

Los Alamos *Community Trail Plan*

Los Alamos County, NM
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PREPARED FOR: Los Alamos County Parks Division

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Introduction

The Los Alamos County Parks Division in Los Alamos, New Mexico, retained the Trail Solutions program of IMBA to develop a shared-use community trails plan for the Los Alamos County Trail Network. This includes trails/open-space within the towns of Los Alamos and White Rock with special considerations made for links to public trails such as those at Santa Fe National Forest and Pajarito Mountain ski area. This report is the result of that investigation. Plan development involved a number of tasks including stakeholder meetings, site inventory and assessment of existing trails, study of conceptual trail design options, and the proposal of a sustainable, destination-quality shared-use trail system that will meet the needs of residents while attracting new visitors.

Stakeholder Involvement

The process required the involvement of a variety of stakeholders, including the following:

Los Alamos County Parks Division
 Los Alamos Singletrack Association

Blackfeather Motorcycle Club
 High Altitude Athletics Club
 Los Alamos County Transportation Board
 Los Alamos Mountaineers
 Los Alamos Pathways Association
 Los Alamos Pony Club
 Pajarito Environmental Education Center
 Pajarito Group of the Sierra Club
 Santa Fe National Forest
 Tuff Riders (mountain bike club)
 plus representatives from Los Alamos neighborhoods and business community



About Los Alamos County, New Mexico

The project site, the Los Alamos County Trail Network, is located in north central New Mexico, Los Alamos County, on the Pajarito Plateau, approximately 97 miles north of Albuquerque, NM and about 206 miles southeast of Durango, CO. Many of the people who work in Los Alamos commute about 35 miles from Santa Fe or 20 or more miles from towns in the Rio Grande valley and beyond. The available acreage of public open space and trails in Los Alamos is approximately 5,000 acres. The town of Los Alamos is bordered by the Santa Fe National Forest (SFNF) to the west and north, the San Ildefonso Pueblo to the east, the Los Alamos National Laboratory to the south and Bandelier National Monument not far from the southwest corner.

There is evidence of Hispanic families living in the region during the Spanish land grant era, subsiding on farming, grazing, and timbering. Within the historic district of Los Alamos, native ruins can be found that date back to 1350 A.D. The rims and canyons are laced with historic trails, routes, and passageways.

Los Alamos is widely known as the site of a secret town established in 1942 by the Manhattan Project to develop the atomic bomb. The location for the project was chosen for privacy, ease of defense, access to water, and the proximity of nearly non-inhabited Federal lands. The town remains the home of the Department of Energy's Los Alamos National Laboratory.



Los Alamos Skyline



Some of the highest nearby altitudes and stunning views are from the summit of Pajarito Mountain Ski Area at 10,441 feet. The town of Los Alamos is nestled below, across four narrow mesas on the Pajarito Plateau at an elevation of 7,320 feet. The sister town of White Rock is perched on the western rim of the Rio Grande at an elevation of 6,365 feet approximately 10 miles southeast of Los Alamos. The towns have a combined population of less than 20,000 at the 2010 Census. There is reputed daily commute of 8,000 cars a day supplying workers to LANL, the county offices and the service sector of Los Alamos.

Los Alamos has a temperate mountain climate with relatively dry conditions. Winter drops an average of 28 inches of snow per year in town with the coldest daily high temperatures usually in January that can range from 17° F to 40° F. During the hottest month of summer, July temperatures typically average from 55° F to 81° F. Moisture comes in predictable afternoon rainstorms locally known as monsoons. During monsoon season, roughly 35% of the annual 18 inches of precipitation falls, often in lightning storms. Los Alamos experiences 61 thunderstorm days a year, twice the national average. The hottest day on record is 95° F and the coldest is -18° F.

Trees are typically Ponderosa Pines with an understory of Gambel Oaks. Heading west and upwards from Los Alamos there are mature forests of Douglas Firs, Spruce, and large Aspens on Pajarito Mountain. Eastwards and down to White Rock, the predominant trees are Juniper and Pinon Pine. The understory in these climate zones is sparse and easy to travel through, unless laced with New Mexico Locust. The forests within the town canyons are mostly intact, however large tracts of the neighboring SFNF have been wiped out by fire.

