles)

Option 2

H1. Ruby Anthracite to Snowline - Planned Route (2.73 miles)

H2. Snowline to Trout Creek - Planned Route (1.64 miles)

H3. Trout Creek to Middle Creek - Planned Route/Existing Jeep Trail (1.22 miles)

H4. Middle Creek to Cliff Creek - Planned Route (4.21 miles)

There are two potential route options along this stretch, Option 1 follows the Kebler Pass Road right of way, while Option 2 pulls away from the road to the south. The initial route surveys for Option 2 (H1 through H4) were completed by the Forest Service in 2017. All of the sections require archaeologist, forest trails expert and forest hydrologist surveys prior to trail construction. This potential route alignment passes through sensitive areas and may need to be rerouted in final design stages.

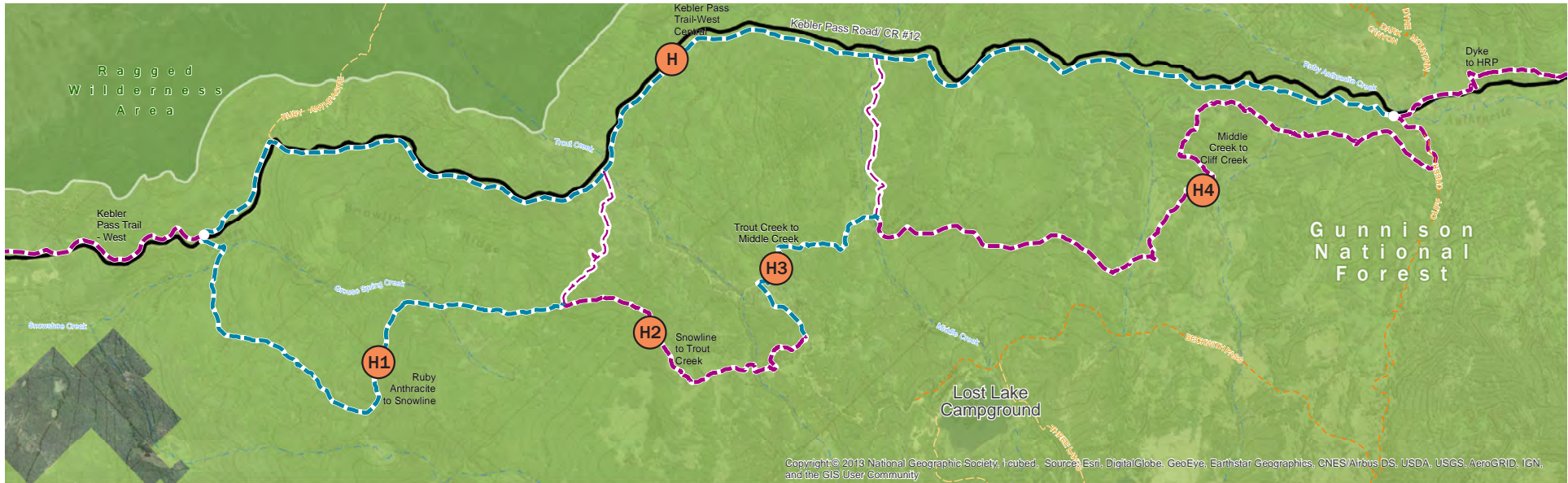
DESCRIPTION:

Option 1: This potential segment would follow within the Kebler Pass right of way from just west of the Ruby-Anthracite Creek Trailhead to Horse Ranch Park.

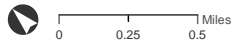
Option 2: This segment begins by crossing CR #12 to the west of the Ruby Anthracite hiking trail/Snowline Ridge and climbs for 2.88 miles to reach the ridgeline. From the ridge the trail continues to contour and climbs towards Trout Creek before reaching Lost Lake Road #705, a dirt road that leads to the Lost Lake Campground. The route would parallel Lost Lake Road to the north for approximately 0.34 miles where it would turn east toward Middle Creek. After crossing Middle Creek the trail would go through West Side Cow Camp following the existing Jeep trail

for approximately 1.28 miles before turning off of the existing Jeep trail to the east. From there the new route would descend toward Cliff Creek/Cliff Creek Trail in the area known as Horse Ranch Park.

There are two new potential access routes from CR #12, Kebler Pass Road, to the proposed alignment. One connection would connect to the eastern end of the Ruby Anthracite to Snowline section from Lost Lake Road #706. A second extension would connect from CR #12 to the trail along an existing dirt road to the east of Middle Creek.



