

PARK CITY CONNECTIVITY

SR -224 WILDLIFE ASSESSMENT PHASE 1 REPORT

SEPTEMBER 30, 2025

PREPARED BY:

**ROCK
DESIGN
ASSOCIATES**

PREPARED FOR:





Photo by Terrie Brightman

PARK CITY CONNECTIVITY PROJECT

The SR-224 corridor in Park City, UT particularly between Mile Marker 7 and 9, has been identified as a high-priority area for wildlife due to frequent wildlife-vehicle collisions (WVC). With Park City traffic projected to increase, especially in anticipation of ongoing development and the 2034 Winter Olympics, there is an urgent need to develop feasible and effective mitigation strategies.

Save People Save Wildlife (SPSW), a registered 501(c)(3) founded in 2015 by concerned residents, emerged in response to the high number of wildlife-vehicle collisions along I-80, the gateway to Park City, UT. At that time, no wildlife crossings existed, and fencing along the corridor was damaged or missing, resulting in frequent wildlife deaths. Concerned that human lives were also at risk, SPSW began advocating for safety measures and fundraising for wildlife mitigation measures to protect both wildlife and motorists.

This framework provides a strategic foundation for pursuing a series of increasingly impactful initiatives, while guiding essential activities such as securing funding, obtaining regulatory approvals, and fostering strong public support for ecologically sensitive mitigation measures. These measures are designed to improve wildlife connectivity and safety, while aligning with community values and transportation objectives. Successful implementation should be informed by site-specific monitoring and targeted data collection, producing refined, species-specific insights that accurately reflect corridor conditions—moving beyond the limitations of prior reports that relied on aggregated collision records, roadkill data, and general traffic counts.

WORKSHOP OBJECTIVES

- Summarize previous studies and conditions associated with wildlife-vehicle interactions within the corridor, and region, to inform this current outreach and assessment.
- Evaluate recent, current, and planned initiatives within the region to understand potential impacts on wildlife safety.
- Assess the interface of wildlife and vehicular traffic along the SR-224 corridor.
- Explore design solutions that balance mobility, aesthetics, and ecological needs, including awareness, signage, fencing, underpasses, and overpasses.
- Identify constraints such as land ownership, topography, hydrology, and regulatory barriers that may influence project feasibility.
- Collect site-specific information to support the need for fundraising, public engagement, and agency approval.
- Identify wildlife mitigation methods suitable for implementation within the corridor and summarize potential regulatory, social, or environmental barriers.



Photo by Terrie Brightman

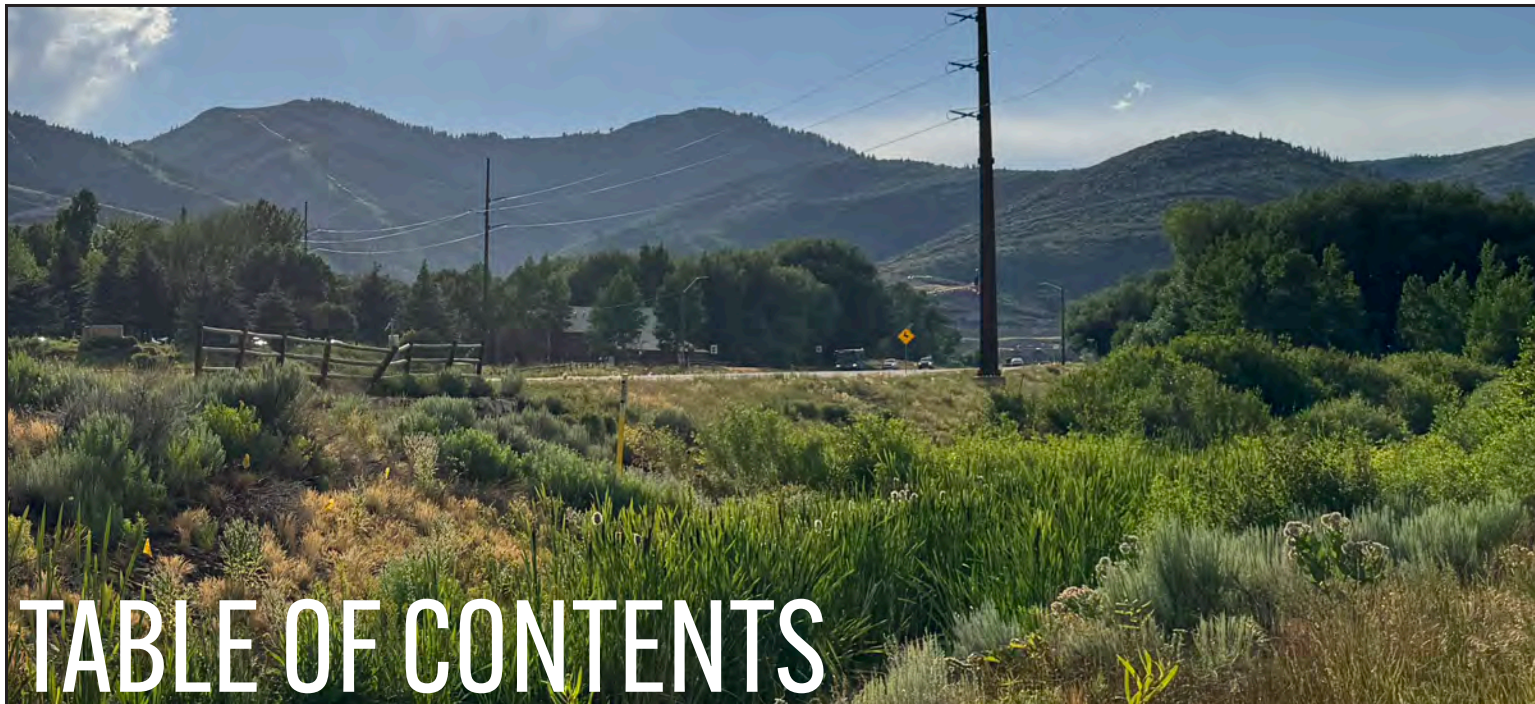


TABLE OF CONTENTS

02	DESIGN TEAM
03	REGIONAL PARTNERS & WORKSHOP PARTICIPANTS
05	SITE HISTORY
25	EXISTING CONDITIONS
43	CONSTRAINTS & OPPORTUNITIES
51	VEGETATION
63	TARGET WILDLIFE SPECIES
79	MITIGATION METHODS & CROSSING TYPOLOGIES
115	REGIONAL MITIGATION PRECEDENTS
129	PARTICIPANT INPUT & OBSERVATIONS
139	PRELIMINARY FINDINGS & RECOMMENDATIONS



A site visit was made on July 10, 2025 to observe conditions along the corridor. Attendees included, from left to right: Makala Gibson, Jennifer Spina, Eva De Laurentiis, Tony Clevenger (rear), Ryan Woodward, Craig Taylor, Robert Rock, Terrie Brightman, Erin Ferguson, Mari Mennel-Bell, Tom Farkas, Lorelei Combs.



DESIGN TEAM



ROBERT ROCK
Rock Design Associates



TERRIE BRIGHTMAN
Rock Design Associates



MAKALA GIBSON
Rock Design Associates



TONY CLEVINGER
Biodiversity Specialist



CRAIG TAYLOR
LimnoTech



RYAN WOODWARD
COWI



Photo by Makala Gibson

A large, empty rectangular box with a black border, occupying the lower two-thirds of the page. This area is typically used for a student to draw a picture related to the text or caption above it.

REGIONAL PARTNERS & WORKSHOP PARTICIPANTS



SAVE PEOPLE SAVE WILDLIFE



UTAH DEPARTMENT OF TRANSPORTATION



UTAH DIVISION OF WILDLIFE RESOURCES



SUMMIT COUNTY COUNCIL



PARK CITY MUNICIPAL CORPORATION



HIGH VALLEY TRANSIT

PARTICIPANTS

NAME	TITLE	ORGANIZATION
Jeremy Gilbert	<i>Design Manager</i>	UDOT
Caroline Rodriguez	<i>Executive Director</i>	High Valley Transit
Makeda Hanson	<i>Wildlife Migration Initiative Coordinator</i>	UDWR
Sarah Kapel	<i>Impact Analysis Biologist</i>	UDWR
Daniel Olson, PHD	<i>Regional Habitat Manager</i>	UDWR
Josee Seamons	<i>Preservation Project Manager</i>	UDWR Central Region
Eva De Laurentiis	<i>Deputy Director, Regional Transportation Planning</i>	Summit County
Alex Roy	<i>Assistant Transportation Planning Manager</i>	Park City Municipal Corp
Sydney Maves	<i>Senior Transportation Planner</i>	Park City Municipal Corp
Erin Ferguson	<i>President</i>	SPSW
Lorelei Combs	<i>Vice President</i>	SPSW
Jennifer Spina	<i>Board Member</i>	SPSW
Mari Mennel-Bell	<i>Board Member</i>	SPSW
Tom Farkas	<i>Treasurer</i>	SPSW
Robert Rock	<i>President & CEO</i>	Rock Design Associates
Terrie Brightman	<i>Senior Associate</i>	Rock Design Associates
Makala Glibson	<i>Junior Landscape Designer</i>	Rock Design Associates
Tony Clevenger	<i>Wildlife Research Scientist</i>	Independent Consultant
Ryan Woodward	<i>Associate Technical Director</i>	COWI
Craig Taylor	<i>Engineer</i>	LimnoTech



SITE HISTORY

The stretch of SR-224 within the study area is often seen as the gateway to modern-day Park City, set between Quarry Mountain and the landmark McPolin Barn as it winds through the Snyderville Basin. Long before miners arrived in the late 1800s, the basin was a thriving landscape of meadows, forests, and creeks that supported abundant wildlife. These natural resources also drew Indigenous peoples and trappers, who found sustenance and passage in the valley well before the era of mining and settlement.

SITE HISTORY

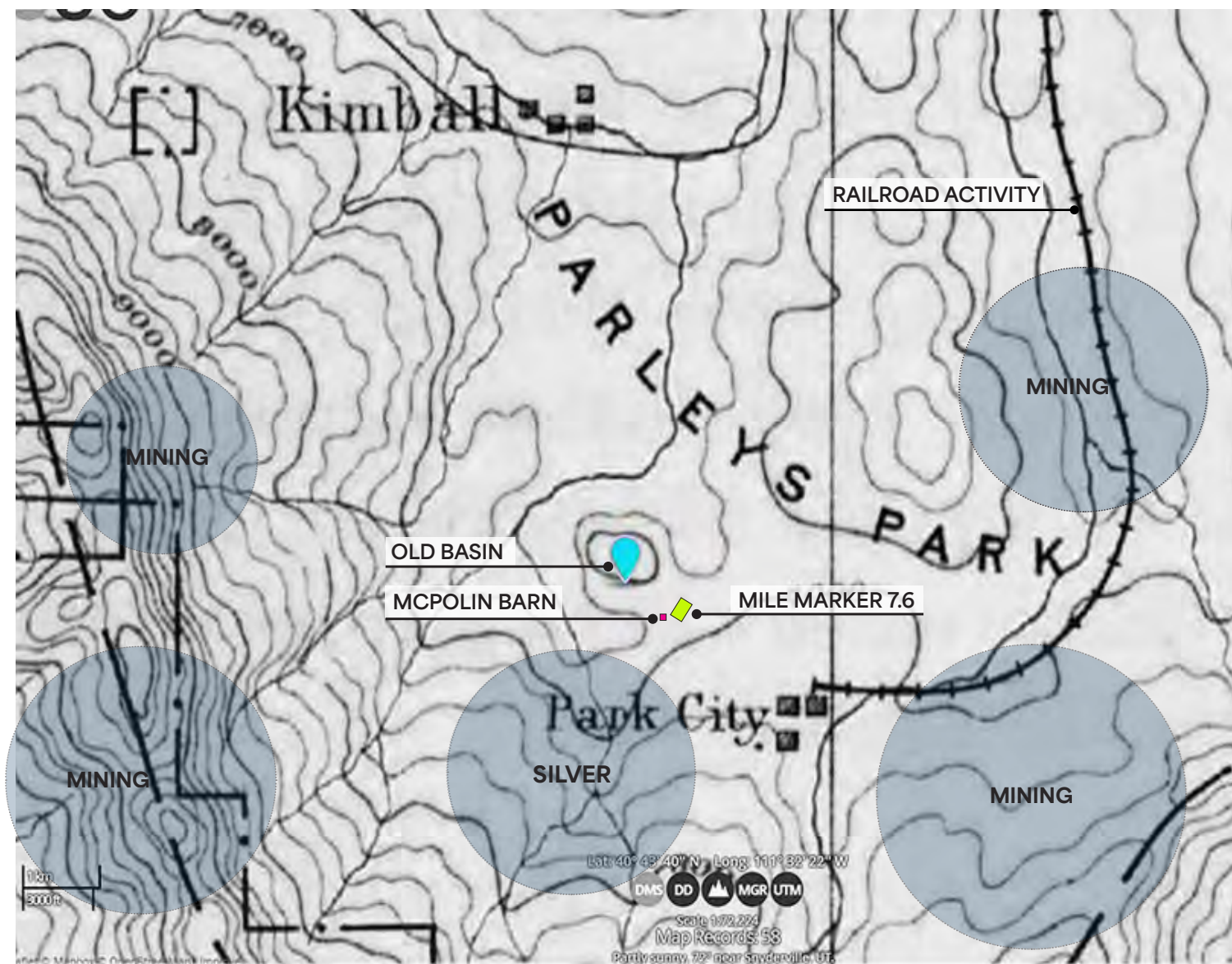


Source: Base map - USGS. Graphic Overlay - Rock Design Associates

Pre-1850s Parleys Park: A Vital Mountain Basin Linking Ecosystems in the Wasatch Range prior to the arrival of settlers.

- Parleys Park, UT located within the Wasatch Range, serves as an important wildlife corridor connecting higher mountain ecosystems with lower valley environments.
- Its proximity to urban areas like Salt Lake City, UT enhances its ecological significance and provides a unique habitat for various species.
- The park features basin and range topography that naturally collects water, supporting a rich diversity of vegetation and creating ideal conditions for wildlife to thrive.
- Parleys Creek flows through the basin, conveying mountain runoff and fostering vibrant riparian ecosystems that attract animals such as deer, elk, moose, and smaller mammals.
- With abundant vegetation and water sources, Parleys Park is a crucial habitat, offering food and shelter for a wide variety of wildlife.

SITE HISTORY



Source: Base map - USGS. Graphic Overlay - Rock Design Associates

1880s Silver Boom: Parleys Park Transforms into Snyderville Basin Amid Mining Rush



Ontario Mine

Source: Park City Museum



Silver King Mine

Source: Park City Museum

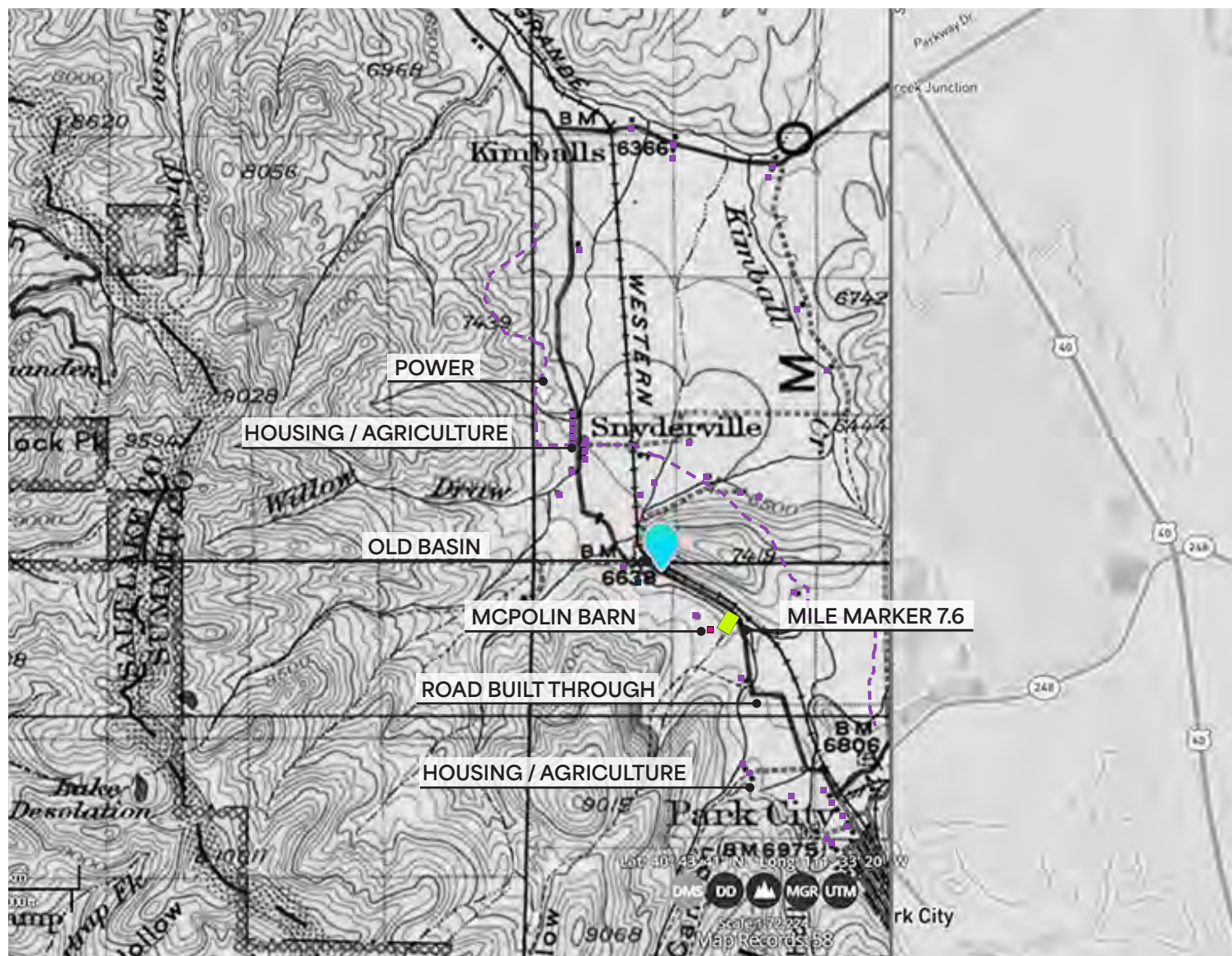


Utah Eastern Railroad

Source: Park City Museum

- The Snyderville Basin, formerly known as Parleys Park, UT underwent significant transformation due to the silver boom that began in the mid-1860s.
- Infrastructure improvements, such as the Utah Eastern and Echo & Park City railroads, facilitated the transport of ore and coal, connecting the region to larger markets.
- As mining operations expanded, the landscape shifted from natural grazing lands to urban development, including roads, railroads, and residential areas. This transformation significantly altered the ecological character of the basin.

SITE HISTORY



Source: Base map - USGS. Graphic Overlay - Rock Design Associates

1885-1930s Agricultural Shift: New Roads Connect Communities but Further Disrupt Natural Ecosystems

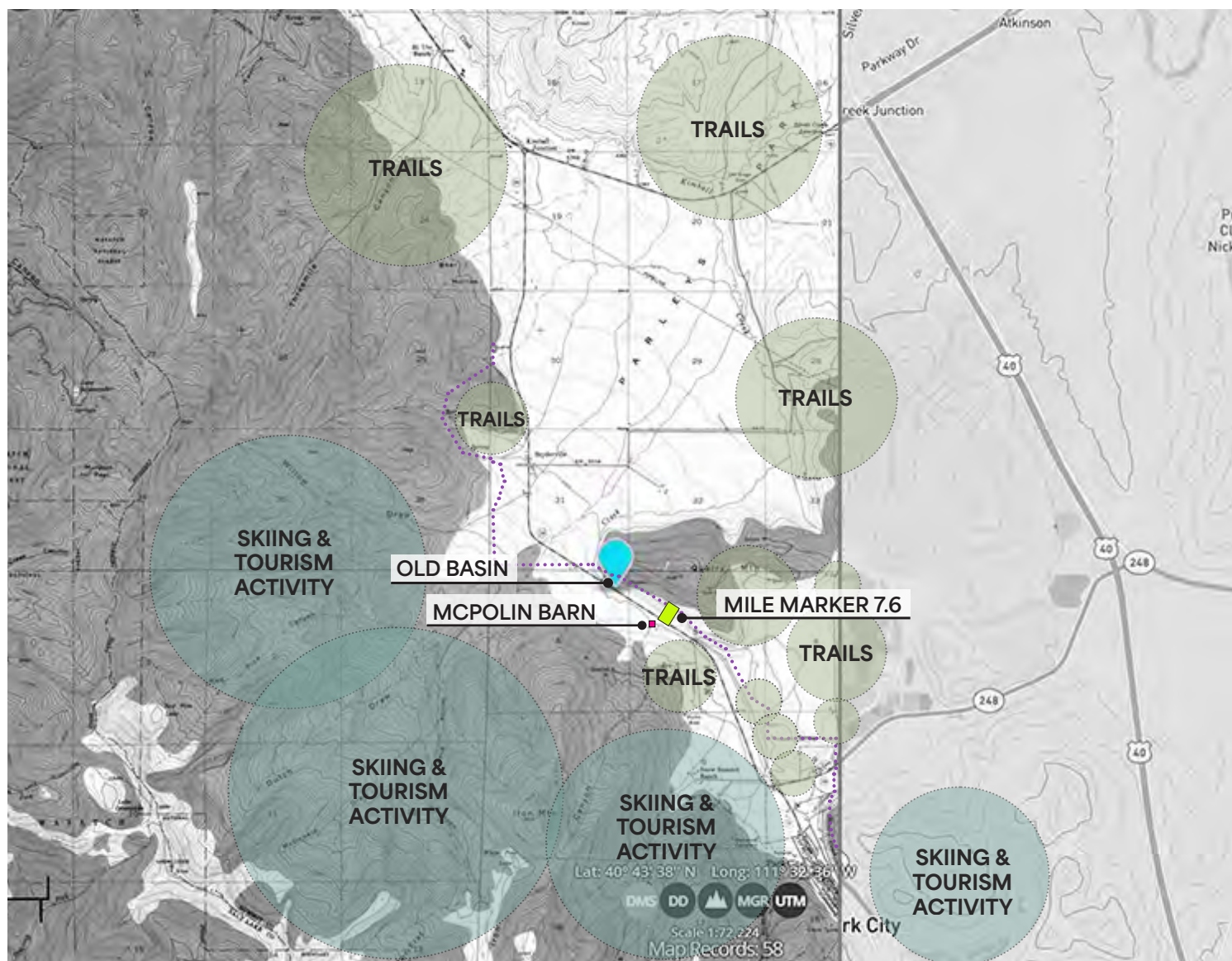


McPolin Barn, Park City, Utah, circa 1921.

Source: Park City Museum

- In the 1920s, the construction of SR-224 (then a simple road) began as a critical route connecting Park City, UT to surrounding areas.
- It facilitated easier access for transportation but also contributed to disrupting wildlife habitats and natural ecosystems, which had already been heavily impacted by mining and railroad construction.
- The McPolin Barn, built in 1921 along SR-224, represents the shift toward agricultural use in some areas as mining declined or became less profitable.

SITE HISTORY



Source: Base map - USGS. Graphic Overlay - Rock Design Associates

1930s-1960s: A Community in Transition – Declining Mining Gave Way to Tourism, Transforming Park City’s Economy, Access, and Identity

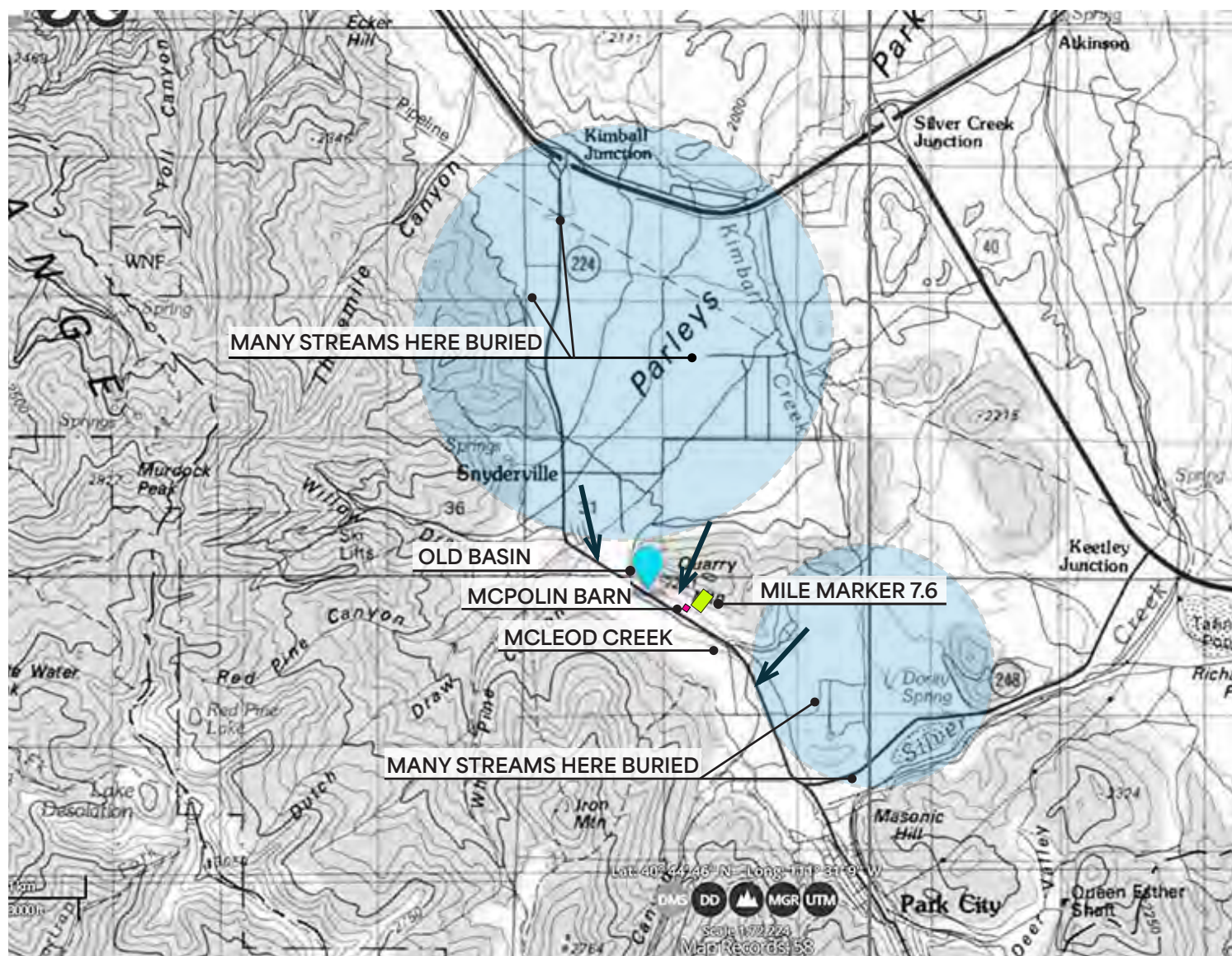


Source: Treasure Mountain Inn

Treasure Mountain Resort (now Park City Mountain Resort)

- Between 1928 and 1958, Park City and Summit County, UT experienced significant changes as silver mining declined, leading to job losses and a population decrease.
- The local economy shifted toward tourism, with Park City developing as a destination for outdoor recreation, particularly skiing and hiking.
- Infrastructure improvements, including the construction of SR-224 (Park City Highway) and the extension of the Rio Grande Western Railroad, increased accessibility for visitors and residents.
- The 1940s and 1960s saw the establishment of ski resorts, such as the Park City ski area in 1963, and the creation of parks and trails to showcase the region's natural beauty.