In 2001, the Cerro Grande Fire ripped through the area, taking 48,000 acres, destroying 250 homes or structures, and displacing 450 families. In 2011, the Las Conchas Fire took another 150,000 acres of forest and 70 more homes. The fires and the floods that followed devastated 70% of all the trails in the nearby Jemez Mountains of SFNF. The Pajarito Plateau is a consolidated mass of volcanic tuff that is highly erode-able. Trails that were poorly aligned or had a hint of steepness suffered the most damage. Some of the first vegetation to come back after the fires are New Mexico Locust, a fierce shrub with thorns up to 2 inches long. SFNF and several volunteer groups have worked countless hours rebuilding their most treasured trails.



Existing Trail Conditions

There are approximately 60 miles of existing *formal* trails in the Los Alamos Trail Network. Most of the trails are narrow and rocky contouring single track within the interior canyons. The formal trails are minimally signed and accompanied by many informal, or visitor-created, trails – approximately 40 additional miles. Navigation of the trail system requires familiarity and a high level of skill. Novice and new users will have difficulty navigating easily around the system and piecing together an enjoyable trail-based recreational experience.

The arid environment in the canyons and mesas around Los Alamos and White Rock results in sparse fragile vegetation, making for easy trail “braiding” (definition: several parallel trails all seemingly headed to the same eventual point). Trail braiding is often an indication of users looking for a different experience, perhaps more challenge, perhaps less. In Los Alamos it is the latter, due to the difficult terrain. Organizing certain trails by difficulty level, experience zones, and destination should help consolidate the canyon trails.

There is also a variety of gentler trails on the outskirts of town that form a perimeter or circumnavigation of the county lands. This outer-most layer of town trails links the system into the vast trail network of the surrounding SFNF. Much of this topography is noticeably gentler than the inner canyon trail network.

Two wildfires have removed much of the trees and understory vegetation from SFNF lands. The Forest Service has spent burn area emergency response (BAER) funds to reestablish facilities and roads on SFNF lands, however most of the trail restoration in the wake of the fires has been accomplished through volunteer led efforts with SFNF oversight. Contracting in 2012 accomplished some trail reconstruction on Guaje Ridge in SFNF.

Pajarito Mountain ski area is outside of the Los Alamos town limits, roughly 7 miles west of town center. They have several miles of lift served trails for both cross-country and downhill bicycling enthusiasts, with the potential for much more.

Many of the existing trails at Pajarito are an aggressive technical gravity-driven style that are accessible to only the most accomplished and daring riders. In addition to high bar to entry, many of the routes follow unsustainable alignments and feature outdated wooden structures. The retirement of these routes, replaced with a series of more modern gravity trails that progress across a spectrum of riding experiences as you move from small to medium to large, is a key element to the recognition of Los Alamos as a Ride Center.

Opportunities and Challenges

Opportunities

Clearly Defined Canvas. Los Alamos is perched atop four narrow *finger* mesas, with the majority of mesa-tops taken up by residential and commercial development. Los Alamos County Open Space has about 4,300 acres, including various parks, horse stables, the golf course, and the steep canyon cliffs below. Approximately 1,500 acres are terrain suitable for trails. The majority of that land is comprised of small parcels on the mesa tops, the canyon slopes, and appropriate canyon bottoms. There are pending acquisitions to the east and north of these canyons that may provide additional trails or trail head access. Much of the draw for trail users to Los Alamos today is the quick access to the adjacent SFNF.

Natural Beauty. The intricate canyons within Los Alamos have always attracted the attention of people. The cool shade of the ponderosa pines, the quiet solitude, access to water, and wildlife viewing, have led to a network of official and user-created trails. Even though the outlying forests surrounding Los Alamos have been damaged significantly by two recent fires, their scenic beauty remains outstanding.

Year Round Recreation. The inner canyons provide plenty of shaded vistas and so do many of the long distance high-alpine trails in SFNF. The relatively high elevation provides cooler summer temperatures and comfortable nearly snow-free trail outings can be found at lower elevations in the dead of winter.



Opportunity – An engaged local community

Piqued by PEEC. The Pajarito Environmental Education Center (PEEC) helps to bring kids closer to nature. Their Mission: “Enriching people’s lives by strengthening their connections to our canyons, mesas, mountains, and skies.” There is a plan to move the school closer to the county aquatic center, in both cases PEEC has immediate trail access to the canyon trails below.

