

# Turkey Mountain Master Plan

November 14, 2019



MVVA  
Inc.



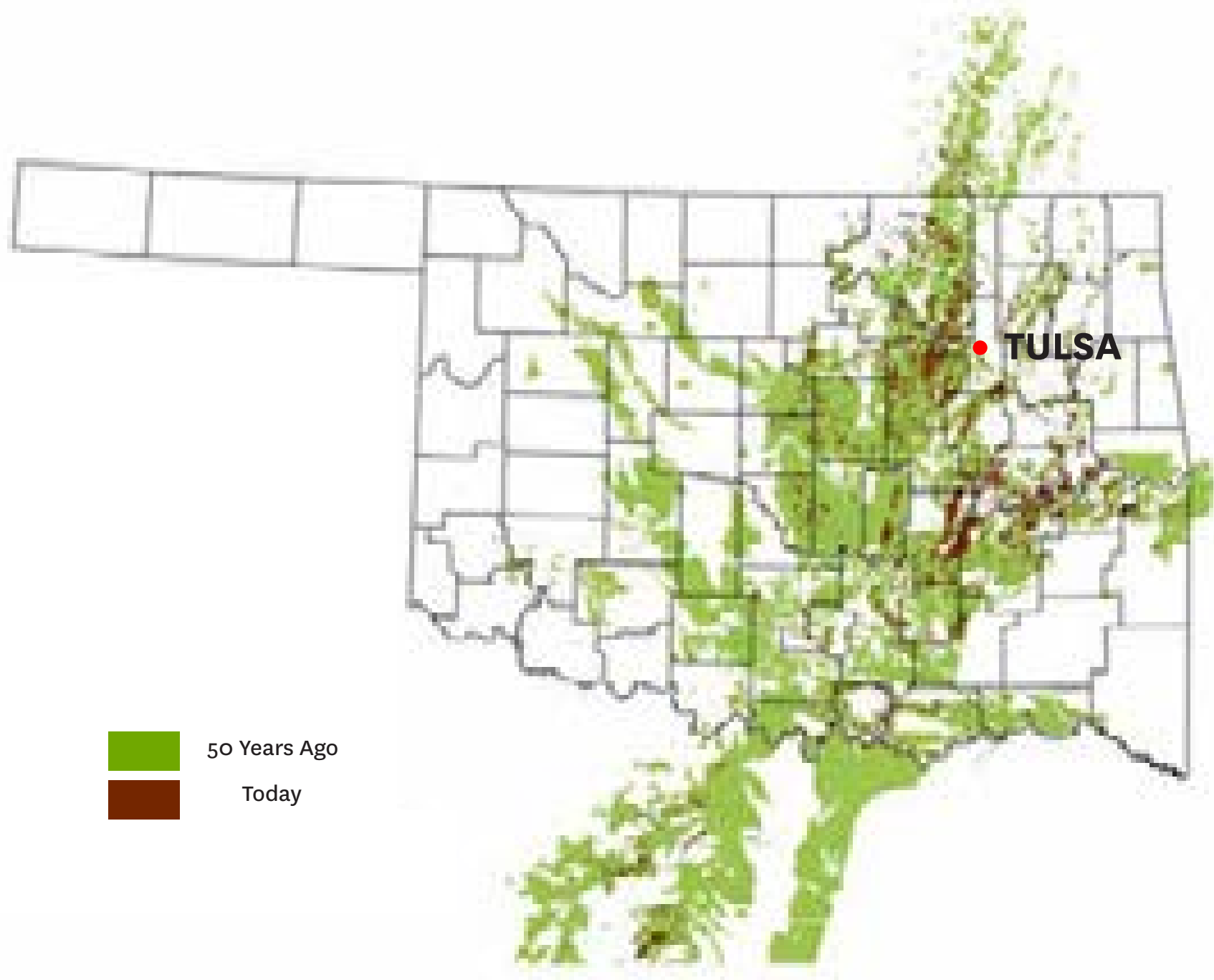
MIDWESTERN  
PRAIRIES

• TULSA

OZARK NATIONAL  
FOREST

## Where Midwestern Prairie and Ozark Forest Meet

Around Tulsa, grasslands mix with post oak-hickory forest, creating a rich mosaic of prairies, savannas, woodlands, and forests known as the Cross Timbers.



## A Unique, Disappearing Landscape That Can Be Preserved

50,000,000 acres of Midwest oak savanna once extended in a continuous band from Minnesota to Texas. Today, only 30,000 acres remain in degraded patches of 100 acres and less—a “globally imperiled” landscape.



## Something You Can't Buy or Build

At 600 acres, and with a high point that is 300 feet above the elevation of the Arkansas River, Turkey Mountain is one of Tulsa's largest undeveloped spaces and its most visible natural landmark.





## We've Seen the Data—We Know Tulsans Love Turkey Mountain

We used fitness app data from Strava to see where users are biking and running.

If you're an outdoors enthusiast in Tulsa, this is your #1 destination.



## **Urban Wilderness Within the City Limits**

Turkey Mountain is positioned to be a defining part of Tulsa's identity.



## **Access to the Wild Without Travel Time or Cost**

This is a special place that could offer outdoors experiences on par with some of our most popular national parks.



## A Local Destination Any Tulsan Can Escape To

Turkey Mountain belongs to Tulsa, and it offers both the space and resources to serve the entire community.

# Site Challenges



## Eroding Trails Are a Problem

Trails were made by users and though they are well-loved, they are not sustainably constructed.  
As Turkey Mountain gains in popularity, it runs the risk of being loved to death.



## Poor Drainage Prevents the Full Use and Enjoyment of Trails

Users widen or cut new trails to avoid wet areas, causing further damage to the surrounding landscape and the trails themselves.



## **The Declining Landscape Will Continue To Get Worse**

Natural disturbances such as grazing and frequent fires that once kept this Cross Timbers landscape healthy are no longer present, which has allowed the understory to become so thick it's choking out the big trees, and it's easy to get lost.





## **Invasives and Understory Trees are Outcompeting Old Native Oaks**

The large, open-grown oaks of the Cross Timbers's post-oak-hickory savanna are adapted to grow best when spread out. Invasives and the dense unmanaged understory are crowding these large trees out.



Already-Disturbed Areas Have Potential for Restoration and Better Uses



## Mooser Creek Is Inaccessible and Struggling Ecologically

We hiked the creek in waders with our wetlands restoration experts from Inter-Fluve, and there is great potential to restore the creek as animal habitat and for recreation, but currently it is inaccessible.



## **The Only Northern Access to Site Today Is Through Private Pepsi Property**

Turkey Mountain Users are currently parking or trespassing on private property in order to get into the wilderness from the north. A new entrance for users approaching from the north would solve this problem.



## Users Told Us: “Keep Turkey Wild” and “Everyone Should Have Access”

MVVA and GKFF have hosted public meetings to bring the community together to craft a vision for the future of Turkey Mountain.



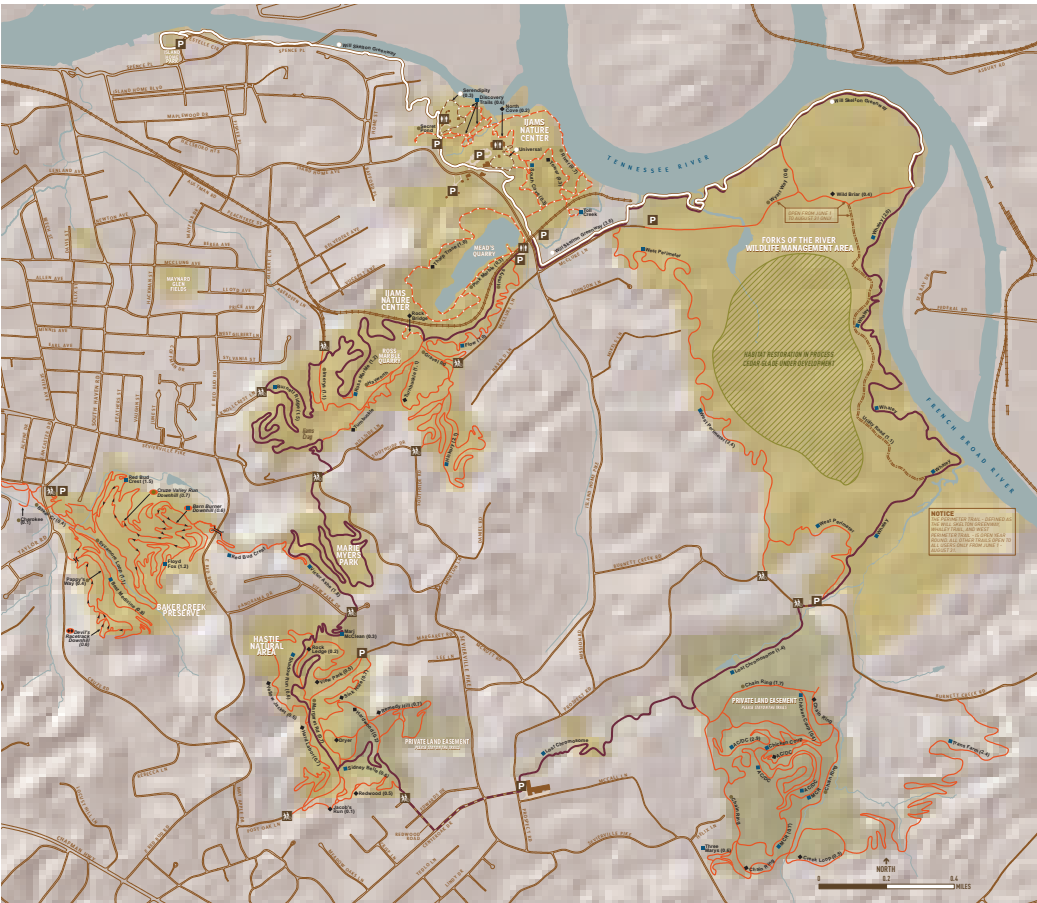
Existing



Proposed

## BIG IDEA: Added Sites Allow Places for Improved Access and New Experiences

Adding new territory to the Turkey Mountain Urban Wilderness will improve access and enable Tulsans to enjoy new programs, while preserving the area's wild character.