SITE HISTORY

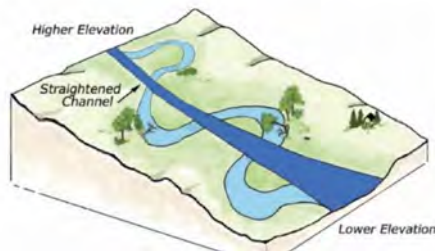


Source: Base map - USGS. Graphic Overlay - Rock Design Associates

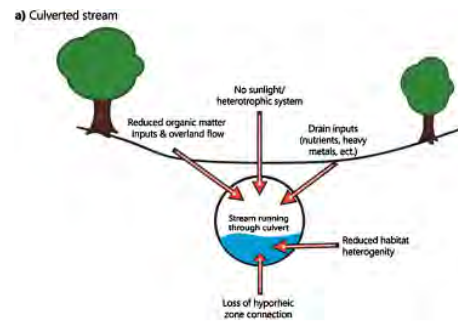
1960s-1980s: Waterways Reworked – Urban Growth and Ski Industry Expansion Led to the Burial and Diversion of Park City’s Natural Streams

1960'S - 1980'S | Channelization and Stream Modifications

- The primary streams along SR-224 in Park City, Utah, are McLeod Creek and, to a lesser extent, Silver Creek.
- These waterways were significantly altered during the 1960s and 1970s to accommodate road expansions and urban development related to the growing ski resort industry.
- McLeod Creek underwent major modifications, with sections being buried or redirected for infrastructure and housing projects.
- Recent restoration efforts have aimed to revive portions of the streams to mitigate ecological damage from these changes.
- Specific alterations include:
 - Channelization
 - Culvert Installations
 - Diversions



Channelization



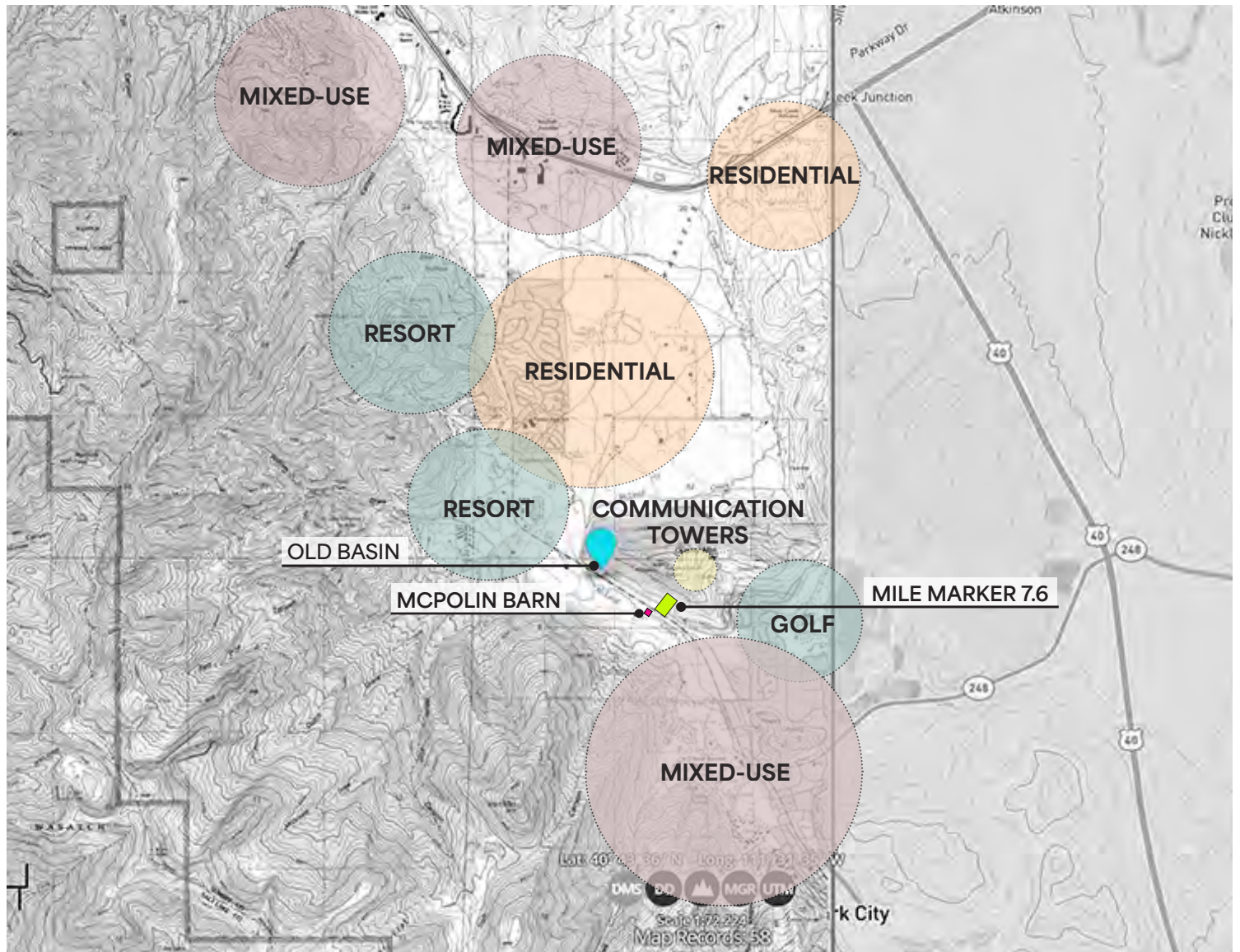
Burial in Culverts



Diversion

Source: Diagrams - EPA, US Dept of Energy

SITE HISTORY



Source: Base map - USGS. Graphic Overlay - Rock Design Associates

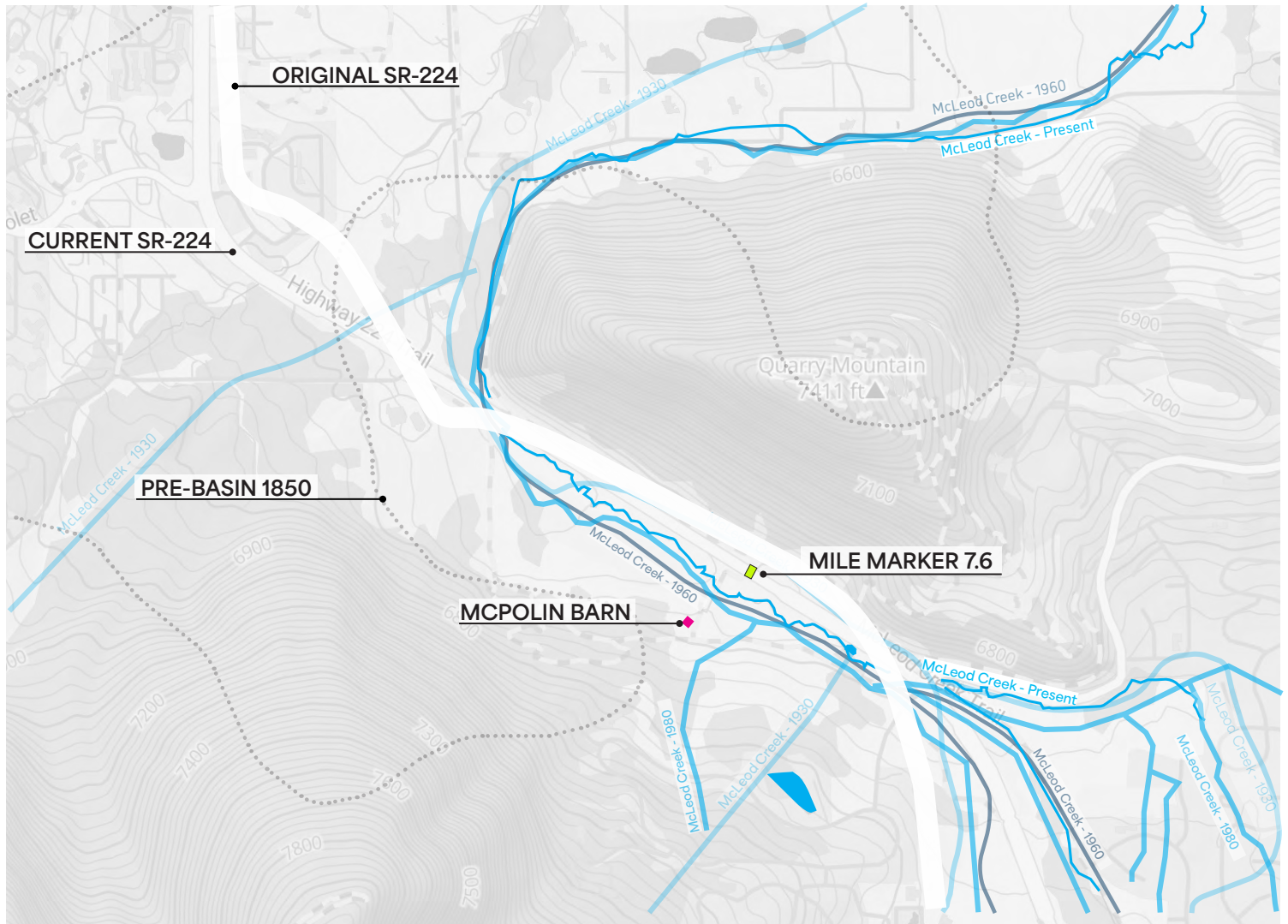
1980s-2000s: Suburban Expansion – As Tourism Boomed, Park City Experienced Rapid Growth in Housing, Infrastructure, and Year-Round Residency



Kimball Junction

- No working mines remain in the region as the shift toward recreation and tourism grows with the opening of the Deer Valley Resort, the Kimball Art Center, and the start of film and art festivals - including the Sundance Film Festival .
- Park City purchases the McPolin Farm from the Osguthorpe family. It is later added to the National Register of Historic Places.
- Salt Lake City is awarded the 2002 Winter Olympics in 1995. Park City facilities host a significant number of the events including slalom, luge, bobsled, ski jump, and mogul competitions.

SITE HISTORY



Source: Base map - USGS. Graphic Overlay - Rock Design Associates

1850s-Present: McLeod Creek Transformed – Mining and Development Severely Disrupted the Creek's Ecosystem, Sparking Ongoing Efforts to Restore Habitat and Water Quality

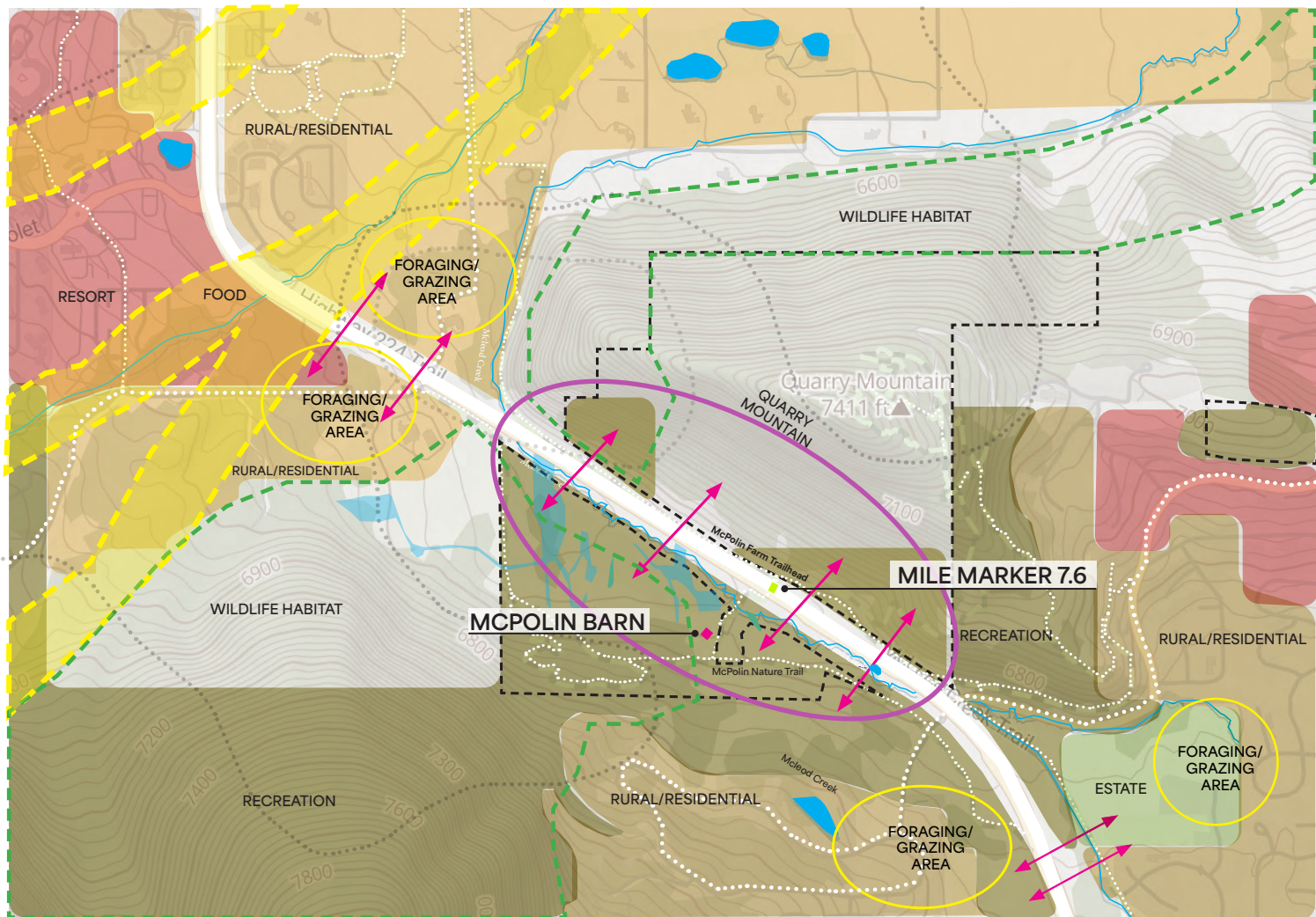


McLeod Creek

Photo by Makala Gibson

- The effects of the early mining boom remain the most significant alterations in the creek's history, permanently changing its course and ecosystem.
- Efforts to restore McLeod Creek have taken place in recent decades, aiming to address the historical impacts of mining and urbanization. These restoration projects focus on improving water quality and stabilizing banks.

SITE HISTORY



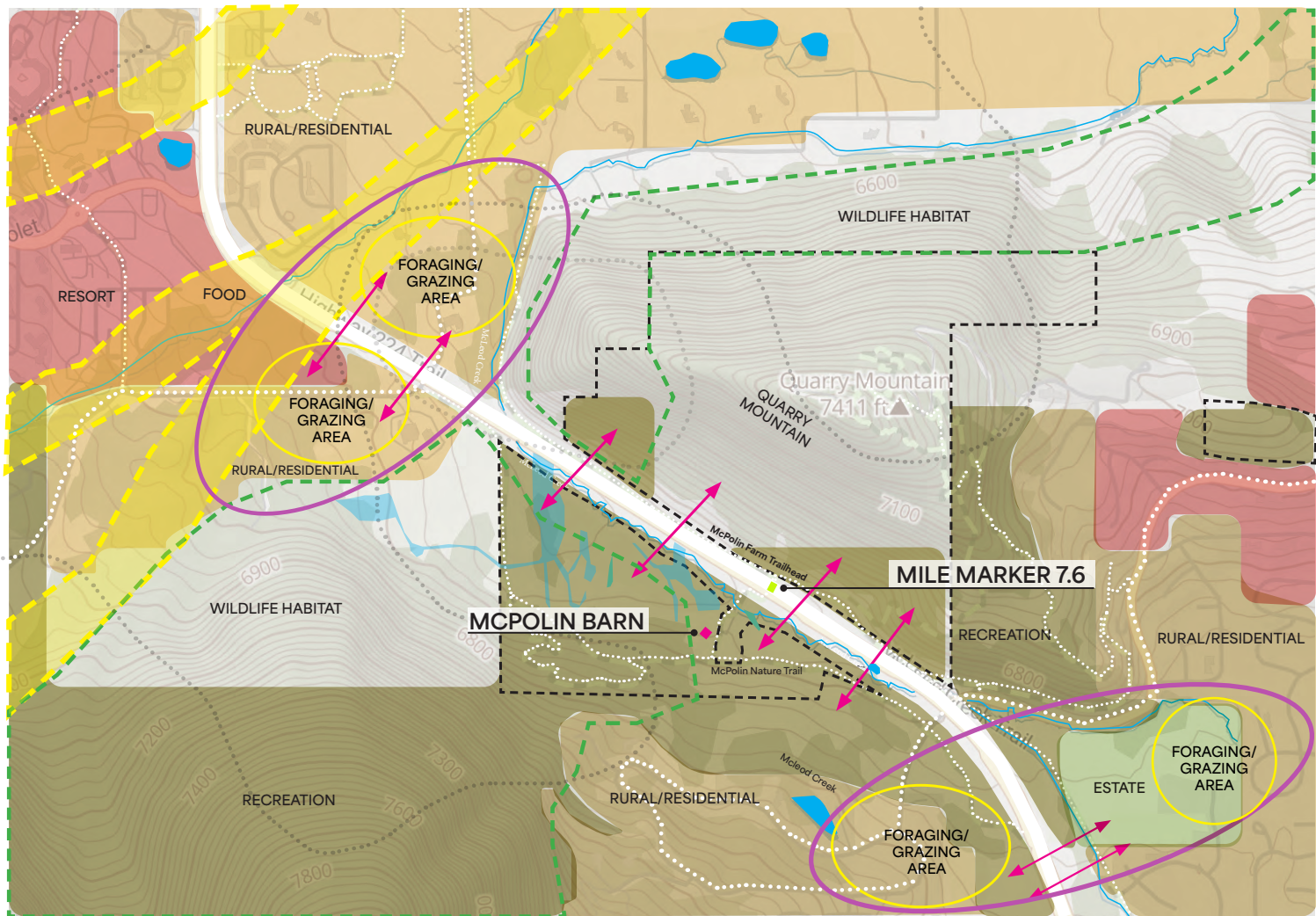
Source: Base map - ArcGis. Graphic Overlay - Rock Design Associates

Centralized Habitat Fragmentation: SR-224 Cuts Through Vital Wildlife Corridors, Forcing Animals Into Dangerous Crossings and Disrupting Ecosystem Connectivity

- KEY**
- WILDLIFE ROUTES
 - RURAL / RESIDENTIAL
 - RECREATION / TRAILS
 - WATER
 - ESTATE
 - RESORT
 - RIPARIAN AREAS
 - CONSERVATION AREA

- SR-224 disrupts critical resources—water, food, and shelter—funneling wildlife directly onto the road. The presence of this highway fragments the natural landscape, cutting through habitats that once provided a seamless resource for wildlife.
- As animals are drawn to isolated patches on either side, the road becomes a hazardous barrier that limits their movement.
- The road not only separates ecosystems but also isolates wildlife populations by breaking up their natural range. Animals attempting to navigate between fragmented habitats are met with the constant risk of death in wildlife vehicle collisions.

SITE HISTORY



Source: Base map - ArcGis. Graphic Overlay - Rock Design Associates

Linear Habitat Fragmentation: Roads with Intersections Offer Crossing Points but Disrupt Wildlife Movement and Increase Collision Risks

- KEY**
- WILDLIFE ROUTES
 - RURAL / RESIDENTIAL
 - RECREATION / TRAILS
 - WATER
 - ESTATE
 - RESORT
 - RIPARIAN AREAS
 - CONSERVATION AREA

- In this scenario, the road includes multiple intersections that serve a dual role in the landscape. While they create significant barriers by fragmenting continuous habitats, these junctions can also act as focal points where wildlife attempt to cross.
- The concentration of traffic and human activity at these intersections, however, poses serious challenges to crossing wildlife, such as heightening the likelihood of collision.
- Animals are inclined to cross at these locations, but the proximity of the road increases the risk of accidents and disrupts their natural movement patterns.

EXISTING CONDITIONS

Between mile markers 7 and 9, SR-224 features curves at each end of a straightaway that parallels McLeod Creek at the base of Quarry Mountain before extending across floodplain and agricultural lands toward Iron Mountain. This corridor serves both people and wildlife: commuters and visitors use it as a main route into Park City, while elk, moose, deer, and other species continue to traverse the area regardless of municipal or property boundaries. Assessing existing conditions requires attention to these overlapping needs and the challenges where they intersect.



EXISTING CONDITIONS



Corridor Site Bird's Eye

Source: Base map - GoogleEarth Graphic Overlay - Rock Design Associates

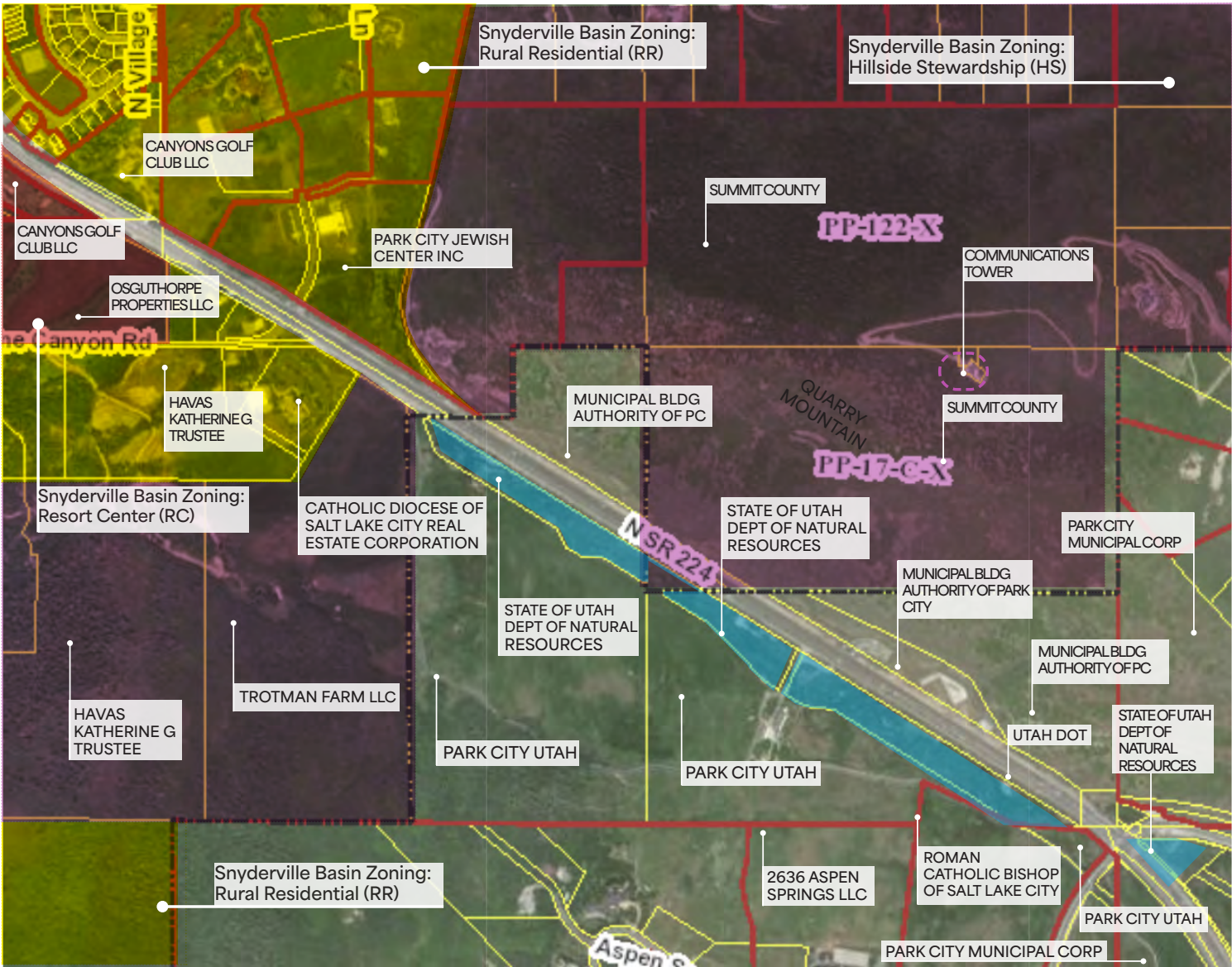


Corridor Site Aerial

Source: Base map - GoogleEarth Graphic Overlay - Rock Design Associates

EXISTING CONDITIONS

ADJACENT PROPERTY | Parcel Map



Site Ownership & Zoning

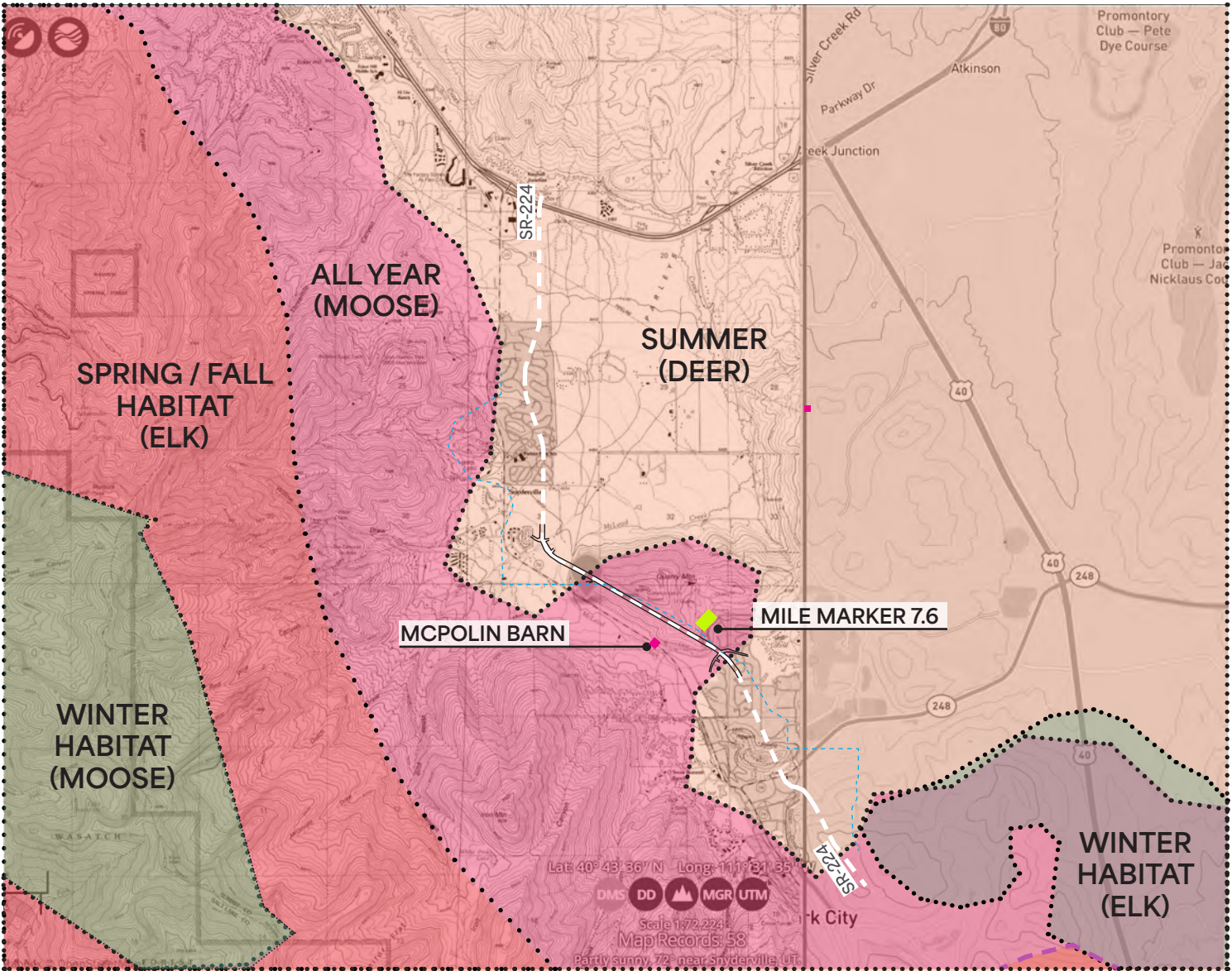
Source: Base map - GIS - Graphic Overlay - Rock Design Associates

KEY

- RURAL RESIDENTIAL (RR)
- HILLSIDE STEWARDSHIP (HS)
- RESORT CENTER (RC)
- NATURAL RESOURCES (NR)

EXISTING CONDITIONS

A large empty rectangular area for drawing or writing, framed by a black border. A thick pink horizontal line is positioned near the top, just below the 'EXISTING CONDITIONS' header.



