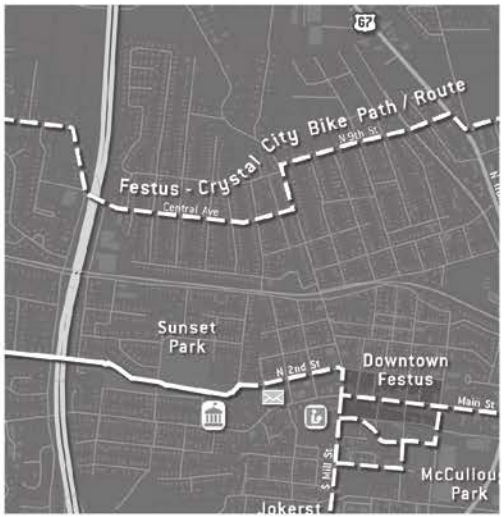
MOUNTAIN BIKE FACILITY FEASIBILITY STUDY

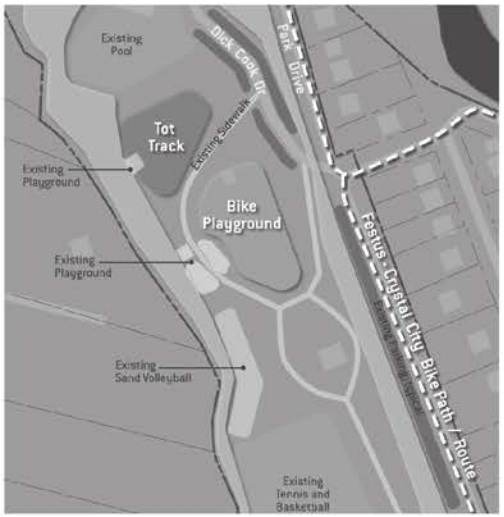
COMMUNITY OF FESTUS AND JEFFERSON COUNTY, MISSOURI

AUGUST 2020

Prepared For:

Prepared By: TRAIL SOLUTIONS IMBA





Prepared for: **Living Life on Two Wheels, Inc.**

Prepared by: **International Mountain Bicycling Association**

Trail Solutions Program

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ABOUT IMBA TRAIL SOLUTIONS

IMBA Trail Solutions (TS) is the international leader in developing trails, with experience in over 500 projects in North America, Europe, and Asia. Our staff excels at planning, design, and construction of trail systems that provide high-quality experiences for local riders and destination visitors while simultaneously minimizing environmental impacts.

Trail Solutions is a fee-for-service based arm of the International Mountain Bicycling Association (IMBA), a 501(c)(3) nonprofit organization. IMBA's mission is to create, enhance, and protect great places to ride mountain bikes. Based in Boulder, Colorado, and with staff distributed across the country and the world, IMBA meets its goal to create great mountain bike experiences through its Trail Solutions program. Trail Solutions employs approximately twenty professional trail planners and builders. In addition to being industry professionals and exceptional mountain bike riders, Trail Solutions staff hold a broad base of applicable skills and knowledge from planning, landscape architecture, and environmental sciences to GIS systems, CAD, and graphic design.

Our wealth of experience has allowed us to develop the gold standard guidelines for the creation of both sustainable and enjoyable singletrack trails. These guidelines have influenced all major federal land management agencies and a large number of state and local parks departments. We pride ourselves on the positive experiences Trail Solutions has provided to the millions of active trail users around the world and on the economic independence that communities have achieved through the development of destination trail systems.

PROJECT BACKGROUND

This study assesses the feasibility of developing mountain bike facilities within the cities of Festus, Crystal City, and Arnold, Missouri. Six parks and the Plattin property were identified as potential sites for the addition of mountain bike facilities with potential connecting bike routes between the parks to create a regional bike-based connectivity plan. This report outlines each parks' opportunities and constraints and provides site visit findings, recommendations for implementation, and conceptual bike facility plans. The addition of mountain bike facilities to the cities of Festus, Crystal City, and Arnold would introduce an engaging activity that brings a community together, provides a healthy and fun activity for children, families, and residents, and attracts visitors to the unique recreational amenities.

Living Life on Two Wheels, Inc.

Living Life on Two Wheels is a 501(c)(3) organization founded by Rene and Chris Creed whose vision is to provide safe places for families to participate in the sport of cycling together and develop programs and camps for everyone and all levels of experience and ability. The non-profit organization supports the development of young riders through its Gateway Devo Cycling Team and provides bike camps for young children with learning disabilities thorough the Strider Academy. The organization continues to develop its programs and is actively assisting with the development of bike facilities within the community.

Jefferson County and the Cities of Festus, Crystal City, and Arnold

Jefferson County is located just south of the large metropolis of St. Louis, Missouri and is home to approximately 224,000 residents. Nearly 25% of residents within Jefferson County are under the age of 18. With a significant number of children and teenagers, there is a need to provide engaging recreational activities that will interest all ages and encourage them to explore and enjoy the outdoors, build connections with each other and the community, and challenge themselves. In addition to providing for children, all residents need access to recreational activities that improve physical fitness and encourage healthy lifestyles. According to the Jefferson County 2009 Assessment Report, nearly 30% of Jefferson County residents are obese. More recreational amenities close to home, especially bike trails and facilities, provide easily accessible activities that improve the health conditions and fitness of residents of all ages and abilities.

According to the Jefferson County Park's 2013 Masterplan, there is a significant need for increased recreational amenities to serve the growing population. From the study, nearly 80% of respondents ranked the desire for walking and biking trails as "Very Important" or "Important". Increased park safety and maintenance, playgrounds, trails, and ADA-compliant accessible spaces were identified as the top items requested by residents. Bike facilities and trails meet these desired needs by activating spaces with people, creating a more welcoming environment, providing experiences for a wide range of users and abilities, and creating designated areas for children.

The municipalities within Jefferson County greatly vary in area and population. The municipalities with the highest population numbers include the city of Arnold with a population of 21,000 residents and the combined population of Festus and Crystal City of approximately 17,000 residents. Most of the parks assessed in this study are located within the cities of Festus and Crystal City, collectively referred to as the "Twin Cities". The cities are located 35 miles south of downtown St. Louis via I-55 and are located near the Mississippi River. At the northern point of Jefferson County, the city of Arnold is located along the Meramac River and is 18 miles south of downtown St. Louis.

Local and Regional Mountain Bike Facilities

Within the city of Festus, the existing bike infrastructure includes 1) the Sunset Park Trail, a paved bike path and on-street route which runs from Sunset Park to West City Park and 2) traditional mountain bike trails in West City Park. Farther to the west, the Jefferson County Parks and Recreation

Department has created a 1.2-mile gravel trail at the Pleasant Valley Nature Center and a 1-mile trail at the Northwest Sports Complex. The largest mountain bike trail systems can be found at Greensfelder County Park, West Tyson County Park, and Castlewood State Park in Eureka, MO. These trails are a 45 min drive from Festus and Crystal City and would be inaccessible to some families and children.

As demonstrated by recent projects in the St. Louis metro area, the interest and demand for mountain bike facilities is growing. The Eureka Mountain Bike Park is currently under construction and will feature mountain bike optimized trails, jump trails, a pump track, and tot track. A full description of these mountain bike facilities is provided in following sections of this report. Farther north, a 30,000 square foot pump track that is considered the country's largest is being constructed at the St. Charles County Youth Activity Park. These bike facilities are significant and will attract enthusiasts from without the region.

Site Visit

In February of 2020, Trail Solutions staff met with Rene and Chris Creed to discuss the project's goals and visit the selected parks and Plattin property. During these site visits, TS staff assessed the park's existing condition and gathered data to be synthesized into recommendations for bike facility placement within each location. The parks assessed in this study include Crystal City Park, McCullough Park, Jokerst Memorial Park, Sunset Park, West City Park, and the (former) Pomme Creek Course. During the site visit, an informational meeting with park officials, community advocates, and residents was hosted to provide information about mountain bike amenity type, current trends, and to share preliminary findings from the park assessments.

PROJECT GOALS

#1 Develop singletrack trails that deliver high quality trail experiences to the community

Outside of the Sunset Park Trail and the West City Park mountain bike trails, the parks within Festus, Crystal City, and Arnold do not currently contain mountain bike facilities. The selected parks have much potential for the development of bike amenities and trails, and these features would activate the parks and provide diverse recreational opportunities that appeal to users of all ages and abilities. Mountain bike amenities considered in this feasibility study include trails, tot tracks, skills loops, pump tracks, and jump lines. These features are explained in the following section. High quality features are those that are well-designed and well-constructed to create a consistent experience.

#2 Create a Festus – Crystal City connectivity plan

Many times, parks are inaccessible to children on foot or bike either due to distance or lack of safe routes to the parks. This greatly reduces the accessibly of parks to children and requires an adult to provide transportation to the park. The parks identified in this study are close to neighborhoods, schools, and community amenities. Therefore, the planned bike facilities are easily accessible and close to home with the intention that many of the amenities can be accessed by a short bike ride. During the site visit, Trail Solutions identified commonly used routes and key waypoints such as parks, schools, libraries, and downtown to identify a bike loop that builds on the Sunset Park Trail and will provide access to more parks and increase connectivity throughout Festus and Crystal City.

#3 Provide healthy activities for residents with a focus on providing for youth-specific amenities

Numerous studies on physical activity have indicated that proximity to outdoor recreational facilities, such as trails and bike amenities, is a predictor for physical activity level. Simply put, if there are walking and biking trails nearby, then residents are more likely to use them and therefore be healthier. Physical health and exposure to nature also benefit mental health, reducing stress and increasing happiness. In addition, individual and community health translate to economic benefits by decreasing healthcare costs. Public trails and bike facilities also provide outdoor community spaces that encourage public engagement. Connection to nature is paramount to maintaining the health of the environment and making the outdoors relevant and accessible to all. Trails serve a diverse population and cultivate unity and stewardship in the community. By incorporating bike facilities trails into parks, the cities of Festus, Crystal City, and Arnold can help promote active and healthy lifestyles and promote social integration.

With today's distractions and increasing amount of time indoors and in front of screens, children are spending less time outdoors. Many times, programmed play equipment doesn't provide the challenge and reward that children are seeking. By incorporating a range of bike-specific play features, the parks can provide engaging activities that will encourage kids to get outdoors, increase socialization, and build confidence.

#4 Provide a racecourse venue and training facility for NICA teams and events

NICA, the National Interscholastic Cycling Association, develops mountain biking programs for student-athletes and coaches across the United States. In 2018, the Missouri Interscholastic Cycling League was formed and is currently providing leadership training programs and hosting expositions and events to develop the program. Currently, one team, the St. Louis West Team, has registered. As this team grows and new teams are created, the program will need training and racing facilities. During our site visit, each park was assessed for its suitability as a potential NICA training area and/or race course venue.

A race course venue requires the space and infrastructure to support, at times, thousands of spectators. For additional and more detailed information on NICA and racecourse requirements, see the "NICA Training and Racing Facilities" section of this report.

#5 Become a regional mountain bike destination

As bike amenities and trails are added to the community, Jefferson County would become known for their regionally unique features. A diversity of features will invite a wide range of riders from families and beginner riders to advanced riders seeking challenge. As was noted previously, Eureka and St. Charles are developing a mountain bike park and pump track; both facilities are the first of their kind the St. Louis metro area. The pump track is significantly unique since it will be the largest pump track in the country. These unique features will greatly enhance the riding opportunities for local riders and will attract mountain bike enthusiasts from across the region and potentially from across the nation.

Many mountain bike enthusiasts will travel significant distances for riding destinations. The closest system of regionally significant mountain bike optimized trails is located in NW Arkansas, approximately a 5-6 hour drive from St. Louis. This area attracts mountain bike enthusiasts from across the region and nation due to its high-quality trails, well-connected trail systems, wide diversity of trail options, a mix of bike parks and bike playgrounds, and bike features that appeal to riders of all ability levels. During the community meeting that was hosted during the Trail Solutions site visit, conversations with local riders revealed that many riders of the St. Louis metro area are seeking these bike amenities and are travelling to NW Arkansas to meet their desired experience. Jefferson County and the surrounding municipalities have the opportunity to incorporate bike facilities throughout the county that will meet the needs of riders in this area and will attract riders to this region. With the other trail and bike park development in the St. Louis metro region, the region has the potential to become a destination for mountain biking.

TYPES OF MOUNTAIN BIKE FACILITIES AND TRAILS

The types of mountain bike trails and facilities considered in this feasibility study are explained below. These narratives are meant to provide a brief description of the experience created by each type of amenity, the intended user, construction considerations, and approximate ranges of construction costs. The construction costs reflect the cost of retaining a professional trail builder and are provided for financial planning purposes only. The cost ranges do not include planning, design, and permitting needed to develop the facilities, typically estimated at 10-20% of construction costs.