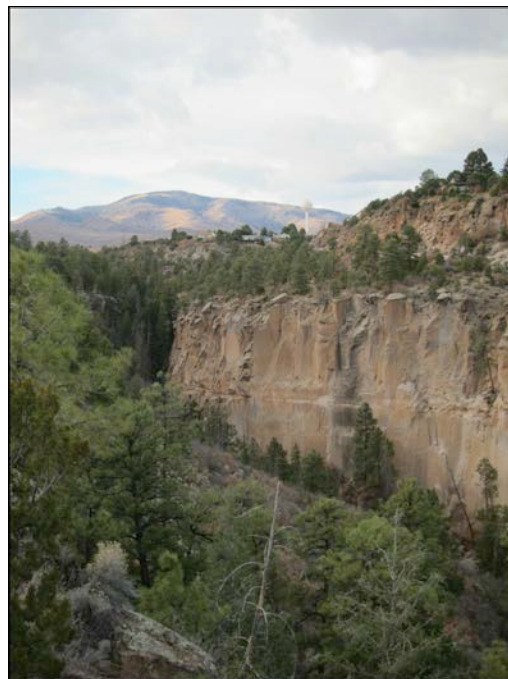
Not Just Los Alamos. The landscape of Los Alamos’ sister town White Rock is similar – it sits atop a mesa, along a rim and overlooking another steep canyon. So they share many of the land-use and topographic challenges. White Rock is 10 miles southeast of Los Alamos. Currently there is no official trail or bike path connecting the two towns. Adventurous road riders frequent the east Jemez Road through LANL, though NM502 has a very narrow shoulder and intense vehicular traffic during peak rush hour periods.

In addition to White Rocks, SFNF, and the resort at Pajarito, Bandelier National Monument is a high value resource on par with any in the southwest. Frijoles Canyon, and its ancestral pueblo homes, petroglyphs, and rock paintings, are complemented by numerous hiking and equestrian routes through the monument’s over 33,000 acres. While damaged by the same fires that ravaged SFNF, most key area escaped unscathed and remain a valuable resource to the local community.

Destination Potential. With some fine-tuning and necessary additions, the Los Alamos County Trails Network can be transformed to destination quality. Nearby Santa Fe, NM recently gave their trail network a makeover, installing new trailheads and parking lots, a community bike park, and better maps, signage and wayfinding. This helped to make their trails more visitor-friendly while giving the residents a more comprehensive trail network. With proximity to other known mountain bike trail meccas such as Angel Fire, NM and Durango, CO, it puts Los Alamos “in the center of the map”. This is a great opportunity to turn northern New Mexico into a regional trail destination.

Challenges

Topography. Even though the available topography for trails is challenging, it hasn't slowed the development of trails through out the ages. Over time, most of the land in Los Alamos with modest side slopes has been privatized and occupied with residential development or commercial enterprises. The remaining public lands are dramatic but challenging for trails. The fabulous views from the steep exposed cliff sides lure trail users to the edge, in some cases with dire consequences looming below.



Beautiful! But Challenging Terrain For Trails



Fragile Soils. The majority of the surface in and around Los Alamos is Bandelier Tuff, a highly permeable volcanic rock. Though tuff drains well it is also highly erodible, with historic trails and “wagon wheel” tracks leaving 2-4 foot deep grooves on seemingly solid tuff rock. Short segments of steep or historic trails may require reroutes or armoring techniques to extend their longevity.

Insufficient and Poorly Placed Trailheads and Parking. Los Alamos has identified more than a dozen official parking areas at trailheads. At present some of them are already at capacity and could stress neighbors and residents as visitor traffic increases. The Aquatic Center parking area is the central gathering point for mountain bikers who drive to Los Alamos to use the trails. But the parking is stressed and at capacity.

Another must is ending a good trail outing by getting the brunt of the climbing done while being fresh and then finishing with a descent. This is especially true with mountain biking, even more so for family or entry level riders. The canyons in Los Alamos and the current parking areas can lead visitors into an “upside down” trail experience. First timers can easily be drawn into the maze of trails, typically following a path down into one of the canyons, only having to climb out with much less energy at the end of the outing. Long term, any opportunity to add a trailhead in the southeast mouth of Pueblo Canyon would allow for a descending finish.