## Building an Urban Wilderness Relies on Cooperation

We visited The Knoxville Urban Wilderness, which was created using easements through state, city and private property.



**Restored Nature**



**New Access**



**Sustainable Trails**



**Exciting Program**

Four Key Components of the Turkey Mountain Master Plan



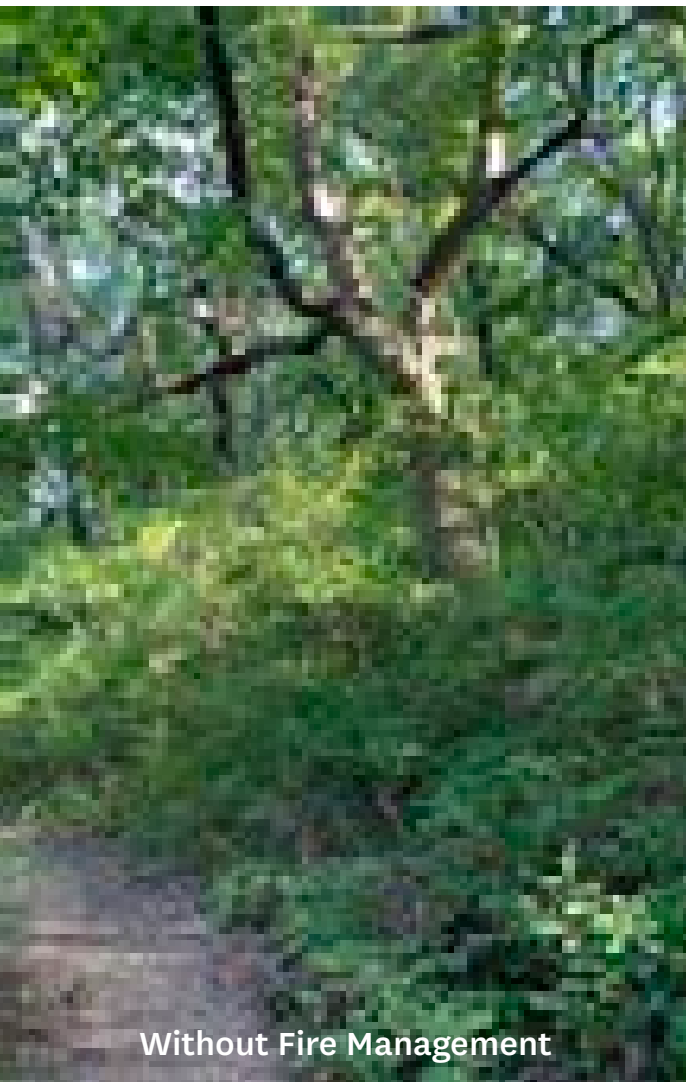


**Restored Nature**



## A Restored Turkey Mountain Opens a Window Back in Time

Turkey Mountain used to have a range of prairie to forest that is typical of the Cross Timbers ecoregion. Current practices and a fundamental lack of care have resulted in a uniformly dense forest.



Without Fire Management



With Fire Management

## Fire Management Is Traditionally the Way This Has Been Achieved

Prescribed burning is a practice that European settlers learned from Native Americans. Periodic fire is an important contributor to maintaining the partially dense/partially open mosaic of the Cross Timbers landscape.



## Turkey Mountain Is Already Experiencing *Uncontrolled* Burns

Lack of fire management allows fuels to accumulate, creating a real risk of wildfires.  
Reinstituting regular controlled burns that benefit the ecology will also reduce these risks.



**John Weir, OSU Natural Resources and Environmental Management**

Practicing Fire Manager, Prescribed Fire Researcher and Educator

**Wildfire**

**vs**

**Prescribed Fire**



**Wildfire- Any non-structure fire, other than prescribed fire, that occurs in the wildland.**

- What causes them?
- When do they occur?
- Under what conditions?
- Have you been exposed to any other type of fire?



**All fire is not wildfire!**

## Prescribed Fire

- Planned application of fire under specific conditions to achieve specific goals and objectives
- Based on science, fact, and experience



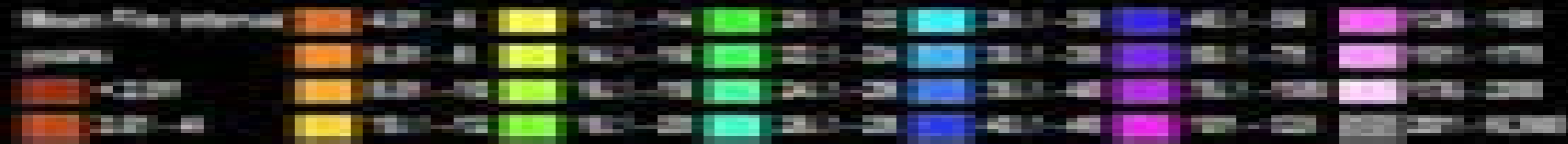
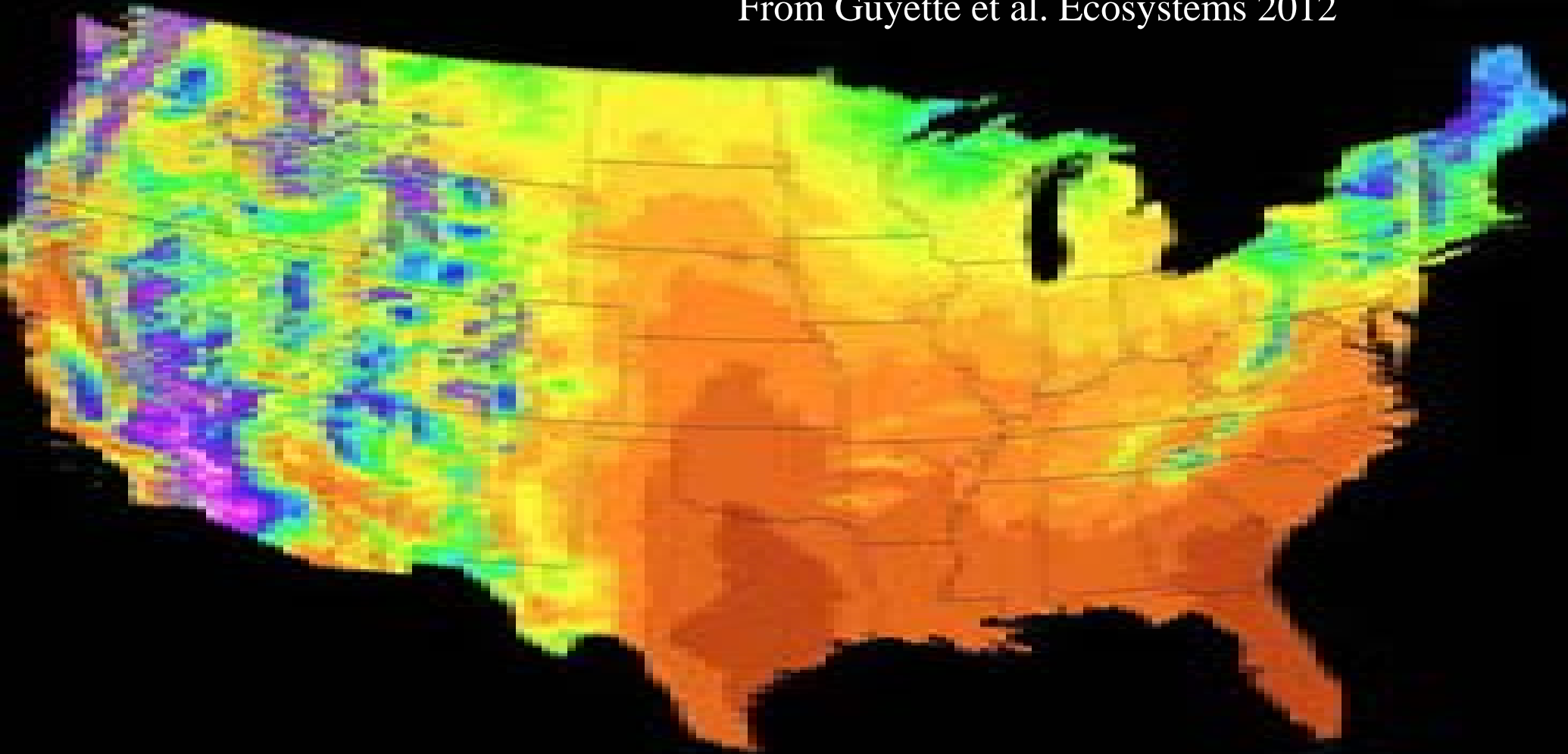
## Do we burn in Oklahoma?

- Prescribed Fire in OK
  - 1-2 million acres annually
- Wildfire in OK
  - 2000-2007 85,432 acres annually
  - 2006-2017 208,000 acres annually



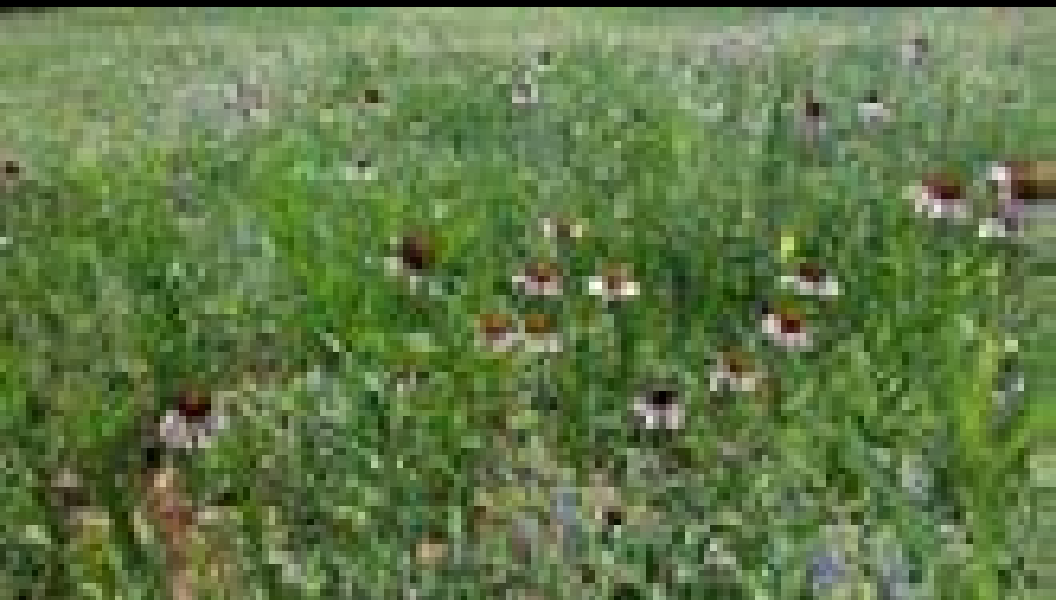


From Guyette et al. Ecosystems 2012



## **Benefits of Fire**

- **Healthy forests and grasslands**
- **Plant and animal diversity**
- **Wildfire control**
- **Cedar control**
- **Improve wildlife habitat**
- **Water quality and quantity**



## How do we burn?

- First, determine goals and objectives.
- Develop a fire plan and prescription based on the unit of land in question.
- Determine needs: training, personnel, equipment, and firebreaks.
- Consultation with a fire management specialist to develop plans and training
- Conduct burns when conditions are proper to achieve goals and reduce impact on the public





## **Turkey Mountain Burn Plan - Year 1 - 120 Units**

Burn units, the amount of land burned at a time, utilize existing trails and other natural fire breaks as boundaries. The plan begins with many smaller units to safely burn high fuel loads accumulated over year of fire suppression.