Wildlife Habitats near SR-224

Source: Base map - USGS - Graphic Overlay - Rock Design Associates

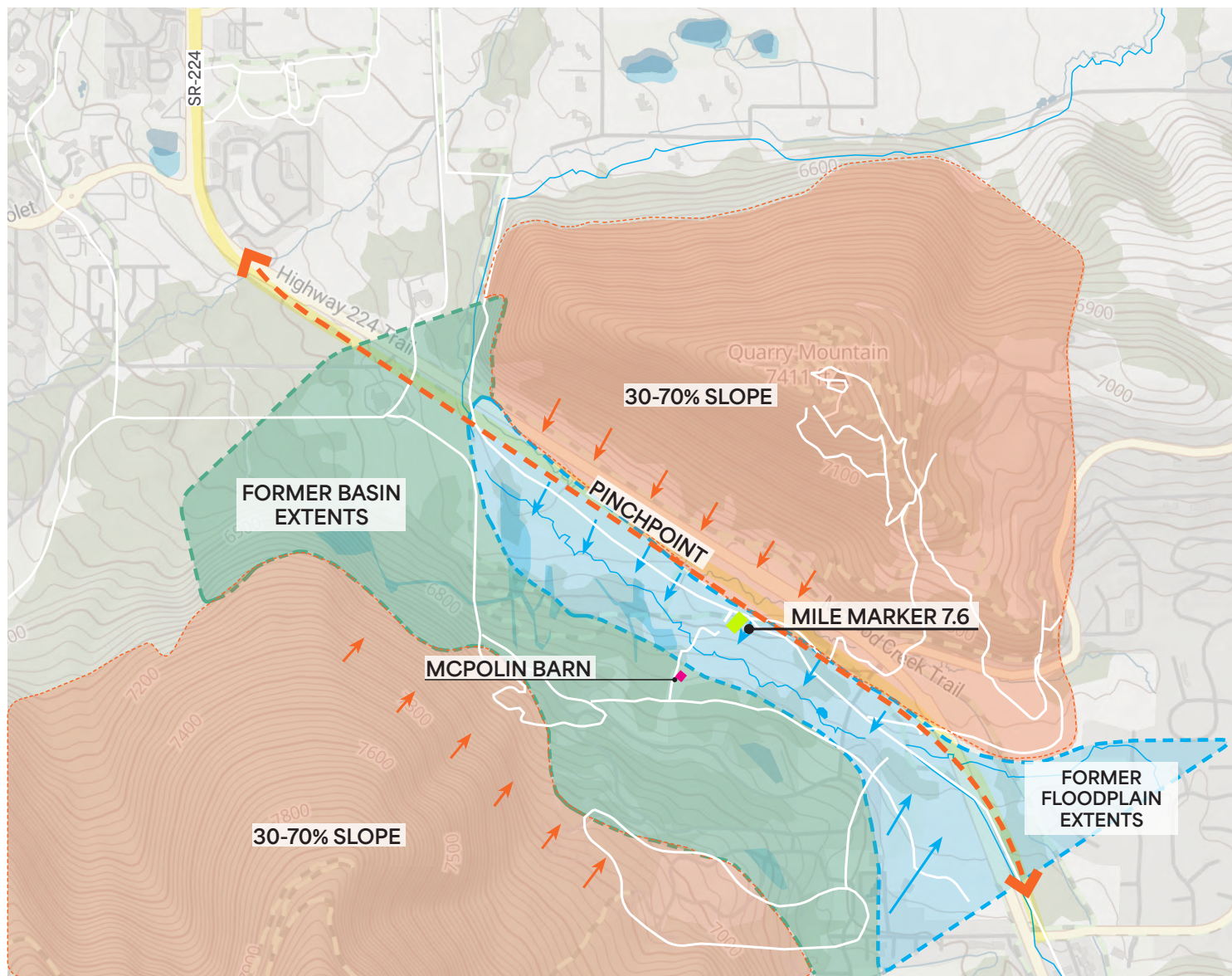
KEY

- WINTER HABITAT (MOOSE)
- SPRING / FALL HABITAT (ELK)
- ALL YEAR (MOOSE)
- SUMMER (DEER)
- WINTER HABITAT (ELK)

EXISTING CONDITIONS

A large empty rectangular area for drawing or writing, framed by a black border. A thick red horizontal line is positioned near the top, just below the 'EXISTING CONDITIONS' header.

WATERSHED | McLeod Creek



Wildlife Habitats near SR-224

Source: Base map - USGS - Graphic Overlay - Rock Design Associates

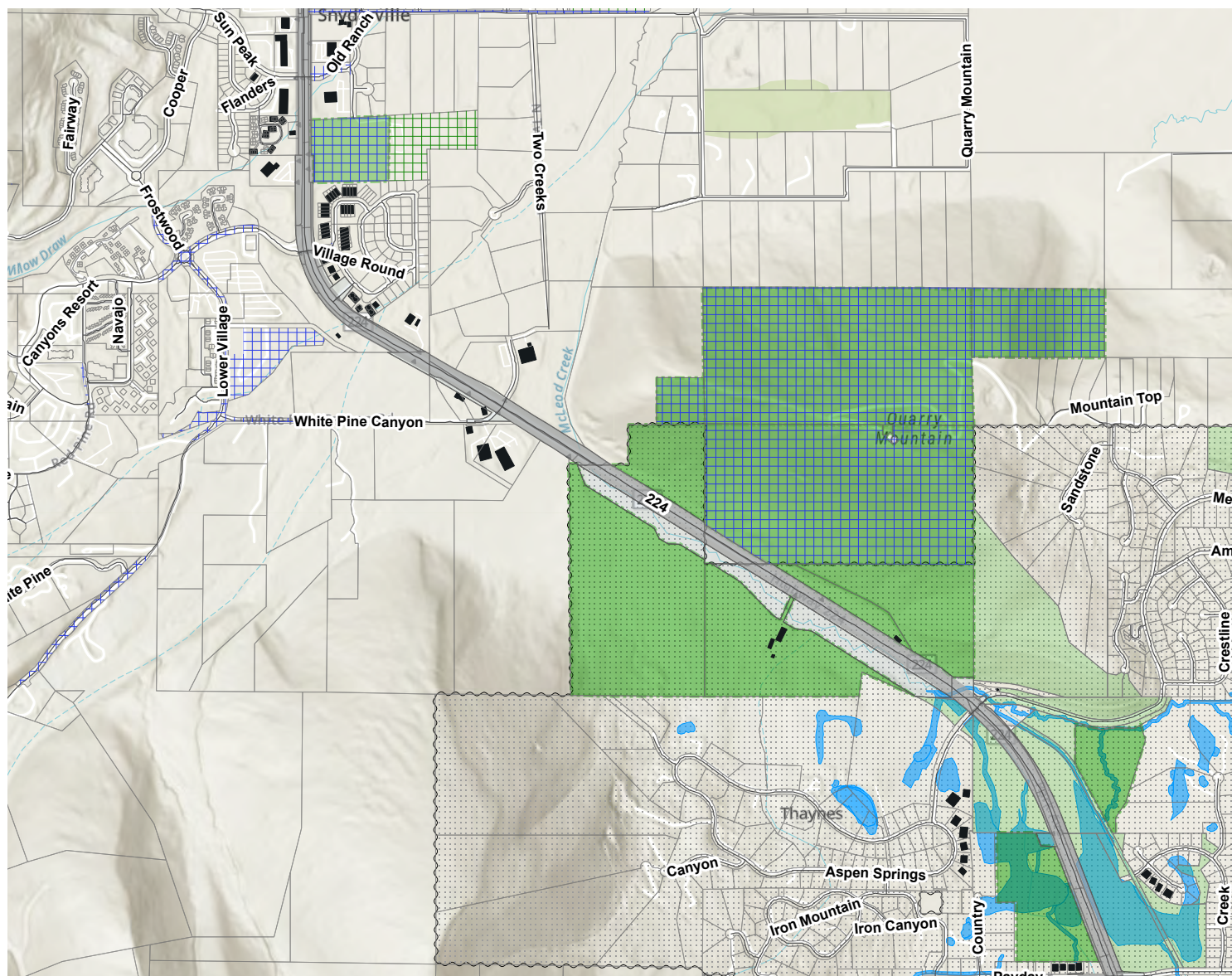
KEY

- SR-224
- SLOPE DIRECTION
- CREEK FLOW
- 30% - 70% SLOPE
- FORMER BASIN EXTENTS
- FORMER FLOODPLAIN EXTENTS

EXISTING CONDITIONS

A large empty rectangular area for drawing or writing, framed by a black border. A thick pink horizontal line is positioned near the top, just below the 'EXISTING CONDITIONS' header.

ZONING | Open Space and County Property



Park City Open Space and County Property

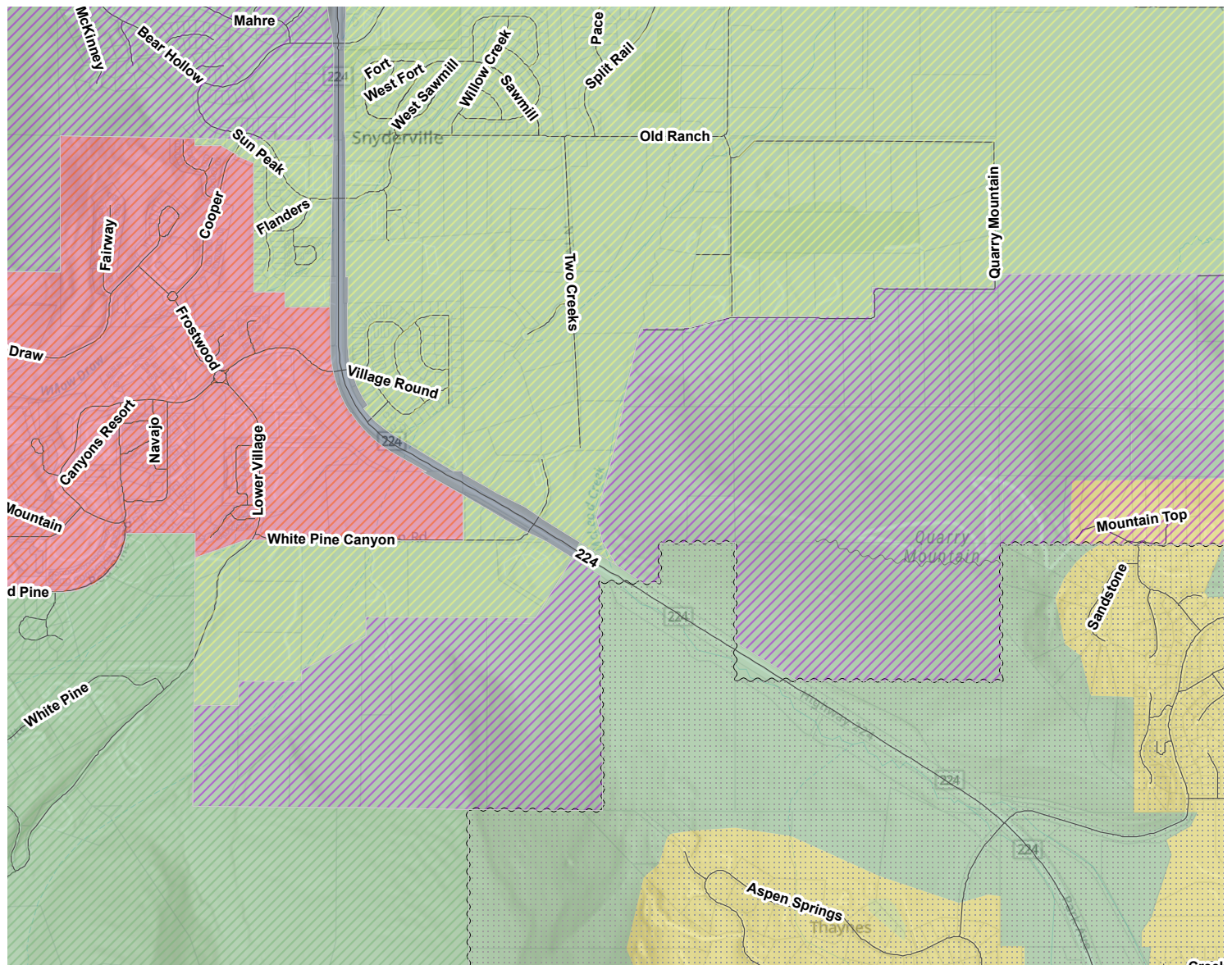
Source: Base map - ArcGIS

KEY

	BASIN REC PROPERTIES		RESIDENTIAL STRUCTURES		MUNICIPAL BOUNDARY
	COUNTY PROPERTIES		CONSERVATION EASEMENTS		COUNTIES
	SUMMIT CO OFFICIAL ROADS		OPEN SPACE		UTAH COUNTY BOUNDARIES
	SR-224 PARCELS		POTENTIAL WETLANDS		
	SR-224 EXTENT		PARK CITY BOUNDARY		

EXISTING CONDITIONS

A large empty rectangular area for drawing or writing, framed by a black border. A thick pink horizontal line is positioned near the top, just below the 'EXISTING CONDITIONS' header.



Snyderderville Land Use

Source: Base map - ArcGIS

KEY

	RURAL RESIDENTIAL (RR)		SINGLE FAMILY		SUMMIT CO OFFICIAL ROADS
	HILLSIDE STEWARDSHIP (HS)		PUBLIC		PARK CITY BOUNDARY
	MOUNTAIN REMOTE (MR)		MIXED USE		MUNICIPAL BOUNDARY
	RESORT CENTER (RC)		UNDEVELOPED		

EXISTING CONDITIONS



Photo by Terrie Brightman
View of Quarry Mountain vegetation and slope.



Photo by Makala Gibson
McPolin Trail extending SE along the base of Quarry Mountain.



Photo by Makala Gibson
View of SR-224 from McPolin Farm Trail.



Photo by Terrie Brightman
View of McPolin Barn with SR-224 and the McPolin Farm Trail in the foreground.



Photo by Terrie Brightman
Existing fencing and gate at Trotman Farm.



Photo by Makala Gibson
View of existing culvert at McLeod Creek.

Images are from a Site Visit conducted as part of the Phase 1 Assessment attended by the RDA Team, Save People Save Wildlife Board members, and representatives from Summit County and the Park Record.

Site Photos



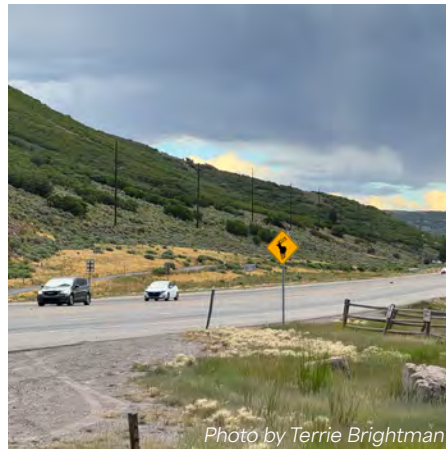
Existing fencing near McPolin Barn at pedestrian tunnel.



McPolin Farm Trail at Trotman Farm.



View of SR-224 and Quarry Mountain from the southern culvert outlet.



Existing Wildlife Crossing Signage along Southbound SR-224.



McLeod creek along McPolin Farm Trail and SR-224.



McPolin Farm Trail at the north end of McLeod Creek culvert.

EXISTING CONDITIONS



Existing wildlife crossing signage along Southbound SR-224.



A herd of elk resting on Trotman Farm, adjacent to SR-224.



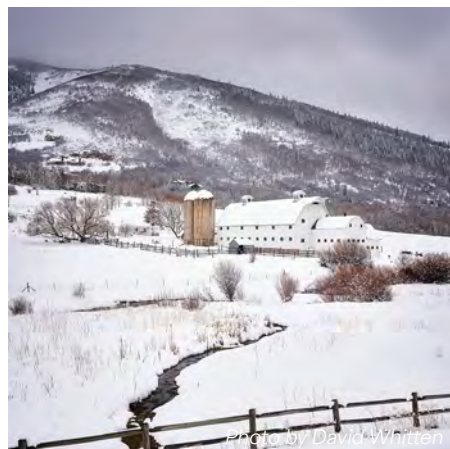
Law enforcement assisted crossing of an elk near St. Mary's Church on SR-224.



Roadwork to fix potholes along the SR-224 corridor.



Existing reflective wildlife silhouettes along SR-224.



Split rail fencing at the historic McPolin Farm.

Site Photos



Photo by Thomas D. Mangelsen

McLeod Creek adjacent to historic McPolin Barn.



Photo by Visit Park City

Existing fencing along the McPolin Farm Trail at Trotman Farm.



Photo by David Jackson

Seasonal traffic on SR-224.



Photo by KPCW

View of SR-224 from the McPolin Farm Trail at the base of Quarry Mountain.



Photo by Bailey Edelstein

View of cars traveling Northbound along SR-224.



Photo by Park City News

Existing wildlife crossing signage along Northbound SR-224.



CONSTRAINTS & OPPORTUNITIES

Park City and Summit County are defined by their natural setting—shaped by geology, elevation, vegetation, and climate—that supports year-round recreation and attracts visitors from around the world. The local economy depends heavily on tourism, making reliable roads and infrastructure essential to the community. At the same time, these needs often conflict with those of the native wildlife that inhabit and move through the region. Understanding these opportunities and constraints is central to guiding decisions within the project area.



Photo by Terrie Brightman

ECONOMIC



- Park City's economy heavily relies on skiing, tourism, arts, and recreation
- Area receives an estimated 2.7 million tourists in the winter and 1.4 million in the summer
- Park City is situated in the Wasatch Range and close to the Uinta-Wasatch-Cache National Forest
- The Park City Trail system is comprised of over 400 miles of trail

Source: Park City Municipal

INFRASTRUCTURE



- Travel by car is via:
 - Utah State Route 224 from both the North and South
 - Utah State Route 248 from the East
- Guardsman Pass (SR-190 and SR-224) is closed seasonally, typically from late November to late May or early June
- The closest airports are the Salt Lake International Airport in Salt Lake City and Heber Valley Airport in Heber City

Source: Park City Municipal

ENERGY



- In 2016, Park City made the decision to work with Rocky Mountain Power, to bring 100% renewable electricity
- A floating solar array of 589.7 kilowatt provides 90% power of Park City's water treatment plant
- Park City, along with Summit County, Salt Lake City, and Moab will convert eighteen percent of Utah's electric grid to renewable

Source: Park City Municipal

DEMOGRAPHICS



- Park City population: 8,146
Summit County population: 42,759
- Demographics: White (81.7%), Other race (8.7%, Two or more races (5.9%) Asian (2.7%) Black or African American (0.9%)
- Median household income = \$156,332
- Employment in Park City, UT grew at a rate of 1.29%, from 5.02k to 5.09k

Source: United States Census Bureau and Data USA



Photo by Makala Gibson

PRECIPITATION



- Snowfall averages 355 inches annually, equivalent to 30 feet. Highest recorded snowfall was 500 inches on March 22nd, 2023
- In 2024, Park City's snowpack peaked at 14.4 inches. Typical to the state's average peak.
- In Utah, 95% of the potable water comes from snowpack. Reservoir storage is dependent upon snowpack and runoff

Source: Park City Mountain Resort and Utah Division of Water Resources

TEMPERATURE



- Spring (April - May)
 - High: 50 - 65 °F
 - Low: 30 - 40 °F
- Summer (June - August)
 - High: 80-90 °F
 - Low: 41 °F
- Fall (September - October)
 - High: 60 - 70 °F
 - Low: 30 - 40 °F
- Winter (November - March)
 - High: 30 - 40 °F
 - Low: 10 °F

Source: U.S. Climate Data

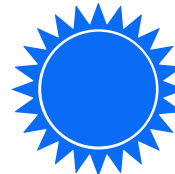
WIND



- Winds exceeding 100 mph contribute to extreme weather conditions that render driving conditions unsafe
- In 2020, wind gusts surpassed 110-mph, damaging property along the Wasatch Front
- Downslope winds on site correspond to strong wind gusts in Park City
- Cold fronts cause air to accelerate over the Wasatch Mountain peaks

Source: National Centers for Environmental Information

DROUGHT



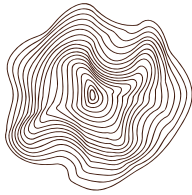
- Frequency of severe drought will increase in the future for Summit County
- Park City experienced severe drought conditions ≤ 20% of the time in 2000-2020
- In October 2021, a prolonged drought brought Echo Reservoir and Rockport Reservoir down to 11% and 26% of their total capacity

Source: Woodwell Climate Research Center: Climate Assessment for Summit County, Utah



Photo by Makala Gibson

TOPOGRAPHY



- Park City is situated at an elevation ranging between 6,800 - 10,000 feet above mean sea level
- Tallest mountain elevation in the area rises to over 13,000 feet
- Topographic expression ranges from level to rolling alluvial plans
- Slope gradients range from relatively flat terrain to slopes of 50 percent or greater

Source: Engineering Geology of Park City, Gill and Land

SOIL



- Soils range from relatively thin colluvial gravel to thick, fine-grained alluvial soil
- Gravelly and fine-grained materials have developed as residual soils over bedrock
- Soils near site are described as Gravelly consisting of silty, clayey and sand gravels

Source: Engineering Geology of Park City, Gill and Land

SEISMIC



- Park City lies within a north-south trending belt of seismicity known as the Intermountain seismic belt
- On May 1st, 2025 a magnitude 3.9 earthquake struck Park City's Old Town to Heber City
- Main source of earthquakes in the area is the active Wasatch Fault
- In the Park City area, special seismic hazards exist due to past mining activity

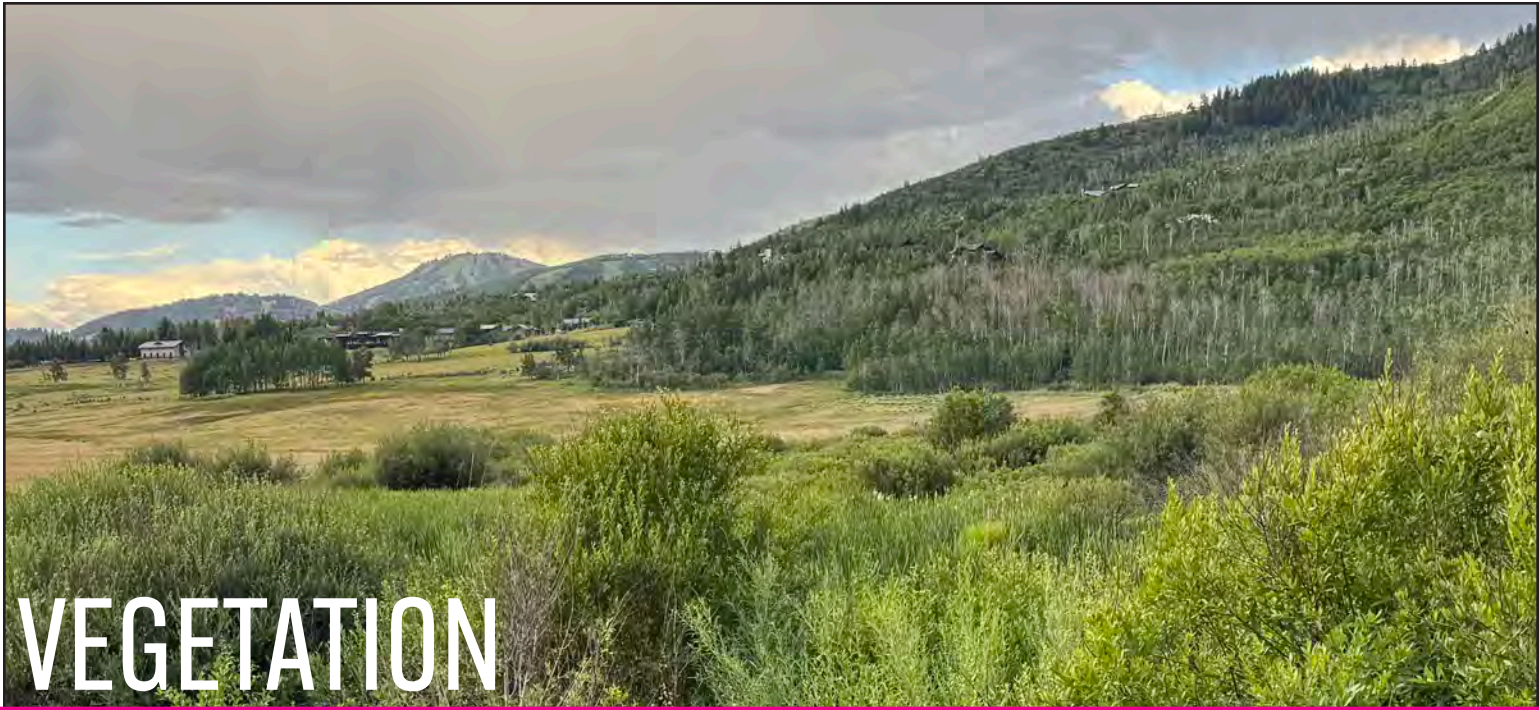
Source: Engineering Geology of Park City, Gill and Land

BEDROCK



- Rock types near site are the Ankareh Formation, Thaynes Formation, Woodside Shale, and some tuffs and breccias of the Keetley Volcanics
- Mudstone, siltstone, and shale are common rock types in most of these formations and are inter-bedded with more resistant strata of limestone, sandstone, and quartzite

Source: Geologic Map of of the Park City East Quadrant



VEGETATION

Native vegetation forms the foundation of ecological health in the region. These plant communities stabilize soils, reduce erosion, and regulate water by improving infiltration, limiting runoff, and sustaining wetlands and streams. They also enhance nutrient cycling, support pollinators and other species with specialized needs, and help maintain the biodiversity essential for long-term ecosystem function. The protection and restoration of native vegetation is central to sustaining both ecological processes and the health of the broader community.