Tight Corridors Around The Airport Boundary

LANL Legacy. Acid Canyon was named during the Manhattan Project when chemical wastes - generically called acids - were dumped directly into the canyon. Legacy waste cleanup projects have removed most contaminants, but verification is required for all construction projects. An extra step to any major construction is consultation with LANL representatives to identify the need for special practices or procedures.

Property Ownership and Access

Restrictions. Many trails and loops are compromised by passing adjacent or through property where access is restricted. Examples include:

THE SPORTSMAN'S CLUB – Is an indoor/outdoor shooting range located north east of town proper in Rendija Canyon. This provides an official area for gun and archery target practice, including training and

competition events. It is less than 1500 feet east of the Pajarito Trail Head. This trailhead is very important to all trail users as it accesses some of the most popular trails in SFNF. Any future trail development behind (north and northeast) of the gun range “back drop” would have to take the shooting range into consideration.

THE LOS ALAMOS AIRPORT – The airport sits atop the same mesa as the main highway into Los Alamos (NM502). This is the largest mesa within town and gets the brunt of vehicular traffic for the Los Alamos area. Due to post 9/11, restrictions and security regulations have increased in relation to the airport property. Currently the Pueblo Canyon Rim Trail provides a loop if linked around the airport with the Canyon Rim Trail to the south. This could be an ideal Gateway Trail outing with some small but "sensitive" trail adjustments.

THE LOS ALAMOS NATIONAL LABORATORY – Is the second largest public land neighbor in the area. LANL is separated from town by Los Alamos Canyon, with heavy fencing and signage to keep out visitors. There are several staffed security gates available to employees and or visitors. There is a network of trails on the mesas and canyons of LANL, though providing public trail access is not encouraged at this time. Access across these lands would be key to connecting trails between the towns of White Rock to Los Alamos.



Trail Braiding – A Common Condition in Open and/or Arid Environments

Community Trail Plan

Objectives

There are fundamental criteria that underpin every planning process:

- 1) Create a shared-use singletrack trail system that appeals to a wide spectrum of abilities: from families and beginners to the users with advanced skills and fitness. System should provide the quality and quantity of experiences to raise it to the level of being regionally significant trail destination.
- 2) Create a trail system that is environmentally and socially sustainable. And one that best highlights the natural beauty of Los Alamos.
- 3) Create a trail system that better interacts with existing park infrastructure and adjacent residential communities.
- 4) Create a trail system that can be improved and enhanced based on a reasonable time line and budget (including a phased development approach).

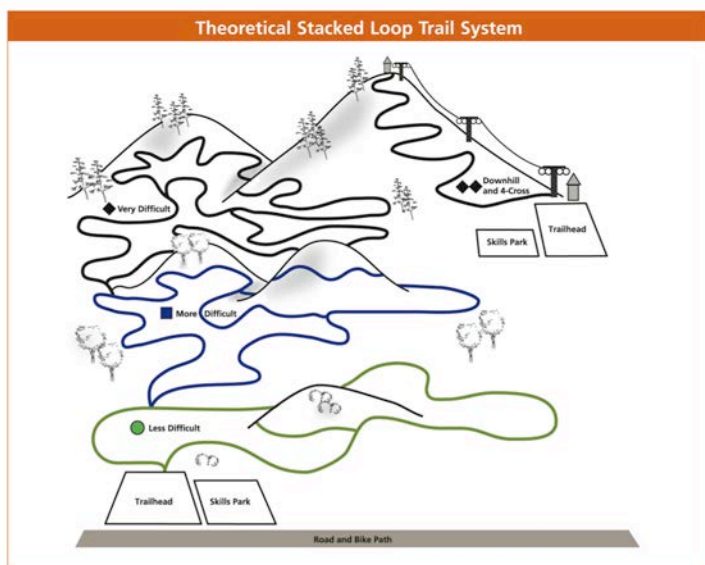
The following objectives specific to Los Alamos were identified through discussions with stakeholders, site visits and learned from local land managers.



Example of Los Alamos' Rugged Trails

Complete Trail System

A primary goal identified during the stakeholder process is creating opportunities and amenities that allow Los Alamos to become a sustainable community beyond just being the home of LANL. To make it both a desirable place to live and to put it on the map as a destination for responsible outdoor recreation. Creating a *complete trail system* is a step toward reaching this goal.