Trail Types

Modern trail systems use specific trail types as a way of managing users and providing them with the best possible visitor experience. Extensive planning and design can be dedicated to the goal of maximizing a visitor's trail experience while simultaneously balancing the demands of physical, environmental and social sustainability. Various types of trails and trail planning strategies are explained below.

Traditional Shared Use Singletrack

These trails can serve walkers, hikers, runners, cyclists, and equestrians. They are constructed and maintained according to sustainable trail construction practices and employ techniques that minimize user conflict. As all user types travel these routes, care should be taken to avoid obstacles such as jumps, rollers, or water bars which may lead to an undesirable trail experience for an allowed user type. Turns are constructed sustainably but are not cambered like bike-optimized turns that improve cornering traction. Keeping trail grades within certain ranges ensures both a positive trail experience for users and proper stormwater drainage with minimized erosion. Depending on soil conditions, these trails may need surface hardening techniques to provide a durable four-season trail.

- Approximate Construction Costs: $30,000-$60,000 per mile

Mountain Bike Optimized Singletrack / Flow Trails

These trails are purpose-built to optimize the experience of riding a mountain bike. The trails can either be unidirectional or bidirectional depending on the type of trail, preferred circulation of users, and management decisions. This type of trail is constructed with features such as rock gardens, berms, grade reversals, cambered turns (typically wider than turns on traditional singletrack trails), and modest jumps. These trails should make use of gravitational forces and, where possible, be managed to enhance trail flow for descending riders. These trails may need surface hardening to provide a durable four-season trail. They should be designed for a range of users from beginner to advanced skill levels. Optional advanced features can be located along the side of the trail to provide challenges for intermediate and advanced riders. This allows many skill levels to experience the full trail mileage, while providing for skill progression within a smaller trail footprint.

- Approximate Construction Costs: $50,000-$100,000 per mile

Tot Track and Bicycle Playground

A tot track is designed for smaller bicycles and beginner ability level users. The track is comprised of reduced-sized rollers as well as low-angle bermed turns that can accommodate balance bicycles as well as regular bikes with short wheelbases. These are essentially small versions of pump tracks, both of which can be constructed with dirt or hardened surfaces. Asphalt is the recommended surface material for tot tracks. Asphalt is more expensive to install, but greatly reduces maintenance costs. Most importantly, asphalt provides a consistent high-quality experience for the users.

Bicycle playgrounds incorporate play features such as prefabricated structures, rocks, berms, tunnels and other challenges to create a fun loop for children to practice skills and improve bike handling. The bicycle playground can range in size and configuration to best fit the site and desired features.

- Approximate Construction Cost: $10-$25 per square foot

Mountain Bike Skills Trail

These are trails that have been specially designed for mountain bikers to develop the skills necessary for enjoying more challenging trails. This type of trail is built with different routes and features for a range of skill levels, allowing users to progress their skills with repetition and experience over time. Beginner riders and kids are especially fond of this type of purpose-built bike facility. They are typically constructed on nearly flat or gently sloping terrain and take up relatively little space. Features may include rocks, bridges, drops, rollers, and more. Typically, installed features include a mix of prefabricated structures and those built on-site with locally sourced materials.

- Approximate Construction Costs:
  - $8-$12/linear foot for trail surface
  - $1500 - $5000 for prefabricated features

Pump Track and Pump Parks

A pump track is designed to encourage cyclists of all skill levels improve their riding skills in a manner that is fun and repetitive. Pump Tracks are typically a bidirectional closed circuit or series of closed circuits made up of rollers and berms. Pump parks have an open design with a larger area of hard surfaces that allow users to create their own multidirectional routes through the rollers, berms, and jump features. A pump park will foster more organic and creative riding that stimulates both novice and skilled riders. Riding these facilities is an extremely anaerobic activity, so it is recommended that suitable seating and shade structures be installed for users to rest between sessions. Like the tot track, pump tracks and pump parks are recommended to have asphalt surfaces. With an asphalt surface, the track will allow users to enjoy year-round.

- Approximate Construction Costs: $15-25/square foot

Dirt Jumps

Riders looking to practice jump skills in a low-consequence environment enjoy bike parks and dirt jumps. These consist of beginner to advanced, skill progression-oriented features through a mix of dirt jumps, berms, and prefabricated "slopestyle" features. These facilities are optimized for mountain bike and BMX riders of all levels. Dirt jumps provide a great workout, and an excellent practice area for building solid bike jumping skills.

Dirt jumps consist of features ranging in height from 3 to 6 feet, spaced to maximize a rider's ability to flow from one jump to the next without having to pedal. Dirt jump areas are designed with a start hill that provides enough gravity to propel riders into the jump lines. They are designed to be ridden in one direction, eliminating potential cross traffic conflicts. Dirt jumps require soil with a high percentage of clay (60-70%) that compacts very hard, minimizing rolling resistance while standing up to heavy use and high shear forces.

- Approximate Construction Costs: $10-$15/linear foot

Bike Parks

The features explained to this point are designed and optimized for bike-based experiences. A bike park combines all or a selection of these features to create an amenity that appeals to a wide range of riders and ability levels. The type and scale of features will be dependent on the community interest, ridership needs, goals of the project, the site's opportunities and constraints, and available funding. Bike parks range from small parks at 1-2 acres, medium sized parks of 5-15 acres in size, to larger parks over 15 acres. Bike parks serve local, regional, and destination ridership by offering a hub of activity to the cycling community by providing progressive facilities that are designed for riders to build skills and confidence while promoting a healthy, active lifestyle.

NICA Training and Racing Facilities

NICA, the National Interscholastic Cycling Association, develops mountain biking programs for student-athletes and coaches across the United States. Over 19,000 student-athletes in junior high and high-school participate in 31 state and regional leagues supported by over 9,000 volunteer coaches and 10,000 additional volunteers. Participant numbers continue to grow. In the last ten years, student-athlete participation has averaged 48% annual growth, and coach participation has averaged 75% annual growth.

The league's mission is to build strong minds, bodies, character, and communities through cycling with the values of fun, inclusivity, equity, respect, and community. Unlike some youth programs, there are no bench warmers. Every athlete participates, and the league offers a multitude of benefits: getting kids outside; promoting healthy lifestyles; exposing kids to cycling and outdoor advocacy; and providing social interaction, leadership opportunities, and life lessons such as self-awareness, discipline, success, failure, empathy, humility, and sportsmanship. In 2018, NICA launched GRiT (Girls Riding Together), a program focused on engaging more girls and women as student-athletes, volunteers and coaches. They also updated their Teen Trail Corps advocacy program to promote stewardship of the trails. Some leagues include Elevate programs for student-athletes with mental and physical challenges, making the sport more inclusive and integrated than many other high school activities. NICA is also helping to fuel more collegiate varsity cycling programs and clubs.

Beyond the many benefits for student-athletes, NICA leagues provide significant economic stimulus to their communities. As participation grows, so does the demand for trails and bike amenities. Teams need trails for training and racing. NICA racecourses require 4- to 6-mile loops of combined singletrack and double track with 300–600 feet of climbing per lap. Throughout the country, communities are building NICA racecourses from scratch or modifying existing trails. Along with the trails, the racecourses require venues that can accommodate, in some cases, thousands of spectators and participants who generate business in lodging, travel, restaurants, bikes stores, and other retail sales and services. This economic activity can support jobs, provide sustainable growth in rural communities, and produce tax revenue. The bottom line: Growth in NICA leagues doesn't seem to show any signs of slowing down, and that means an abundance of benefits for individuals and communities.

Experience Zones and Preferred-Use Trails

Experience zones and preferred-use trails are showing up in trail systems around the world. Experience zones divide management areas into special-use zones designed around specific activities: one zone may be preferred for mountain biking and another for accessible, interpretive trails. Implementation of such zones can provide a variety of visitor experiences and recreational opportunities that reduce conflict between differing user groups while providing sustainable, long-lasting trails.

Single use challenges the notion that all trails must be all things to all people. In this case, land managers designate certain trails as “preferred” for certain activities. For example, a trail that is single use for mountain bikers might be designed to be fast and flowing through open terrain, with swooping turns and dips. Hiking-preferred trails, meanwhile, may be more about travel efficiency with stairs, tight switchbacks, short distances, or other qualities that would be less attractive to bikers and equestrians. Visitors will be drawn to routes that match their desired experience.

Each trail system should, of course, include a variety of trails. One way to include numerous types of trails is to have shared-use trails at the beginning of the network near parking lots, with preferred-use trails branching off farther along. The number of trails designated for each mode of travel should be based on the habits and needs of the user groups being managed.

APPROACH

The parks selected for this feasibility study include Crystal City Park, McCullough Park, Jokerst Memorial Park, Sunset Park, West City Park, and the (former) Pomme Creek Golf Course. These were selected for their proximity to neighborhoods, schools, downtown, existing trail infrastructure, and available space for the addition of mountain bike amenities. The parks vary from neighborhood pocket parks to large community parks that represent varied existing recreational amenities and a mix of terrain types.

During the site visit, various features were observed to assess the suitability of the parks for the addition of mountain bike facilities. Existing recreational amenities were inventoried along with supporting infrastructure, such as parking areas and restrooms. The parks were visited during various times to observe the current use of the park. Environmental considerations such as low-lying areas or evidence of past flooding, soil types, vegetation, and the slope/terrain of the landscape were observed. Adjacent land uses, proximity to neighborhoods, schools, and downtown were considered when locating appropriate locations for bike amenities and connecting routes.

After gathering the data and observations, this information was synthesized into recommendations and guidelines for developing bike facilities within the parks. Existing infrastructure, current use of the park, topography, environmental conditions, adjacent properties, and nearby community features were considered when identifying suitable locations for bike facilities and their appropriate size. The recommendations identify the most suitable areas of the parks for mountain bike facilities including: singletrack and flow trails, tot tracks, bicycle playgrounds, skills trails, pump tracks, jump lines, and bike parks. A “MTB Amenities Concept Plan” is provided for each park to demonstrate the configuration of the amenities. Recommendations for next steps and implementation of the features are provided.

Connectivity

This study also analyzed the parks’ connectivity between one another and significant waypoints in town including schools, libraries, and the downtown core. The Sunset Park Trail provides a route from Sunset Park to West City Park and could be expanded to provide additional connectivity throughout Festus and Crystal City. Strava Heatmap data was used to identify roads that are currently heavily used by cyclists. After reviewing these commonly-used routes and key waypoints, a potential contiguous route was identified that would connect the parks and key community features. The “Regional Connectivity” section of this report and adjoining map illustrate the existing Sunset Park Trail and planned trail extension.