VEGETATION

Native vegetation is the foundation upon which the ecological integrity and long-term function of a landscape depend. The integration of native plant communities, composed of species that have coevolved with local fauna, is essential for restoring fragmented landscapes and reshaping them into resilient, self-sustaining habitat connections. These communities not only provide food, cover, and microhabitats for wildlife; they stabilize soils, enhance nutrient cycling, and support healthy microbial communities that underpin ecosystem productivity. Deep-rooted native species can also help to regulate hydrologic processes by improving infiltration, reducing surface runoff, and maintaining groundwater recharge. Further, native plants aid in mitigating erosion and help to sustain stream and wetland health in areas adjacent to water courses and wetlands.

Many native plant species also serve as keystone resources, supporting highly specialized interactions for pollinators, insects, or birds that depend on a single host plant for critical stages of their life cycle. By prioritizing the reestablishment of diverse, site-appropriate native plant palettes, we can create corridors and connections that not only enable wildlife movement but also restore fundamental ecological processes. Ultimately, the successful recovery and protection of these plant communities determines whether a corridor functions as a regenerative community that supports biodiversity or remains an isolated, degraded landscape fragment.

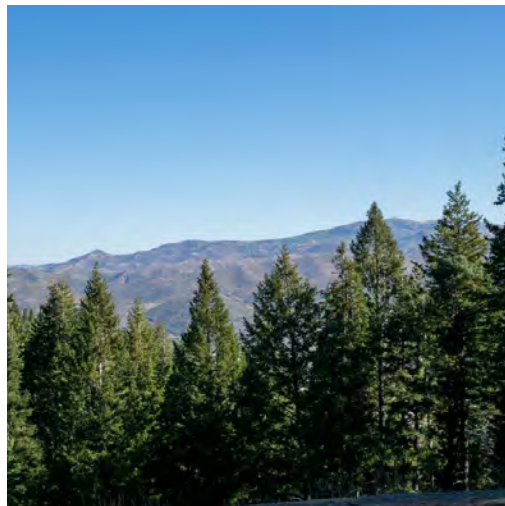
Native Plant Communities



Utah State Forestry Extension

PINYON JUNIPER WOODLAND

This forest type covers the most land in Utah which generally occurs in the foothills at elevations of 5,000 to 8,000 feet. The woodlands make up 60% of Utah's forest cover, covering 8 million acres of land in Utah alone. Density has increased in the past century due to fire suppression and grazing.



Utah State Forestry Extension

DOUGLAS FIR FOREST

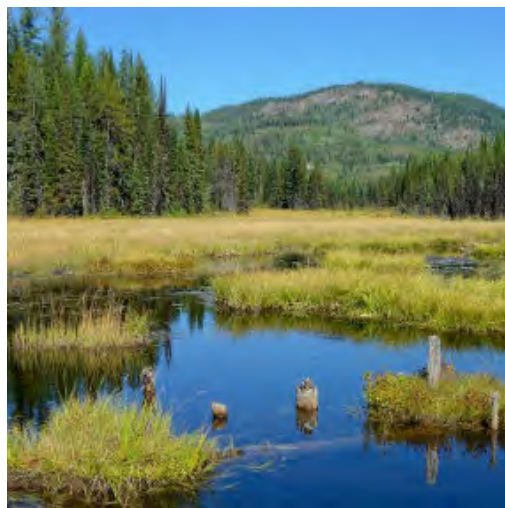
This forest type is the second most common in Utah. It is found between 6,000 to 9,000 feet elevation. Mid elevation species, such as Douglas Fir and Ponderosa Pine, cover more than one million acres. This forest is important for timber, as a recreational resource, and wildlife habitat.



Utah State Forestry Extension

BIG SAGEBRUSH STEPPE

This is the dominant landscape throughout much of Utah and the Great Basin. Sage Steppe is considered an endangered ecosystem due to fragmentation. Sagebrush is an important member that helps support many birds, reptiles, amphibians, and mammals.



Utah State Forestry Extension

MONTANE RIPARIAN

This is the most critical ecosystem in terms of life support to Utah's plants and animals. Intact riparian zones are physically complex, with a layer of grass, then shrubs, then upper canopy trees. Riparian areas only cover about one half of one percent of Utah's total land area, above 5,500 feet.

VEGETATION

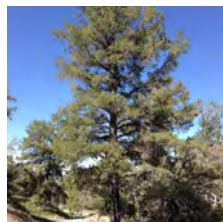
Image Sources: Jason Hollinger, Walter Siegmund, Andy Nunn, LAM Tree Service, Patrick Alexander, James St John, Tony Frates, Kirsten Olmon, Max Licher, Stan Shebs, Southwest Desert Flora, Paul Rothrock, Matt Lavin, Thayne Thuason, Cache Valley, Liz Makings, Stevenson Intermountain Seed, Applewood Seed Company.

PINYON JUNIPER WOODLAND | Plant Species

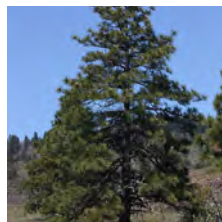
TREES



CURL LEAF MOUNTAIN MAHOGANY
Cercocarpus ledifolius



LIMBER PINE
Pinus flexilis



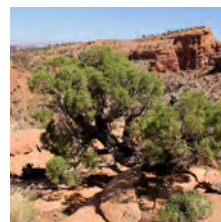
PONDEROSA PINE
Pinus ponderosa



TWO-NEEDLE PINYON
Pinus edulis



ROCKY MOUNTAIN JUNIPER
Juniperus scopulorum

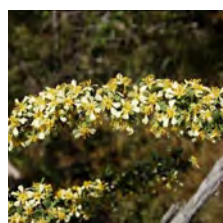


UTAH JUNIPER
Juniperus osteosperma

SHRUBS



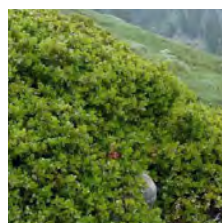
BIG SAGEBRUSH
Artemisia tridentata



ANTELOPE BITTERBRUSH
Purshia tridentata



BLACK SAGEBRUSH
Artemisia nova



GREENLEAF MANZANITA
Arctostaphylos patula



GREEN RABBITBRUSH
Chrysothamnus viscidiflorus

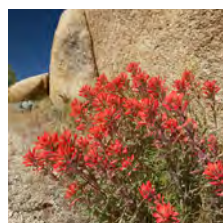


WINTERFAT
Krascheninnikovia lanata

PERENNIALS



LEWIS FLAX
Linum lewisii



NORTHWESTERN INDIAN PAINTBRUSH
Castilleja angustifolia



STICKY PURPLE GERANIUM
Geranium viscosissimum



SILVERY LUPINE
Lupinus argenteus

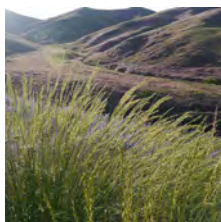


ROCKY MOUNTAIN PENSTEMON
Penstemon strictus



YELLOW BEAPLANT
Penstemon strictus

GRASSES



BLUEBUNCH WHEATGRASS
Pseudoroegneria spicata



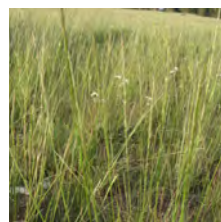
BLUE GRAMA
Bouteloua gracili



PRAIRIE JUNEGRASS
Koeleria macrantha



MEADOW BARLEY
Hordeum brachyantherum



LETTERMAN'S NEEDLEGRASS
Achnatherum lettermanii



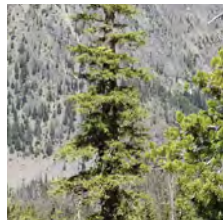
WESTERN WHEATGRASS
Pascopyrum smithii

VEGETATION

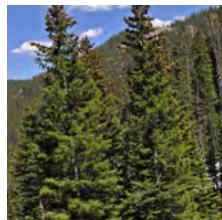
TREES



BLUE SPRUCE
Picea
pungens



DOUGLAS FIR
Pseudotsuga
menziesii



ENGLEMANN'S SPRUCE
Picea
engelmannii



LIMBER PINE
Pinus
flexilis

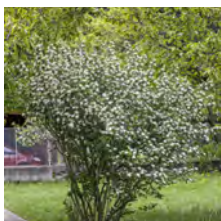


ROCKY MOUNTAIN LODGEPOLE PINE
Pinus contorta var.
latifolia

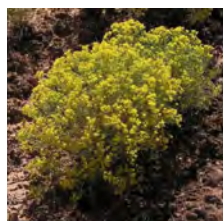


WHITE FIR
Abies
concolor

SHRUBS



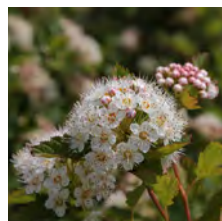
BLACK CHOKEBERRY
Aronia
melanocarpa



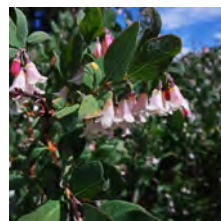
BROOM SNAKEWEED
Gutierrezia
sarothrae



GOLDEN CURRANT
Ribes
aureum



MALLOW NINEBARK
Physocarpus
malvaceus



MOUNTAIN SNOWBERRY
Symphoricarpos
oreophilus



WINTERFAT
Krascheninnikovia
lanata

PERENNIALS



FIREWEED
Chamerion
angustifolium



MULES EAR
Wyethia
amplexicaulis



WASATCH PENSTEMON
Penstemon
cyananthus



YELLOW BEE PLANT
Cleome
lutea

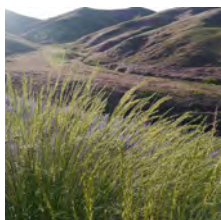


PORTER'S LICORICE ROOT
Ligusticum
porteri

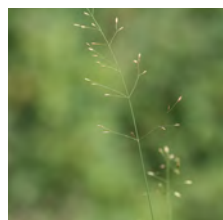


WESTERN CONEFLOWER
Penstemon
strictus

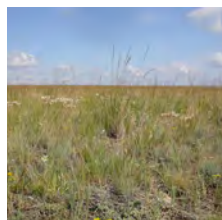
GRASSES



BLUEBUNCH WHEATGRASS
Pseudoroegneria
spicata



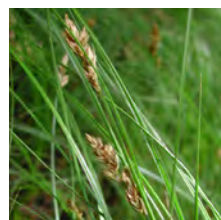
FOWL BLUEGRASS
Poa
palustris



IDAHO FESCUE
Festuca
idahoensis



LETTERMAN'S NEEDLEGRASS
Achnatherum
lettermanii



MEADOW SEDGE
Carex
praticola



MUTTONGRASS
Poa
fendleriana

VEGETATION

SHRUBS



BIG BASIN SAGEBRUSH
Sedum lanceolatum



BIG SAGEBRUSH
Artemisia tridentata



LITTLE SAGEBRUSH
Artemisia arbuscula



LANCELEAF STONECROP
Sedum lanceolatum



RUBBER RABBITBRUSH
Ericameria nauseosa



WHITE SAGEBRUSH
Artemisia ludoviciana

PERENNIALS



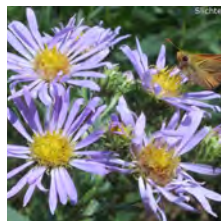
ASPEN FLEABANE
Erigeron speciosus



BLACK-EYED SUSAN
Rudbeckia hirta



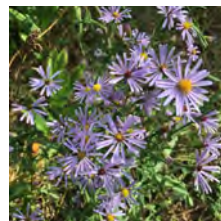
COLORADO BLUE COLUMBINE
Aquilegia coerulea



ENGELMANN'S ASTER
Eucephalus engelmannii



GOODBERRYLEAF GLOBEMALLOW
Sphaeralcea grossulariifolia



WESTERN ASTER
Symphotrichum ascendens

GRASSES



GREAT BASIN WILDRYE
Leymus cinereus



INDIAN RICEGRASS
Achnatherum hymenoides



MEADOW BARLEY
Hordeum brachyantherum



SLENDER WHEATGRASS
Elymus trachycaulus



THURBER'S NEEDLEGRASS
Achnatherum thurberianum



WESTERN WHEATGRASS
Pascopyrum smithii

VEGETATION

Image Sources: Utah State University, Southwest Wildflowers, Bluff Lake Nature Center, Grow Billion Trees, Jane Richardson, Max Licher, Mieko-Watkins, Sten Porse, Jerzy Opiola, Native Plants PNW, Paint Creek Nursery, INaturalist, Thayne Tuason, Dave Ingram, The Ohio Nature Blog, Vicki Watkins, Steve Matson, Cache Valley, Paul Rothrock, Krysztof Ziarnek, Max Lavin, Pawnee Bucce Seeds.

TREES



BLACK HAWTHORN
Crataegus douglasii



GAMBEL OAK
Quercus gambelii



NARROWLEAF COTTONWOOD
Populus angustifolia



ROCKY MOUNTAIN MAPLE
Acer glabrum



WATER BIRCH
Betula occidentalis

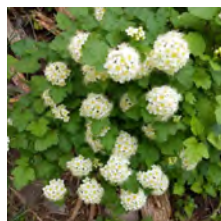


QUAKING ASPEN
Populus tremuloides

SHRUBS



BLUE ELDERBERRY
Sambucus nigra subsp. cerulea



MALLOW NINEBARK
Penstemon strictus



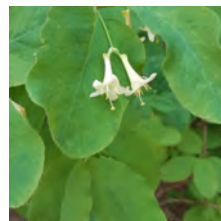
NOOTKA ROSE
Rosa nutkana



RED ELDERBERRY
Sambucus racemosa

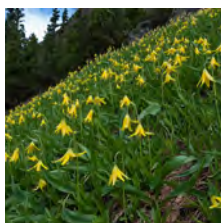


RED-OSIER DOGWOOD
Cornus sericea



UTAH HONEYSUCKLE
Lonicera utahensis

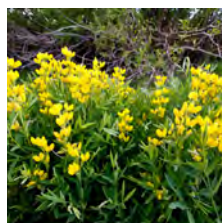
PERENNIALS



GLACIER LILY
Erythronium grandiflorum



FERNLEAF BISCUITROOT
Lomatium dissectum



MOUNTAIN GOLDENBANNER
Thermopsis montana



SHOWY MILKWEED
Asclepias speciosa



WESTERN SWEETROOT
Osmorhiza occidentalis



WESTERN YARROW
Achillea millefolium

GRASSES



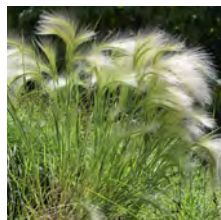
BALTIC RUSH
Juncus balticus



BLUE GRAMA
Bouteloua gracilis



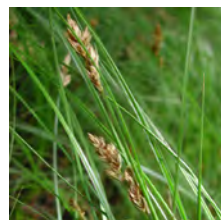
BLUEPOINT REEDGRASS
Calamagrostis canadensis



FOXTAIL BARLEY
Poa endleriana



INDIAN RICEGRASS
Achnatherum hymenoides



MEADOW SEDGE
Carex praticola



TARGET WILDLIFE SPECIES

The project region supports a rich diversity of wildlife, though only a subset of these species will benefit directly from the mitigation measures recommended in this report. Some of these focal species, target species, are well known due to their visibility, size, or history of involvement in wildlife-vehicle collisions, while others are highlighted for their broader ecological roles as predators, prey, pollinators, or keystone species. In addition, certain species hold cultural, regional, or community significance, making them especially valuable to identify when building support for future initiatives.



TARGET WILDLIFE SPECIES

REGIONAL WILDLIFE SPECIES

All species observed or mapped near (10-20 miles) of Park City or the Wasatch Front

*Target Species have an asterisk

COMMON NAME	SCIENTIFIC NAME	TYPE	PROTECTED STATUS	SOURCES
Columbia spotted Frog	<i>Rana luteiventris</i>	Amphibian	Utah Sensitive & Protected Species	UDWR / US Fish & Wildlife Service / Reptiles & Amphibians of Utah
Northern Leopard Frog*	<i>Lithobates pipiens</i>	Amphibian	USFWS Endangered under Federal Species Act	Reptiles & Amphibians of Utah Field Guide / US Fish & Wildlife Service
Boreal Chorus Frog	<i>Pseudacris maculata</i>	Amphibian	Least Concern	UDWR / Reptiles & Amphibians of Utah Field Guide
Western Toad*	<i>Anaxyrus boreas</i>	Amphibian	Utah Sensitive & Protected Species	Reptiles & Amphibians of Utah Field Guide / US Fish & Wildlife Service
Woodhouse's Toad	<i>Anaxyrus woodhousii</i>	Amphibian	Least Concern	Pajarito Environmental Education Center / US Fish & Wildlife Service
Great Basin Spadefoot	<i>Spea intermontana</i>	Amphibian	Least Concern	Reptiles & Amphibians of Utah Field Guide / US Fish & Wildlife Service
Eastern Tiger Salamander*	<i>Ambystoma tigrinum</i>	Amphibian	USFWS Endangered under Federal Species Act	Utah State University Wildlife Extension / US Fish & Wildlife Service
Smooth Greensnake	<i>Opheodrys vernalis</i>	Reptile	Utah Sensitive & Protected Species	Utah State University Wildlife Extension / Reptiles & Amphibians of Utah Field Guide
Northern Rubber Boa*	<i>Charina bottae</i>	Reptile	Least Concern	Utah State University Wildlife Extension / Reptiles & Amphibians of Utah Field Guide
Great Basin Gopher Snake*	<i>Pituophis catenifer deserticola</i>	Reptile	Least Concern	Utah State University Wildlife Extension / Reptiles & Amphibians of Utah Field Guide
Northern Side-blotched Lizard	<i>Uta stansburiana stansburiana</i>	Reptile	Least Concern	UDWR / Nature Serve Explorer
Great Basin Collard Lizard	<i>Crotaphytus bicinctores</i>	Reptile	Least Concern	Utah State University Wildlife Extension / Reptiles of Utah
Common Sagebrush Lizard	<i>Sceloporus graciosus</i>	Reptile	Least Concern	Reptiles & Amphibians of Utah Field Guide
Great Basin Striped Skunk	<i>Plestiodon skiltonianus utahensis</i>	Reptile	Least Concern	UDWR / Nature Serve Explorer / Reptiles of Utah
Great Basin Whiptail	<i>Aspidoscelis tigris tigris</i>	Reptile	Least Concern	US Fish & Wildlife Service / Nature Serve Explorer
Greater Short Horned Lizard*	<i>Phrynosoma hernandesi</i>	Reptile	Least Concern	Reptiles & Amphibians of Utah Field Guide / Nature Serve Explorer
Least Chipmunk	<i>Neotamias minimus</i>	Small Mammal	Endangered	UDWR / US Fish & Wildlife Service / NatureServe Explorer
American Red Squirrel*	<i>Tamiasciurus hudsonicus</i>	Small Mammal	Least Concern	UDWR / Reptiles & Amphibians of Utah Field Guide
Unita Ground Squirrel*	<i>Uroctellus armatus</i>	Small Mammal	Least Concern	UDWR / Utah State University Wildlife Extension / Nature Serve Explorer
American Beaver	<i>Castor canadensis</i>	Small Mammal	Least Concern	UDWR / Utah State University Wildlife Extension / Nature Serve Explorer
Botta's Pocket Gopher	<i>Thomomys bottae</i>	Small Mammal	Considered a Pest / Least Concern	Utah Division of Wildlife Resources / Utah State University Wildlife Extension
Meadow Vole	<i>Microtus pennsylvanicus</i>	Small Mammal	Utah Protected Species	UDWR / Utah State University Wildlife Extension / Nature Serve Explorer
North American Porcupine*	<i>Erethizon dorsatum</i>	Small Mammal	Utah Protected Species	US Fish & Wildlife Service / Nature Serve Explorer
Yellow Bellied Marmot	<i>Marmota flaviventer</i>	Small Mammal	Least Concern	UDWR / Reptiles & Amphibians of Utah Field
Western Harvest Mouse	<i>Reithrodontomys megalotis</i>	Small Mammal	Least Concern	NatureServe Explorer / Natural Museum of Utah
Short tailed Weasel*	<i>Mustela erminea</i>	Small Mammal	Utah Sensitive Species List	Utah Division of Wildlife Services / Inaturalist / Reptiles & Amphibians of Utah Field
American Marten	<i>Martes americana</i>	Small Mammal	Least Concern	NatureServe Explorer / Nature Canada / Dirt to Trees Wildlife / US Forest Service
Townsend's big eared Bat*	<i>Corynorhinus townsendii</i>	Small Mammal	Utah Sensitive & Protected Species	Utah Division of Wildlife Resources / Utah State University Extension
Silver haired Bat	<i>Lasiyonycteris noctivagans</i>	Small Mammal	Endangered in Canada	NatureServe Explorer / Animal Diversity Web / US Fish & Wildlife Service
American Pika	<i>Ochotona princeps</i>	Small Mammal	Least Concern	NatureServe Explorer / Utah State University Wildlife Extension / US Forest Service
White-tailed Jackrabbit*	<i>Lepus townsendii</i>	Small Mammal	Least Concern	UDWR / Utah State University Wildlife Extension
Snowshoe Hare*	<i>Lepus americanus</i>	Small Mammal	Utah Protected Species	NatureServe Explorer / Utah State University Wildlife Extension / US Forest Service
Western-spotted Skunk	<i>Mephitis mephitis</i>	Small Mammal	Least Concern	UDWR / Utah State University Wildlife Extension
American Water Shrew	<i>Sorex palustris</i>	Small Mammal	Least Concern	NatureServe Explorer / Utah State University Wildlife Extension
Masked or Cinerous Shrew	<i>Sorex cinereus</i>	Small Mammal	Least Concern	NatureServe Explorer / Fort Hays State University / US Fish & Wildlife Service
Rocky Mountain Mule Deer*	<i>Odocoileus hemionus</i>	Large Mammal	Least Concern	UDWR / Utah State University Wildlife Extension / NatureServe Explorer
Moose*	<i>Alces alces</i>	Large Mammal	Utah Protected Species	UDWR / Utah State University Wildlife Extension / Nature Serve Explorer
Red Deer	<i>Cervus elaphus</i>	Large Mammal	Least Concern	UDWR / Utah State University Wildlife Extension / NatureServe Explorer
Rocky Mountain Elk/ Wapiti*	<i>Cervus elaphus nelsoni</i>	Large Mammal	Least Concern	UDWR / Utah State University Wildlife Extension / Nature Serve Explorer
Mountain Lion	<i>Puma concolor</i>	Large Mammal	Endangered Species Act Protection	Wild Aware Utah / Utah State University Wildlife Extension / US Fish & Wildlife Service
Coyote	<i>Canis latrans</i>	Large Mammal	Least Concern	UDWR / Nature Serve Explorer / Utah State University Wildlife Extension
American Black Bear*	<i>Ursus americanus</i>	Large Mammal	Utah Protected Species	UDWR / Nature Serve Explorer / Utah State University Wildlife Extension
Bobcat*	<i>Lynx rufus</i>	Large Mammal	Utah Protected Species	UDWR / Nature Serve Explorer / Utah State University Wildlife Extension
Gray Fox*	<i>Urocyon cinereoargenteus</i>	Large Mammal	Least Concern	UDWR / Nature Serve Explorer / Utah State University Wildlife Extension
American Three-toed Woodpecker	<i>Picoides dorsalis</i>	Birds	Utah Sensitive & Protected Species	UDWR / Nature Serve Explorer / Utah State University Wildlife Extension
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	Birds	Utah Sensitive & Protected Species	UDWR / Nature Serve Explorer / Utah State University Wildlife Extension
Ruffed Grouse*	<i>Bonasa umbellus</i>	Birds	Utah Protected Species (UDWR)	UDWR / Nature Serve Explorer / Utah State University Wildlife Extension
Dusky Grouse	<i>Dendragapus obscurus</i>	Birds	Least Concern	UDWR / Nature Serve Explorer / Utah State University Wildlife Extension
Chukar	<i>Alectoris chukar</i>	Birds	Least Concern	UDWR / US Fish & Wildlife Service
Snowy Plover	<i>Charadrius nivosus</i>	Birds	Federally Threatened - Endangered Species Act	US Fish & Wildlife Services / Nature Serve Explorer
Lewis's Woodpecker	<i>Melanerpes lewis</i>	Birds	Species of Greatest Conservation Need	UDWR / National Audubon Society / Nature Serve Explorer
Red Winged Blackbird	<i>Agelaius phoeniceus</i>	Birds	Least Concern	UDWR / National Audubon Society / Nature Serve Explorer
Black billed Magpie*	<i>Dendragapus obscurus</i>	Birds	Protected under Federal Migratory Bird Treaty Act	UDWR / US Forest Service / Nature Serve Explorer
Woodhouse Scrub Jay	<i>Apelocoma woodhouseii</i>	Birds	Species of Greatest Conservation Need - by (WGFD)	National Audubon Society / Utah Birds
Sandhill Crane*	<i>Antigone canadensis</i>	Birds	Protected under Federal Migratory Bird Treaty Act	National Audubon Society / Nature Serve Explorer
Great Blue Heron	<i>Ardea herodias</i>	Birds	Least Concern	UDWR / US Fish & Wildlife Service / Nature Serve Explorer
House Sparrow	<i>Passer domesticus</i>	Birds	Least Concern	US Fish & Wildlife Service / Utah Birds
Bobolink	<i>Dolichonyx oryzivorus</i>	Birds	Special Concern	UDWR / US Fish & Wildlife Service / Nature Serve Explorer
Cinnamon Teal	<i>Anas cyanoptera</i>	Birds	Least Concern	UDWR / US Fish & Wildlife Service / Utah State University Wildlife Extension
Red Tailed Hawk*	<i>Buteo jamaicensis</i>	Birds	Protected under Federal Migratory Bird Treaty Act	UDWR / US Fish & Wildlife Service
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Birds	Utah Sensitive & Protected Species	UDWR / US Fish & Wildlife Service / Nature Serve Explorer
Monarch Butterfly*	<i>Danaus plexippus</i>	Invertebrate	Utah Sensitive & Protected Species	Utah State University Wildlife Extension
Two tailed Swallowtail	<i>Papilio multicaudata</i>	Invertebrate	Utah Sensitive & Protected Species	Butterflies and Moths of North America
Mormon Fritillary*	<i>Speyeria mormonia</i>	Invertebrate	Conservation Efforts	Butterflies and Moths of North America
White-spotted Sawyer	<i>Monochamus scutellatus</i>	Invertebrate	Least Concern	Nature Serve Explorer / Insect Identification.Org
Western Bumble Bee*	<i>Bombus occidentalis</i>	Invertebrate	Species of Greatest Conservation Need	Washington Dpt of Fish & Wildlife / Nature Serve Explorer
Eastern Boxelder Bug	<i>Boisea trivittata</i>	Invertebrate	Least Concern	Utah State University Wildlife Extension
White-spotted Sawyer	<i>Monochamus scutellatus</i>	Invertebrate	Least Concern	Nature Serve Explorer / Insect Identification.Org / USFW
Thin Legged Wolf Spiders	<i>Pardosa pauxilla</i>	Invertebrate	Least Concern	Utah State University Wildlife Extension / Nature Serve Explorer
Western Tent Caterpillar	<i>Malacosoma californicum</i>	Invertebrate	Least Concern	Utah State University Wildlife Extension / Utah Division of Forestry, Fire, and State Lands
Rainbow Trout	<i>Oncorhynchus mykiss</i>	Verebrate	Threatened / Endangered	National Wildlife Federation / Western Native Trout
Bonneville cutthroat Trout*	<i>Oncorhynchus clarkii utah</i>	Verebrate	Special Concern	US Fish & Wildlife Service / Western Native Trout
Bluehead Sucker	<i>Catostomus discobolus</i>	Verebrate	Utah Sensitive & Protected Species	UDWR / US Fish & Wildlife Service
Northern Leatherside Chub	<i>Lepidomeda cope</i>	Verebrate	Utah Sensitive & Protected Species	UDWR / US Fish & Wildlife Service