## **Turkey Mountain Burn Plan - Year 5 - 90 Units**

By year 5 burn units would begin to shift, using newly constructed trails as fire breaks, and could begin to be grouped into larger units as fuel loads decrease.



## **Turkey Mountain Burn Plan - Year 10 - 60 Units**

By year 10 the burn crews conducting burns will shift from restoring the landscape to a maintaining it. Larger burn units means fewer burns need to be conducted each year, further lowering the cost and labor associated with maintenance.



## Wetland Restoration and Bioengineering the Creek Channel

Mooser Creek is dangerous and inaccessible today, but it's ideally positioned to provide northeast access to Turkey Mountain. Reintroducing the creek's meander and stabilizing its eroding banks facilitates fishing and interacting with the water.





**Greg Koonce, Inter-Fluve Wetlands Restoration and Bioengineering**

Founding Principal and Fisheries Biologist



## Squalicum Creek - Bellingham, Washington

The new channel flows along a natural meandering path with pools and riffles.



## **Squalicum Creek - Bellingham, Washington**

The new channel flows along a natural meandering path with pools and riffles.



## **Squalicum Creek - Bellingham, Washington**

The wood adjacent to the floodplain supports riparian forest and wetland.



## **Squalicum Creek - Bellingham, Washington**

The restored channel flows along a walking path (right), and interstate highway (left).



BEFORE

## Milo McIver State Park - Calackamas River, Oregon

The existing riverbed was dry with stagnant pooling water most of the year and occasional flooding.



AFTER (+4 Years)

## Milo McIver State Park - Calackamas River, Oregon

The channel bed was lowered to create a low-flowing stream to provide cold-water rearing and refuge habitat for coho, Chinook, and steelhead.



AFTER (At Time of Construction)

## Milo McIver State Park - Calackamas River, Oregon

During floods, submerged log jams help slow down water, reducing erosive forces on the landscape.





AFTER (+4 Years)

## Milo McIver State Park - Calackamas River, Oregon

During floods, submerged log jams help slow down water, reducing erosive forces on the landscape.



**New Access**



## **New Bike and Pedestrian Access Into Turkey Mountain**

Improving bike and pedestrian connectivity between urban and wild means crossing creeks, rivers, and highways. These bridges will help increase daily use, and be features themselves.



**Mooser Bridge Provides New Northern Access**



**Precedent: Jarrold Bridge - Norwich, England**



Johnson Bridge Connects Over The Arkansas River



**Precedent: American River Bicycle Trail - Sacramento, CA**



**Bales Bridge Flies Over US-75**





**Precedent: Wing Tip Bridge at Summit Bechtel Reserve - Glen Jean, WV**



Hinterlands Bridge Allows Access From The West



**Precedent: Log Bridge at Summit Bechtel Reserve - Glen Jean, WV**



**Four New Bike and Pedestrian Bridge Connections into Turkey Mountain**



Four New Bike and Pedestrian Bridge Connections into Turkey Mountain



Existing Access and Parking

270

Existing Spaces

120

150

## Limited Parking Only Accessible from the South

Today Turkey Mountain is only accessible from two parking lots at its southwestern edge.



## S Elwood Drive Closed to Thru Traffic and Upper Parking Lot Moved

S Elwood Drive is a dangerous cut through that disconnects property on either side.





## Expanded Parking At The Edge Retains Turkey Mountain's Remoteness

Additional parking will be necessary as Turkey Mountain attracts more users, but by grouping the parking along the edges, the wild and remote character of Turkey Mountain will be preserved.



**2,010**  
**Proposed Spaces**

## A Significant Increase in Parking

By strategically connecting to large existing parking lots in Bales and Johnson Parks, and carefully placed new parking lots, Turkey Mountain users will be able to park closer to where they're headed.



## Gravel Drives Provide Vehicular Access Within Turkey Mountain

The curving park drives break with Tulsa's street grid, signaling entry into Turkey Mountain.



## A Second Option for Gravel Drives Prevents Thru Traffic Altogether

Access to all the same parking lots is maintained but there is no access to thru traffic.

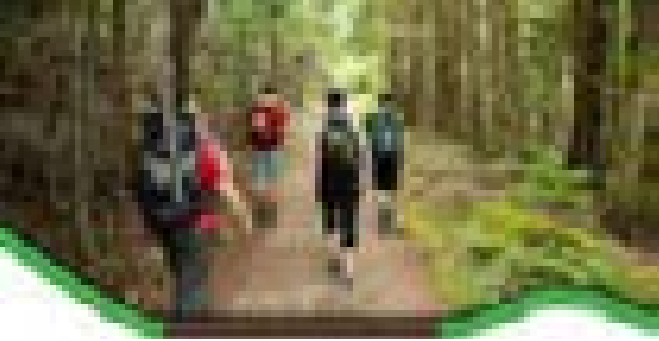


## A National Park-Inspired Drive

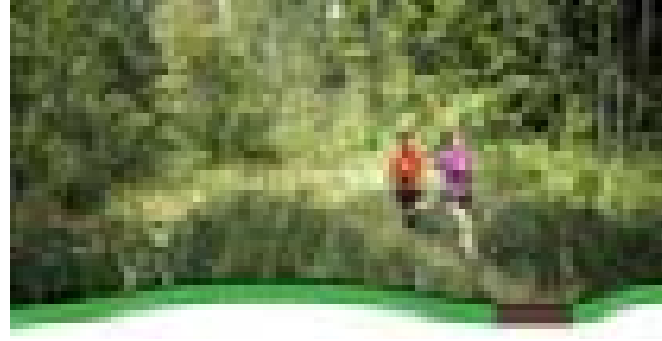
Gravel drives in keeping with Turkey Mountain's wilderness allow those who don't hike or bike to experience the rugged landscape.