ASSESSMENTS AND RECOMMENDATIONS

McCullough Park

Existing Trails

- No existing trails

Recreation Infrastructure

- Playground
- Picnic Area / Pavilion
- Horseshoes

Existing Facilities That Could Support Bike-based Programming

- Restroom facility
- 10 parking spaces

Key Opportunities

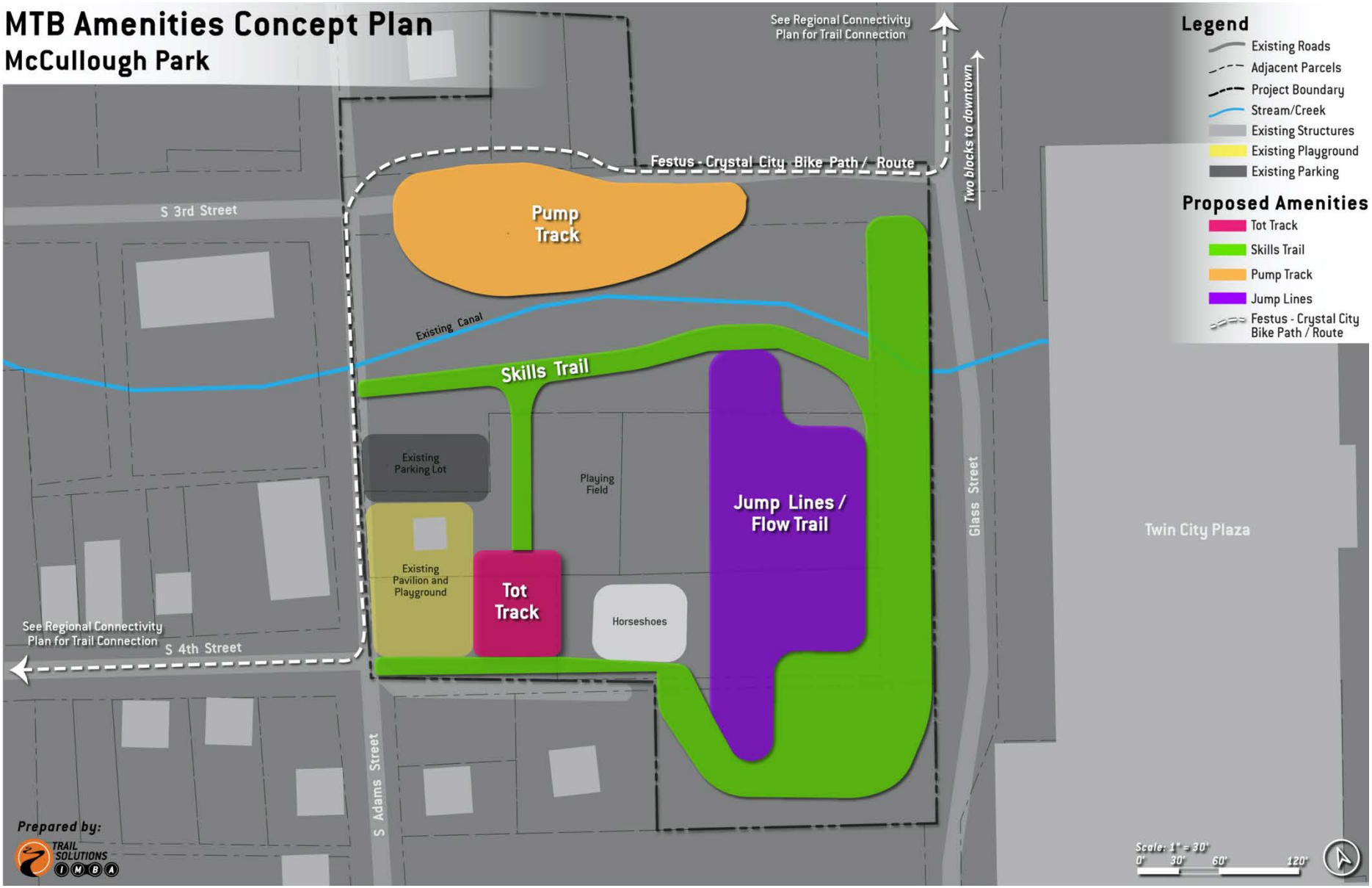
- Large, open spaces without programming and existing facilities to support new bike-based programming
- One block south of downtown
- Directly across the street from the Ward Chapel Methodist church
- Next to Twin City Mall which has ample parking spaces that may be available with a shared parking agreement
- Across from the Ball Barn, which attracts kids with the existing baseball activities
- Other nearby and adjacent open lot properties provide potential for additional park amenities.

Key Constraints

- A drainage channel divides the site and may attract children to the water.
- 2-3 private homes are adjacent to the park.
- The site is mainly flat, with a small corridor of vertical rise along the eastern border. Flow trails and jump lines will require additional fill to create those features.
- A restricted access roadway crosses along the north side of the site; the roadway will need to be removed to make space for bike-specific features and/or additional parking.
- A large tree in poor health is located in the northeast corner of the site and presents a potential hazard.

Recommendations

- The park already provides facilities for children with the playground and pavilion near the entrance. Trail Solutions (TS) recommends the addition of a bike playground as the first bike-specific amenity to provide an activity for younger children. The bike playground should be located near the existing playground to allow parents to watch children at both amenities.
- As the park develops, the parking lot will need to expand. An additional row of parking can be added to the north side of the lot. The existing restroom facility may need to be relocated.
- A fence should be provided along the edge of the drainage channel. The channel is an attractive nuisance and presents risks to users.
- To provide an activity for ages 8+, we recommend adding a mountain bike skills loop as the second amenity. The loop will challenge older children and new riders by helping them improve their bike handling skills.
- Lastly, the addition of a pump track and flow/jump trails would attract riders of all abilities and provide a fun and exciting activity. With these bike-optimized facilities, the park would become a local destination for residents and visitors. Since downtown is just a block to the north, visitors are within walking distance to local stores and restaurants.
- TS recommends coordinating early in the park planning process with local stakeholders, adjacent homeowners, and nearby residents to gather their feedback, concerns, and recommendations.


MTB Amenities Concept Plan
McCullough Park
See Regional Connectivity Plan for Trail Connection
Festus - Crystal City Bike Path / Route
Two blocks to downtown
Legend
Existing Roads
Adjacent Parcels
Project Boundary
Stream/Creek
Existing Structures
Existing Playground
Existing Parking
Proposed Amenities
Tot Track
Skills Trail
Pump Track
Jump Lines
Festus - Crystal City Bike Path / Route
S 3rd Street
Pump Track
Existing Canal
Skills Trail
Existing Parking Lot
Playing Field
Jump Lines / Flow Trail
Glass Street
Twin City Plaza
Existing Pavilion and Playground
Tot Track
Horseshoes
See Regional Connectivity Plan for Trail Connection
S 4th Street
S Adams Street
Prepared by:
Scale: 1" = 30'
0' 30' 60' 120'

Sunset Park

Existing Trails

- Sunset Park Trail
  - Type: Paved
  - Connectivity: The trail begins at the eastern end of the site and travels west, crossing the site and then extending to West City Park.
  - Current uses: Bike riding and walking

Recreation Infrastructure

- Ballfields
- Playgrounds
- Tennis Courts
- Pavilions

Existing Facilities That Could Support Bike-based Programming

- Parking area
- Restrooms
- Sunset Park Trail

Key Opportunities

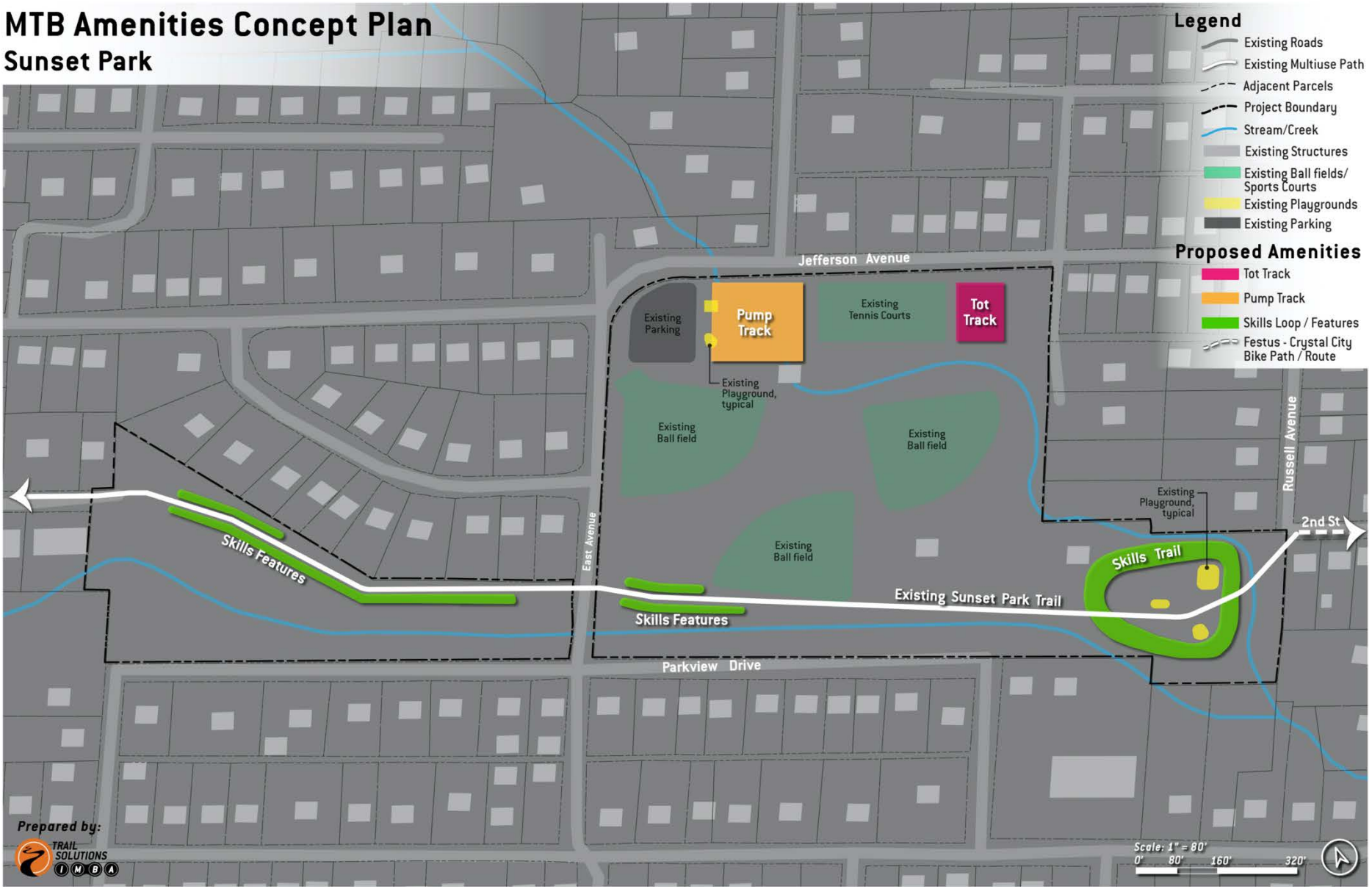
- The Sunset Park Trail runs through the site and the connects via a paved path or designated roadways to West City Park.
- Neighborhood setting
- 1/3 mile to downtown

Key Constraints

- Much of the park has existing sports field facilities.
- East Ave bisects the park.

Recommendations

- The Sunset Park Trail provides a corridor from Sunset Park to West City Park and nears the Festus High, Middle, and Elementary School. The addition of skill features (bridges, rocks, and small berms) along the trail would add interest to the trail and provide a fun route for kids.
- The available space on either side of the tennis courts is an ideal location for a bicycle playground or a tot track. The area is protected, partially-shaded, and located near existing playground infrastructure.
- On the east end of the site, a skills loop could be added to provide a challenging and fun extension of the Sunset Park Trail.


MTB Amenities Concept Plan
Sunset Park
Legend
Existing Roads
Existing Multiuse Path
Adjacent Parcels
Project Boundary
Stream/Creek
Existing Structures
Existing Ball fields/ Sports Courts
Existing Playgrounds
Existing Parking
Proposed Amenities
Tot Track
Pump Track
Skills Loop / Features
Festus - Crystal City Bike Path / Route
Jefferson Avenue
Existing Parking
Pump Track
Existing Tennis Courts
Tot Track
Existing Playground, typical
Existing Ball field
Existing Ball field
Existing Playground, typical
Russell Avenue
2nd St
East Avenue
Skills Features
Existing Ball field
Skills Trail
Existing Sunset Park Trail
Skills Features
Parkview Drive
Prepared by:
TRAIL SOLUTIONS IMBA
Scale: 1" = 80'
0' 80' 160' 320'

Pomme Creek Golf Course

Existing Trails

- No existing trails

Recreation Infrastructure

- Clubhouse
- Ponds

Existing Facilities That Could Support Mountain Bicycle Trail Systems

- Parking
- Golf cart paths

Key Opportunities

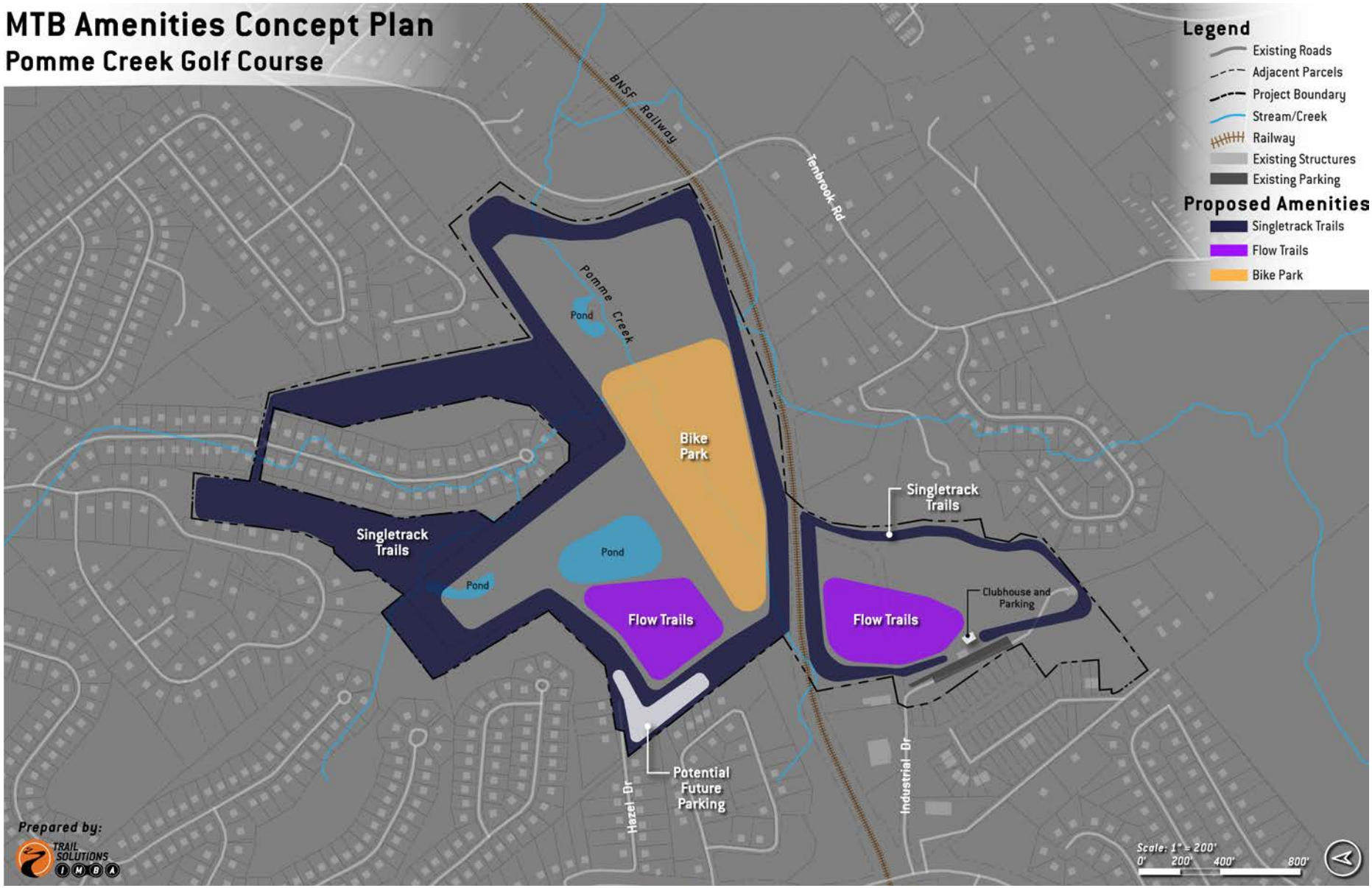
- Large, open, unprogrammed spaces
- Forested edges
- Slight shifts in elevation and small berms