Large Mammals

PREDATOR



Source: Image - Western Wildlife Resource

AMERICAN BLACK BEAR
Ursus americanus

PREY



Source: Image - Mix Lab

ELK / WAPITI
Cervus canadensis

PREY



Source: Image - Outdoor Guide

MOOSE
Alces alces

PREY



Source: Image - Wilderness Shots

ROCKY MOUNTAIN MULE DEER
Odocoileus hemionus hemionus

Small Mammals

PREY



Source: Image - Andrei Sosnovskii

AMERICAN RED SQUIRREL
Tamiasciurus hudsonicus

PREY



Source: Image - Look Photos

UINTA GROUND SQUIRREL
Urocyonellus armatus

PREDATOR



Source: Image - Nat Hab

SHORT-TAILED WEASEL
Mustela erminea

PREY



Source: Image - Environmental Education for kids

SNOWSHOE HARE
Lepus americanus

Small & Medium Mammals

PREY



Source: Image - Max Allen

NORTH AMERICAN PORCUPINE
Erethizon dorsatum

PREY



Source: Image - Freepik

AMERICAN BEAVER
Castor canadensis

PREDATOR



Source: Image - Western Wildlife Outreach

GRAY FOX
Urocyon cinereoargenteus

PREDATOR



Source: Image - Covenant Wildlife

BOBCAT
Lynx rufus

PREDATOR



Source: Image - Animalia

TOWNSEND'S BIG-EARED BAT
Corynorhinus townsendii

PREDATOR



Source: Image - UDWR

BLACK-BILLED MAGPIE
Pica hudsonia

PREDATOR



Source: Image - Feathered Photography

RED-TAILED HAWK
Buteo jamaicensis

PREY



Source: Image - UDWR

RUFFED GROUSE
Bonasa umbellus



SANDHILL CRANE
Antigone canadensis



MONARCH BUTTERFLY
Danaus plexippus



WESTERN BUMBLEE BEE
Bombus occidentalis



MORMON FRITILLARY
Speyeria mormonia

PREY



Source: Image - Nevada Dpt of Wildlife

NORTHERN LEOPARD FROG
Lithobates pipiens

PREY



Source: Image - Sealand Collaborative

WESTERN TOAD
Anaxyrus boreas

PREDATOR



Source: Image - Vail Daily

GREAT BASIN GOPHER SNAKE
Pituophis catenifer deserticola

PREDATOR



Source: Image - Lost Coast Outpost

NORTHERN RUBBER BOA
Charina bottae

PREDATOR



Source: Image - Wikipedia

GREATER HORNED LIZARD
Phrynosoma hernandesi

PREDATOR



Photo credit John Zsiray/Herald Journal

CUTTHROAT TROUT
Oncorhynchus clarkii

MITIGATION METHODS & CROSSING TYPOLOGIES

The following methods reflect best practices in roadway ecology, wildlife biology, landscape architecture, transportation planning, and related fields, and are increasingly incorporated into state and federal policy guidance.

These strategies address wildlife-vehicle collisions, support wildlife movement, protect habitats along transportation corridors, and reduce ecosystem fragmentation. While not all are universally applicable, they illustrate the range of available approaches considered when assessing the SR-224 corridor and adjacent area.



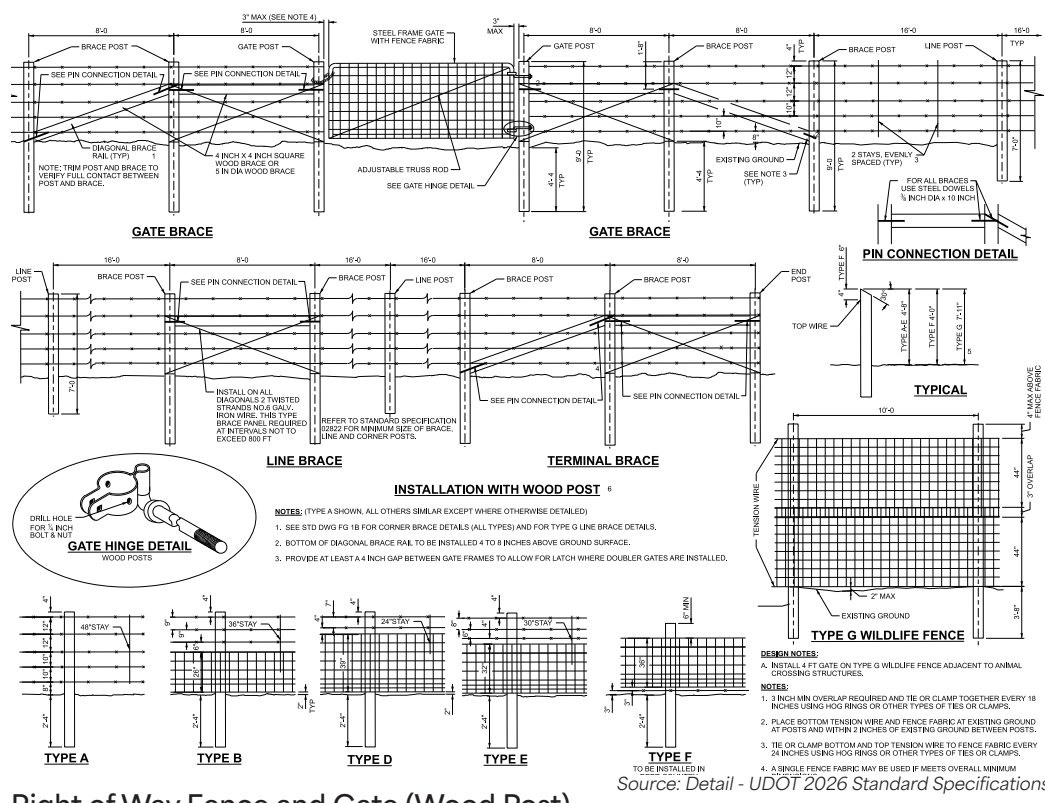
OPPORTUNITIES

1. The low impact is more amendable to landowner preferences, especially in conservation easement and agricultural areas.
1. The design of the fencing is visually compatible within scenic and rural settings and wood posts blend into the landscape better than metal posts.
2. In forested or rural areas, wooden posts may be more affordable and easier to source/replace as metal posts are typically more expensive.
3. No special machinery is required to cut or weld wood, making it easier for community-based or low-tech installation projects.
4. When harvested responsibly, wood has a lower embodied energy than steel.
5. Fence sections can be quickly altered, removed, or replaced by maintenance crews or landowners without heavy equipment.
6. This fencing can be designed with drop or removable sections for migration seasons or livestock movement.

CONSTRAINTS

1. Certain species and/or untreated timber products may be more susceptible to rot, insect damage (e.g., termites), and weathering, especially in humid, wet, or freeze-thaw climates.
2. In wildfire-prone areas, wooden posts may be liability compared to metal alternatives.
3. Certain species and/or untreated wood posts may warp, split, or weaken over time, leading to increased maintenance or breach points for wildlife.
4. Fencing requires regular, ongoing inspection and replacement cycles.
5. Wood may weaken or dislodge from footings with prolonged exposure to water.

UDOT Standard Fencing | Wood Post Fence



Right of Way Fence and Gate (Wood Post)



Wood Post and Wire Fencing at I-80 Parleys Summit

Source: Image - UDOT

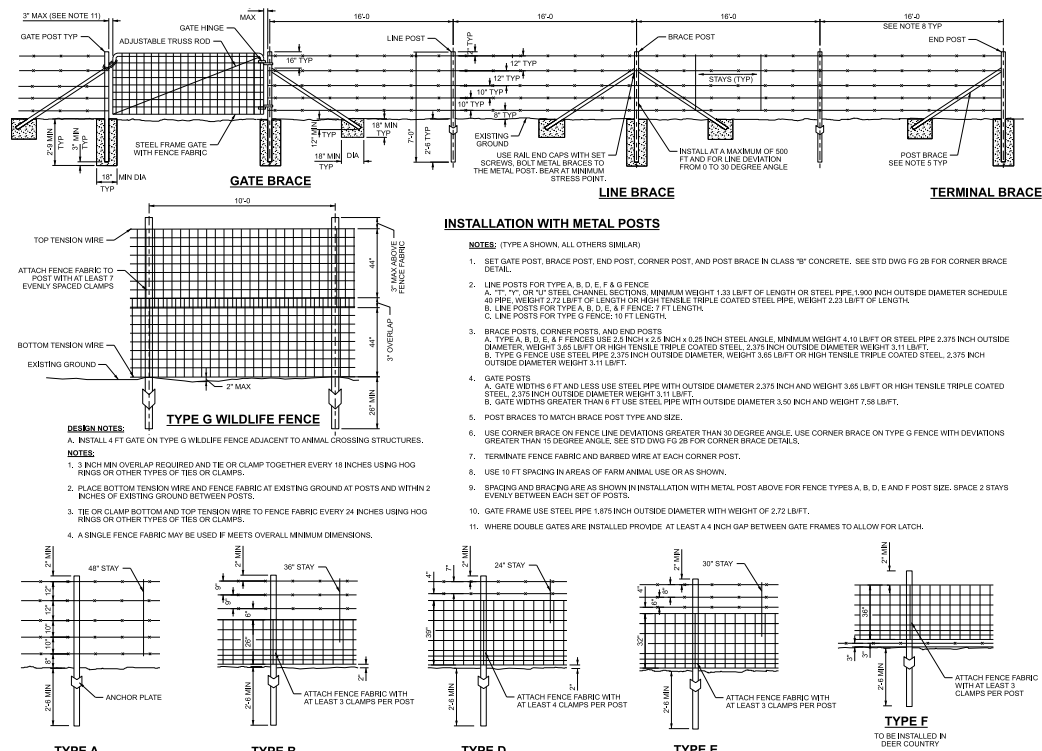
OPPORTUNITIES

1. When combined with crossings and signage, high-collision corridors (e.g., U.S. Hwy 93 in Montana or I-90 in Washington), wildlife fences (both metal and wood post) reduce wildlife-vehicle collisions by 80–90%.
2. Metal post fences are robust, often lasting longer than wood or plastic alternatives.
3. Metal posts outperform wood in fire-prone or flood-prone areas meeting federal and state transportation department durability standards (e.g., AASHTO).
4. Metal posts withstand harsh weather and animal pressure better than other materials.
5. Fences can be customized with features like escape ramps for trapped animals, drop-down sections for seasonal access, or adjustable gates for human/vehicle movement.
6. Metal fencing has proved to be the stronger fence type in resisting damage from elk and moose.

CONSTRAINTS

1. When designed for specific animals such as deer, the fence may unintentionally block small species.
2. High-quality metal posts and wildlife-specific designs can be expensive; exceeding typical budget costs.
3. Regular checks are needed to identify damage caused by weather, vehicles, or animals attempting to breach.
4. Roadside areas often have legal limitations for what can be built, particularly near public roads or utilities.
5. This type of fencing can be visually unappealing or disrupt scenic views.
6. If not properly planned and maintained, gates may restrict access for landowners, emergency services, or utility maintenance.

UDOT Standard Fencing | Metal Post Fence



Right of Way Fence and Gate (Metal Post)

Source: Detail - UDOT 2026 Standard Specifications



Wildlife Fencing with Gate and Metal Post

Source: Image - Elite Fencing Company

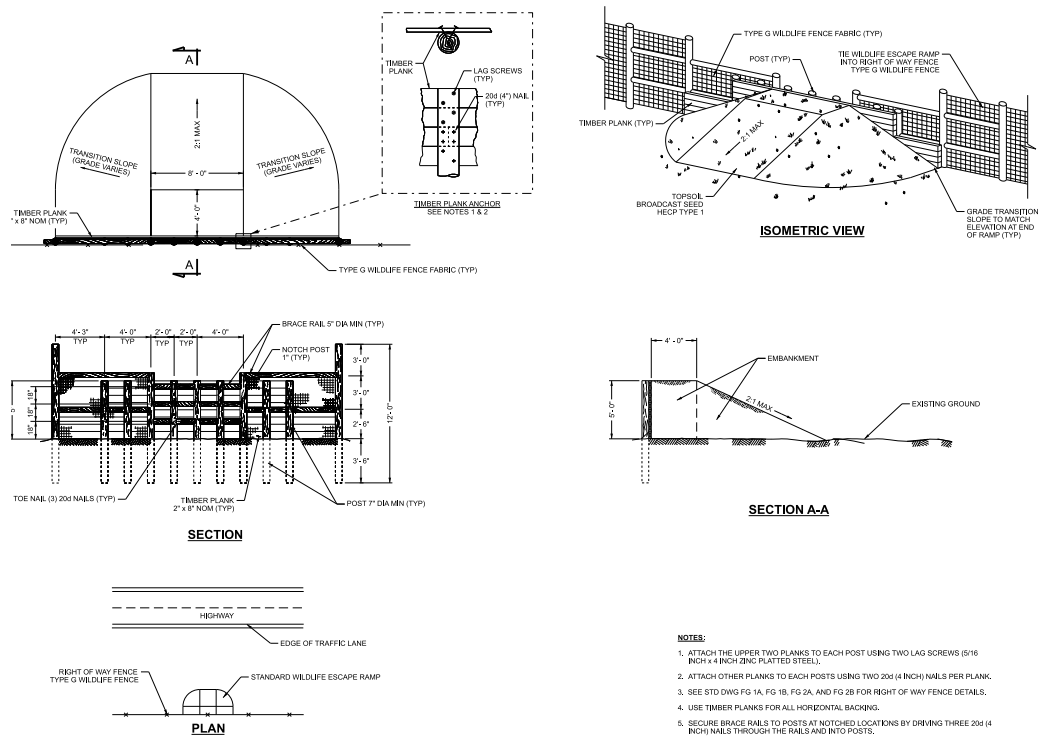
OPPORTUNITIES

1. Wildlife escape ramps provide wildlife access out of dangerous zones along roads and developments.
2. By providing a way out, ramps reduce the likelihood that animals will panic and run across roads
3. While not a substitute for wildlife overpasses or underpasses, escape ramps cost significantly less and still offer major safety benefits. When full crossings aren't viable, ramps provide functional alternatives.
4. Variability in design allows for multiple species, such as steeper ramps with sturdy footing for deer and elk, or gradual slopes with enclosed sides for small mammals, reptiles, and amphibians.
5. Alongside fencing, gates, and overpasses, ramps complete a comprehensive wildlife-friendly corridor.

CONSTRAINTS

1. Some species (e.g., large ungulates like moose or predators like wolves) may be reluctant or physically unable to use escape ramps.
2. If ramps aren't designed with side rails or proper surfacing, small mammals or reptiles may be unable to use them effectively.
3. Ramps too far apart or in areas with low animal activity reduce their effectiveness.
4. If too steep or slippery, animals may avoid or fail to use escape ramps.
5. Constrained ROWs (e.g., narrow shoulders, steep embankments), can limit or prevent the installation of ramps in areas where they could be most effective.

UDOT Standard Fencing | Wildlife Escape Ramp



Standard Wildlife Escape Ramp

Source: Detail - UDOT 2026 Standard Specifications



Wildlife Escape Ramp - Jumpout

Source: Image - Road Guard

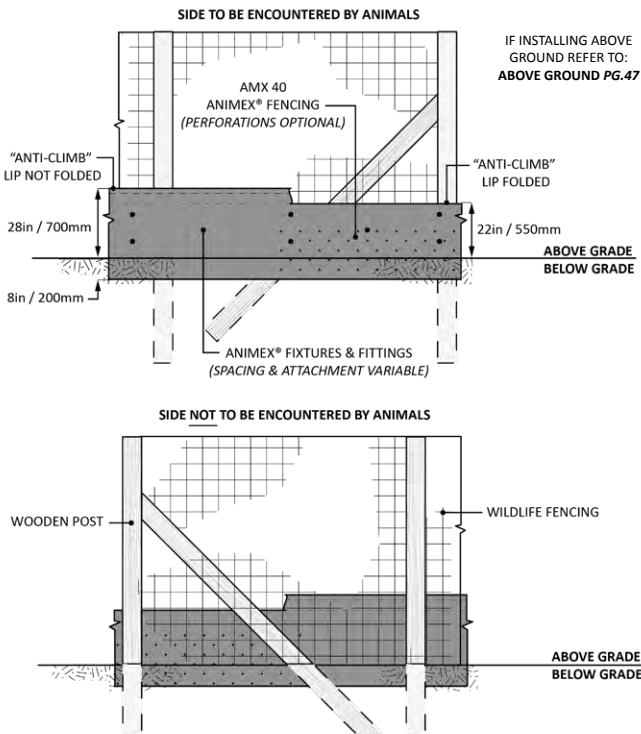
OPPORTUNITIES

1. Woven or page wire with proper mesh size and tension prevents wildlife from jumping, squeezing through, or breaking through wildlife fencing.
2. The use of customizable mesh sizes and variable fence heights accommodate different species.
3. Narrower mesh near the ground limits the passage of small mammals. Tighter spacing at the top prevents animals from jumping over.
4. This style is ideal for perimeter fencing at private conservation areas, rural sensitive habitats, or natural landscapes where minimal visual impact is preferred.
5. The rustic aesthetic suits farmland, rangeland, or traditional rural settings.
6. Wood and page wire can be a cheaper alternative, especially when labor is locally sourced.
7. Design can be supplemented by dig barriers or electric offset wires to deter burrowing animals or persistent species, like coyotes.

CONSTRAINTS

1. Wood post are vulnerable to rot, insect damage, and weathering over time.
2. Wood post have a shorter lifespan in humid, wet, or freeze-thaw climates compared to steel or composite posts.
3. Page wire may sag or loosen with time, especially if not tensioned properly or after wildlife contact.
4. This type of fencing requires frequent inspection and repair, especially where wildlife push against or climb the wire.
5. Unlike metal post systems, wood and page wire fencing is more permanent and harder to modify or relocate.
6. Small and medium-sized animals can become entangled or injured, especially if mesh openings are too large or fences are improperly installed.
7. Installation is labor-intensive and slow, as wooden posts require more effort to drive or set—especially in rocky or frozen soils.

Wildlife Exclusion Fencing | Wood Post and Page Wire Fencing



Wood Post & Page Wiring Fencing

Source: Detail - Animex Wildlife Fencing



Wood Post and Wire Fencing

Source: Image - Colorado Dept of Transportation

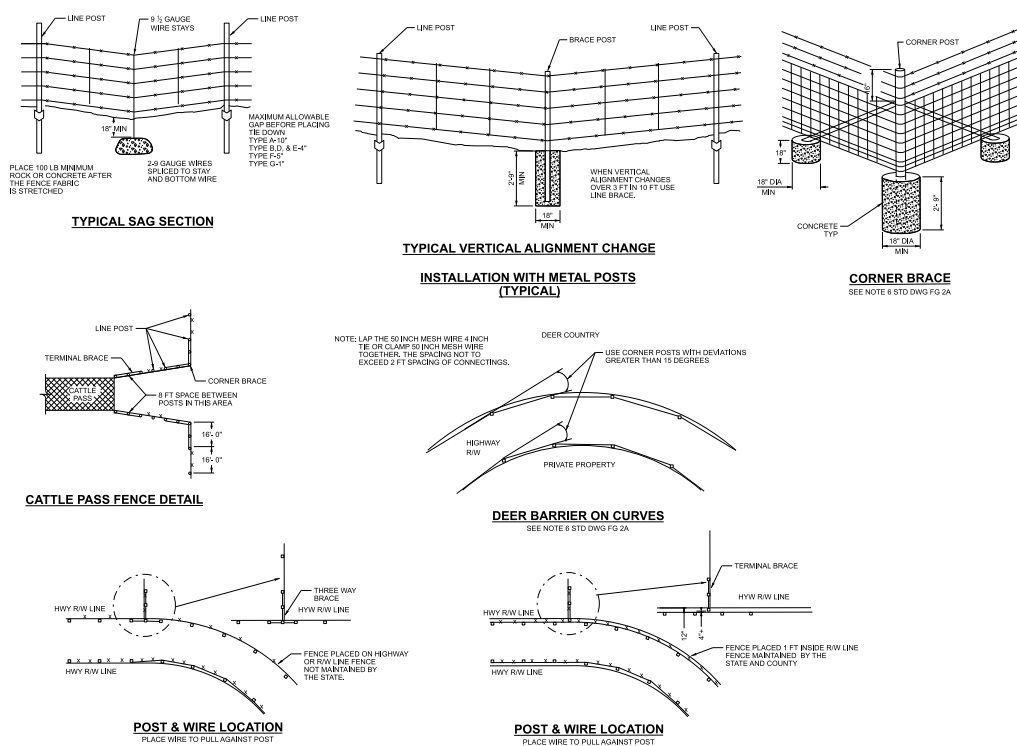
OPPORTUNITIES

1. Containment fencing controls grazing patterns by enabling rotational grazing and protecting pastures from overuse.
2. Well-designed fences reduce labor by minimizing the need for constant herding or animal oversight.
3. This fencing improves productivity by keeping animals secure, well-fed, and protected from hazards such as roads and predators.
4. High-tensile woven wire or electric fencing can deter predators such as coyotes, wolves, or stray dogs.
5. Fencing can be designed to allow wildlife passage (e.g., with a bottom smooth wire 18 inches above the ground) or to avoid injury to non-target animals.
6. Containment fencing supports pasture regeneration, erosion control, and nutrient management by directing livestock away from sensitive zones such as streams and forest edges.
7. There are diverse material and design options available based on species, terrain, and budget.

CONSTRAINTS

1. This fencing keeps grazing animals such as cattle within their paddock but larger wildlife such as deer, elk, and moose, jump these fences to reach their destinations.
2. A one size does not fit all approach applies: cattle require strong, visible fences, preferably barbed or electric, while sheep and goats need tight mesh or electrified fencing due to their smaller size.
3. The initial cost can be high, depending on the material used, such as woven wire, pipe fencing, or electric fencing.
4. Fences must be regularly checked and repaired to address damage caused by livestock pushing or rubbing, as well as erosion.
5. Zoning or boundary regulations may restrict fence placement near roads, streams, or neighboring properties.
6. Low-visibility wire can cause entanglements or injuries related to panic in animals.
7. Installation is labor-intensive, especially in rough terrain or on large acreages.