**Sustainable Trails**



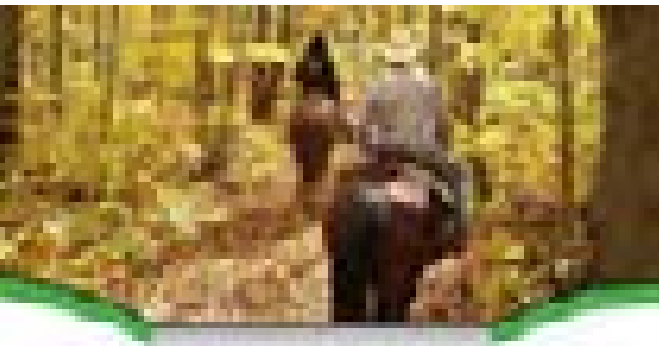
Hiking



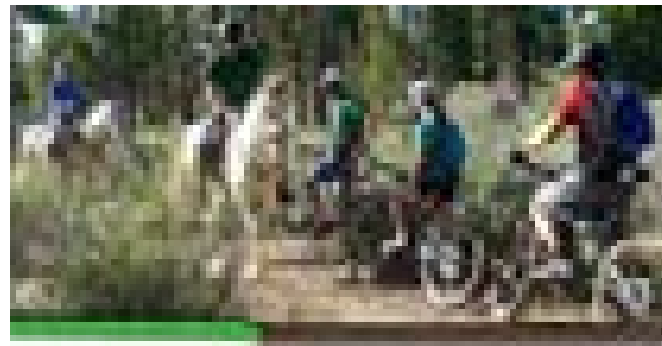
Trail Running



Biking



Horseback Riding



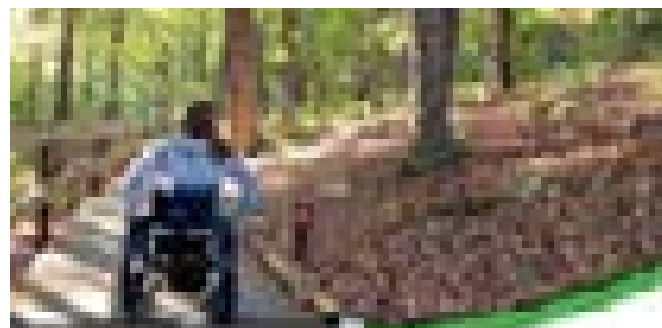
Shared Multi-Use



Technical / Rock Garden



Adaptive Sports / Hand Cycling



ADA Accessible



Contour Flow

## A Range of Trail Types so Everyone's Included

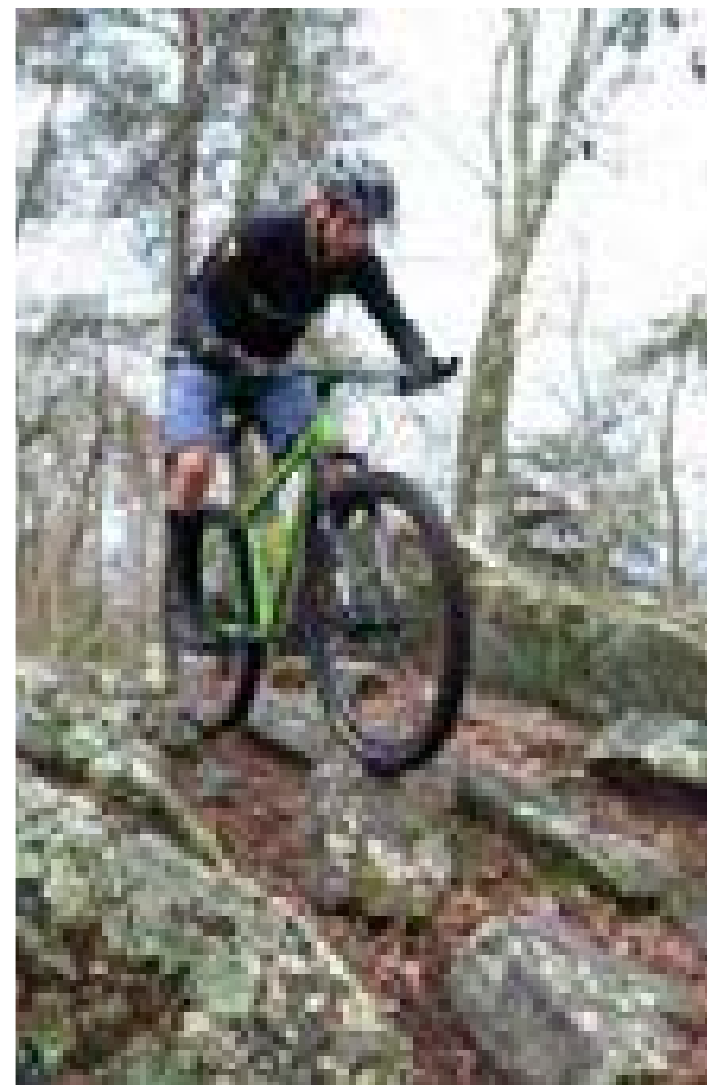
Some uses combine easily for shared multi-use trails. Other special types of trails must be kept separate so they can be enjoyed without undue risk.



## Beginner Trails That Are Still Exciting

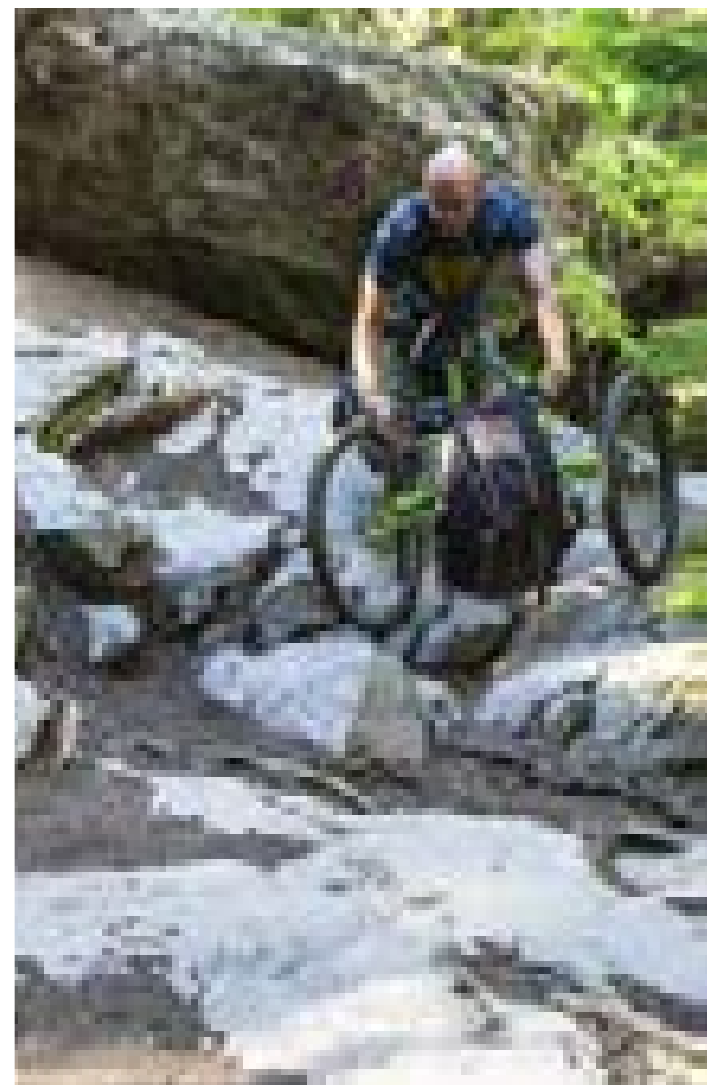
Turkey Mountain needs more trails for beginners, but just because they're easier doesn't mean they have to be dull.





## Diversifying Challenges for Experts

Most expert trails in Turkey Mountain today get their difficulty from the technical, rocky terrain. Other types of challenges for advanced riders can be introduced to provide a wider range of experiences.



## Accessible and Adaptive Trails to Enable New Users

Accessible and adaptive users also benefit from a range of difficulties and trail types.



Inviting New Audiences of All Ages



## Volunteer Trail Crews Have Done What They Can

The erosion and drainage issues Turkey Mountain's trails show are a result of where and how they have been cut. We can't put a band-aid on the problem, it requires a fundamental fix.



## Trails Will Need to Be Closed and Rebuilt to Be Improved

Many of the existing trails in Turkey Mountain will need to be rebuilt in order to prevent erosion and improve overall trail conditions, but the plan proposes to add XX miles of trail to the existing system.



## Major Multi-use Trails Create a Framework for Wayfinding

Existing trails may need to be widened and realigned to prevent erosion. They will be connected to new trails to create an intuitive system of loops that always bring you back to a parking lot.



## **Smaller Multi-Use Trails are Restored In-Place Where Possible**

Many existing trails will be restored and extended into added sites to extend the trails available to everyone.



## Bike-Optimized Trails Connect To Multi-Use Without Conflicts

Two-directional trails that are optimized for bikes, but are also designed with trail runners in mind connect to the major trails and expand the system of sustainable trails.





## Bike-Specific Trails Expand the Quantity and Quality of Trails for Riders

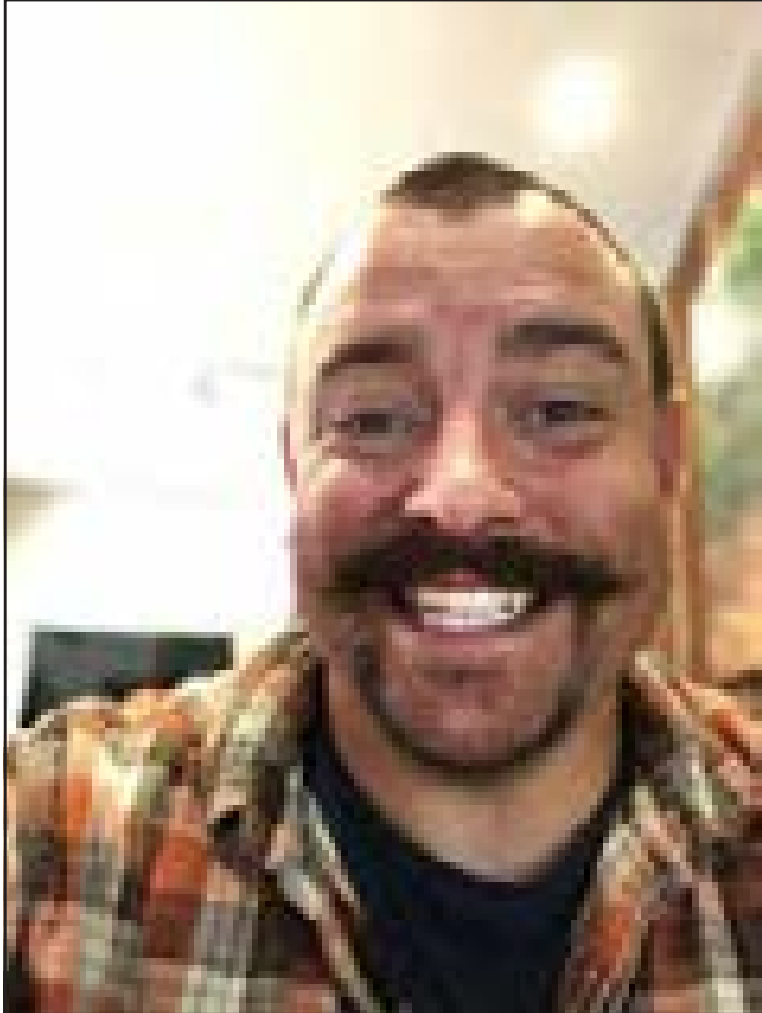
One-directional dirt trails, downhill, and contour flow create an unprecedented density of bikes only trails for riders that do not conflict with other uses.