Key Constraints

- The conversion from a golf course to a park opens the land to a diversity of new recreational amenities. Currently, the goals of the park, the community's needs, and the future programming is unknown. Public meetings, a user needs study, and public outreach will be required to begin the redesign and programming for the park.
- Flooding along Pomme Creek and the eastern portion of the site
- Occasional standing water on site
- Many flat areas of the site
- The site is bisected by a railroad; the railroad continues along the side of golf course, potentially restricting the development of trails on that side
- The site's existing parking area is surrounded by development and does not have space to be expanded.

Recommendations

- The closing of the golf course presents the opportunity to provide the community with new recreational amenities, and bike-based facilities could provide wide-ranging benefits to diverse users. Meeting with the park's director and recreational planners, coordinating public meetings, and educating the public of the range of bike amenities available along with their benefits will elicit valuable feedback that will determine the park's future.
- The feasibility of accessing the site from Hazel Drive and providing a new parking lot here should be investigated further. This access point would greatly improve the accessibility to the central portion of the site.
- The forested portions at the edges of the golf course has side slopes appropriate for traditional shared use, singletrack trails.
- The multi-use perimeter path could serve as a walking route and provide connections throughout the site. Many of the existing golf cart paths are in good shape and could be used as walking paths.
- The large open and dry portions of the site may be suitable for bike park amenities. Since most of the site is flat and doesn't have much vertical relief, jump lines and flow trails would require large amounts of fill material and construction to create those specific experiences.


MTB Amenities Concept Plan
Pomme Creek Golf Course
Legend
Existing Roads
Adjacent Parcels
Project Boundary
Stream/Creek
Railway
Existing Structures
Existing Parking
Proposed Amenities
Singletrack Trails
Flow Trails
Bike Park
BNSF Railway
Tenbrook Rd
Pomme Creek
Pond
Bike Park
Singletrack Trails
Pond
Pond
Flow Trails
Singletrack Trails
Clubhouse and Parking
Flow Trails
Potential Future Parking
Hazel Dr
Industrial Dr
Prepared by:
Scale: 1" = 200'
0'
200'
400'
800'

West City Park

Existing Trails

- Wetland Trail
  - Type: Compacted, crushed fines
  - Connectivity: The trail begins near the southeast entrance of the park and the end of the Sunset Park Trail. It starts off of Fedler Drive, travels underneath Old State Highway A, and continues along the ballfield, and into the wetland area along Joachim Creek.
  - Current uses: Walking, running, bird watching, and biking
- The Joachim Creek Trail
  - Type: Natural surface singletrack. The trail consists of a short leg of hand-built trail along the western bank of Joachim Creek.
  - Connectivity: The trail travels through a forested section along the western side of Joachim Creek and provides connectivity to the southern and northern portions of the park
  - Current uses: Walking, running, bird watching, and biking
- East side Trails
  - Type: Natural surface singletrack. These trails are located in the portion of the park that is east of Joachim creek. The trails are located in the floodplain of the creek and along higher, rocky ledges. The trails appear to be user-created.
  - Connectivity: The trails could provide connectivity along the eastern ledges and quarry sites
  - Current uses: Walking, running, bird watching, and biking
- Ludwig Nature Center Trail
  - Type: Old road bed
  - Connectivity: Provides connectivity to the trails east of the creek
  - Current uses: Walking, running, bird watching, and biking

Recreation Infrastructure

- Baseball and soccer fields
- Playgrounds
- Amphitheater (West City Park Stage)

- Disc Golf
- Ludwig Nature Center

Existing Facilities That Could Support Mountain Bicycle Trail Systems

- Parking area
- Picnic Pavilions
- Restrooms

Key Opportunities

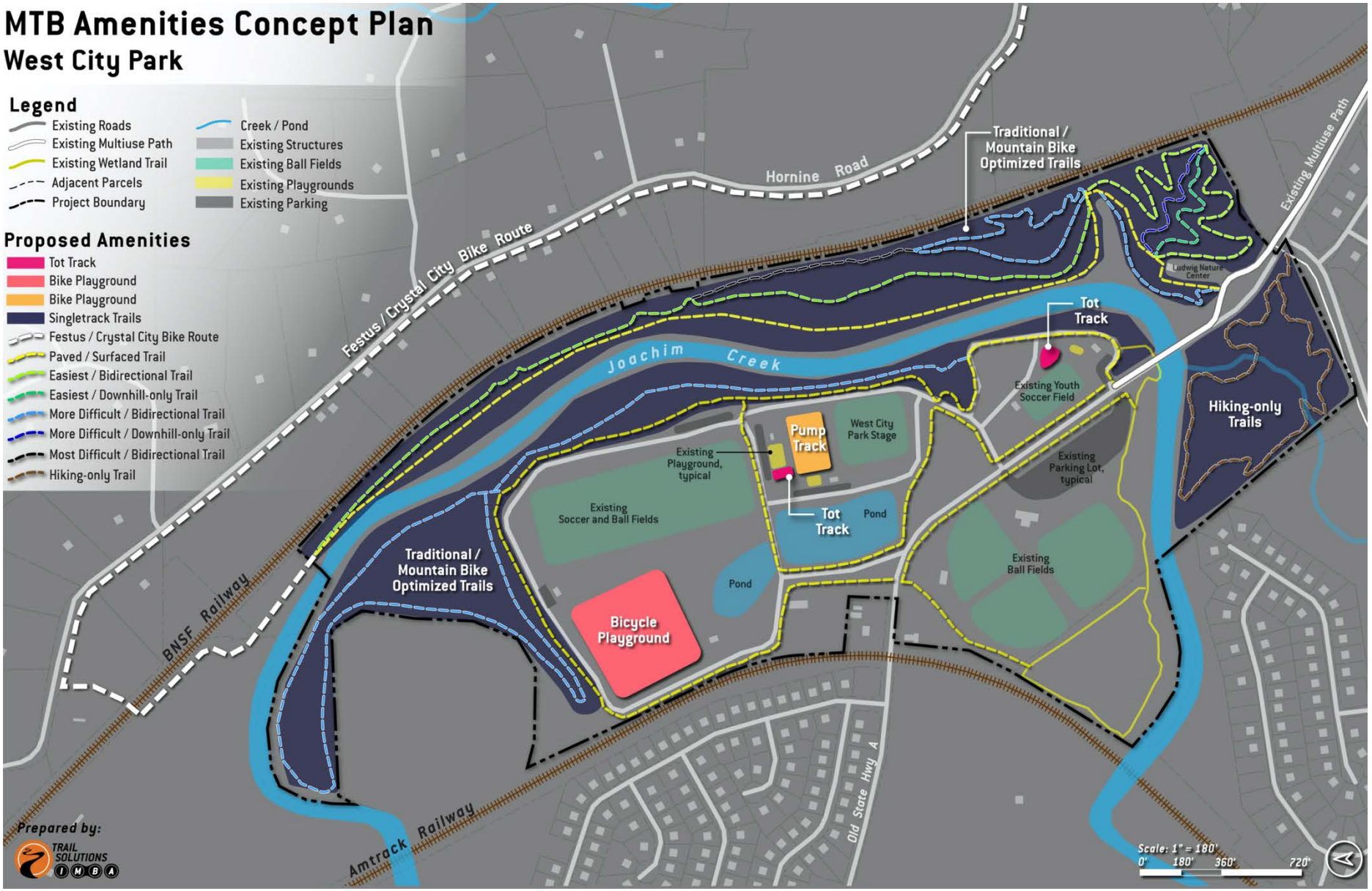
- Because of the close proximity of the park to schools, the site would be an excellent area to develop a bike playground, tot track, singletrack trails, or pump track.
- Good sideslopes for trail development in portions of the forested area
- Potential to connect with the existing Wetland Trail

Key Constraints

- Potential congestion during the busy months due to many activities available in the park
- Adding bike amenities will attract more users; careful trail system planning is required to avoid user conflict. Additional parking areas, crosswalks, and signage will be required to designate areas.
- The park is divided by Old State Highway A.
- Flooding occurs around the Joachim Creek. Severe impacts to the edge of the stream bed were observed.
- A significantly large area of Horsetail Reed (*Equisetum hyemale*) was observed in the forested area east of Joachim Creek. While it is a native plant, it is an aggressive grower that spreads invasively. Management of this plant will be required where future trails are planned.
- Cliff bands were observed in the forested area east of Joachim Creek.

Recommendations

- Existing roads become crowded in the summer with drivers, walkers, and cyclists. Creating a loop for walkers and cyclists will greatly reduce user conflict, ease the flow of traffic, and reduce the risk of accidents. The proposed loop is nearly 1.3 miles. By connecting, with the Wetland park trail (0.62 mi), the loop is 2.0 miles. A crosswalk would be required to cross Old State Highway A.
- Forested areas of the east and west sides of Joachim Creek provide a suitable space for 2-3 miles of singletrack trails. Beginner or intermediate trails would be appropriate. Flooding does occur in these areas; careful trail planning and construction is required to ensure trail sustainability. Note that the compacted, crushed fines of the Wetland trail withstood recent flood damage, and the material remained in place.
- Gradual side slopes around the nature center provide an ideal environment for beginner trails. The southeastern corner, the highest point on the site, could serve beginner downhill trails. To add to the nature center's programming, an interpretive nature loop could be added for outdoor education.
- At the park's central playground just north of the West City Park Stage, a large open space is available for a bike playground, tot track, and/or pump track. This site is ideal since families and kids are actively using these areas and parents can watch kids at both amenities. A pump track would be an exciting amenity for kids and riders of all ages that would activate the large green space. Adequate space would be required as a buffer between the pump track and amphitheater staging. Alternatively, a large space in the northwest corner of the site is available for a pump track. It is farther away from the other amenities but offers more available space. The parking lot would need to be expanded, and an existing disc golf area would need to be relocated.


MTB Amenities Concept Plan
West City Park
Legend
Existing Roads
Existing Multiuse Path
Existing Wetland Trail
Adjacent Parcels
Project Boundary
Creek / Pond
Existing Structures
Existing Ball Fields
Existing Playgrounds
Existing Parking
Proposed Amenities
Tot Track
Bike Playground
Bike Playground
Singletrack Trails
Festus / Crystal City Bike Route
Paved / Surfaced Trail
Easiest / Bidirectional Trail
Easiest / Downhill-only Trail
More Difficult / Bidirectional Trail
More Difficult / Downhill-only Trail
Most Difficult / Bidirectional Trail
Hiking-only Trail
Hornine Road
Festus / Crystal City Bike Route
Traditional / Mountain Bike Optimized Trails
Existing Multiuse Path
Ludwig Nature Center
Tot Track
Joachim Creek
Existing Youth Soccer Field
Hiking-only Trails
Pump Track
West City Park Stage
Existing Playground, typical
Existing Parking Lot, typical
Existing Soccer and Ball Fields
Tot Track
Pond
Traditional / Mountain Bike Optimized Trails
Existing Ball Fields
Pond
Bicycle Playground
BNSF Railway
Old State Hwy A
Amtrack Railway
Prepared by:
TRAIL SOLUTIONS IMBA
Scale: 1" = 180'
0' 180' 360' 720'

Jokerst Memorial Park

Existing Trails

- No existing trails

Recreation Infrastructure

- Disc Golf
- Playground
- Pickleball

Existing Facilities That Could Support Mountain Bicycle Trail Systems

- Parking area

Key Opportunities

- Excellent elevation changes and side slopes for singletrack and flow trails
- 1/3 mile to downtown
- Great visibility from two busy roads, Mill Street and Veterans Boulevard
- Single family neighborhood setting

Key Constraints

- Disc golf holes are located throughout the site.
- A lack of crosswalks, bike paths, or sidewalks on both sides of Mill Street may pose risks, deterring children or adult riders from crossing the street
- Homes are located along the north side of the park; adequate buffering and coordination with neighbors early on in the process would be necessary to address any concerns.
- The parking area is small and would need to be expanded.