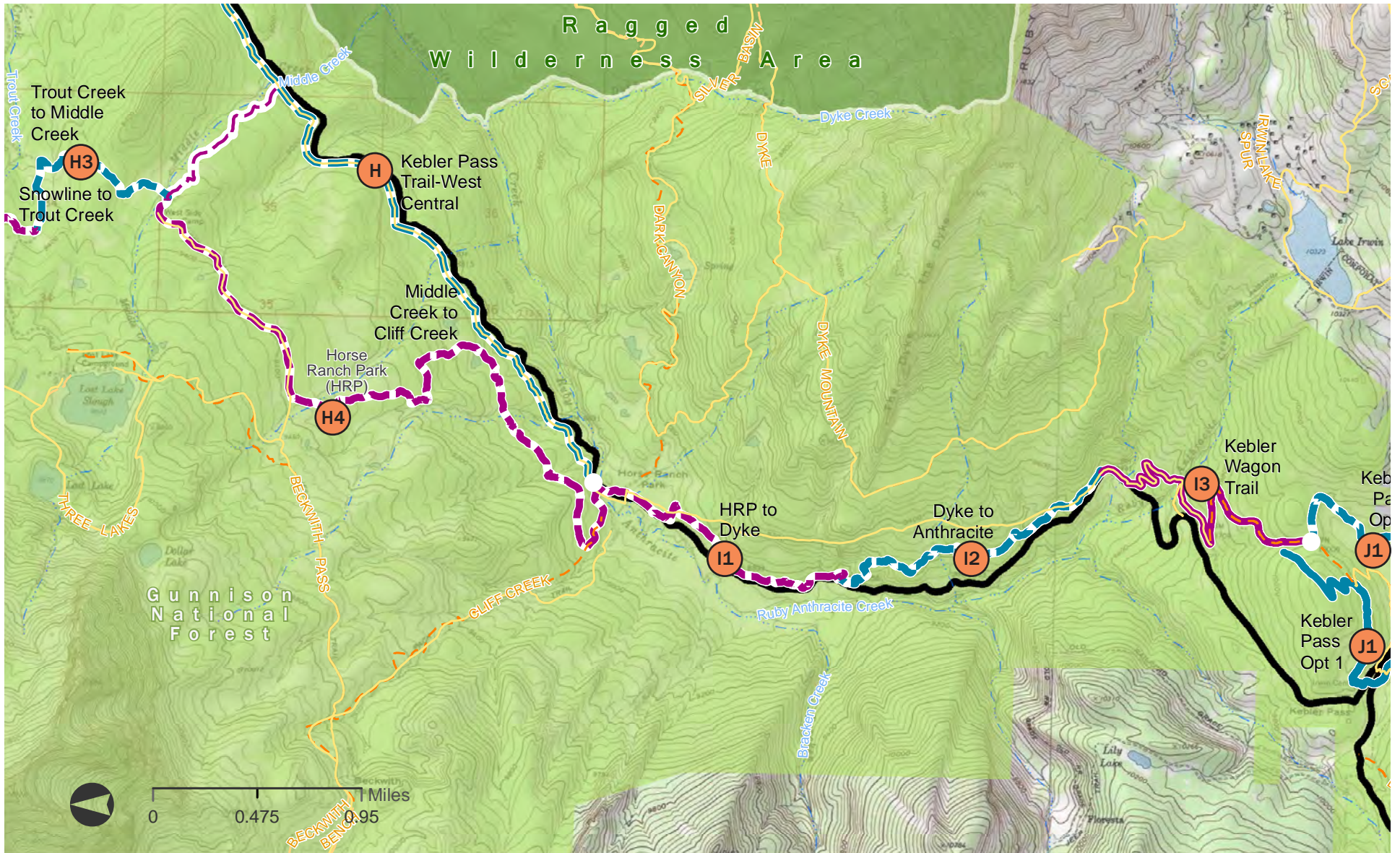
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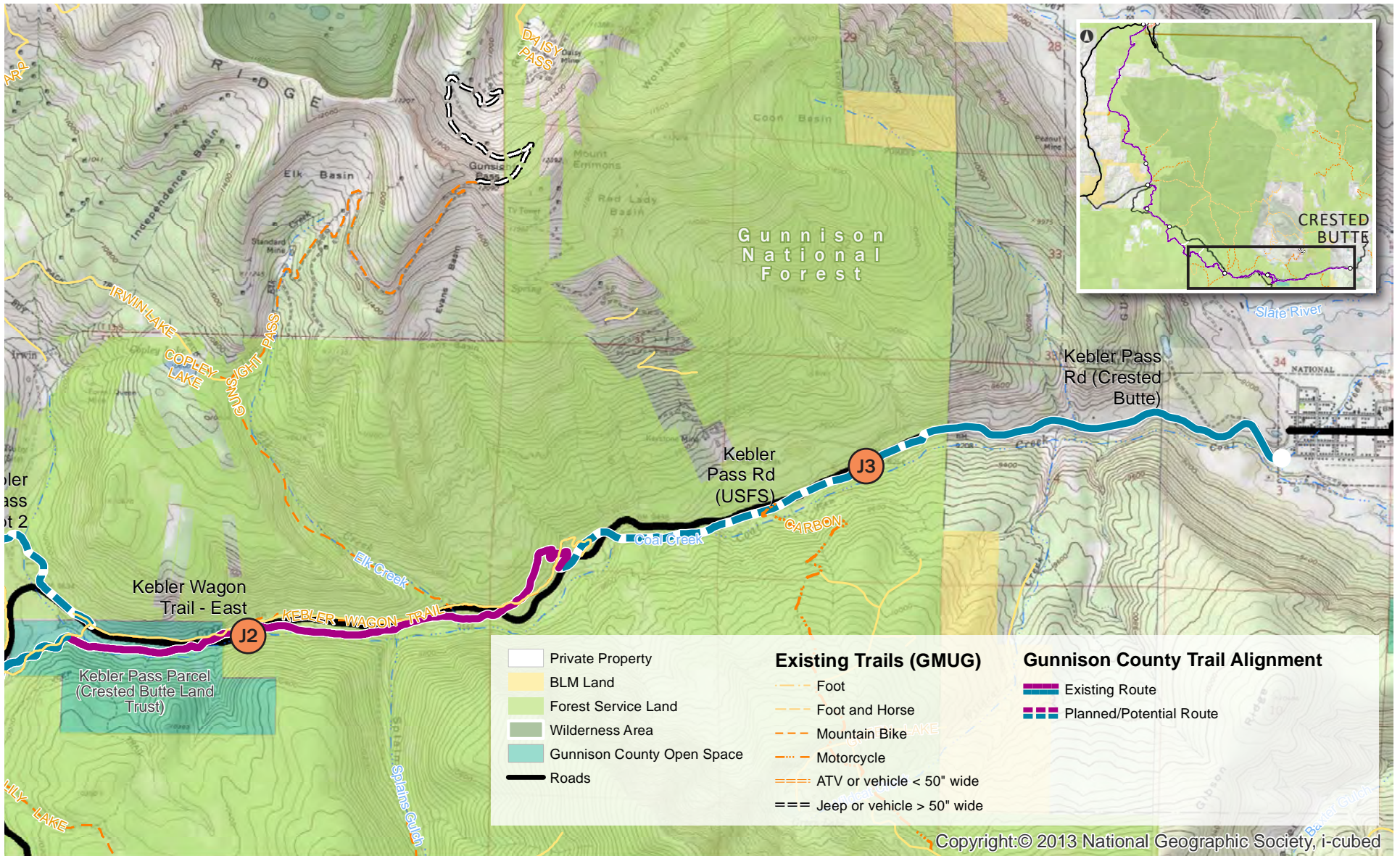
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← KEBLER PASS TRAIL - WEST CENTRAL