Stacked Loop Trail System – Helps Make It Easy For Visitors To Select The Most Appropriate Experience

One of the main priorities of the Los Alamos County Trail Network plan is to provide a wide spectrum of trail experiences, from entry level “Gateway Trails” and intermediate level paths, up to the more challenging advanced single track and finally gravity-drive bicycle-specific trails.

Beginner level trails have a low barrier for entry into the sport of mountain biking, and for foot and horse traffic have a relatively smooth tread and gain elevation at modest grades. Intermediate trails serve the greatest number of mountain bikers and other trail users across the board.

This level of trail is especially suited to a skill and fitness level of enthusiast regardless of modality who desires longer, more challenging routes. Intermediate trails also provide opportunity for progression attractive to bicyclists as beginning riders seek out experiences that provide more demanding riding situations. Advanced trail challenge the skill and fitness of the most experienced backcountry visitor.

Today Los Alamos has a significant number of trails but they are poorly organized and skewed toward the advanced side of the difficulty spectrum. But modest additions and/or reconfigurations to create easier and intermediate opportunities combined with key new connections will transform Los Alamos into a model trails destination.

Serve the Los Alamos Community

Many of the citizens and daily trail users of Los Alamos consider the trails network to be a treasure. Turning Los Alamos and the surrounding areas into a trails destination would be a boon to local businesses and a boost to the general quality of life. It is said the no home in Los Alamos is more than 7 minutes walking time from a local trail. The adjustments and improvements of the existing trail network will appeal to a wider user group. By directing trail users to their desired experience zones and encouraging trail use by skill level and user types, any increase of user numbers will barely hinder or alter the current solitude found along the trails in Los Alamos.

An element of this approach is complimenting the larger shared-use trail system with compact modality-directed elements. Examples include set-aside areas focused on the specific needs of the bicycle (skills area), equestrian (jumping facility), and walking communities (solitude and dog walking zones).

Jumpstart Improvements to the Surrounding Area

Improvements to the town trails might also attract funds or donations to better the SFNF trail network and even to develop a more progressive bike park at Pajarito Mountain. Future dialogue with other neighboring public land managers should also be sought as the network grows.

Connecting Neighborhoods

Currently there is a plethora of narrow single track and braided trails that connect many of the streets and neighborhoods. With a few underpasses, safer road crossings, and other improvement, the system can be leveraged to provide an alternative mode of non-motorized travel through out town in addition to providing recreation.

While beyond the scope of this report, it was made clear during the stakeholder process that a similar set of gaps and barriers exist in Los Alamos' on and off-road bicycle transportation infrastructure. Some of the captured suggestions are



Some Neighborhood Connections Appear To Cross Residential Land



shown on the report maps as “Commuter Connection” (light blue dashed). In many cases, improvements in transportation trails will return double in improved utility of the natural surface network.

Designate, Design and Construct a Mountain Biking Skills Area.

A central feature in the effort to transform Los Alamos’ trail network is the creation of a central trailhead area built around a mountain biking skills area. Such a facility will provide a wide range of mountain bike specific trails, tracks and courses. Skills areas are especially effective in creating a nurturing environment to introduce youth to riding bicycles on natural surface trails. They also provide an area for both young and old to hone their riding techniques.

Most important, it will create a hub and focus area for a revised trail system in Los Alamos. The place where every one wants to start their ride, finish, and hang out afterwards to talk about it.

The skills area, if deemed appropriate, could become a suitable venue for small events, clinics, or races.

Serve as an Outdoor Classroom

Partnering with county schools, such as nearby Los Alamos High School, or the Pajarito Education and Environment Center could be an incredible opportunity for the youth of Los Alamos. By including students, faculty and parents into the planning of the skills area and other trail improvements, it gives them ownership while fostering their creativity, fitness and a renewed passion for nature.

PEEC is slated to move to a new facility. Once settled into its new home, it is important to reconnect PEEC to the natural surface trails and the area’s open space as soon as possible.

Improved Wayfinding

As improvements to the trail network proceed, install new signage to help visitors and unfamiliar trail users navigate the intricate canyons more easily. Consider maps at major junction points, with wayfinding and confidence markers at every junction. The trails can also be designated by level of difficulty and most commonly preferred methods of modality while keeping to the overall shared-use, neighborly feel of Los Alamos. To establish a unique brand, develop symbology iconic to Los Alamos to include on the improved trail signage.