Recommendations

- Near the existing playground, a large open area is available for a bike playground and tot track. This would create another activity for kids and families. The site's location above the road provides a clear view to the proposed tot track/ bike playground facility.
- The site's rolling topography and significant vertical relief provide excellent terrain for a flow trail and/or jump lines.
- We recommend providing access to downtown by adding a bike path or bike lane.


MTB Amenities Concept Plan
Jokerst Memorial Park
See Regional Connectivity Plan for Trail Connection
1/3 mile to downtown
Briar Ridge
Olive Street
S Mill Street
Singletrack Trails
Flow Trail
Tot Track
Playground
Existing Parking
Clyde Street
Restrooms / Swing set
Pickleball
Basketball
Festus - Crystal City Bike Path / Route
Festus Centre Drive
Legend
Existing Roads
Adjacent Parcels
Project Boundary
Existing Structures
Existing Sports Courts
Existing Playground
Existing Parking
Proposed Amenities
Tot Track
Singletrack Trails
Flow Trail
Festus - Crystal City Bike Path / Route
Prepared by:
TRAIL SOLUTIONS IMBA
Scale: 1" = 50'
0' 50' 100' 200'

Crystal City Park

Existing Trails

- No existing trails

Recreation Infrastructure

- Ball fields
- Basketball and Tennis Court
- Sand Volleyball
- Swimming pool
- Playgrounds

Existing Facilities That Could Support Mountain Bicycle Trail Systems

- Parking lots
- Existing paved pathway

Key Opportunities

- Close to Crystal City High School and Elementary School
- The site connects to Mississippi Ave, an iconic main street
- Neighborhood setting
- Possible connection to Festus parks via bike path connection
- Many parking areas throughout the park

Key Constraints

- North Truman Boulevard creates a difficult crossing for users coming on bike from Festus
- The park is filled with existing programming and may be congested in the summer
- Disjointed park layout with park features spread far apart throughout the property.

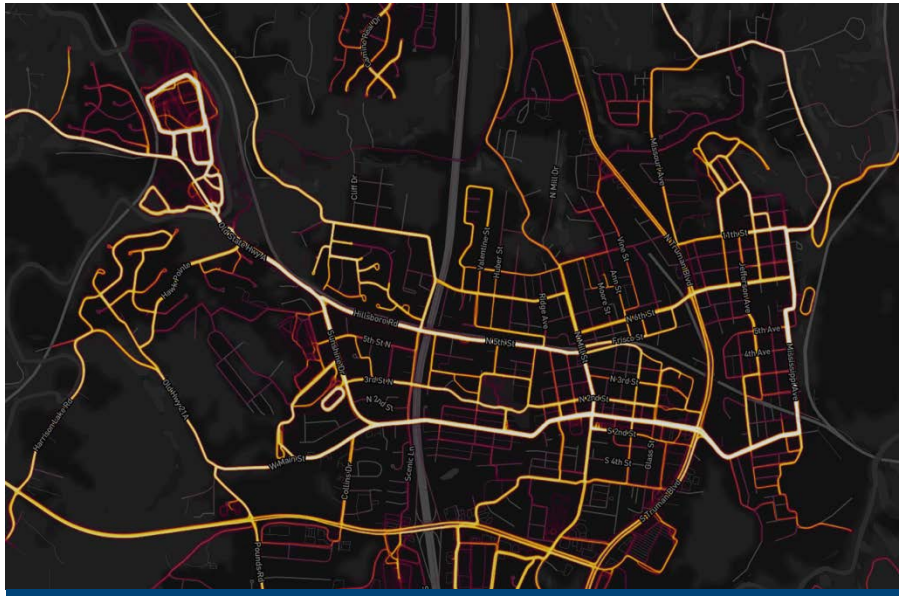
Recommendations

- Available spaces near existing playgrounds and pavilions would be suitable for bike playgrounds or tot tracks.
- Excellent terrain exists for a flow trail or jump lines in the northeast corner of the park. A home is adjacent the suitable flow trail area. Reaching out to the homeowner early in the planning process is highly recommended.
- Removing the handball court to make additional space for the flow trails was discussed. TS recommends continuing to coordinate with park leadership to assess the feasibility of displacing existing facilities.
- A half-mile long skills loop trail could encircle the park for beginners to build bike handling skills. The features could be placed on the side of the trail as optional features. Therefore, riders can choose features appropriate to their skill level, while at the same time this trail can be used by other park visitors such as walkers and joggers.
- Around the park's ponds, singletrack trails could be added to provide access to the proposed jump lines / flow trails on the east end of the site near the existing handball court.


MTB Amenities Concept Plan
Crystal City Park
Legend
Existing Roads
Adjacent Parcels
Project Boundary
Existing Sidewalks
Stream/Creek
Existing Structures
Existing Ball fields / Sports Courts
Existing Pool
Existing Playgrounds
Existing Sand Volleyba
Existing Parking
Proposed Amenities
Tot Track
Bike Playground
Skills Loop
Singletrack Trails
Jump Lines / Flow Trail
Festus - Crystal City Bike Path / Route
Parkview Drive
The Summit House
Existing Ball field
Singletrack Trails
Jump lines / Flow Trail
Steep Sideslopes
Skills Loop
Existing Pool
Dick Cook Dr
Park Drive
15th Street
Tot Track
Existing Sidewalk
Existing Playground
Bike Playground
Existing Playground
Festus - Crystal City Bike Path / Route
Existing Parking, typical
Jefferson Ave
N Taylor Ave
Steep Sideslopes
Existing Sand Volleyball
Existing Tennis and Basketball
14th St
Prepared by:
TRAIL SOLUTIONS IMBA
See Regional Connectivity Plan for Trail Connection
Scale: 1" = 80'
0' 80' 160' 320'

Regional Connectivity

Roads and paths surrounding the parks were analyzed as potential routes that connect the parks to each other and to significant features throughout Festus and Crystal City. Strava Heatmap data and on-the-ground observations of best routes were used to identify a contiguous route through Festus and Crystal City, expanding upon the existing 1.8-mile Sunset Park Trail. The route is conceptual at this point in the planning process; the design and safety requirements of the route will need to be compliant with local, state, and/or federal standards. The Pedestrian Bicycle Information Center (PBIC) created by the Federal Highway Administration (FHWA) and the National Highway Traffic Safety Administration (NHTSA) provides guidelines and information on federal requirements.



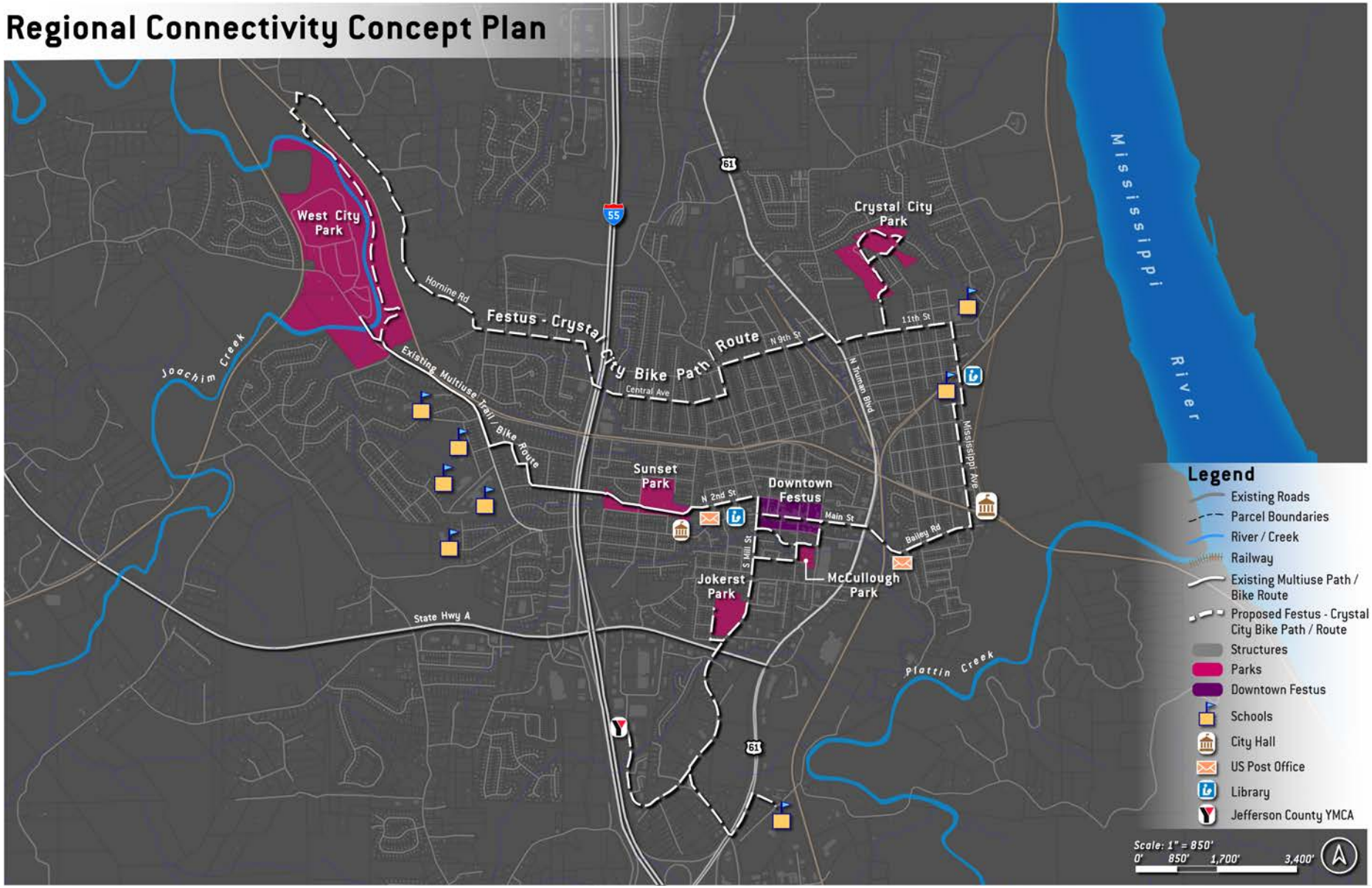
Example of Strava Heatmap imagery for Festus, MO.
Brighter lines indicate more bicycle use.

The planned route provides increased connectivity throughout both cities and creates designated bike routes to key points such as downtown districts, libraries, schools, neighborhood parks, and the Jefferson County YMCA. The planned trail concept extends the existing multiuse path/bike route (Sunset Park Trail). The route originates at the eastern edge of Sunset Park and then connects to downtown, Jokerst Memorial Park, and McCullough Park. From Jokerst Park, the route continues south to connect to the YMCA and St. Pius High School. Then east from downtown, the trail follows along quaint Mississippi Ave, bringing riders to the center of Crystal City, and then reaching Crystal City Park, the eastern terminus of the trail extension. This concept creates a looped trail by providing a northern route through neighborhoods of Festus, along Horine Road, and then connecting to the northeast corner of the West City Park boundary. In order to reach the park's boundary, the trail must pass through two parcels of private property. The trail route is conceptual at this early stage in the ideation process; coordination with private landowners is necessary to assess the feasibility of the connection.

The planned loop provides residents with an 9.5- to 11-mile route that creates a bike-friendly path or designated route with access to parks, downtown, schools, and other key locations. Where conditions allow, a paved bike path separated from the road is preferred. If the right-of-way is too narrow for a bike path, a designated bike route with appropriate signage and traffic calming can create an attractive route for cyclists.

Portions of the trail have the potential to become designated routes for children to ride to school. The expanded bike path/route creates greater opportunities for residents and visitors to enjoy bike rides with friends and family while participating in a healthy activity. As the trail connects to key features in town, it will act as an attraction for visitors to tour Festus on bike. At that relaxed pace, visitors can stop, explore the historic features of Festus and Crystal City, and connect to neighborhood parks.

The Regional Connectivity map on the following page illustrates the best routes for providing connectivity between the subject parks that were analyzed for this study. Both existing and proposed routes are illustrated.