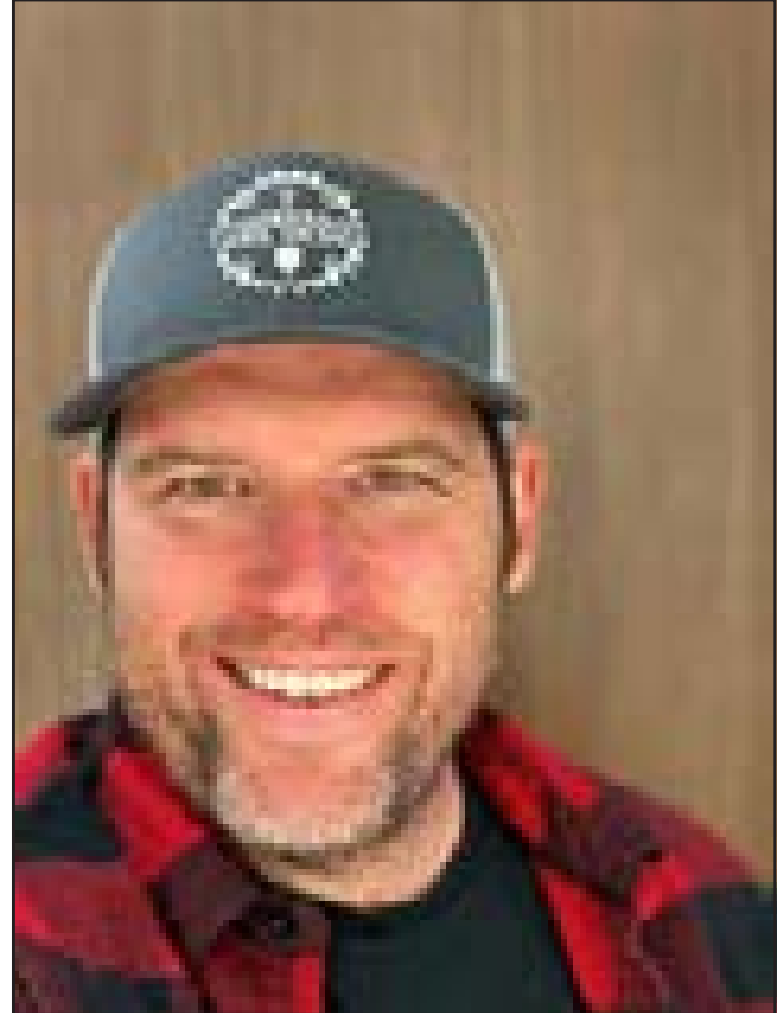
**The Master Plan Calls for A Net Increase in Trail Mileage, Variety, and Interest**



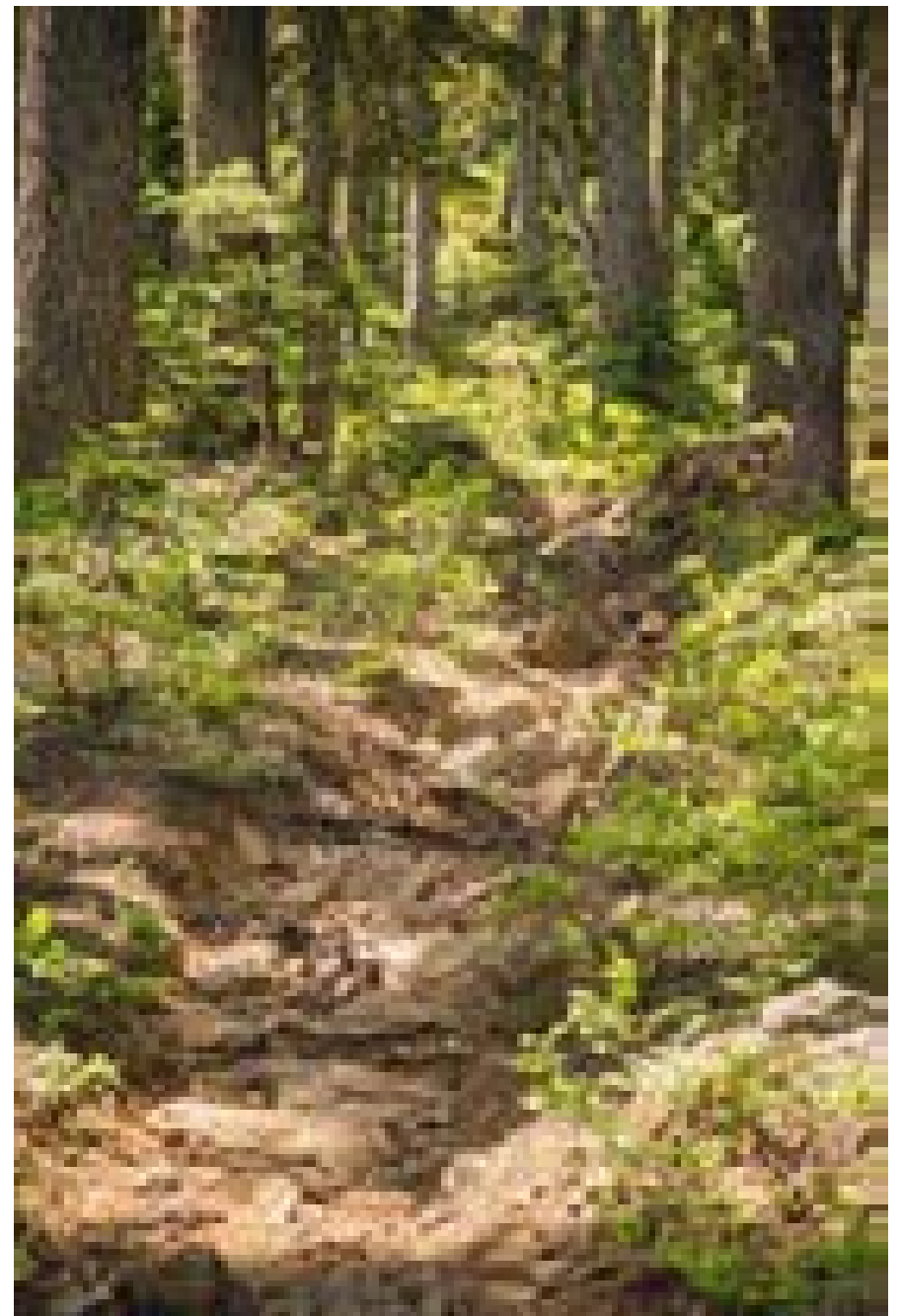
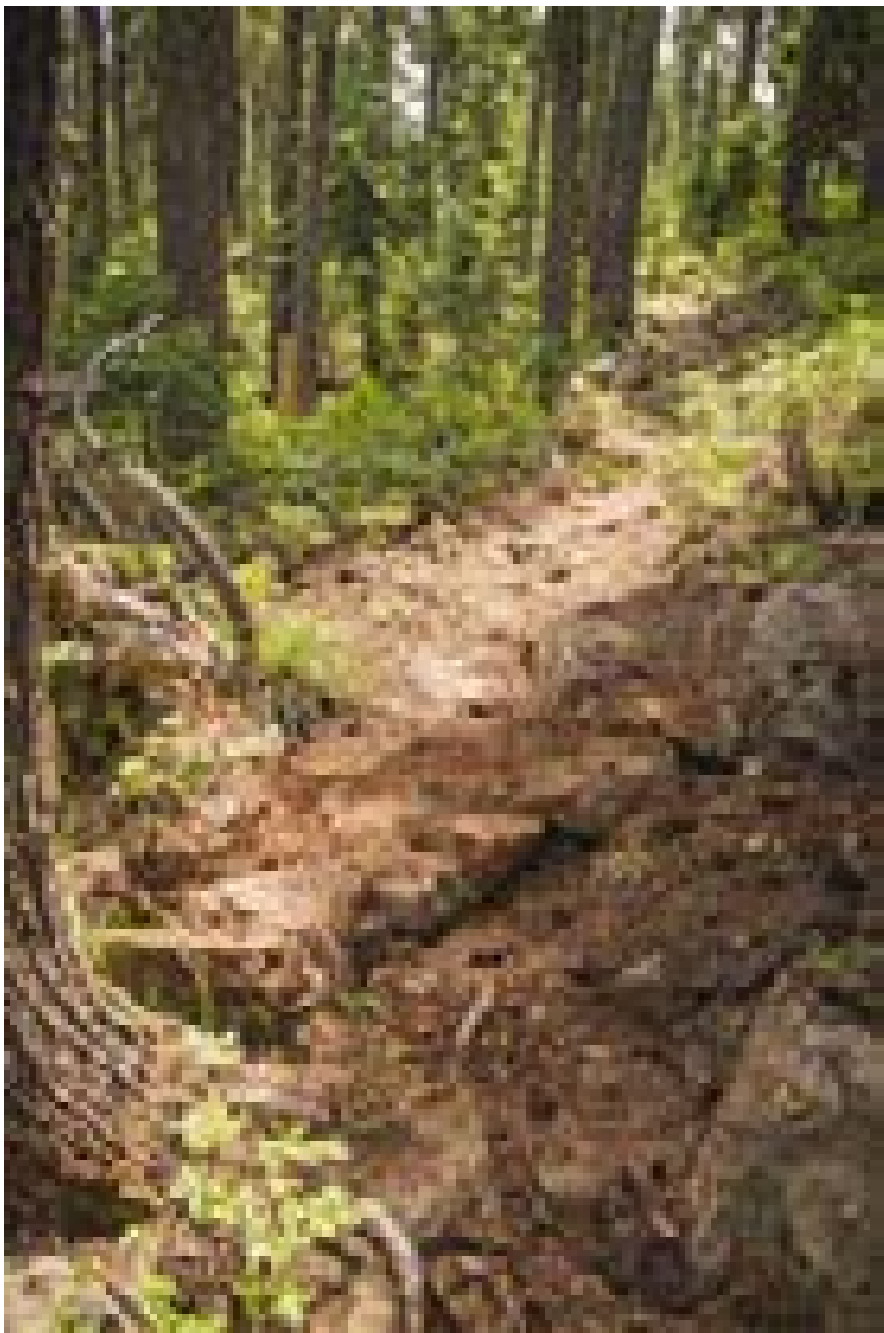
**DESIGN•BUILD•RIDE**