KEBLER PASS TRAIL - EAST CENTRAL →



KEBLER PASS TRAIL - EAST



KEBLER PASS TRAIL - EAST CENTRAL

HORSE RANCH PARK TO KEBLER PASS / KEBLER WAGON TRAIL

TRAIL MILEAGE AND STATUS:

Total Segment 5.3 miles

I1. Horse Ranch Park (HRP) to Dyke - Planned Route (1.63 miles)

Requires archaeological survey, hydrologist survey and Forest Service trails clearance

I2. Dyke to Anthracite - Planned Route (1.77 miles)

Archaeologist survey and Forest Service trails clearance complete, requires hydrologist survey.

I3. Kebler Wagon Trail - Existing Trail (1.84 miles)

DESCRIPTION:

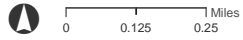
This segment begins roughly at Horse Ranch Park (HRP) or the start of the existing Cliff Creek Trail at CR #12 where the potential alignment will need to be verified. From Horse Ranch Park to the east, for approximately 1.63 miles (HRP to Dyke), the route is to the north of CR #12. The initial route surveys were completed by the Forest Service in 2017; however the potential alignment will need to be verified and requires archaeologist, forest trails expert and forest hydrologist surveys prior to construction.

The Dyke to Anthracite section travels north of CR #12 for approximately 1.77 miles before connecting to the Kebler Wagon Trail switchbacks. This planned section has been conceptually surveyed by the Forest Service Archaeologist and Forest Service Trails expert. The forest hydrologist survey is still needed prior to final approval.

Along the Kebler Wagon Trail section, the 2015 completion of the Ruby-Anthracite Creek Bridge Project extended the trail over Ruby-Anthracite Creek. This bridge facilitated the connection between two existing routes on each side of the creek, extending the Kebler Wagon Trail.