Regional Connectivity Concept Plan
West City Park
Crystal City Park
Festus - Crystal City Bike Path / Route
Hornine Rd
Central Ave
N 9th St
11th St
N. Truman Blvd
Mississippi Ave
Existing Multiuse Trail / Bike Route
Joachim Creek
Sunset Park
N 2nd St
Downtown Festus
Main St
Bailey Rd
S Mill St
Jokerst Park
McCullough Park
State Hwy A
Platin Creek
Mississippi River
61
55
Legend
Existing Roads
Parcel Boundaries
River / Creek
Railway
Existing Multiuse Path / Bike Route
Proposed Festus - Crystal City Bike Path / Route
Structures
Parks
Downtown Festus
Schools
City Hall
US Post Office
Library
Jefferson County YMCA
Scale: 1" = 850'
0' 850' 1,700' 3,400'

PLATTIN PROPERTY

Existing Conditions

The Plattin Property is a nearly 800-acre site of mostly undeveloped oak woodland and cedar forest. The site features a main stream running east to west, a wide central valley, gently rolling terrain, and rocky open glades. Two long ridges, Southern Ridge and Middle Ridge, extend from the eastern and western sides of the property. An abandoned home site is located in the northwestern arm of the property. The majority of the site is secluded and hidden from neighboring properties.

An existing network of double track roads, providing OHV and 4x4 access, encircle most of the property along the site's perimeter. Many of the roads are over-grown with vegetation and are significantly eroded due to steep grades and water channelization. In the northwestern arm of the property, severe erosion created collapsed portions of the road, creating impassible sections by off road vehicles and preventing access to the southern portion of the site. The property has been used in the past for off-road motorcycle racing, bike riding, and trail running. A few singletrack trails can be found on site as extensions of the existing doubletrack roads.

Primary access to the site is located off Plattin Road at the southeastern edge of the property. This location provides the most assessible amount of well-intact existing doubletrack roads. Secondary access is currently located at the northern boundary off Highway CC. This entrance provides two-wheel drive auto access to the old homesite and the northwestern portion of the property.

Trail Suitability Assessment

The property features large, forested slopes and valleys. The two main ridge tops and central valley floor offer a multitude of terrain diversity. The ridges offer south-facing, open and rocky slopes along with wooded north-facing slopes. Both landscape types provide excellent trail potential. The landscape of the Southern Ridge is highly suitable for the development of a number of parallel shared use or XC style trails. The Middle Ridge can be reserved for more advanced level mountain biking and longer distance shared use outings. The low point at the Central Valley could become an excellent staging area for a number of events. Waterways appear to be clear and naturally flowing with potential for creekside trail experiences.

Key Opportunities

- The site offers a potential backcountry experience with urban proximity (4.5 miles from downtown Festus).
- Both ridges top out near the western boundary at approximately 700 feet in elevation, creating the potential for a maximum continuous vertical drop of 270 feet to the valley floor.
- Approximately 15-18 acres of nearly flat land is available in the Central Valley and could support venues for races or other events.
- The northern zone can be linked to the south and middle zones while providing ample user/visitor separation.
- The old homesite and the northeast corner lot are ideal for structures or other development.

Key Constraints

- There is currently no developed parking area at the east entrance off Plattin Road.
- Most of the roads will need maintenance, upgrades, surfacing, and/or bridges for full motorized service access.
- Amenities such as restrooms and other functioning structures are non-existent.
- The abandoned house, trash, and other issues at the old homesite will need to be addressed.
- The existing buried gas line running across the eastern portion of the South Ridge, Central Valley, and North Ridge may limit or restrict future trail or road construction.

Goals and Objectives

The Plattin property has highly suitable terrain and a diversity of landscape types to create a variety of trail types and experiences. One of the main objectives of this project is to create a system of diverse trails that appeals to mountain bike enthusiasts of all ability levels, walkers, runners, and hikers. This objective will be accomplished by creating a network of purpose-built trails that invite all ability levels and interests. Trail options will include beginner and family-friendly skill building loops, intermediate to difficult endurance trails, and downhill (gravity) trails. The trail system is designed to allow users to progressively build their skills. New riders can learn on the beginner trails and loops near the entrance and then graduate to longer and more challenging trails. A mountain bike (skills) park will provide entry to expert level skills features and trails while offering a gathering place for families and groups. The site has the potential and highly suitable terrain to support the development of a NICA training and racing venue. With the site's proximity to Festus, the park could serve as a after school training area and support local teams. In addition to providing mountain bike focused amenities, the site could offer hiking, camping, a community garden, nature center, educational programs, and other nature-based recreational activities that will allow residents to explore and enjoy the outdoors and connect with each other.

In summary, the following project goals guided the development of the trail experience zones and trail segments:

1. Provide a diversity of trail difficulty types from beginner to advanced trails.

2. Incorporate both traditional shared use and mountain bike optimized trails to serve all potential users.

3. Identify a suitable space for a NICA event or other race event.

4. Create a mountain bike skills park.

5. Allow for space to provide nature-based recreational amenities, such as hiking trails and camping spots.

Trail Experience Zones

Zone 1 – South Ridge and Central Valley

The main access to the site, primary amenities, and beginner to intermediate trails are provided in Zone 1. The trails in this zone are meant to create a beginner and family-friendly experience while providing the option to continue to more difficult trails and features. Zone 1 features a mix of traditional and mountain bike optimized trails and introduces beginner downhill trails. Downhill-only, bike-optimized trails begin at the highest points on the Southern Ridge at Hubs 2-5 and gradually traverse down to the Central Valley. The downhill trails in this Zone are intended to be beginner and intermediate trails that help riders improve their skills to gradually progress to the more difficult downhill trials.

A parking area is proposed at the southeastern entrance to the site from Plattin Road. The flat section of the ridge provides suitable space for parking areas and a trailhead. Additionally, the space south of the existing doubletrack road provides suitable terrain for a mountain bike park. The area features 60’ of vertical fall within a 9-acre space and could feature beginner to intermediate flow or jump trails and/or a skills loop. Considering the location’s proximity to the property’s entrance and parking, the site is an ideal location for a bike park.

If adequate parking and staging areas can be created, the proposed mileage and types of trails provided along the ridge would suffice for a number of trail-based events including high school NICA racing. The tributary of Plattin Creek runs through the bottom of the Central Valley, and various types of trails can parallel the stream, providing a creekside trail experience.

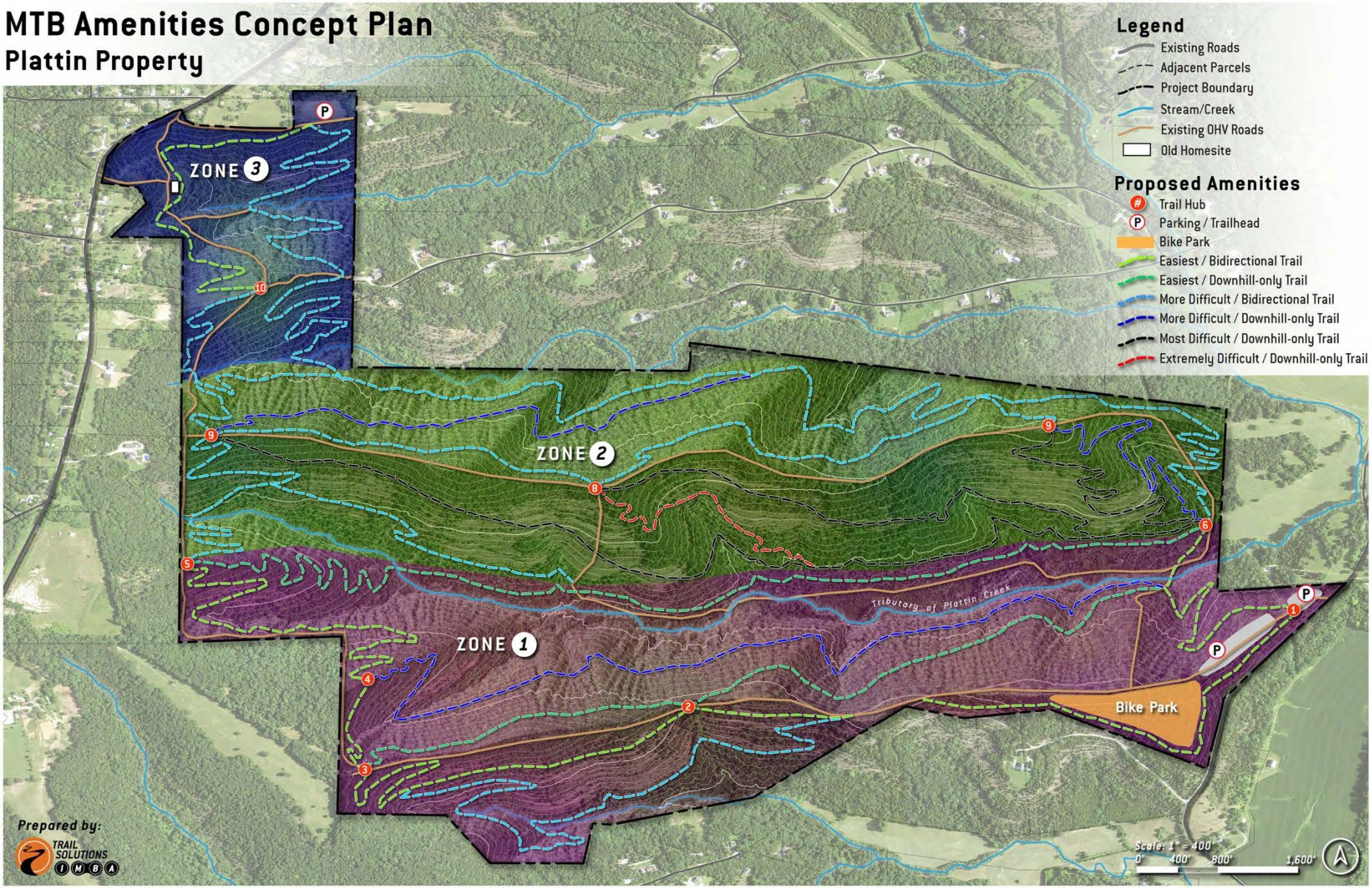
Zone 2 – Middle Ridge

The topography and landscape types of Zone 2 create the ideal conditions for intermediate and advanced trails. The south facing slope of the Middle Ridge is open and stratified with rocky ledges that could provide more challenging trail features while the north-facing slope is more forested and features gradually-sloping terrain. An existing doubletrack road (Sieze Alley) traverses the top of the ridge and could be used for maintenance and access. Trail hubs are located at the high points along the road which would serve as potential start zones for gravity trails. The difficult gravity trails travel along the rocky ledges of the south-facing slope and could feature challenging rock features. In addition to the gravity trails, cross county dual-direction trails are proposed in the forested areas of the north-facing slope. The trails travel in and out of interesting drainage channels and connect with the Zone 1 trails to create a long-distance route. Access to Zone 3 is provided by connecting, cross-county trails.

Zone 3 – North Ridge

With several drainages and micro ridges providing natural separation, the northern ridgeline is slightly divided from the rest of the site. The landscape of the northern ridge lends itself well for the creation of hiking and nature-based, interpretive trails. Plans for a nature center, community garden and other educational programing have been discussed for this area. The area surrounding the old homesite and the open field of the northeast corner lot provide the ideal terrain for structures, parking, and alternate trailhead.

Since riders would need to traverse in and out of drainage channels to reach the mountain-bike optimized trails in the rest of the property, the North Ridge is not recommended as a starting point for mountain bike users. In the ideal management scenario, mountain bikes would use the Plattin Road entrance in Zone 1 as a launch point, thus leaving the north entrance for hiking access while still providing some shared use connectivity. Trail connectivity between the North and Southern Ridges is provided by beginner and intermediate shared-use trails.


MTB Amenities Concept Plan
Plattin Property
Legend
Existing Roads
Adjacent Parcels
Project Boundary
Stream/Creek
Existing OHV Roads
Old Homesite
Proposed Amenities
Trail Hub
Parking / Trailhead
Bike Park
Easiest / Bidirectional Trail
Easiest / Downhill-only Trail
More Difficult / Bidirectional Trail
More Difficult / Downhill-only Trail
Most Difficult / Downhill-only Trail
Extremely Difficult / Downhill-only Trail
ZONE 3
ZONE 2
ZONE 1
Tributary of Plattin Creek
Bike Park
Prepared by:
TRAIL SOLUTIONS IMBA
Scale: 1" = 400'
0'
400'
800'
1,600'

Necessary Amenities / Access

To ensure the best shared use trail experience, TS recommends developing the primary mountain bicycling trailhead near the low point on site. This will assure outbound climbs and inbound descents. This experience is more desired by mountain bikers and makes it easier for tired riders to return back to the trailhead and parking areas. The ideal location for the mountain bike trailhead and parking is located at the low point of Central Valley. Currently, access to this area is only available from the southern ridge via eroded doubletrack road. To gain motorized access to the Central Valley, a new road from the southern ridge would need to be constructed with a sustainable alignment or access from the adjacent property owner to the east would need to be granted. The pasture adjacent to the Central Valley (Larry's Pasture) could provide the most efficient connection to the lowest and flattest part of the site and Plattin Road.