Livestock Containment Fencing



Livestock Containment Fencing

Source: Detail - Animex Wildlife Fencing



Livestock Fencing

Source: Image - Western Ranch Supply

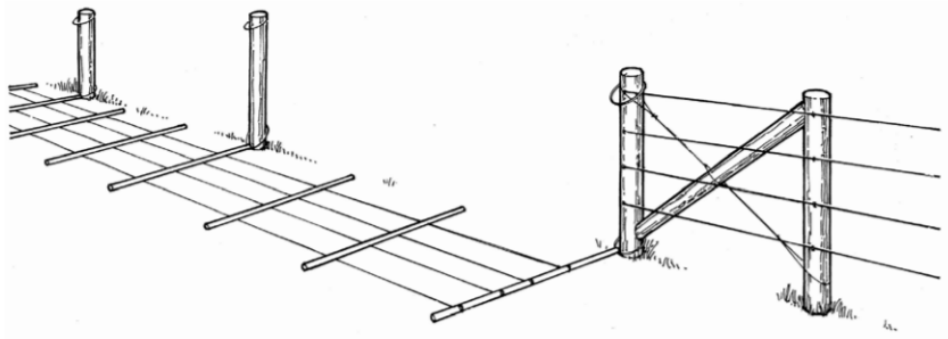
OPPORTUNITIES

1. Lay down fences allow wildlife, such as deer, elk, and antelope, to access traditional migration routes during key seasons while controlling their movement during others.
2. This design is especially important for animals that don't jump well, such as pronghorn, helping to avoid injuries common with year-round fencing.
3. The lay down fence design is a functional solution when wildlife overpasses or underpasses are not feasible.
4. Fencing can be adapted to existing fence lines with relatively inexpensive hardware and careful planning.
5. This design helps accommodate wildlife movement related to conservation targets, such as sage-grouse, pronghorn, and migratory deer.
6. Ranchers and landowners may support lay-down fencing because it allows seasonal grazing control without blocking wildlife.
7. The timing and usage can be easily adjusted based on changing ecological or land-use needs.

CONSTRAINTS

1. Typically raised in winter and laid down in spring, or vice versa, this approach requires seasonal labor, careful planning, and consistent execution.
2. Fencing not laid down or erected on time can defeat its purpose, either blocking migrating wildlife or allowing unwanted access.
3. Repeated raising and lowering can weaken fence components (posts, wires, fasteners), potentially reducing the fence's overall durability and effectiveness over time.
4. High winds, snow load, or ice can damage sections of fencing, when they're upright or stored on the ground.
5. To ensure easy manipulation, appropriate wire tension, and structural integrity is recommended in both positions.
6. When fences lie flat near travel lanes, they may pose hazards, such as entanglement for animals or interference with road shoulder maintenance like snowplowing.

Miscellaneous Fencing Components | Lay Down Fence



Lay Down Fence

Source: Detail - USDA - Ed Jenne



Metal H-brace Ready for Lay Down System

Source: Image - K Fence

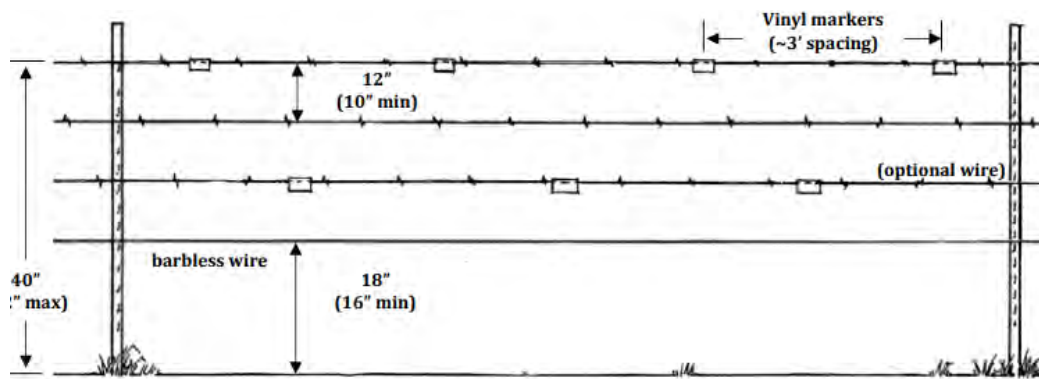
OPPORTUNITIES

1. Adding markers, helps animals see and avoid the fence, especially at dusk, dawn, or in snowy conditions, reducing the risk of accidental injury or entanglement.
2. This design is proven to reduce entanglement and collisions along high-speed road corridors.
3. For birds, adding visual markers (e.g., flappers or flags) to avoid wire strikes is essential, especially near wetlands or flyways.
4. Visibility markers improves fence visibility for drivers and can highlight fence lines and wildlife crossing areas.
5. This method reduces entanglement or panic injuries for wildlife, especially in low-light conditions.
6. Visibility markers can be added to existing fences without major construction.
7. Reflective tape, poly-wire, PVC slats, and flutter flags are low-cost options.
8. Makes temporary or seasonal fences more visible during migration periods (e.g., lay-down fences), helping to reduce wildlife collisions or entanglement.
9. Research on wire visibility for sage-grouse demonstrates that flagging and marker use on fences significantly reduces fence collisions in functioning conservation efforts.
10. Utilizing reflective materials in fence components enhances visibility during low-light conditions, helping both wildlife and humans see the fence more clearly.

CONSTRAINTS

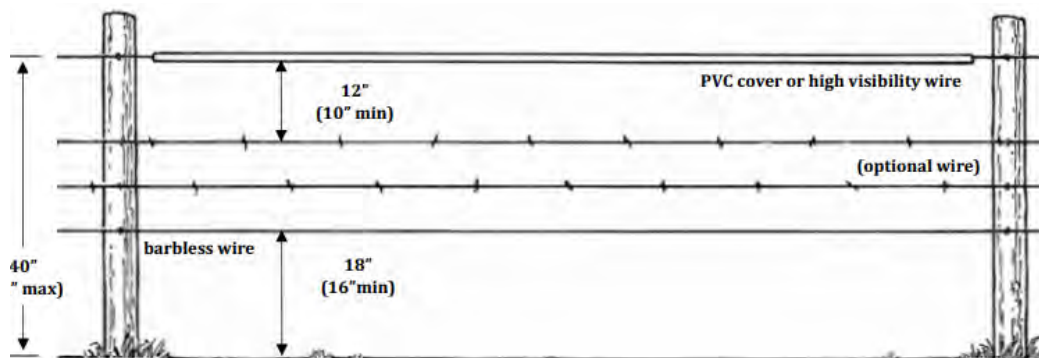
1. Markers can fade, tear, or fall off over time due to sun, wind, snow, or UV exposure.
2. Over time, wildlife may become accustomed to visual markers, reducing their deterrent effect.
3. Some animals may avoid or panic around high-contrast objects, especially prey species or sensitive animals such as pronghorn, potentially affecting their movement or behavior.
4. Community members may object to bright or flashy fencing in rural or protected landscapes.
5. There is no universal effectiveness as species vary in visual acuity and response to markers (e.g., deer vs. birds).

Miscellaneous Fencing Components | Visibility Markers



Barbed / Barbless Wire Fence - Visibility Markers

Source: Detail - USDA - Ed Jenne



Wire Fence with Visibility Markers

Source: Detail - USDA - Ed Jenne



Source: Image - Easy Fence

Wire Fence with Visibility Markers



Source: Image - K Fence

Wire Fence with Polyester High Visibility Poles

ROAD DESIGN MODIFICATIONS

OPPORTUNITIES

1. Measures such as wildlife signs and roadway lighting not only raise public awareness of wildlife presence but also serve as constant reminders for drivers to stay alert in high-risk areas.
2. Lowering speed limits, as implemented along the SR-224 corridor study area, can help reduce wildlife-vehicle collisions when drivers comply with the limits and during critical periods such as dawn, dusk, or migration seasons.
3. Roadway modifications such as rumble strips, raised medians, and narrower lanes can naturally slow vehicle speeds.
4. Determent campaigns geared towards wildlife awareness build community support and reinforce safe driving behaviors.
5. Seasonal signage and variable message boards can be utilized during periods of active wildlife movements to increase driver awareness and alertness.

CONSTRAINTS

1. Temporary road closures and traffic volume reductions may face resistance from the public and businesses.
2. Roadway lighting, while improving visibility, can contribute to light pollution and impact nocturnal wildlife behavior.
3. Raised medians, speed humps, and traffic circles may conflict with emergency response routes and freight movement, and not typically allowed along major highways –like SR-224.
4. Even with roadway modifications and signage, effectiveness depends on drivers consistently complying with posted signage; non-compliance can limit success.
5. Signage fatigue can result in a loss of efficiency of new signage requiring ongoing changes to types and locations to maintain a beneficial impact, and not typically allowed along major roadways –like SR-224.

Potential Interventions



Speed Check in Yosemite National Park

Source: Yosemite National Park



Speed Determent Sign in Yosemite National Park

Source: Yosemite National Park



Sources: SWNS

Road Closure for Toad Migration

Design modifications that reduce collisions help ensure that wildlife populations remain connected, while also improving travel safety.

Yosemite National Park reminded visitors to follow the “Speeding Kills Bears” signs in the park after an uptick in wildlife vehicle collisions.

Reduction in traffic volumes on roadways can be accomplished by:

- Reduction in traffic volume on road network.
- Temporary road closures.
- Reduction of the posted speed limit

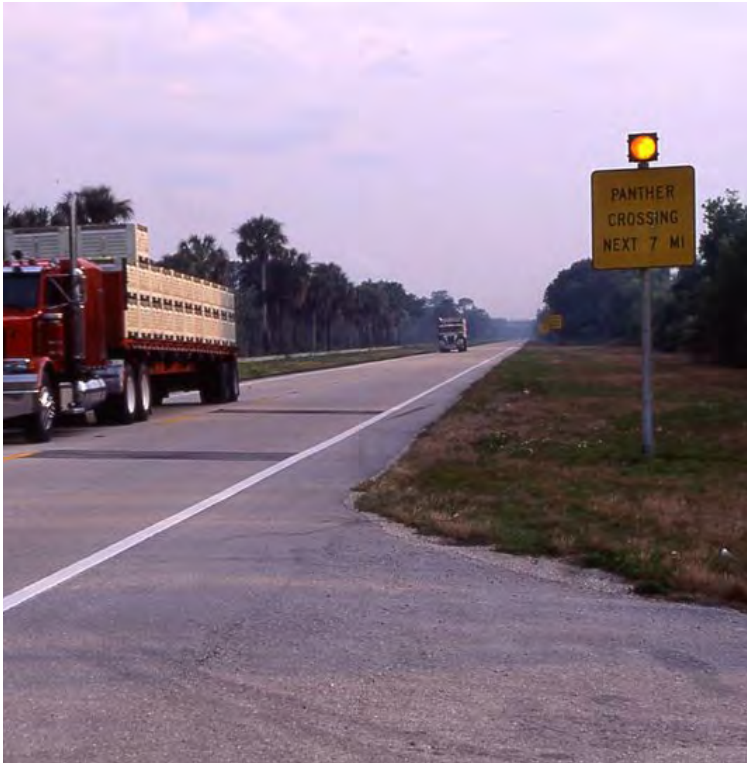
An increase in visibility to drivers can be done by:

- Addition of roadway lighting
- Vegetation removal
- Wider roadway striping
- Reduced height of snow banks
- Seasonal signs

Sources: Utah Wildlife Mitigation Initiative

This image shows a completely blank white rectangular area. It is surrounded by a thick, solid black border that frames the entire composition. There are no markings, text, or illustrations on the white surface.

Potential Interventions



Source: Marcel Huijser

Rumble Strips and Panther Warning Sign, Florida



Source: Montana Dpt of Transportation

Seasonal Sign for Bison, Montana

Roadway modifications such as reduced speed limits or signage play a crucial role in preventing wildlife collisions.

To address and protect the panther species in Florida, the department of transportation installed rumble strips along with a warning sign.



Source: Angela Kociolek

A VMS Updates of Moose, Wyoming

Other roadway modifications specific to reducing and calming road design speed include:

- Sharper, Horizontal Curves
- Narrow lane widths and no shoulders
- Narrow clear zones
- Speed humps / bumps
- Traffic circles
- Curb and sidewalk extensions
- Raised medians
- Rumble strips
- Variable message signs
- Seasonal signage

Sources: Wildlife Vehicle Collisions Reduction Study, USDOT

PUBLIC INFORMATION & DRIVER EDUCATION CAMPAIGNS

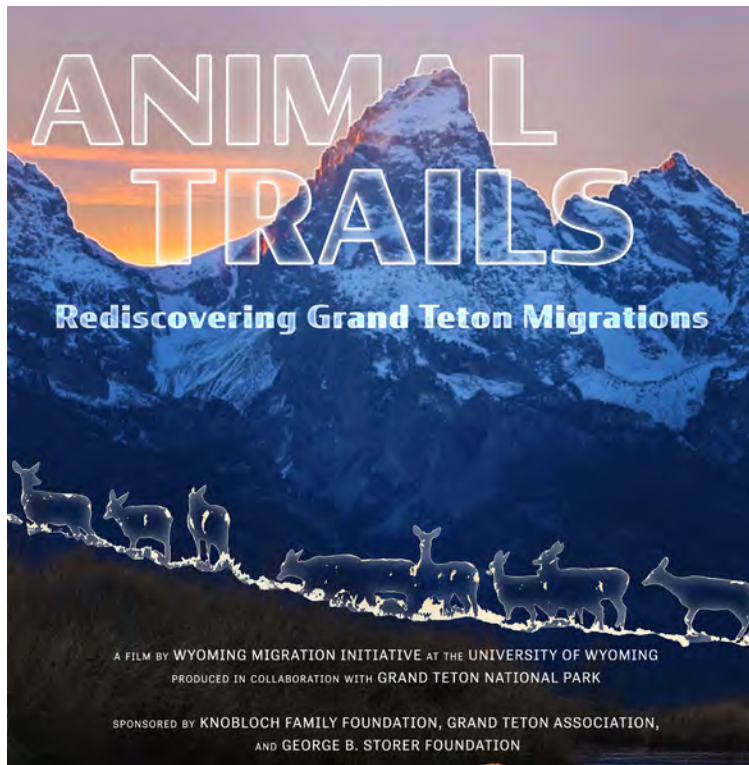
OPPORTUNITIES

1. Campaigns using radio, billboards, and digital media can reach a sizable number of drivers and create widespread awareness of wildlife-vehicle collisions (WVC) risks.
2. Crash data maps, roadkill surveys, and spatial information allow agencies to highlight high-risk areas, ensuring messages are specific and relevant to motorists.
3. Collaborations with schools, local organizations, and agencies expand the reach of educational programs and foster shared ownership of solutions.
4. Public information campaigns are relatively low-cost compared to physical roadway modifications and can be quickly adapted to new data, locations, or species.
5. Videos, brochures, community flyers, and bumper stickers help normalize safe driving behaviors and create generational awareness about wildlife safety.

CONSTRAINTS

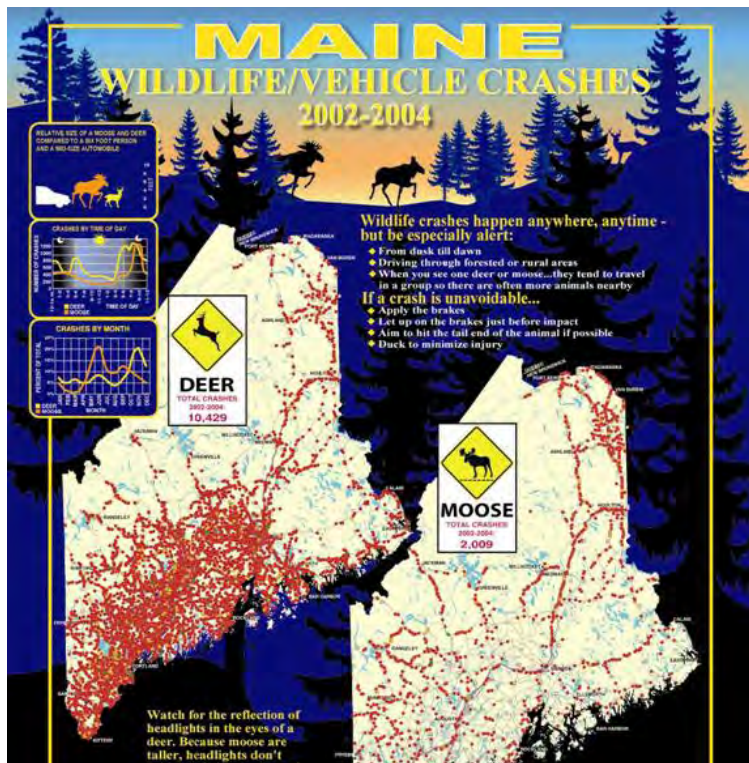
1. Awareness campaigns may not always lead to measurable reductions in WVCs if drivers fail to change their speed or attentiveness.
2. Campaigns may miss certain populations (tourists, seasonal drivers) who are often most at risk in wildlife crossing zones.
3. Sustained funding is required to keep campaigns active, update materials with new data, and ensure continued visibility.
4. It can be difficult to directly measure the effectiveness of public education efforts in reducing collisions compared to infrastructure solutions.

Potential Interventions



Source: Wyoming Migration Initiative

Educational Program for Wildlife Migrations



Source: Maine Department of Transportation

Wildlife Vehicle Crashes Poster



Source: Wyoming Migration Initiative

Car Bumper Stickers

Increasing roadway safety via public information and driver education seeks to reduce WVC's by increasing motorists' awareness of the impacts.

"I brake for Migration" stickers remind motorists that migratory big game animals cross Wyoming's highways as well as mountains and plains.

- Driver education and public information campaigns summarize and display crash data maps related to WVCs.
- Spatial information can be used for focusing limited resources to roadside mitigation methods.
- Campaigns can tap into a public that wants to more fully understand the dangers of WVCs.
- Many states have developed safety campaigns to increase public awareness.
- Campaigns have reached more than three million people through television, magazines, and other media.

Sources: Wildlife Vehicle Collisions Reduction Study, USDOT

This image shows a completely blank white rectangular area. It is surrounded by a thick, solid black border that frames the entire composition. There are no markings, text, or illustrations on the white surface.

Potential Interventions



Roadkill Prevention Program Poster

Source: NASA



Public Safety Campaign

Source: Seattle Dept of Transportation

Many driver education and public information campaigns summarize and display crash data maps related to WVCs.

The Kennedy Space Center has developed a website with a video, materials, posters, stickers and updates on the latest roadkill statistics.



Wildlife Vehicle Crashes Poster

Source: Maine Department of Transportation

Additional typologies and partner supported campaigns compose of some of the following methods:

- Public Service Announcements
- Public Information Campaigns
- Radio Spots
- Videos
- Brochures
- Posters
- Billboards
- Graphic Signs
- Local Educational Programs
- Bumper Stickers

Sources: Wildlife Vehicle Collisions Reduction Study, USDOT

ANIMAL DETECTION SYSTEM

OPPORTUNITIES

1. Animal detection systems provide immediate warnings when wildlife is near the road, allowing drivers to reduce speed and improve reaction times, directly lowering the risk of collisions.
2. Unlike physical barriers, detection systems allow animals to move freely along their natural routes.
3. Systems can be combined with wireless communication, speed reduction zones, wildlife fencing, and potentially on-board vehicle warning systems, creating a multi-layered approach to collision reduction.
4. Visible detection infrastructure (flashing signs, message boards) reinforces the presence of wildlife and encourages ongoing driver attentiveness.

CONSTRAINTS

1. Wildlife sensor accuracy can be affected by environmental conditions, false positives, or technical malfunctions, requiring ongoing maintenance and monitoring.
2. Studies show mixed results in how drivers adjust speed when warned, with some slowing substantially, others minimally, and some not at all.
3. Animal detection systems should still be regarded as an experimental mitigation measure rather than a measure that will reduce WVCs with a high degree of certainty.
4. Systems are effective only in the zones they cover, meaning animals outside detection zones may still be at risk.
5. Current system designs do not accommodate roadways that are the width of SR-224.

Potential Interventions



Source: British Columbia Ministry of Transportation and Transit

Animal Detection System on Highway 3, Alberta



Source: British Columbia Ministry of Transportation and Transit

Animal Detection System on Highway 3, Alberta, Canada



Source: British Columbia Ministry of Transportation and Transit

Visualization of Detection System at Night

Animal detection system is a technology that uses sensors to identify animals near roadways and alert drivers in real-time.

Highway 3 near Elko in British Columbia uses advanced animal detection systems to raise awareness and prevent wildlife collisions.

When wildlife enters pre-determined danger zones, the system triggers alerts that are used to activate signs, raise alarms, or signal to control centers. The multi-layered system includes:

- Animal detection system
- Automated driver warning signs and signaling
- Solar and wireless systems
- Data collection devices and methods
- Wildlife fencing
- Camera and monitoring equipment
- Speed reduction zones
- Camera and monitoring equipment

Sources: Federal Highway Administration, British Columbia Ministry of Transportation and Transit

[illegible]

Potential Interventions



Source: British Columbia Ministry of Transportation and Transit

Animal Detection System on U.S. Highway 191



Source: Marcel Huijser

Animal Detection System on U.S. Highway 191 in Yellowstone National Park



Source: Animex International

Animex Wildlife Detection System

Wildlife detection systems—such as flashing signs, motion-activated detectors, or seasonal signage—play a crucial role in reducing wildlife vehicle collisions (WVC).

In 2002, the ICx Radar Systems was installed along a 1-mile road section of the US Highway 191 in Yellowstone, National Park south of Big Sky, Montana.

The effects of reliable detection systems are wide-ranging and crucial for road safety, including:

- Increases driver awareness of nearby wildlife
- Encourages drivers to reduce speed
- Improves driver reaction time to animal presence
- Lowers the risk of vehicle-animal collisions
- Enhances safety for both animals and humans
- Provides real-time alerts in high-risk areas
- Decreases likelihood of wildlife vehicle collisions

Sources: Federal Highway Administration, Marcel P. Huijser, Montana State University

UNDERPASSES

OPPORTUNITIES

1. Underpasses can be tailored to accommodate a range of species—from amphibians to large mammals—helping maintain biodiversity and ecological connectivity.
2. Multiple types of underpass crossings exist (culverts, concrete boxes, bridge extensions, amphibian tunnels, etc, allowing customization based on species needs, topography, and habitat.
3. Successful documented use by varying species of wildlife over multiple years and sites shows reliability of wildlife underpasses as a mitigation strategy.
4. Underpasses can be combined with fencing, signage, and monitoring systems to increase overall effectiveness and connectivity, as part of a larger, integrated approach.

CONSTRAINTS

1. The effectiveness of undercrossings depends on careful consideration of species behavior, size, approach design, lighting and noise conditions, surrounding vegetation, and ground conditions.
2. Underpasses are most effective when paired with fencing or other guidance systems; without them, wildlife may not locate or use the structures.
3. Underpass placement requires suitable clearance, accessible terrain, and hydrology, as not all locations can accommodate this type of structure.
4. Federal, state, and local transportation and natural resource agencies may have differing priorities when infrastructure and waterways are involved.

Potential Interventions



Source: Tony Clevenger

Culvert Underpass along the Trans Canada Hwy, Banff



Source: Atlantic Industries

Open Bottom Culvert along the Trans Canada Hwy, Banff



Source: National Wildlife Federation

Mountain Lion exiting Banff Underpass

Wildlife underpasses help move wildlife through disrupted habitats, decreasing the risk of vehicle collisions.

In 1996, Banff National Park installed a series of underpasses beneath the Trans Canada highway to provide a safe alternative route for wildlife.

Several important factors influence how well underpasses function to reduce wildlife-vehicle collisions. Some of the most critical considerations include:

- Species-specific preferences
- Location
- Size, shape, and materials
- Drainage
- Vegetation
- Approach Ramps and Entry Design
- Habitat Continuity
- Light and Noise Control
- Monitoring and Maintenance

Source: Parks Canada, The Oregon Conservation Strategy

[illegible]

Potential Interventions



Source: The Oregon Conservation Strategy

Underpass on US-97, Oregon



Source: Oregon Field Guide

Wildlife crossing the US-97 Underpass, Oregon



Source: The Oregon Conservation Strategy

Deer crossing US-97 Underpass

Wildlife underpasses help animals safely cross roads, reducing collisions and protecting both wildlife and people.

In their first two years, the wildlife underpasses on Highway 97 were used by 31 different species reduced WVC's by over 90% within fenced areas.

There are various types of underpasses designed to accommodate different wildlife species, ranging from simple culverts to complex, species-specific tunnels. Examples are below:

- Culverts
- Concrete Box underpass
- Large mammal or open span underpasses
- Multi-use underpasses
- Bridge extensions and viaducts
- Amphibian tunnels
- Critter shelving such as ladders or shelves

Source: Oregon Department of Transportation, The Oregon Conservation Strategy, Wikipedia

OVERPASSES

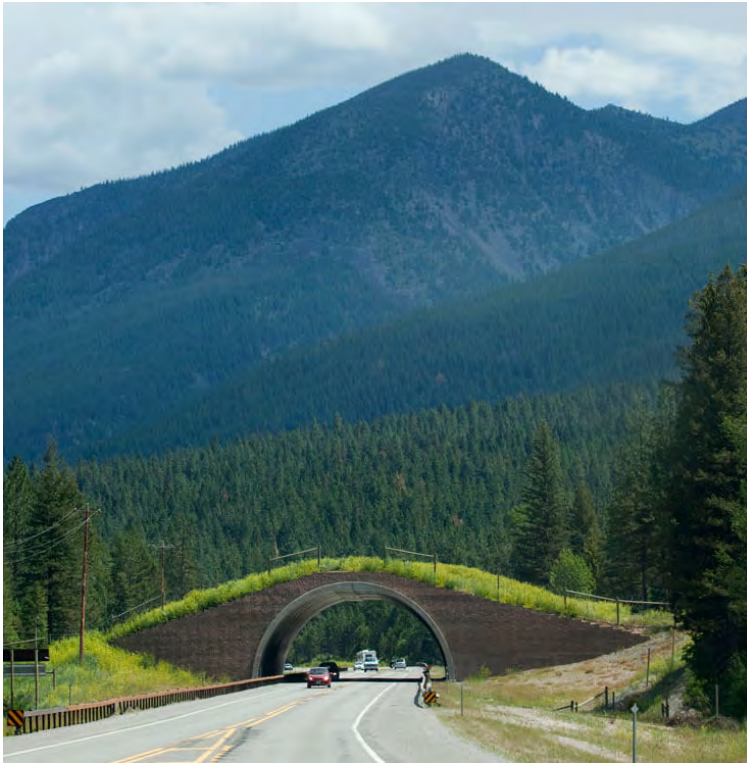
OPPORTUNITIES

1. Overpass crossings reconnect fragmented habitats, reduce stress on wildlife populations, and provide safe natural movement corridors.
2. When combined with fencing, overpass crossings effectively guide animals to safe crossings, maximizing the reduction of wildlife vehicle collisions.
3. Visible structures like green bridges or land bridges can educate the public about wildlife conservation and the importance of coexistence.
4. Overpass crossings can become key nodes in a regional network of wildlife corridors, contributing to long-term landscape-level conservation goals.
5. Overpass crossings are the preferred method of movement across roadways for some species. These structures provide safe crossing, expanded ranges that contribute to genetic diversity, increased habitat biodiversity, and a documented reduction in collisions and deaths (animal and human).