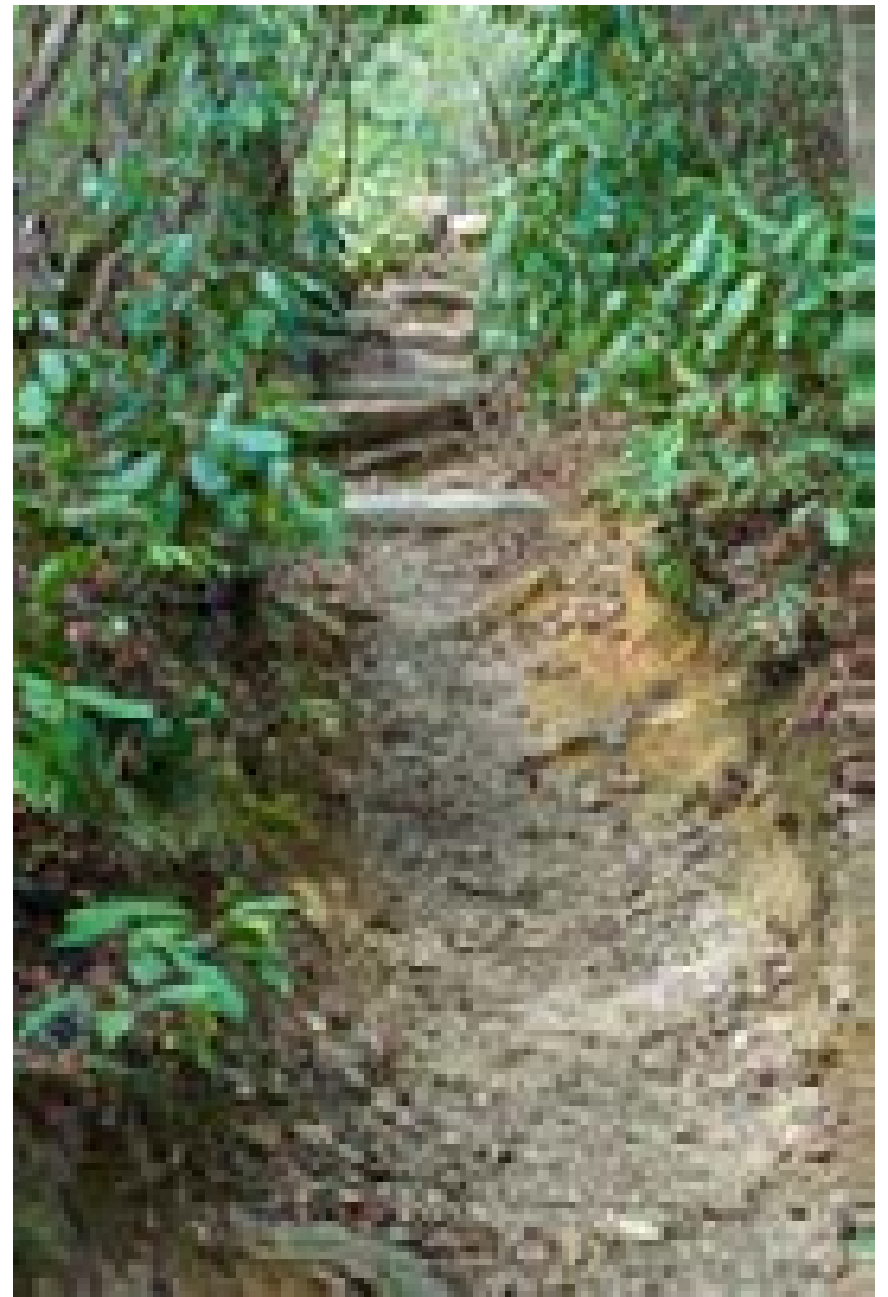
**Jason Stouder**  
Vice President



**Joel McCourt**  
Creative Director



**Trail Alignment on “Fall Line”**  
example of severe erosion due to unsustainable trail alignment.



### **Trail Alignment on “Fall Line”**

trail will continue to erode and cup even with water bars and short reroutes

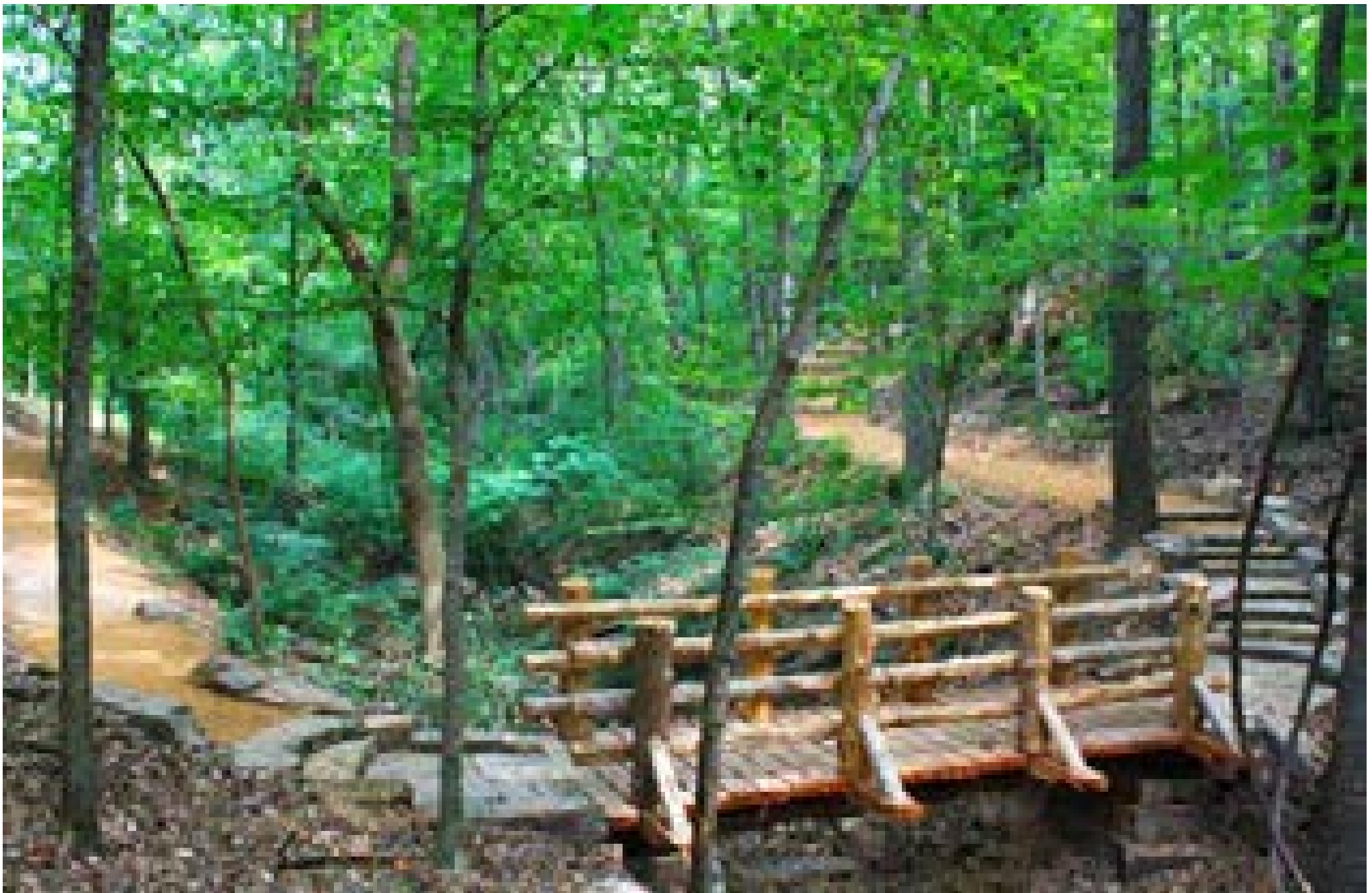


**Sustainable Trail Alignment**  
example of proper trail grade on side slope



### **Sustainable Trail Alignment**

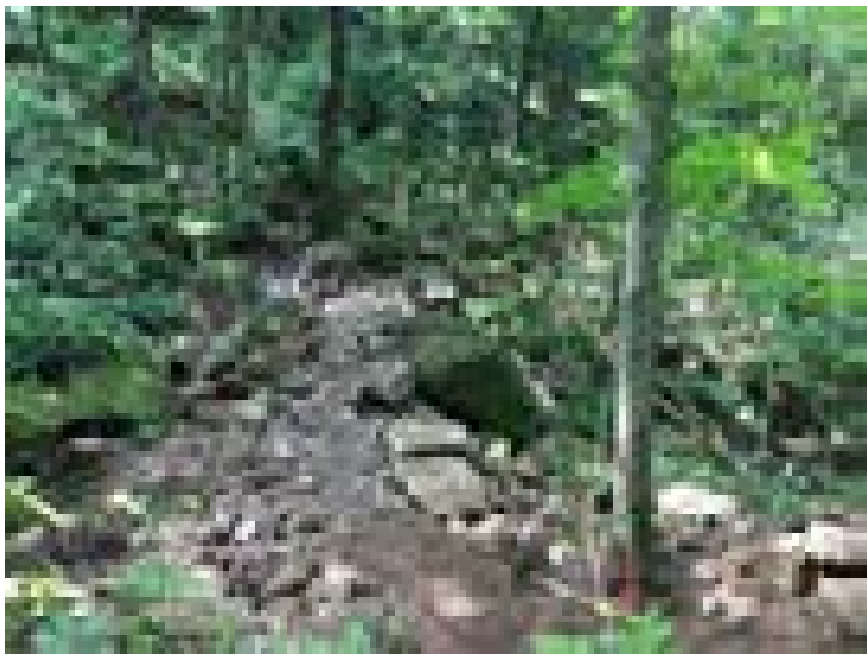
trail is build into the existing environment and natural features while maintaining grade



### **Multi-Use Trails**

example of a decomposed granite surface trail - appropriate for shallow grades and wide trail





### **Rock Armoring**

rock is used for interface between hard and soft surface trails, armoring berms and wet trail locations to minimize maintenance