If motorized access to this area is not provided and parking cannot be secured at the low point of the Central Valley, then the primary parking area is recommended at the eastern end of the South Ridge, near the existing entrance off Plattin Road. This location provides easy access to Plattin Road and is located in fairly flat terrain. With proper clearing, grading, and surfacing this can be an adequate parking and staging area. This area could serve as a Phase 1 parking area for immediate access and site development.

In addition to parking areas, restrooms and a trail kiosk should be in place at the parking area prior to official park opening. Entry signage, trail signage, and other necessary wayfinding signage should be provided to guide users though the trail network. An interpretive kiosk with trail system map should be provided to orient new visitors with route planning information, any necessary safety information, user etiquette and park rules. Please see the "Signage" section included in the Appendix for more information on other recommended sign types.

Recommendations and Phasing

1) One of the first steps to any new trail development is to initiate a professional survey of the boundaries, identifying property corners and limits. This information is vital for the development and construction of trails to ensure trail locations and intersections are within the property boundary.
2) Improvements to the existing double track road system will be essential to provide motorized service passage for maintenance and emergency response. Most of the steep roads were severely eroded; proper water management and/or realignment of the road is required to improve the longevity and safety of the road. Additionally, many of the existing roads could supplement trail or race course access. Many of the double track roads can be paired with proposed singletrack to increase mileage or provide looped outings for shared use.
3) If motorized access to the Central Valley cannot be provided, the existing road that lines the South Ridge should be improved to provide access to the site and create a trailhead near the Plattin Road entry. This allows for the immediate development of the beginner and intermediate trails. With these trails in place, trail interest and a base of users will begin to grow. In future development, if access can be granted to the Central Valley, a larger trailhead, parking lot, and more amenities can be located in the Central Valley. This location will provide the preferred outbound climbs and inbound descents.
4) The beginner and intermediate trails of Zone 1 should be constructed first. Once the parking and trailhead are in place, the mountain bike park and skills trails could be constructed in the next phase. This will introduce users to a new trail type and provide a family-friendly gathering area.
5) After the development of beginner and intermediate trails within Zone 1, the next phase should include the bike optimized cluster of gravity trails on the eastern end of the Middle Ridge. Developing these more advanced skill level trails will attract a wider range of mountain biker types.
6) TS recommends the development of a balanced ratio of shared use and single use trails to attract the most diverse amount of trail users. This will ensure interest among all users continues to grow.
7) As funding allows, continue with perimeter and shared use singletrack to increase mileage while providing premier backcountry trail experiences.
8) Zone 3 can be developed in concert or separate from the middle and southern zones. Considering the different experience of Zone 3, trail-based events and/or racing can be staged from the eastern end while an entirely different type of park programming could be taking place in Zone 3. Depending on management's decision, the programming of the event can include or separate Zone 3 from the rest of the property. As northern zone amenities are developed, park management can decide to make connections via trail and or road upgrades.

Summary and Next Steps

The Plattin Property offers the ideal terrain for development of mountain bike trails and a bike park. Due to its close proximity to Festus and Crystal City, the property is easily accessible to many residents and would draw visitors from nearby communities, the St. Louis metro area, and the region. The property is privately owned which provides the flexibility of site design, programming, and schedules. Recommendations for the phasing of trail development provided above create a framework for project development. Please refer to the "Implementation" section for recommendations for in-the-field flagging/design, maintenance, and liability concerns.

Funding will be necessary for the development of the mountain bike trails, facilities, and future maintenance. Grants from community foundations and private donors may be available for the park development. Besides grant funding, fee-based facilities and services within the park could generate economic support for the future development of the park and maintenance. Entry to the park could be fee-based, but visitor protections and liability law must be investigated and understood before moving forward. Offering fee-based parking could be provided to generate income for the property, but further investigation of liability concerns is recommended. Amenities and services, such as food service, a bike shop, and retail facilities could be developed within the park. Camping, yurts, and other lodging that is unique, convenient, or offers the right combination of MTB related services can be a huge draw.

IMPLEMENTATION

Community Outreach and Visioning

The conceptual site plans reflect the identified suitable locations for bike facilities. The proposed locations work in tandem with existing recreational amenities and are located based upon the assessment of opportunities, constraints, nearby supporting infrastructure, and community amenities. These concept plans are preliminary at this point in the planning process. In order to move forward to implement these bike facilities, an understanding of each parks' goals and coordination with future plans is necessary to integrate the bike facilities into the future development and visioning of the park. Public outreach, such as community and stakeholder meetings, is necessary to gather input on the concept plans. This outreach is paramount to ensure residents are engaged during this process. This will generate excitement and support for the plans, create a stewardship base of future trail users, and foster a sense of ownership and pride of the bike facilities. In addition to reaching out to residents, communication with local bike groups and other mountain bike enthusiasts will help build an understanding of the interests and concerns of the existing ridership while creating relationships. These mountain bike enthusiasts can share local knowledge of trails, construction experience, and lessons learned on past projects.

Since many of the bike facilities presented in this study would be a new type of recreational amenity to the area, the facilities and their benefits may be unfamiliar to residents, stakeholders, and community leaders. Continued education, through community meetings, field trips to trails and bike facilities, and demonstration projects will help residents understand the potential of these facilities and generate support for future projects.

While the scope of this feasibility study focused on selected parks within Festus, Crystal City, and Arnold, other opportunities for bike facilities may exist throughout Jefferson County on lands that are in holding and awaiting funding for development. Coordination between the individual

municipalities and Jefferson County will be necessary to identity other sites of interest and create a unified vision for bike amenity development.

To create a regionally significant destination, coordination early on with the tourism bureau and community development organizations will help generate a plan for future development, assist with the necessary branding, create the content and platforms to spread the word of the bike facility development. In addition, Eureka and St. Charles are actively constructing significant bike facilities. Coordinating with St. Louis County and surrounding municipalities to identify shared goals and create a unified vision and brand will create an integrated plan for the development of bike facilities throughout the region. By coordinating with the larger region, the St. Louis metro area could grow into a regionally-significant destination that will keep meet the needs of residents and attract mountain bike enthusiasts from throughout the Midwest.

Funding and Liability

The availability of funding for the bike facilities will vary among municipalities. Planning for these amenities in yearly recreational budgets will begin the process of designating funds for bike facility projects. Some municipalities employ a voter-approved recreational and trails sales tax to generate funding specifically for recreation improvements. In addition, a range of federal, state, and local grants are available that support trail development and recreational amenities. Coordinating with local organizations with allied interests may offer financial support and increase the base of supporters.

As the bike facilities would introduce a new type of recreation with unknown liability concerns to municipalities, an assessment and clear understanding of recreation protections, laws, and precedents is necessary to ease concerns and create a plan to mitigate risk. Professional legal advice is recommended to ensure all liability concerns are understood and create a plan to mitigate risk. Warnings of the inherit risk of mountain biking should be clearly provided on park signage and should be reviewed by a legal professional.

Bike Facility and Trail Development

Once the park concept plans are further refined based upon community input and coordination with future park plans, final masterplans should be created to guide the development of the bike facilities. The plans should clearly indicate the type of desired features and trail types. Parks with multiple bike facility plans may require phasing plans. Project cost and timeline projections should be identified and provided with the masterplans.

After the masterplan is complete, development of construction plans with specifications and details is necessary to guide and communicate the construction. Based upon the facility type and conditions, permitting plan sets may be necessary. For the development of all trails and bike facilities, we recommend a professional trail designer/builder field flag the trail alignments, construct the trails or bike facilities, and provide training for staff and volunteers. The construction of the pump track and other asphalt features will require the services of a specialized designer and builder. For the construction of the dirt jumps, we recommend an experienced rider to provide consultation services and oversight during construction to ensure the proper design, spacing, and scale of jumps. When retaining a professional trail building firm, we recommend having a qualified construction manager experienced with mountain bike trail development provide oversight during the construction progress, perform inspections, and provide quality assurance services.

Maintenance

Trails should be managed according to recommended difficulty guidelines, trail type guidelines, and respective trail narratives. Master planning and design will provide these detailed guidance documents. Maintenance is an ongoing cost and should be planned for. Typical annual maintenance budgets for traditional and mountain bike-optimized trails are 10%-15% of the installation cost, and gravity trails can be closer to 20%-25% of the construction cost. Some of the annual maintenance for all trails can be performed by adequately managed and trained volunteers. These tasks will include corridor trimming, downed tree removal, general clean up (branches, leaf litter, etc.), and minor drainage work

Professional assistance will occasionally be required. The frequency will depend upon ongoing maintenance as well as weather patterns and use. Typically for cross-country trails, professional maintenance will be required every 10-20 years and will involve small reroutes, major drainage work, or other large tasks. Gravity trails can be expected to need professional help every 5-10 years as trails wear through weather and use. This will typically come in the form of rebuilding large dirt features and upgrading trails to provide slightly new experiences which help continue to draw regional riders, give locals something new, and help all riders progress in their skills. Increasingly, destination mountain bike trail systems are funding and hiring part- or full-time staff to provide maintenance to trail systems. Ensuring a quality, consistent riding experience is key to attracting visitors and keeping a local riding community satisfied and growing.

Programming

To fully activate and create a community around outdoor recreation and mountain biking, certain programming is necessary. With the establishment of the Missouri NICA program, middle and high school teams are beginning to form, and Jefferson County could provide trails that would serve as training and racing venues. Beyond high-school racing, many other programs can activate the community. The trails could be programmed with guided and interpretive hikes and outdoor education. Mountain bike skills clinics and/or scheduled and guided rides can be provided to help introduce the sport to new riders and help them improve skills. Having scheduled volunteer days keeps the community engaged, invested in their local trails, and helps improve the conditions of the trails while reducing the maintenance workload of land managers. Many times, local clubs and bike shops will schedule weekly rides that can be tailored for beginners, intermediate, or advanced riders. These rides encourage mountain bikers to connect with the local riding community.

Riding or running races, charity events, and bike festivals would greatly attract riders. Hosting a race regularly can attract visitors year after year. The bike facilities, especially the pump tracks and jump lines, could host local or regional competitions. Events and programming could help keep visitation numbers high throughout the year.

CONCLUSION

This document presents the feasibility, key opportunities and constraints, and recommendations for the development of bike facilities within the selected parks and Plattin property. The terrain, supporting infrastructure, and surrounding amenities of the parks offer highly suitable conditions for the incorporation of bike facilities. These bike trails and amenities would provide an engaging and exciting activity that can be enjoyed by residents of all ages and abilities that would increase park utilization, therefore improving neighborhood and park safety. The bike facilities and trails would serve to bring the community together and improve the health of by offering a new and fun outdoor activity. The bike amenities will encourage children to explore the outdoors while socializing, improving their physical fitness, and building skills that support their growth and development. It is hoped that this trail feasibility assessment will be a catalyst for the development of bike facilities and trails that reflect the community's goals and address the growing need for recreational amenities.

To bring these concepts and ideas into fruition, the next step is to share the findings of this report with Jefferson County and the cities of Festus, Crystal City, and Arnold to gather their feedback, strategize the next steps, and identify funding sources. This coordination will help identify the key areas of need and prioritize projects. Next, public meetings with community leaders, residents, adjacent property owners, local riders and clubs, and other stakeholders will help refine the plans. After considering feedback, the concept plans will be refined into masterplans and construction documents. Continued education of residents, key community leaders, and stakeholders through public meetings and outreach events will help build project support that may open new funding opportunities. Coordination efforts between St. Louis County, surrounding municipalities, and the tourism bureau can begin to create a region-wide visioning plan. This plan will address goals, projected timelines and phases, project costs, and funding sources.

APPENDIX A: GENERAL TRAIL PLANNING AND DESIGN GUIDELINES

The following are guidelines for the construction and maintenance of trails. The natural environment is dynamic and unpredictable. The nature of recreational trails and roads, the desired user experience, and the constant forces acting on natural surface trails and roads make strict standards untenable and undesirable. As such, the guidelines below are simply that: best management practices that should be followed within environmental constraints.

Trail System Design

Mountain Bike-Optimized Trails and Preferred Direction Trails

Mountain bike-optimized singletrack trails are designed and constructed to enhance trail experiences specifically for mountain bikers. Mountain bike-optimized trails might differ from traditional trails in several ways: enhanced tread shaping, directional or one-way travel, and the addition of man-made technical trail features (TTFs). Bicycles move differently along a trail than other modes of transportation. The movement of the wheel, the use of gravity and friction, the transfer of energy from the rider to the wheel – these offer both opportunities and constraints for trails and trail features that may differ from those of other users.