CONSTRAINTS

1. Overpass crossings can be expensive to plan and construct, and funding availability varies among agencies, sometimes limiting implementation.
2. Without fencing or other guidance systems, wildlife may not find or use the overpasses, reducing the benefits of the structure.
3. Terrain, land availability, and environmental conditions can limit feasible locations and designs for overpasses.
4. Successful planning and implementation requires cooperation across federal, state, and local agencies. These efforts can be complicated by differing priorities, timelines, and funding sources.

Potential Interventions



Source: Vital Ground Foundation

Hwy 93 Animals' Trail Overpass, Montana



Source: Montana Dept of Transportation

Bear in proximity to Hwy 93 Overpass

Wildlife crossings can be as simple as a rope bridge or as complex as an overpass. A wide variety of options for crossings allow for tailor-made solutions to local issues.

The Animals' Trail wildlife overpass is a 197-foot crossing structure managed by the Confederated Salish and Kootenai Tribes.



Source: Montana Dept of Transportation

Hwy 93 Animal's Bridge Overpass, Montana

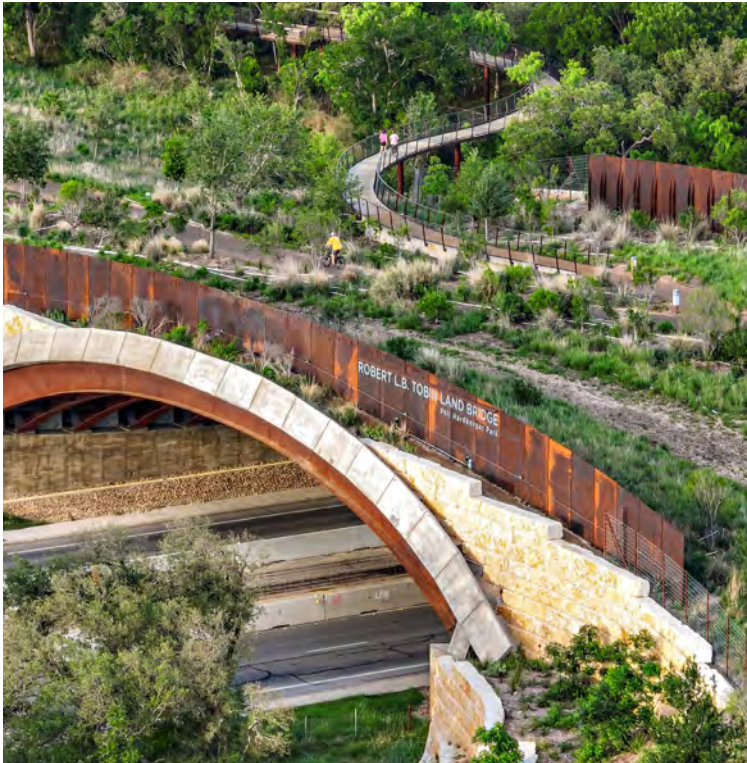
Green infrastructure typologies provide a various range of wildlife crossing potentials. The below are options and types of wildlife crossings:

- Overpasses
- Wild or Agricultural
- Simple to Complex
- Small to Large
- Specific to Diverse
- Public or Restricted
- Visible or Hidden
- Cold, Hot, Wet, and Dry
- Multipurpose

Sources: US Dept of Transportation , USDA Forest Service

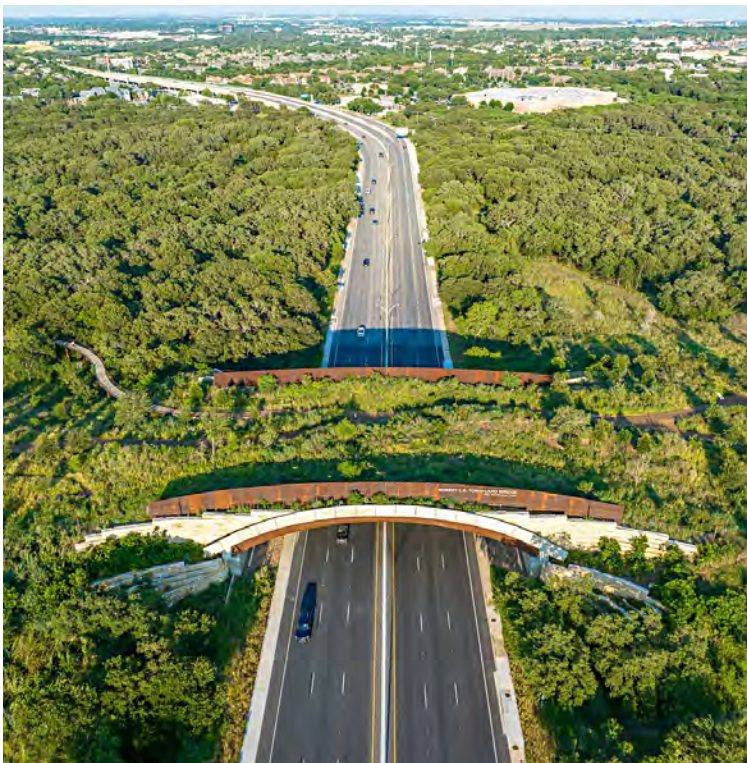
This image shows a completely blank white rectangular area. It is surrounded by a thick, solid black border that frames the entire composition. There are no markings, text, or illustrations on the white surface.

Potential Interventions



Robert L.B Tobin Land Bridge, Texas

Source: Phil Hardberger Park



Bird's Eye of Robert L.B Tobin Land Bridge, Texas

Source: Phil Hardberger Park



Deer crossing Tobin Land Bridge

Sources: Texas Monthly

Wildlife crossings take on a variety of forms and can exist where human animal interaction occurs. They reduce conflict by providing safe passageways for wildlife.

The Robert L.B Tobin Land Bridge was designed with ample space to accommodate both humans and animals, ensuring a secure crossing.

Various types of wildlife crossings are available based on structure type:

- Green Bridges / Land Bridges
- Aerial Crossings / Canopy Bridges
- Lattice or Rope Bridges
- Multi-Use Overpasses
- Viaduct Overpasses

Wildlife crossing are also available based on material type:

- Concrete or Steel Structures
- Modular or Prefabricate Overpasses
- Natural Material Bridges
- Geotextiles and Drainage Fabrics

Sources: US Dept of Transportation , USDA Forest Service, Arc Solutions



REGIONAL MITIGATION PRECEDENTS

State and local agencies have long worked to address the challenges created where trans-portion corridors intersect with wildlife migration routes and habitats. Across the region, both large- and small-scale interventions have been implemented to reduce wildlife-vehicle collisions and enhance ecological connectivity. These efforts provide valuable precedent and directly inform the recommended strategies for the SR-224 study area, ensuring that proposed measures build upon proven practices while responding to site-specific conditions.

REGIONAL MITIGATION PRECEDENT



Wildlife Fencing along I-80

Source: Image - UDOT



I-80 Wildlife Escape Ramp

Source: Image - UDOT

The installation of wildlife fencing aims to decrease deaths and serious injuries on roadways by preventing animals from accessing roadways. This strategy physically separates wildlife from traffic, thereby reducing likelihood of collisions. Wildlife fencing is often implemented in locations through collision data, animal movement patterns, and migration corridors.

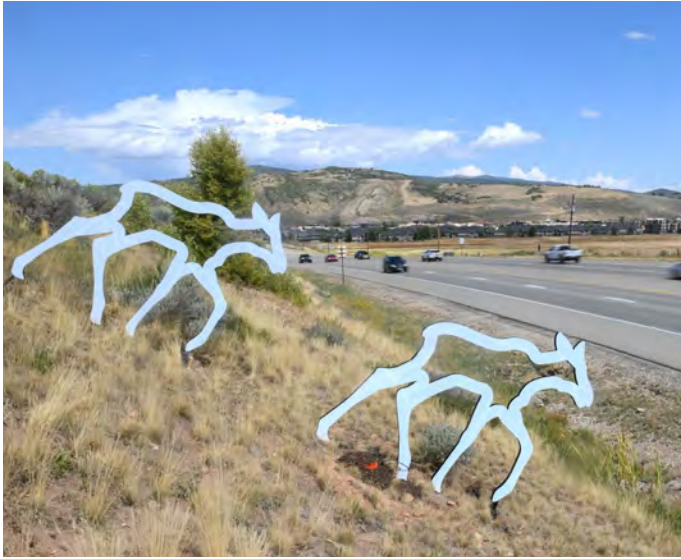
Exclusion fencing is the most common type, designed to keep animals off roads and direct them to underpasses or overpasses. Escape features, like one-way gates or jump-outs, allow animals to exit road areas safely.

ECHO JUNCTION, UTAH (I-80/84) WILDLIFE FENCING

- This new fencing constitutes phase one of a seven-phase project to enhance safety.
- The project's objectives are aimed at reducing wildlife-vehicle collisions.
- The first three miles of fencing funnel animals to an underpass that allows them to go to and from the body of water while bypassing at least a portion of the interstate system.
- Additional proposed fencing will extend along the two interstates in the area, funneling critters to existing underpasses.
- The fencing consists of wood posts and page wire mesh, a configuration commonly used in wildlife mitigation projects due to its durability and effectiveness.

Sources: Utah Dept of Transportation , Utah Wildlife Mitigation Initiative

REGIONAL MITIGATION PRECEDENT



Source: Image - Park Record

Wildlife Signage along SR-224



Source: Image - Park Record

Reduced Speed Limit along SR-224

Reducing wildlife-vehicle collisions through thoughtful road design is vital for both public safety and ecological health. Roads that intersect with natural habitats often disrupt wildlife movement, leading to dangerous encounters between animals and vehicles.

Road design modifications like reduced speed limits and wildlife signage are essential for protecting both animals and drivers. Slower speeds give motorists more time to react to animals crossing the road, reducing collisions and saving lives. Clear signage alerts drivers to high-risk areas, increasing awareness and encouraging caution.

PARK CITY, UTAH (SR-224) ROAD MODIFICATIONS

- Implemented on SR-224, reducing vehicle speeds in high-risk areas can give drivers more time to react to wildlife on the road.
- Strategically placed wildlife crossing signs, such as the ones present on SR-224 can raise driver awareness in known wildlife movement corridors.
- Established smaller lane widths as part of the BRT effort, can create an illusion of acceleration and reduce vehicle speed.

Sources: US Dept of Transportation , Wildlife-Vehicle Collision Reduction Study

REGIONAL MITIGATION PRECEDENT



Source: Image - Utah Dpt of Transportation

Citizen using Utah Roadkill App



Source: Image - NY Times

Citizen recording roadkill

Increasing roadway safety via public information and driver education seeks to reduce death and serious injury on roadways by increasing motorists' awareness of the impacts, causes, and high-risk locations of WVCs, while also giving drivers advice on the best actions to take to avoid crashes with animals.

Public information and driver education about wildlife-vehicle collisions are vital for raising awareness and promoting safer driving habits. Informed drivers are more likely to stay alert in high-risk areas, reducing accidents and helping protect both wildlife and human lives.

UTAH ROADKILL REPORTER APP (UDOT and UDWR)

- The Utah Roadkill Reporter app uses modern GPS tracking technology to collect high-accuracy data on animal carcasses involved in vehicle collisions.
- The app collects data on reported animal carcasses, animal carcasses that have been picked up, and pick-up routes being completed by contractors.
- When carcasses are reported and collected, the app records information on the species, gender, age class, and location of each carcass.
- Automatic GPS coordinates, along with the date and time of the record and the collected animal information, provide valuable data on wildlife-traffic interactions.
- Data is used by policymakers when they are designing for culverts, stream crossings and other mitigation strategies.

Sources: Utah Dept of Transportation , Utah Division of Wildlife Resources

REGIONAL MITIGATION PRECEDENT



Source: Image - US 160, CDOT

Area - Detection Cover System



Source: Image - SR-73, Adam Small

SR-73 Break the Beam System

Animal detection systems use sensors to detect large animals that approach the road. Once a large animal is detected, warning signals are activated to inform the drivers that a large animal may be on or near the road at that time.

Two broad categories are commonly used in animal detection systems: area-cover systems and break-the-beam systems. Area-cover systems detect large animals within a certain range of a sensor. Break-the-beam sensors detect large animals when their body blocks or reduces a beam of infrared, laser, or microwave radio signals sent by a transmitter to a receiver.

EAGLE MOUNTAIN, UTAH (SR-73) DETECTION SYSTEM

- Utah Department of Transportation and Utah Division of Wildlife Resources aided in the installation of animal detection and warning signs on SR-73 between MM 30 and 31.
- The mitigation efforts are linked to a greater migration corridor plan.
- Approximately 2,000 mule deer migrate annually through the Eagle Mountain area.
- Spring migration in the area generally occurs between March 15 and April 30 each year.
- Fall migration in the area generally occurs between December 1 and January 15 each year.
- More than 190 deer-vehicle collisions occurred in the area within the past two years, and the actual number may be as much as twice that.

Sources: US Dept of Transportation , UDOT, CDOT

REGIONAL MITIGATION PRECEDENT



Deer Creek Culvert Underpass

Source: Image - UDOT



Deer Creek Culvert Underpass

Source: Image - UDOT

Underpasses are engineered structures such as culverts, tunnels, or bridges designed specifically to allow animals to pass safely beneath roads. By providing safe passageways, they significantly reduce the likelihood of animals crossing directly over roadways.

Numerous studies have demonstrated the effectiveness of wildlife underpasses particularly when combined with exclusion fencing. Furthermore, underpasses can be species specific or design for multi species use, with size, location, substrate, and vegetative cover tailored to encourage use.

DEER CREEK STATE PARK, UTAH (I-189) UNDERPASS

- The underpass was constructed and completed as a metal culvert under I-189.
- Wildlife exclusion fencing and warning signage have been installed as supplementary mitigation strategies.
- The underpass is designed to support both stormwater drainage and the safe passage of terrestrial wildlife ensuring dual functionality.
- The completed underpass measures 212.00 feet in length, 21.00 feet in width, and 20.00 feet in height.
- The underpass features a gravel surface, which promotes natural movement for target species, such as mule deer.

Sources: Utah Dept of Transportation , Utah Wildlife Mitigation Initiative

REGIONAL MITIGATION PRECEDENT



Parley's Summit Bridge Overpass

Source: Image - UDOT



Deer crossing Parley's Summit Overpass

Source: Image - UDOT

Wildlife overpasses are bridges designed to move animals safely over roadways. They are strategically placed in locations where high number of animals cross busy roads. Crossing structures significantly reduce wildlife mortality, while also decreasing vehicle damage, and injuries as a result of wildlife-vehicle collisions.

In 1975, the Utah Department of Transportation installed the first wildlife bridge in the nation on I-15 near the town of Beaver. Since then, over 50 wildlife crossings have been built across the state. Wildlife crossings are now becoming an essential tool to maintain healthy wildlife populations in modern society.

PARLEY'S SUMMIT CROSSING, UTAH (I-180) OVERPASS

- The Parleys Summit wildlife overpass was completed in December 2018.
- The overpass is constructed as a multi-span bridge, providing a wide, stable platform that supports natural vegetation and mimics surrounding habitat.
- The structure was designed to serve large ungulates, including elk, moose, and mule deer, which are prone to vehicle collisions.
- A permanent surveillance camera system has been installed at the crossing.
- In 2024, UDOT repaired approximately one mile of wildlife exclusion fencing near the overpass.

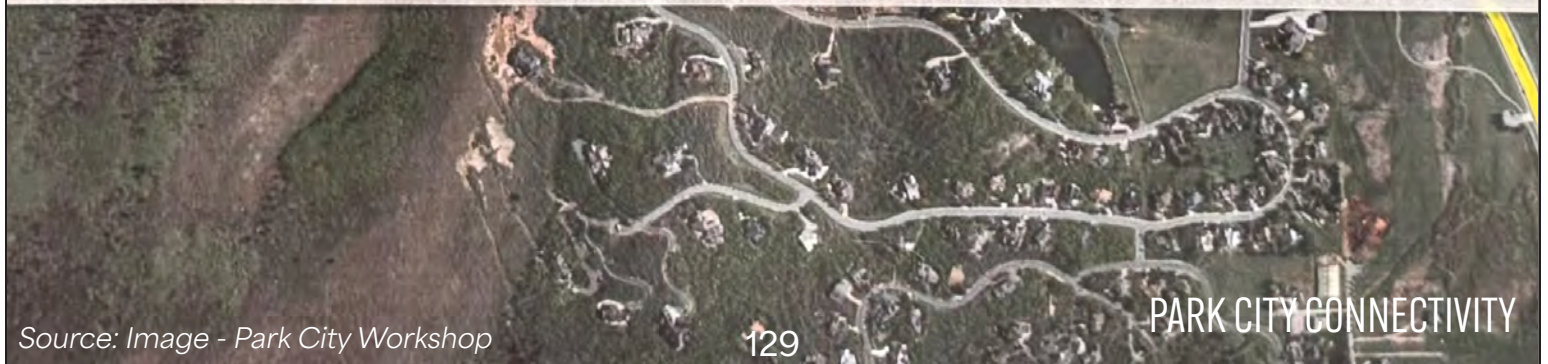
Sources: Utah Dept of Transportation , Utah Wildlife Mitigation Initiative



PARTICIPANT INPUT & OBSERVATIONS

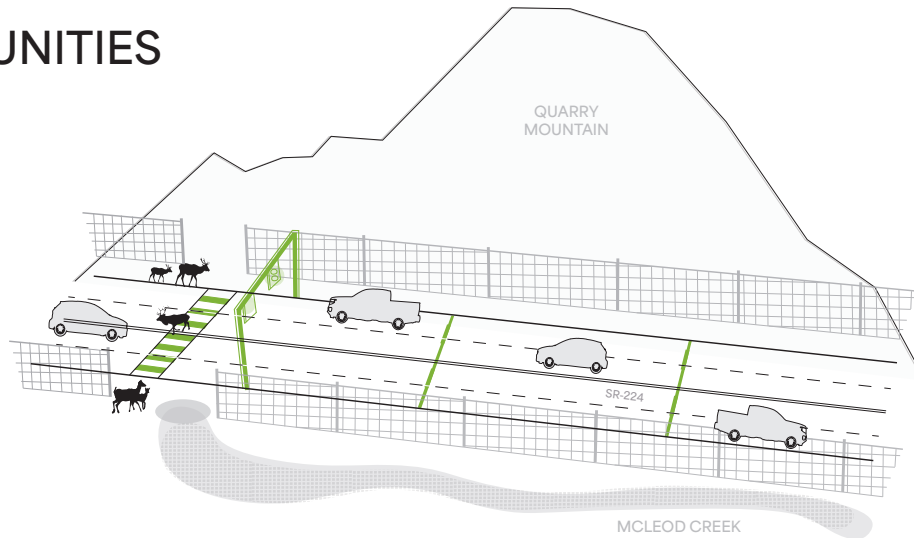
- transportation considerations
- school traffic
 - general community
 - construction traffic (AP)
 - BRT

The RDA-led design team invited regional stakeholders—including UDOT, UDWR, High Valley Transit, Summit County, and Park City Municipal Corporation—for a site visit and full-day workshop focused on the SR-224 corridor. The workshop provided an opportunity to collectively examine challenges, share perspectives, and explore strategies to reduce wildlife-vehicle collisions. The exchange of ideas fostered a more comprehensive understanding of opportunities and constraints. This process was intended to help identify areas of consensus and build regional momentum for action.



PARTICIPANT INPUT & OBSERVATIONS

OPPORTUNITIES



SPEED MANAGEMENT

- Reducing vehicle speeds markedly decreases wildlife vehicle collision risk.
- Narrower travel lanes act as traffic-calming measures and lower speeds.
- Enforcement with portable radar speed signs warns drivers into greater compliance with the posted speed limit.

WILDLIFE CROSSING AND CONNECTIVITY

- Vehicle-caused mortality exceeds natural predation for local mule deer.
- Eliminate medians or, if retained, replace tall plants with shorter native species that do not attract wildlife.
- Wildlife detection systems for buses and vehicles can reduce collision risk.
- The McPolin Trail System is maintained; consider a multi-functional crossing.
- Review alternate wildlife crossing signage that may more effectively alert drivers and raise awareness.

LIGHTING AND NOISE MITIGATION

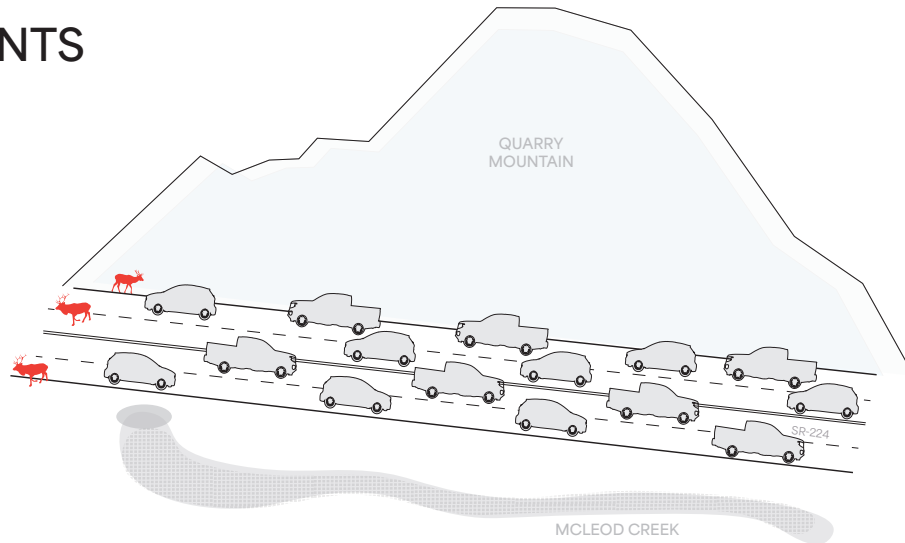
- Upgrade to infrared or fully shielded lighting to minimize disturbance.
- Target ≥ 10 dB noise reduction to reduce wildlife disturbance. Further study the impacts of various levels on native wildlife species.

TRANSPORTATION INFRASTRUCTURE AND POLICY

- A portion of Park City's sales tax supports transportation and transit initiatives.
- Further assess the benefit of installing a traffic light at White Pine Canyon Rd and SR-224 to regulate traffic and potentially provide opportunities for safe crossing by wildlife via remote or manual control of the signals during periods of increased collisions.
- Woodward facility triggered a Summit County viewshed benefit analysis; height limits may be exceeded.

*Community determined the facility's public benefit outweighed viewshed impact.

CONSTRAINTS



TRAFFIC AND SAFETY

- High intersection collision rates remain a persistent concern on this UDOT roadway.
- Nighttime wildlife crossing attempts elevate collision risk.
- Significant seasonal congestion during ski season delays travel.
- Traffic bottlenecks occur near St. Marys Church and White Pine Road.
- Updated traffic counts recommended before any further adjustments to traffic lanes.
- Ongoing growth in the area continues to increase commuter volumes, adding pressure to SR-224.

ENVIRONMENTAL IMPACTS

- SR-224 noise levels elevated; potential disturbance to residents and wildlife.
- Increased vehicular activity contributes to higher air pollution.
- Vehicle runoff identified as a pollutant source in McLeod Creek.
- Proposed BRT route and trail enhancements will expand impervious surface area.
- SR-224 acts as a barrier, causing significant habitat fragmentation.

VISUAL AND AESTHETIC CONSIDERATIONS

- Roadway widening diminishes scenic quality valued by the community.
- Local preference expressed for preserving unobstructed visual corridors.

OPERATIONAL AND MAINTENANCE FACTORS

- Snow plowing deposits snow into the right-of-way.
- Reduced congestion could decrease municipal fuel and sales tax revenue.
- Multiple land owners flank SR-224 requiring coordinated access and agreements for maintenance efforts.

OPPORTUNITIES

PROTECTED AND MANAGED LANDS

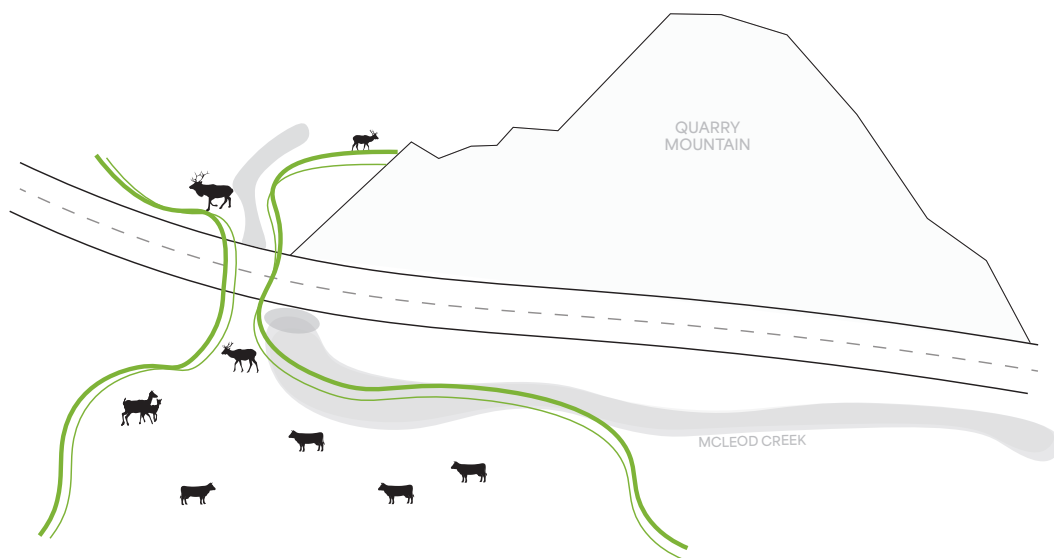
- Park City owns preserved open space adjacent to SR-224.
- Summit County holds protected open space along SR-224.
- Private landowners own parcels along SR-224 and may be willing to support mitigation.
- ONX parcel property app utilized by Utah Division of Wildlife Resources (UDWR).