**Exciting Program**



The Turkey Mountain Core



The Turkey Mountain Core



The Turkey Mountain Core



Precedent: Oak-Hickory Forest



The Turkey Mountain Core



Precedent: Woodland





The Turkey Mountain Core



Precedent: Oak Savanna



The Turkey Mountain Core



Precedent: Prairie



The Turkey Mountain Core



Precedent: Restored Trails



The Turkey Mountain Core



Looking South from Pepsi Lake







Northeast Access + Mooser Creek



Northeast Access + Mooser Creek



Precedent: Parking Lot



Northeast Access + Mooser Creek



Northeast Access + Mooser Creek



Precedent: Big Stairs



Northeast Access + Mooser Creek





Existing Shale Escarpment



Northeast Access + Mooser Creek



Precedent: Restored Creek Channel



Northeast Access + Mooser Creek



Precedent: Re-Meandered Creek



Northeast Access + Mooser Creek



Precedent: Regional Asphalt Trail



**Precedent: Boardwalks Along Regional Trail**





Northeast Access + Mooser Creek



Precedent: Family Picnicking Areas



Northeast Access + Mooser Creek



## Northeast Access + Mooser Creek



Pepsi Lake

Pepsi Bottling Plant

I-44

Looking Southwest from I-44 Bridge



Regional Path Connection

Existing Shale  
Escarpment

Northeast  
Access

Bridge Over  
Mooser Creek

North Access  
Along Rail

New Entrance  
Under Rail

New Parking Lot



Turkey Mountain

Rail Bridge Over Mooser Creek

Looking Southwest from W Skelly Drive



Regional Path Connection

Existing Shale  
Escarpment

Lowland Habitat

Re-Meandered  
Creek Bed

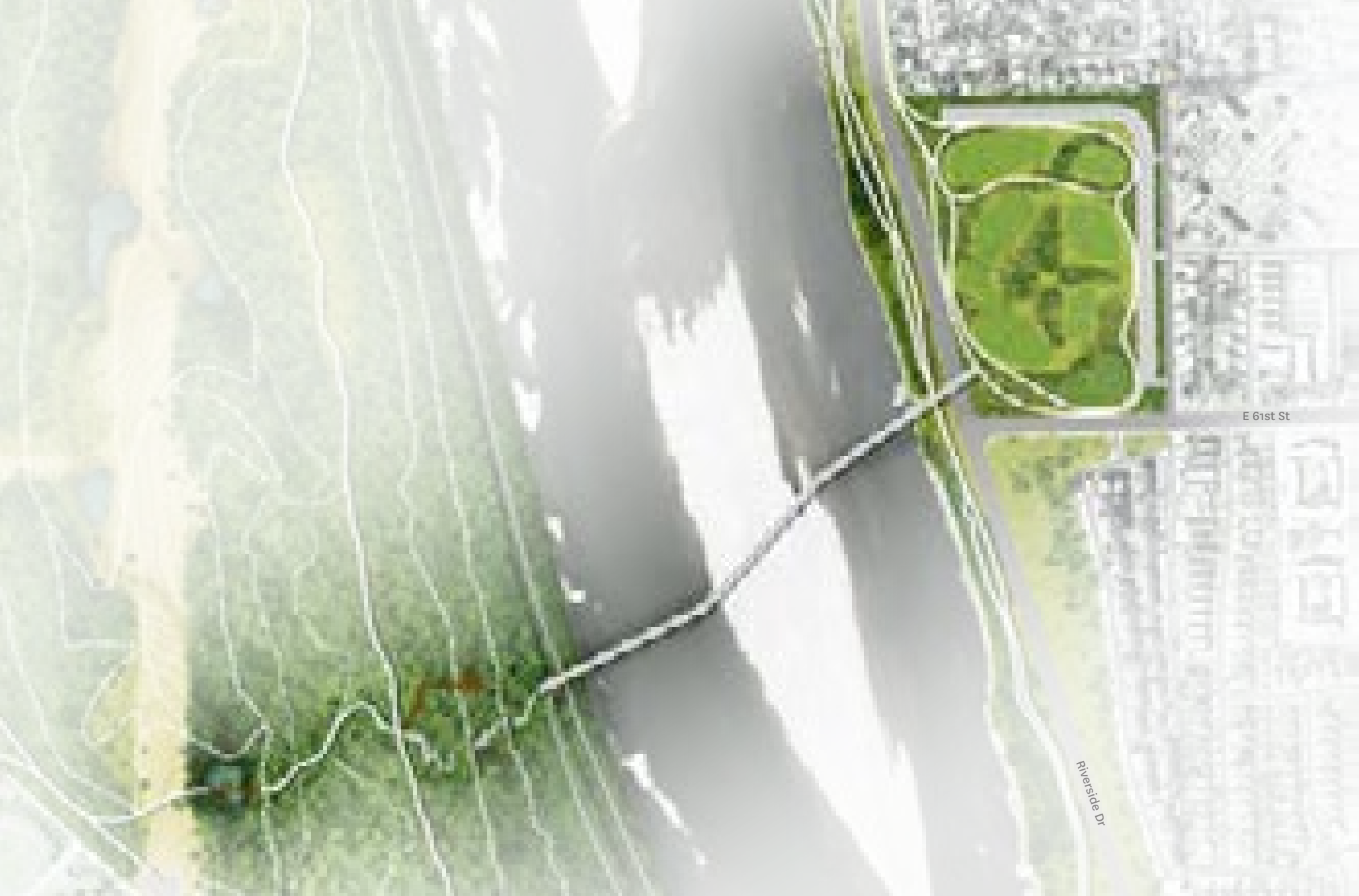
Bridge Over  
Mooser Creek

New Entrance  
Under Rail

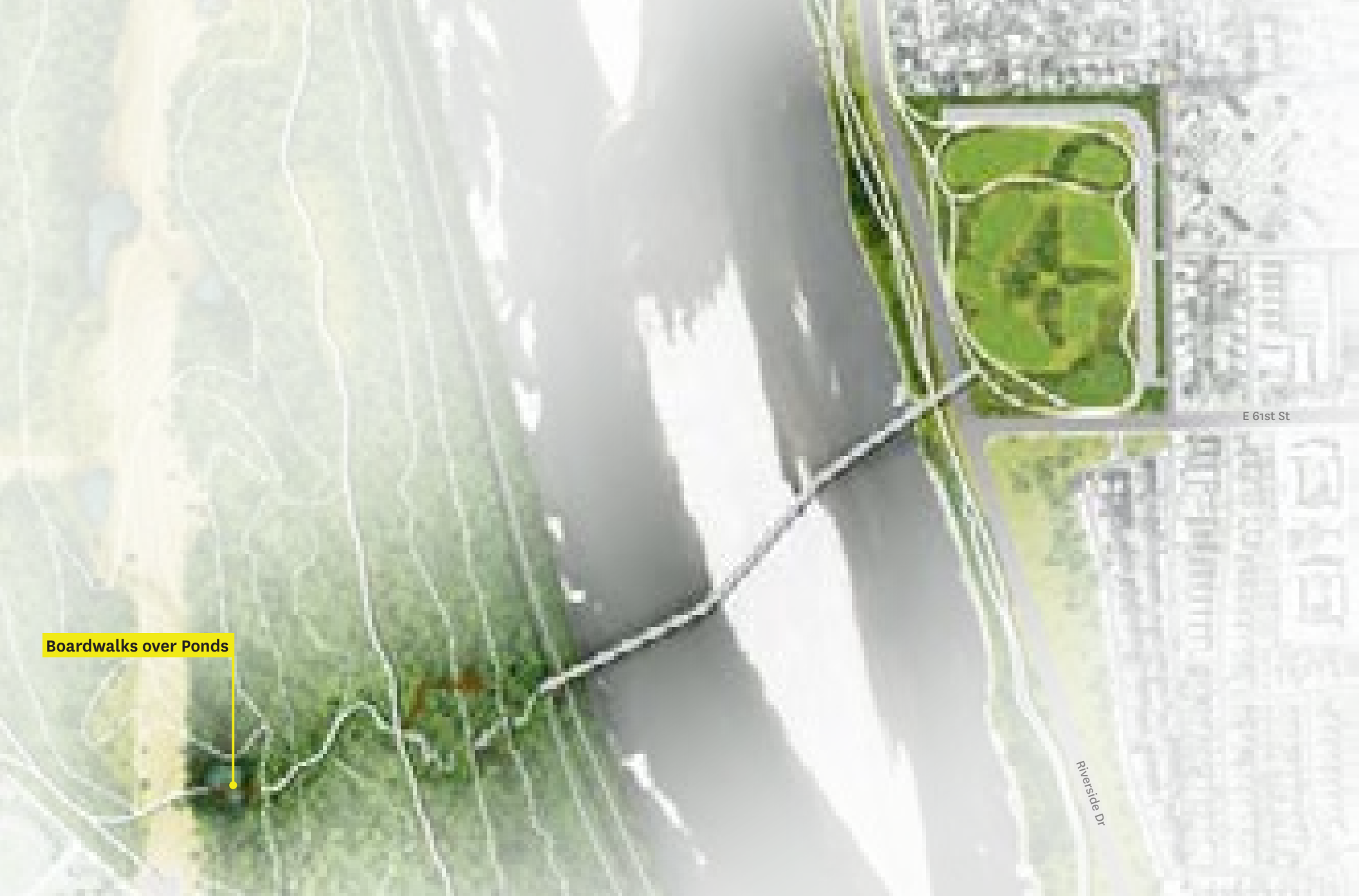




Boardwalk Overlook and Johnson Park



Boardwalk Overlook and Johnson Park



Boardwalk Overlook and Johnson Park



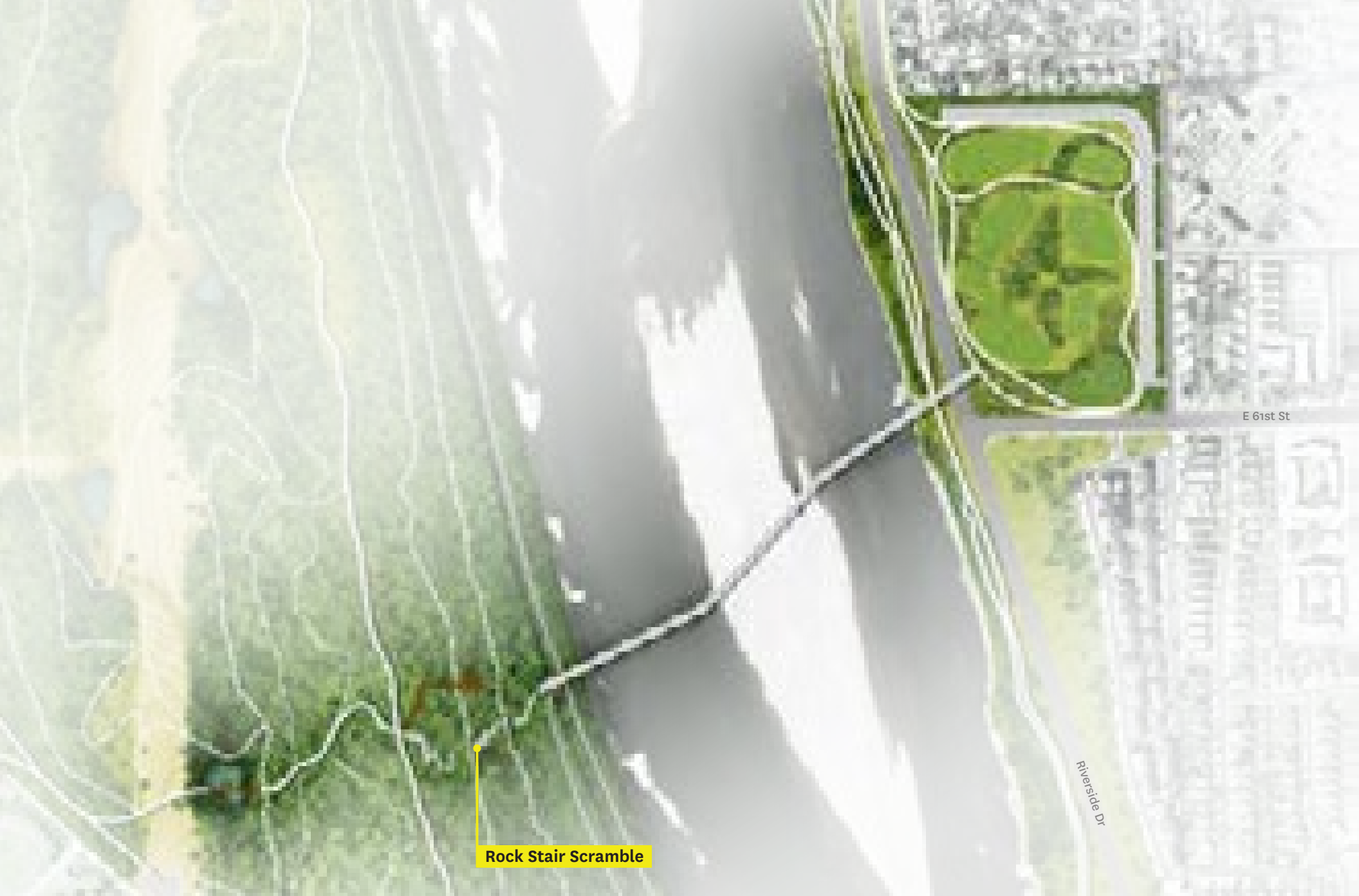
Precedent: Boardwalk



Boardwalk Overlook and Johnson Park



Precedent: Cliffside Overlook



Boardwalk Overlook and Johnson Park





Precedent: Rock Stair / Scramble





**Boardwalk Overlook and Johnson Park**



**Precedent: American River Bicycle Trail - Sacramento, CA**



Boardwalk Overlook and Johnson Park

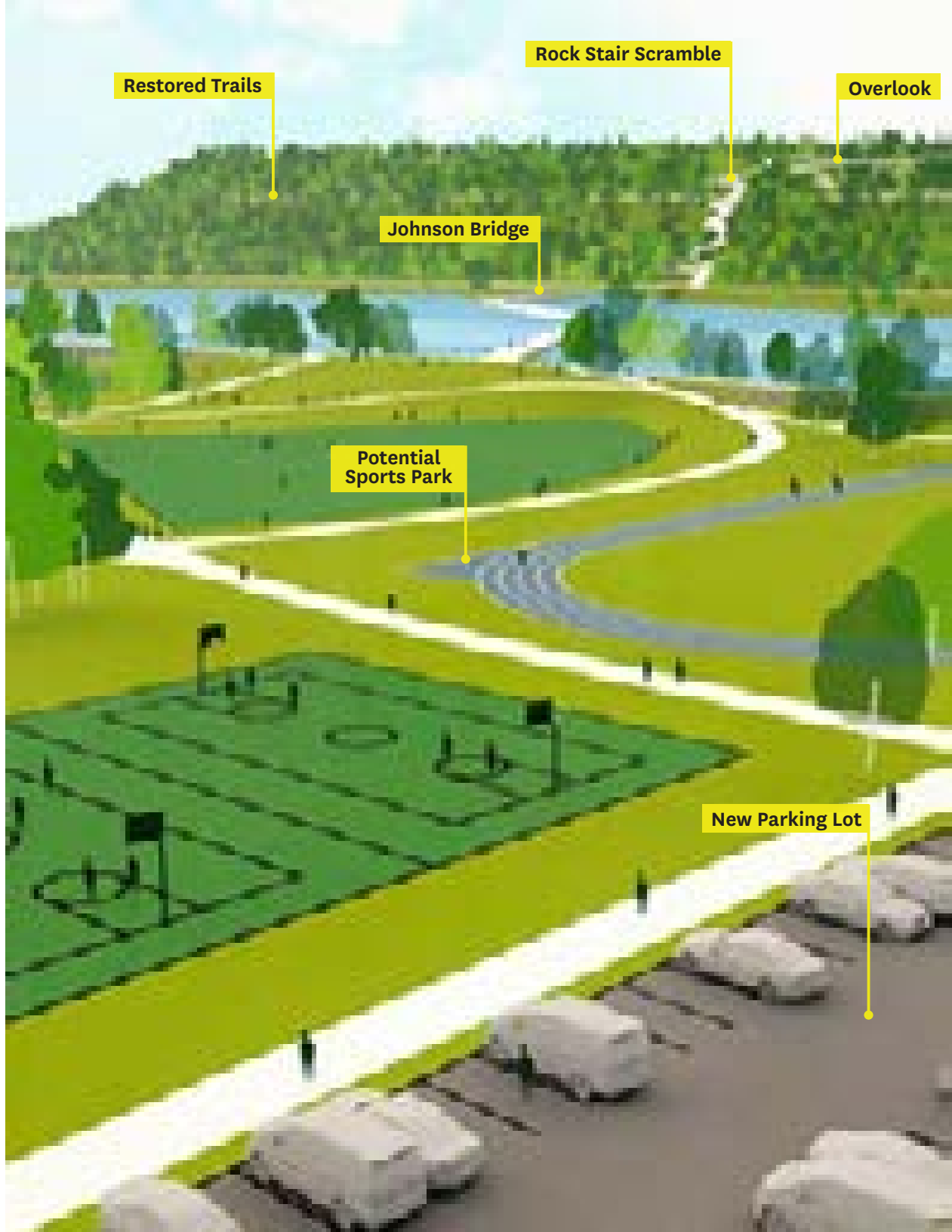
Turkey Mountain

Riverside Drive

Johnson Park

Looking West from Johnson Park





Restored Trails

Rock Stair Scramble

Overlook

Johnson Bridge

Potential  
Sports Park

New Parking Lot



Bike Park + Water Tank Trails



**Bike Park + Water Tank Trails**



**Bike Park + Water Tank Trails**





Precedent: Bike-Specific Trail