Mountain bike-optimized and one-way trails that harness gravity are a growing area of interest for mountain bikers. These trails can be designed and built at any level, from beginner friendly flow trails to extremely difficult race-oriented downhill trails. Riders cherish the feeling of flight that a bicycle provides while coasting through a succession of bike-optimized features from top to bottom. A consistent trail is not necessarily a boring or easy trail (though it can be), it's one that is designed such that a preceding section of trail prepares users for the subsequent sections. This is a hallmark of flow trails and can be particularly important for beginner trails, as well as for higher speed trails with gravity features, such as jumps and drops.

As trail systems grow and become congested, one-way trails help to take the pressure off popular shared-use trails. Riders looking for speed, thrill, and challenge will have their own designated areas, and users travelling at slower speeds will have their own trails. Well-designed mountain bike-optimized singletrack and gravity singletrack are exciting for mountain bikers but are also designed to help manage risk and minimize user conflict.

Rolling Contour Design

Providing consistent climbs and extended descents is a design priority. Trails may contour gently up or down for consistent lengths to maximize climbs and descents. This is known as rolling contour design. All shared- use trails should be of rolling contour design to minimize impact and sedimentation in the watershed.

Stacked Loops

A stacked-loop system is a series of loops somewhat like links in a chain. The loops can vary in length and difficulty. In a stacked-loop system, the loops that are closest to the trailheads are more inviting to novice riders, and the loops further out cater to more advanced riders. This creates a progression of experiences and challenges as users explore the trails in more depth.

Progressive Hubs and Clusters

A trail system of hubs and clusters looks more like spokes radiating out from a central junction and intersecting at various points. A trailhead or major intersection is a hub. A cluster is a concentration of trails radiating out from the hub. Like a stacked loop system, hubs and clusters are designed with skill level progression in mind. Hubs and clusters give users more trail options for varying skill levels at each hub, allowing for skill level diversity. At many intersections, riders have the option to change trail difficulty or continue on the same difficulty level.

With progressive trail features, a mountain biker may become a better rider by gradually moving up in trail difficulty. This practice also spreads out visitors and helps reduce trail user conflict. This is also a proven risk management tool. Signage shows difficulty levels at every hub and wherever necessary in the trail system to help users choose trails based on their skill levels and desired experience. Giving riders the option to warm up before hitting more technical segments provides a level of safety in the system.

Loops and clusters are often favored over out-and-back routes because they offer variety. People love the adventure of starting down one path and returning to the same point by way of a different trail. With loops or clusters in a trail system, visitors can choose a short route, a combination of routes, or a long outer route.

Progressive design and construction also allow users of different levels to ride the trails in the same system, so families and groups can enjoy being together in one place and riders can find a trail that matches their skills and progress.

Trail Difficulty Rating System

In order for a trail system to provide the varied riding experiences and skill progression which trail users seek, the trails must be built to provide relatively specific challenges and riding characteristics. For the purposes of this conceptual trail plan, the difficulty rating system has been simplified into three levels:

- Easiest Trails, Green Lines (green circle) – For beginners, these trails have a smoother and wider tread, lower trail grades, and less exposure to fall risks.
- More Difficult, Blue Lines (blue square) – For intermediate riders, these trails can be steeper, more technically difficult, or longer.
- Very to Extremely Difficult Trails, Red Lines (black diamond or double black diamond) – For advanced riders, these trails offer a combination of difficult trail tread, technical features, and long distances for those looking for challenge and endurance-oriented experiences. Generally, they have significant exposure and have less predictable surfaces.

This system was adapted from the International Trail Marking System used at ski areas throughout the world. Many trail networks use this type of system, most notably resort-based mountain biking trail networks. The system applies well to mountain bikers and is also applicable to other visitors such as hikers and equestrians. These ratings should be posted on trail signage and in all maps and descriptions. Following is a summary of criteria to be considered when implementing a trail rating system.

Tread Width

The average width of the active tread or beaten path of the trail.

Tread Surface

The material and stability of the tread surface is a determining factor in the difficulty of travel on the trail. Some descriptive terms include hardened (paved or surfaced), firm, stable, variable, widely variable, loose, and unpredictable.

Trail Grade (maximum and average)

Maximum grade is defined as the steepest section of trail that is more than approximately 10 feet in length and is measured in percent with a clinometer. Average grade is the steepness of the trail over its entire length. Average grade can be calculated by taking the total elevation gain of the trail, divided by the total distance, multiplied by 100 to equal a percent grade.

Natural Obstacles and Technical Trail Features

Objects that add challenge by impeding travel. Examples of natural obstacles include rocks, roots, logs, holes, ledges, drop-offs. The height of each obstacle is measured from the tread surface to the top of the obstacle. If the obstacle is uneven in height, measure to the point over which it is most easily ridden. Technical trail features are objects that have been introduced to the trail to add technical challenge. Examples include rocks, logs, elevated bridges, teeter-totters, jumps, drop-offs. Both the height and the width of the technical trail feature are measured.

Trailheads

Well-placed trailheads and parking lots contribute to a successful trail system. Trailheads should be located in areas of lower elevation, as most trail users prefer outbound climbs with inbound descents back to the parking area. This also helps mitigate risk by allowing fatigued riders an easier route back to their starting point. This is especially true for mountain bikers, and necessary for families and beginners. Trailheads should offer information useful for the trail users, including trail maps, location information, emergency contact details, and volunteer information.

Sustainable Trails

A sustainable trail balances many elements and is designed to have little impact on the environment. Sustainable trails resist erosion through proper design, construction, and maintenance and blend with the surrounding area. A sustainable trail also appeals to and serves a variety of users over many years. It is designed to provide enjoyable and challenging experiences for visitors by managing their expectations effectively. Following sustainable trail design and construction guidelines allows for high-quality trail and education experiences for users while protecting the land's sensitive resources. For additional trail design, construction, and maintenance techniques, refer to *Trail Solutions: IMBA's Guide to Building Sweet Singletrack*. These guidelines are appropriate for any hike, bike, or equestrian trail.

Signage

The development of a mountain bike trail network requires the development of a comprehensive system of signs. Signs are the most important communication tool between land managers and trail users. A well-implemented and maintained signage system enhances the user experience by helping visitors navigate the trail network and providing information about the area. Signage also plays a critical role in managing risk and deploying emergency services.

Recommended signage for the trails should be simple, uncluttered, and obvious with a sign at every major intersection to help users stay on track. Signs should meet the needs of all users, from the daily trail user to someone who is experiencing the trails for the first time. In order to serve the variety of visitors, sign placement should be strategic and frequent. Because signs can intrude on the natural outdoor experience, too much signage can be unsightly. Balancing competing interests is key to developing a successful signage program.

Sign Types

A variety of signs can be created to help users identify trails and their location, select routes, remain confident in their trail choices, find destinations and key points of interest, and understand regulations and allowed uses. Signage can also be interpretive, helping visitors learn about responsible recreation, trail etiquette, and resource protection, as well as how to reduce risk and hazards.

Informational signs

Usually positioned at the trailhead and major intersections, informational signs provide details such as trail length and difficulty. These include signs that identify a trailhead from a road, signs at a trailhead kiosk, trail intersection signs, waymarks, difficulty rating signs, and trail length or elevation gain and loss signs.

Regulatory signs

These types of signs delineate rules, such as prohibited activities, direction of travel, or other restrictions.

Directional signs

Directional signs provide navigational information.

Warning signs

Often incorporating highly visible designs, these signs warn trail users of upcoming hazards or risks. These include visitor rules and regulations, allowed activities, road and trail intersections, and emergency signs.

Educational signs

Educational signs can provide a variety of information for trail users, such as guidelines for responsible recreation, descriptions of natural or cultural resources, trail etiquette, and bike skills.

APPENDIX B: BENEFITS OF MOUNTAIN BICYCLING TRAILS

Promoting Active and Healthy Lifestyles

The benefits of mountain biking may start on the trails, but they don't end there. Learning to ride a bike is a rite of passage. Bikes and the sport of mountain biking provide a multitude of opportunities to teach children valuable lessons that will carry into adulthood.

Obesity is at a high, while activity levels among Americans are plummeting. With its progressive nature and way of stimulating the senses, mountain biking is appealing, especially to youth, and provides an excellent form of recreation for reversing the trend toward poor health. Since riding a bike provides excellent cardio conditioning, improves strength and coordination, and burns several hundred calories an hour, it is an activity as appealing to parents as it is to kids.

The unstructured play that mountain biking provides inspires people to explore and appreciate the natural world, leading to positive associations with outdoor activities and exercise.

Mountain biking allows individuals to advance at their own pace, so kids looking for a challenge can have just as much fun as children who are more interested in exploring the scenery. Riding in nature provides an environment where children can work on their skills, have fun, and pedal their bikes without parents having to worry. Mountain biking is a cross-generational endeavor, accessible to all ages and levels of physical fitness. Going for a trail ride is an excellent way for parents to do more than support their children's activities, it's a way to share the experience. Every ride is an opportunity to create a healthy lifestyle and pass on lessons that are best learned through experience.

Several studies on physical activity have indicated that proximity to recreational facilities, such as trails, is a predictor for physical activity. Simply put, if there are walking and biking trails nearby, then residents are more likely to use them and therefore be healthier. Physical health and exposure to nature also benefit mental health, reducing stress and increasing happiness. In addition, individual and community health translate to economic benefits by decreasing health care costs.

Contributing to Economic Growth

A well-designed trail system can stimulate economic growth by increasing activity within the local population as well as attracting visitors from outside. Trails can generate business in retail sales and services, support jobs, provide sustainable growth in rural communities, and produce tax revenue. Access to trails also correlates to a higher quality of life, thus making the community more desirable and capable of attracting new businesses and workers to an area.

IMBA assists local communities in increasing mountain bicycling tourism as a sustainable, renewable source of economic development. A mountain biking destination is one that attracts tourists to an area for the benefits of the mountain biking experience; provides visitors with all of the amenities needed to compliment, ease, and enhance their visit; and in turn creates word of mouth about the community that will draw new and repeat visits.

According to the Outdoor Industry Alliance, mountain bicyclists represent approximately 3.4% of the U.S. population, or nearly 10.6 million participants. IMBA's own research indicates that enthusiasts, who represent a portion of this overall number, travel extensively within a four-hour range and will typically devote one week per year specifically to travel to reach mountain bicycling destinations. Same-day visitors spend approximately $35 per day in local communities while destination visitors spend closer to $193 per day (due in part to lodging and increased meal purchases).

While mountain bicyclists are certainly willing to travel to ride, they will only do so if their destination contains a key ingredient: high-quality trails. These trails must be of a sufficient length and contain a variety of experiences, such as traditional singletrack, bike-optimized singletrack, bike parks, and shuttle options. The competition for these destination-quality locations is slowly increasing over time

A case study in Cable, Wisconsin, clearly illustrates how a community can benefit from offering a world-class bicycling experience. Construction of new bicycle trails in Cable resulted in:

- Increased property values.
- Increased spending on bicycle related goods.
- 35 jobs created annually, adding $523,000 to total employee compensation.
- Nearly $1.3 million impact related to spending from mountain bicyclists.

Fostering Community Pride and Identity

Involving community members in the planning, building, and maintaining of trails fosters community pride. In order to maintain sustainable trails, care of the trail system should be managed by local enthusiasts and rely on an organized membership base. Volunteering to help with trails provides an opportunity for area residents to connect with each other and with the terrain and land that surround them. IMBA members donate nearly one

million volunteer hours to trails throughout North America every year, making volunteerism a large part of mountain bike culture.

Trails and parks also provide informal opportunities for people to meet and interact with others in a natural setting. Connection to nature is paramount to maintaining the health of the environment and making the outdoors relevant and accessible to all. Trails serve a diverse population and cultivate unity and stewardship in the community. Trails can even revitalize blighted areas, for example, turning landfills into bike parks or gravel pits into trailheads.

Preserving Open Space

Trails make communities better places to live by preserving and creating open spaces for recreation. Greenways function as hands-on environmental classrooms for people of all ages, providing opportunities to enjoy nature close up. With its abundant plant life, open spaces can decrease pollution, protect water quality, and reduce soil erosion. Economic growth and property values are also tied to open space as buyers are generally willing to pay more for property located close to parks and open space. The recreation, health, economic, and environmental benefits of trails can contribute to an overall enhanced quality of life in nearby communities.

Encouraging Positive Recreation Use to Displace Negative Use

Without a plan, undeveloped areas are often haphazardly transformed by users creating unauthorized sites to suit their personal wants. Purposefully designing trail systems can help create diverse recreational opportunities, encourage safe use, and meet the needs of the entire community. Unauthorized trail building and dumping or other unacceptable activities can damage ecology, cause safety hazards, and leave behind debris that is both unsightly and illegal. The best way to encourage positive use is to displace negative use. A well-planned trail system can discourage and displace destructive activities with healthy recreational use that attracts visitors of all ages.