LANDOWNER COLLABORATION OPPORTUNITIES

- Property owners near the existing culvert appear amenable to granting an easement.
- Active cattle grazing operations near SR-224 present opportunities for joint land stewardship benefiting agriculture and wildlife.
- Portions of McLeod Creek corridor under private ownership offer potential for voluntary conservation agreements.
- Local land trusts and landowners along McLeod Creek and SR-224 could partner to establish conservation easements.

PLANNING AND DEVELOPMENT COORDINATION

- Corridor-wide coordinated planning could align development efforts.
- Deer Valley East expansion offers an opportunity to advocate for low-impact development and conservation of land that supports wildlife habitat and public access to natural landscapes. These initiatives can serve as a model for future conservation, protection, and access to recreation lands.



CONSTRAINTS

PLANNED AND POTENTIAL DEVELOPMENT

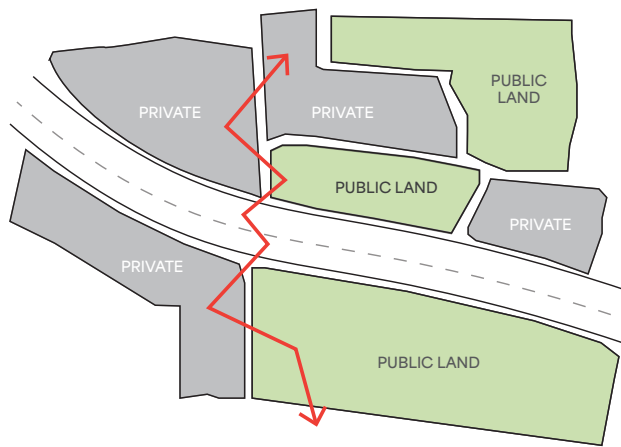
- Dakota Pacific project includes ~750 residential units.
- Deer Valley expansion is adding recreation and commercial spaces.
- Olympic-related development could accelerate habitat loss.

LAND OWNERSHIP AND MANAGEMENT

- Active cattle grazing operations located near SR-224.
- Portions of McLeod Creek corridor are under private ownership.
- SR-224 and right-of-way (R/W) is owned and maintained by UDOT.
- Parcels along SR-224 are held by multiple public and private stakeholders.

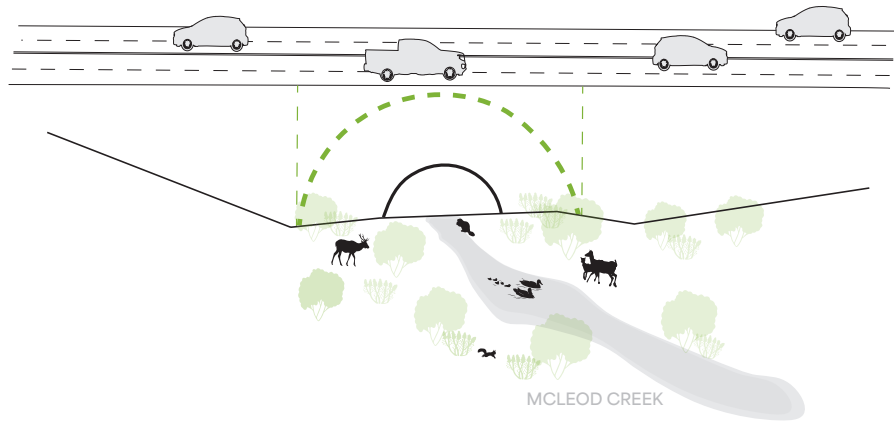
CONSTRAINTS AND CHALLENGES

- Conflicting priorities among transportation, conservation, development, and private use may delay decisions.
- Limited authority of government or conservation entities to impose land-use restrictions.
- Some landowners may be unwilling to engage in conservation actions.
- Conservation measures are subject to permitting, NEPA review, and water rights regulation.
- Major events or expansions (e.g., Olympics) may compete with or disrupt conservation objectives.



PARTICIPANT INPUT & OBSERVATIONS

OPPORTUNITIES



RESTORATION AND HABITAT MANAGEMENT

- Park City is engaged in ongoing McLeod Creek restoration.
- Swaner Preserve is leading ecological restoration efforts in the area.
- Restoration of the natural slope along SR-224 would support improved hydrological function.
- Landscape buffers are recommended to prevent McLeod Creek contamination from adjacent site and road work.
- There is opportunity to expand the existing culvert to improve wildlife passage.

WATER QUALITY AND STORMWATER MANAGEMENT

- The BRT improvements include planned implementation of runoff treatment systems.
- Comprehensive stormwater treatment is included in future infrastructure upgrades.
- Assessment of upstream control devices can assist with improving water quality in McLeod Creek.
- Existing upstream control structures require functionality evaluation.
- Ability to utilize UDOT standards for water protection, erosion control, and silt fencing.

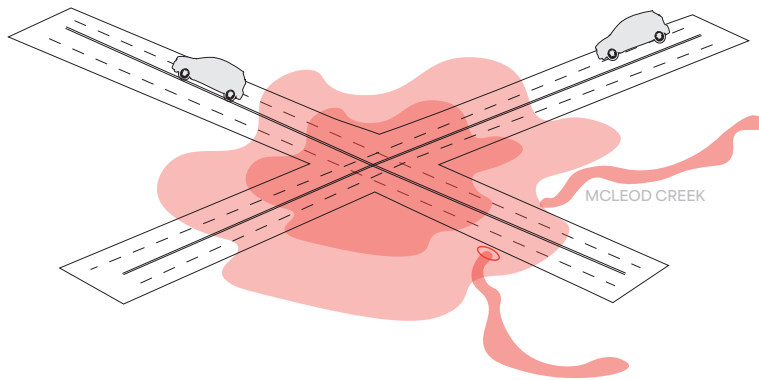
FLOOD AND HYDRAULIC CONSIDERATIONS

- Major flood events require oversized culverts or other mitigation measures.
- Tripling culvert width could reduce blockage risk and improve flow capacity.
- McLeod Creek currently shows no excessive erosion or channel incision.

PLANNING AND COORDINATION

- Incorporate guidance from the Utah DWR Wildlife Action Plan.
- Standard frost protection for this region requires footings to be at min. 28-30 in. depth.
- Potential to coordinate efforts with East Canyon Watershed Committee.

CONSTRAINTS



STORMWATER AND HYDROLOGIC MANAGEMENT

- Increased impervious surfaces resulting from the widening of SR-224 may degrade watershed health and hydrologic function.
- Impervious areas draining to McLeod Creek require stormwater treatment.
- Drainage design along SR-224 determines percolation vs. discharge rates; impacts water quality.
- Design should accommodate 100-year flood events for long-term resilience.

FLOODING AND INFRASTRUCTURE RISK

- Snowmelt runoff contributes to localized flooding, impacting adjacent properties.
- Severe storms may introduce debris that obstructs culverts, causing roadway flooding.
- High-intensity rainfall damaged the existing culvert last year.
- McPolin Barn tunnel experiences water ingress during heavy rain, indicating limited capacity or back-flow, and high groundwater.
- Beavers are present in McLeod Creek, increasing the potential for blockage of the culvert.

GROUNDWATER AND HYDRAULIC CONSTRAINTS

- McPolin Tunnel is near the groundwater level, causing occasional flooding.
- The existing McLeod Creek culvert is in a high water table area.
- Significant water withdrawal is occurring from McLeod Creek.

ECOLOGICAL AND GEOMORPHIC CONSIDERATIONS

- Beaver activity presents localized risk to damage infrastructure; monitoring recommended.
- The creek's natural evolution may create oxbows over time that shift portions of the channel closer to the roadway.
- Future development is expected to impact hydrology and ecology in the corridor resulting in increased stormwater flow and habitat fragmentation.

PARTICIPANT INPUT & OBSERVATIONS

OPPORTUNITIES

FUNDING AND POLICY INITIATIVES

- Summit County issued an obligation bond to support conservation efforts.
- State legislature is promoting initiatives to increase mule deer populations.
- The Predator Control Program maintains collaboration with local hunting communities.

STAKEHOLDERS

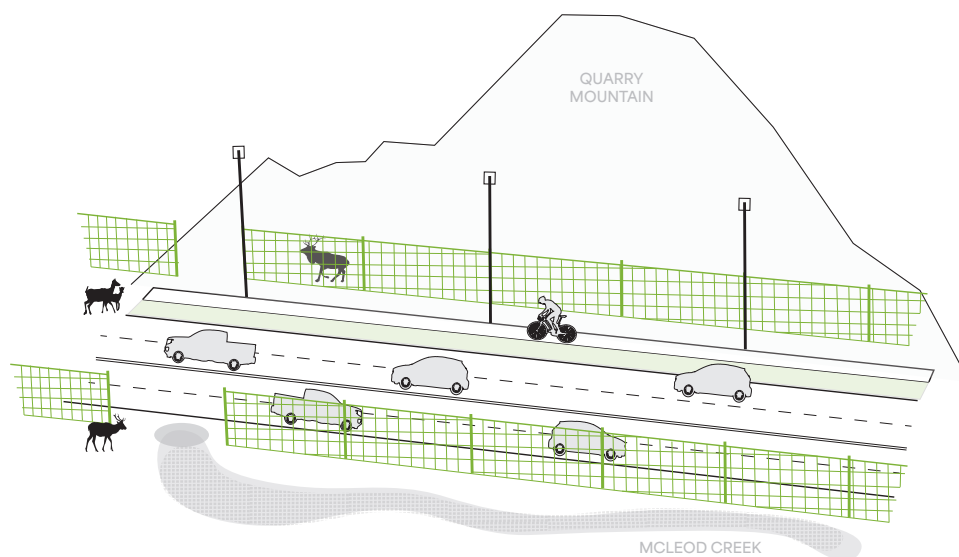
- There are several regional stakeholders that may become potential partners in the effort to reduce collisions on SR-224: Utah Wildlife Federation, The Nature Conservancy (Chris Roberson), Trout Unlimited, Mule Deer Foundation.

TARGET SPECIES AND MITIGATION PRIORTIES

- Priority species for the reduction of wildlife vehicular collisions or conservation include elk (*Cervus canadensis*), mule deer (*Odocoileus hemionus*), sage grouse (*Centrocercus urophasianus*), and June sucker (*Chasmistes liorus*).
- Beaver coexistence strategies: pond levelers, beaver deceivers, exclusionary fencing.
- Wildlife fencing (wooden post and woven wire) with clear signage on both sides of SR-224 is recommended.
- Acoustic deterrent devices under consideration for corridor wildlife management.

WILDLIFE OBSERVATIONS AND COLLISION RISK

- High-risk species for vehicle strikes: elk, moose, deer, coyote, skunk, raccoon.
- Additional local species: bear, bobcat, mountain lion, rabbit, goose, beaver, opossum, duck.
- Wildlife signage and detection systems recommended for SR-224.



CONSTRAINTS

WILDLIFE MOVEMENT AND MIGRATION

- DWR and UDOT identify Echo Junction as one of the most problematic WVC areas.
- Migration “hot spots” are a priority for UDOT but are not present along SR-224.
- DWR has identified no established species migration routes across SR-224.
- Large overcrossing structures support large species migration but are not effective for small, isolated populations.
- Migration patterns differ between large herds and smaller, localized groups.
- Critical habitat ranges for key species lie outside the immediate project area.

BEHAVIORAL AND MONITORING CHALLENGES

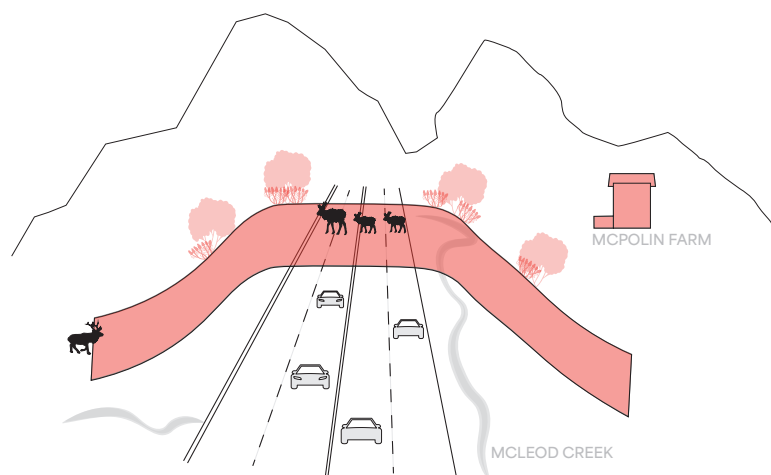
- Monitoring wildlife movement along SR-224 is limited by restrictions on hazing, hunting, and aerial surveillance.
- Elk, as a more timid species, tend to avoid designated crossing structures.
- Absence of hunting in the area has increased poaching concerns near McLeod Creek.

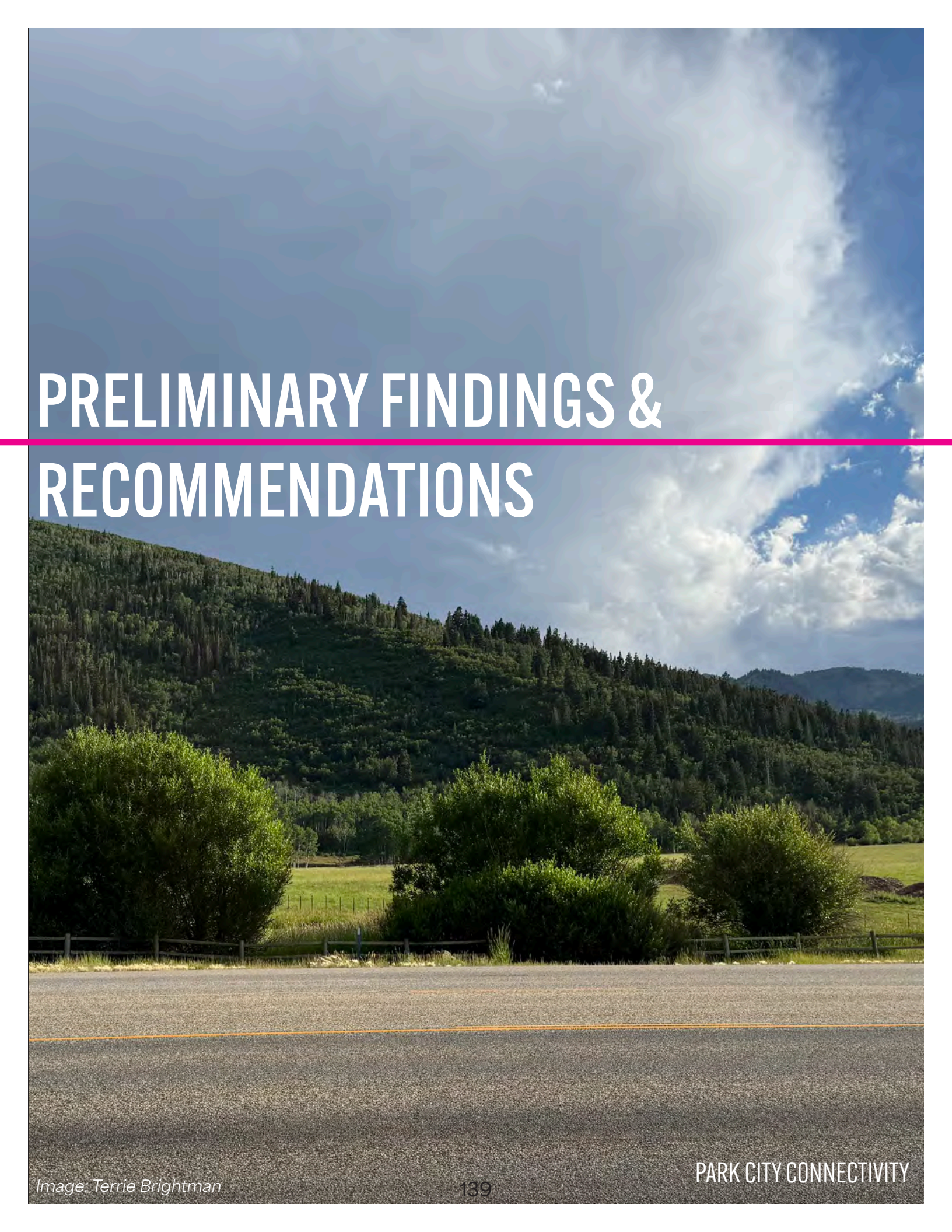
INFRASTRUCTURE AND CONNECTIVITY ISSUES

- Existing fencing along SR-224 is not wildlife-friendly and may restrict movement.
- Beaver ponds present challenges for fish passage and aquatic connectivity.
- Wildlife fencing may impede snow removal operations in winter.

COMMUNITY AND LAND USE CONSIDERATIONS

- Community concerns focus on the visual impact of wildlife fencing along SR-224.
- Agricultural land fragmentation is a prominent feature surrounding the corridor.
- There is significant support for maintaining the existing viewshed due to its historic and scenic character.





PRELIMINARY FINDINGS & RECOMMENDATIONS

NEXT STEPS | Short- to Long-Term Mitigation Installations

Mitigation measures are presented in order of recommendation (top to bottom), beginning with the least intrusive option. The more minimal intervention should be attempted first. If no measurable improvement is achieved, proceed to the next measure in sequence, moving step by step from minimal to more transformative interventions.”

LEVEL OF INTERVENTION	
MINIMAL	DRIVER AWARENESS & EDUCATION (ONGOING)
	WILDLIFE CAMERA STUDY
MODERATE	FENCING IMPROVEMENTS & MODIFICATIONS
	WILDLIFE DETECTION & WARNING SYSTEMS
SIGNIFICANT	TARGETED ROADWAY MODIFICATIONS
	DEDICATED WILDLIFE CROSSINGS
TRANSFORMATIVE	INTEGRATED CORRIDOR APPROACH

Photo Credit: Hallie Rugheimer

PRELIMINARY FINDINGS & RECOMMENDATIONS

DRIVER AWARENESS & EDUCATION

(SPSW has successfully implemented several key mitigation methods within the corridor)

- Install enhanced wildlife crossing signage with clear, high-visibility graphics.
- Use seasonal, changeable message boards to alert drivers during peak migration or high-risk periods.
- Conduct public outreach on local wildlife movement patterns and safe driving practices.
- Partner with local NGO's, government agencies, and stakeholders on public outreach and messaging efforts to share best practices for collision avoidance, ecosystem protection, and habitat management.

WILDLIFE CAMERA STUDY

- Visually survey roadsides for evidence of sign of wildlife presence: scat, tracks, game trails, vegetation with signs of herbivory, etc. If game trails are present, follow them away from the road to see where they come and go from.
- Monitor adjacent habitat and fence lines within the corridor to better understand wildlife movement patterns and their presence along roadsides. Install cameras to detect presence of wildlife and use of areas adjacent to roads.
- Include cameras deployed at the McLeod Creek culvert and McPolin Farm Trail tunnel entrance and exit to answer whether current structures are being used by wildlife. This will provide information on any species that utilize these spaces to cross SR-224. The tunnel may be used by wildlife when pedestrians aren't present and these species will need to be accommodated at an alternate location, if desired.
- Camera data must be downloaded and stored in a database then reviewed by an experienced Biologist adept at identifying local wildlife. Include still images and video.
- A minimum of 12 months is typical for the duration of the camera study.

FENCING IMPROVEMENTS & MODIFICATIONS

- Install or replace existing fencing with wildlife-friendly designs (e.g., wooden posts, smooth wire, strategic escape gaps) that fit the aesthetic of the basin and vernacular landscape and direct wildlife to safe crossings and/or away from roadways .
- Target fencing to key hazard areas instead of continuous corridors to preserve permeability.
- Ensure high visibility for drivers around fence openings where wildlife may attempt to cross or access the roadway.

WILDLIFE DETECTION & WARNING SYSTEMS

- Deploy roadside sensors that detect large animals near the roadway and trigger flashing signs or in-vehicle alerts.
- Prioritize locations with historic WVC clusters and roadkill hot spots along SR-224.
- Coordinate with transit agencies to integrate alerts for bus and commercial truck drivers.
- Implement beaver pond flow controls to maintain aquatic connectivity without creating attractants near roads.

TARGETED ROADWAY MODIFICATIONS

- Remove or modify roadside vegetation that attracts grazing wildlife.
- Manage forage availability away from roadway edges.
- Eliminate or renovate medians to reduce planting heights and improve sight lines for drivers, prevent build-up of snow drifts, and provide for optimized wildlife crossing distances.
- Further reduce speed limits in high-risk segments during migration seasons.
- Expand flared end sections and culvert width on existing underpasses/tunnels to improve animal visibility and willingness to enter.

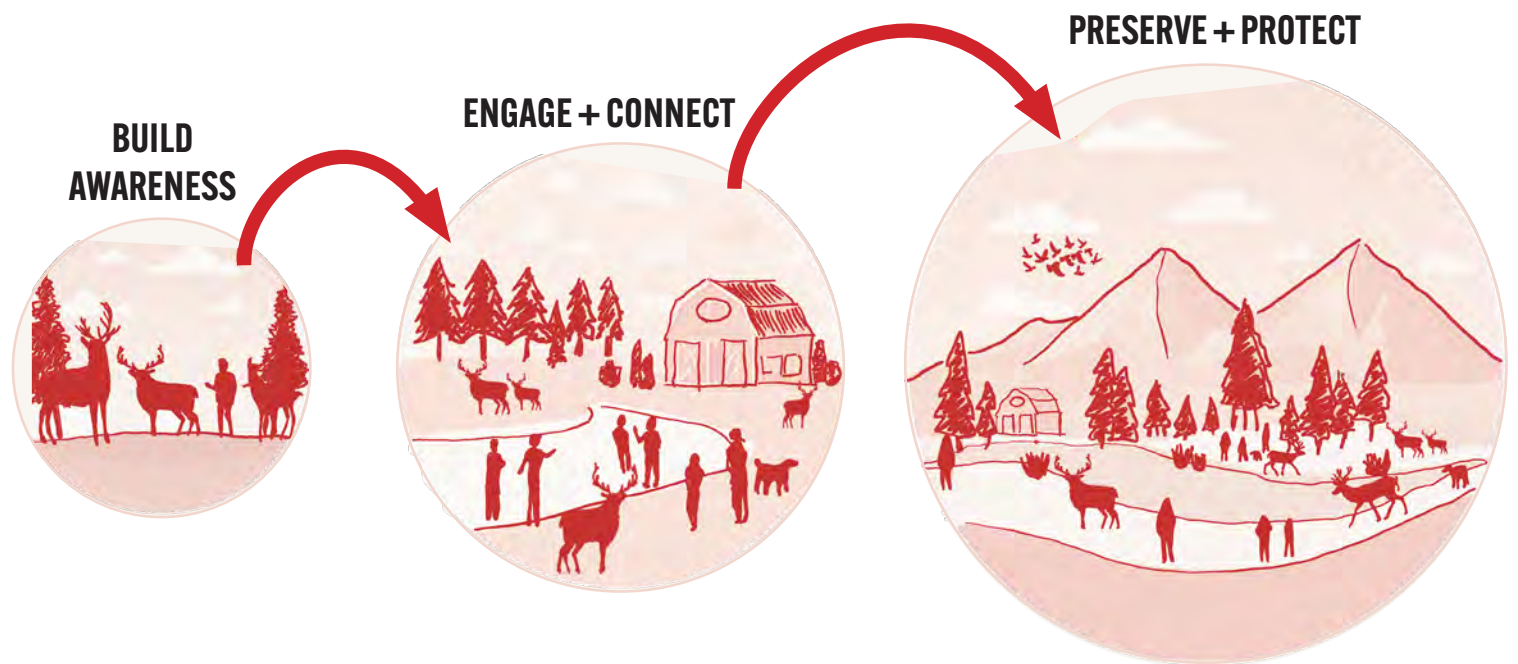
DEDICATED WILDLIFE CROSSINGS

- Construct species-specific underpasses for small mammals and amphibians.
- Enhance and/or enlarge existing culverts and tunnels with natural substrate floors and vegetation at entrances to provide crossing opportunities to wildlife.
- Per Utah DWR, SR-224 currently lacks established, large herd, migration routes. But, consideration should be given to assess overcrossings in areas with demonstrated large-species crossing routes.

INTEGRATED CORRIDOR APPROACH

- Combine continuous fencing with strategically placed crossing structures to fully separate wildlife from traffic.
- Install landscape-scale wildlife guidance systems directing animals to safe passage points.
- Incorporate hydrological design into crossing structures to serve both terrestrial and aquatic species.
- Identify pathways of contiguous protected and conservation lands, accessible to wildlife, on both sides of any crossing to ensure unimpeded wildlife movements.

BRIDGING THE DIVIDE



The need for wildlife crossings in Park City, UT is more urgent than ever. As development expands and road networks continue to grow, highways and rural roads increasingly cut through critical wildlife habitats—disrupting natural migration routes, separating breeding grounds, and limiting access to essential resources such as food and water. These human-made barriers force animals to take dangerous risks, often resulting in collisions that are deadly for wildlife and potentially life-threatening for drivers.

Species such as moose, mule deer, elk, mountain lions, and even smaller animals like squirrels and raccoons are all affected by this growing issue. Utah ranks among the states with some of the highest rates of wildlife-vehicle collisions, causing not only ecological damage but also millions of dollars in property damage and medical costs each year.

The mission is to address this crisis head-on by promoting and implementing safe, effective wildlife crossings—such as strategically placed signage and fencing, underpasses, and overpasses—that reconnect habitats and reduce the risk of accidents. These solutions not only protect wildlife and preserve biodiversity but also enhance public safety for all road users. By working together with transportation planners, wildlife experts, and local communities, we can create a future where roads no longer divide ecosystems but instead coexist with them in harmony.

ROCK
DESIGN
ASSOCIATES