**Bike Park + Water Tank Trails**



Precedent: Downhill Trails



## Bike Park + Water Tank Trails



Precedent: Contour Flow Trails



**Bike Park + Water Tank Trails**



Precedent: “North Shore” or Ladder Trails



**Bike Park + Water Tank Trails**





Precedent: Skills Area



## Bike Park + Water Tank Trails



Precedent: Jumps Course



## Bike Park + Water Tank Trails



Precedent: Outdoor Velodrome



**Bike Park + Water Tank Trails**



Precedent: Spectator Pavilion



## Bike Park + Water Tank Trails





Peak of Turkey Mountain

Downtown Tulsa

Existing Asphalt Path

Looking North from the Red Trail

**Downhill Bike Trails**

**Spectator Pavilion**

**Existing Path**

**North Shore Trail**

**Contour Flow Trail**

**Jumps Park**





Bales Park



Bales Park



Bales Park



Bales Park



Bales Park



Precedent: Swimming Hole





Bales Park



Precedent: Tree Houses



Bales Park



Precedent: Archery Range



Bales Park



Precedent: Picnicking



Precedent: WPA-Era Pavilions in Mohawk Park



Bales Park





The Hinterlands



The Hinterlands



Precedent: Group Camping



## The Hinterlands



Precedent: Aerial Adventure



The Hinterlands



Precedent: Agility Course



## The Hinterlands





Precedent: Youth Equestrian Co-op



# The Hinterlands



Precedent: Maker Space / Trade School



The Hinterlands



Beginner Bike Trails at Lubell Park



## The Hinterlands



Looking East from Remington School



Picnic Pavilions

Bales Park Bridge

Event Space

Gathering Lawn

Treehouse Village

Bridge Over Creek

Group Camping

Bike Trails

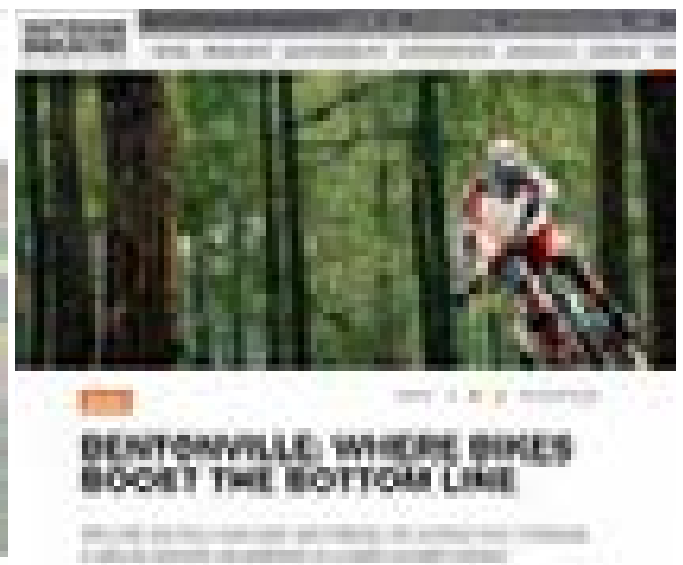
Aerial Adventure





## Turkey Mountain Has Potential to Make an Imprint on Tulsa's Identity

Taken together, the multiple elements that go into the Plan for Turkey Mountain (for instance, the creation of the longest downhill mountain bike trail in Oklahoma) can help increase the Wilderness Area's role as a destination for Tulsans as well as outside visitors.



## Restored Nature Can Stimulate Tulsa's Growth

A destination for nature recreation to draw outdoors enthusiasts to Tulsa and promote community health.

An aerial photograph of a mountainous region, likely Turkey Mountain, overlaid with a grid. The terrain is rugged with green vegetation and rocky outcrops. A road or path is visible on the right side, winding through the landscape. The grid lines are thin and light gray, providing a reference for the map's scale and orientation.

## Turkey Mountain Master Plan

A Plan to Protect and Preserve Turkey Mountain For Generations to Come.