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KEBLER PASS TRAIL - EAST

TOP OF KEBLER PASS TO THE TOWN OF CRESTED BUTTE

TRAIL MILEAGE AND STATUS:

Total Segment 7.61 to 8.01 miles

- J1. Kebler Pass - Option 1 - Existing Jeep Road (1.69 miles)
- J1. Kebler Pass - Option 2 - Planned Route (1.29 miles)
- J2. Kebler Wagon Trail East - Existing Wagon Road (2.68 miles)
- J3. Kebler Pass Road USFS - Parallel Trail or Shared Road (approximately 1.95 miles)
- J4. Kebler Pass Road - Existing Shared Road (approximately 1.69 miles)

DESCRIPTION:

There are two potential routes in the Kebler Pass area identified as Options 1 and 2. The first is an existing alignment that follows the Kebler Wagon Trail through a series of switchbacks to where it crosses CR #12 and Road #730 to the east of Kebler Pass and then continues along the north of CR #12. The second option would deviate from the Kebler Wagon Trail taking a route to the north, following an existing Jeep road and crossing both CR #826 and Coal Creek before connecting back to the Kebler Wagon Trail along the north side of CR #12. Additional variations of these routes were identified in the 2004 Feasibility Study.

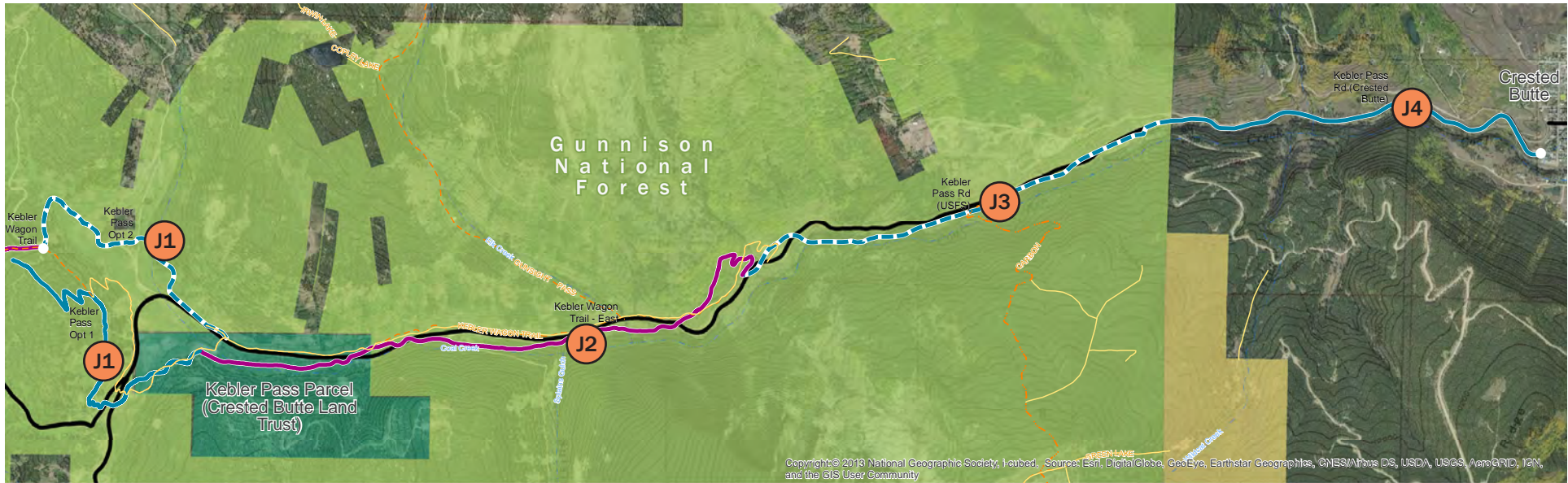
From the Kebler Pass section, the route follows the existing Kebler Wagon Trail. This 2.68-mile segment begins just east of the Irwin townsite/campground Road #826 and follows an old wagon road / existing Kebler Wagon Trail to the north of County Road #12.

From the eastern end of the Kebler Wagon Trail, the route connects to the Kebler Pass Road section. The western half of this section of trail is within the National Forest for approximately 1.95 miles. The portion of the alignment within the USFS is part of the Travel Management Plan and is identified as NM/MB (non-motorized/mountain bike) that may be a parallel trail adjacent to the roadway. This segment would need to be verified on the ground. When the trail exists USFS lands, it will share Kebler Pass Road, CR #12, for the remaining 1.7 miles to the western

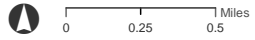
town limits of Crested Butte at Elk Avenue. In this area, adjacent lands are privately owned subdivisions known as Trappers Crossing at Crested Butte to the north and Trappers Crossing at Wildcat to the south of the road.



Eastern end of the Kebler Wagon Trail No. 606



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