Parking and Trailheads

One of the most essential improvements to any trail network is a well thought out parking system that does not disrupt the current balance and provides plenty of space for visitors,

residents, and potential trail events. Today, Los Alamos features a main parking area by the Aquatic Center, minor parking areas across a range of identified trailheads, complimented by neighborhood access points featuring no more than a spur and perhaps a sign.

The plan proposes creating a new primary trailhead at the skills area. Additional overflow trailheads can be identified and enhanced with additional parking. Repeating an earlier suggestion, when planning for mountain bikers strive to put the trailhead/parking at the bottom of popular trail outings or loops it possible.



Quemazon Trailhead is representative of current conditions – small and often full, some system information, no sanitary facilities.



Trail Plan Elements

The topography and development in and around Los Alamos allow us to divide the trail system and town open space lands into several zones:

Airport Mesa Zone: This zone includes the lands and trails immediately adjacent and east of downtown Los Alamos extending eastward to the interface with Pueblo lands. This zone includes lower Pueblo Canyon and the trails on the mesa and the north slope of the mesa.

Central/Kinnikinnik Zone: Includes the lands and trails just north and west of downtown Los Alamos extending north and west to Diamond Drive and Walnut Canyon. This area has high trail densities and connects downtown to the rest of the system and neighborhoods to the west. It includes upper portions of Pueblo Canyon and Acid Canyon.

North Mesas Zone: This region includes the lands and trail network north east of Walnut Canyon south of Diamond Drive and extends to the east along North, Kwage, Otowi, and Deer Trap Mesas. This large zone includes developed facilities for equine and cycling use in addition to the multi use trail system and golf course.

Perimeter/SFNF/Pajarito Zone: The area west of Diamond Drive wrapping east into Rendija Canyon contains many neighborhood trails, less developed trailheads, and trails extending outward (west and north) onto USFS lands. Nestled in the National Forest seven miles west of town is the Pajarito Mountain Ski Resort, offering unique opportunities for gravity-driven trail experiences.

White Rock Zone: The open space lands and trails within the town of White Rock. The local trails drop off of the mesa to the Rio Grande and follow the canyon rim from Overlook Park to NM 4 on the south end of town.

These zones are described independently, yet in practice need to be managed as a whole. Changes and development in one zone will impact the connectivity, users, and distribution of use in other zones.

For detail sake, we describe how the overall vision elements can be achieved by zone:

Airport Mesa

Airport Mesa describes the lands immediately adjacent and east of downtown Los Alamos extending eastward to the interface with pueblo lands including Pueblo Canyon. Formal trails in this area include: Zipline, Pueblo Canyon, Tent Rocks, Los Alamos Mesa, Pueblo Canyon Rim, Camp Hamilton, Canyon Rim, and Anniversary. Note that the Camp



Hamilton and Anniversary Trails cross LANL lands. There are additional social trails in the area, many configured to link Pueblo Canyon Rim Trail to the canyon floor.

Canyon Rim Trail provides a trail “spine” through the zone, a paved highly developed greenway type trail with terrific views of Los Alamos Canyon. The Canyon Rim Trail offers an excellent all-abilities trail experience as well as connectivity between town and amenities (co-op, airport, hotel, county offices) further east on the mesa. Airport Zone and its trails have been envisioned to provide additional connectivity from downtown and the Omega Bridge entrance to LANL. As part of this vision, additional all-abilities and commuter/connectivity should be developed to extend the Canyon Rim Trail towards the western end of town and LANL. Additional integration of bike lanes and crossings of Trinity and other main road are needed to improve the walk/bike-ability of town.

Actions:

- Create an easier/green loop from the East Park trailhead by joining the Canyon Rim and Pueblo Canyon Rim trails. This requires the re-alignment and construction along select sections of the Pueblo Canyon Rim. A reroute is needed west of the Zipline Trail near the mouth of Acid Canyon where it descends steeply along an existing steel utility pipe. Another area of concern is immediately west of the Zipline Trail junction and poses two complications: 1. Working with the Los Alamos Airport officials to move their fence to achieve a sustainable grade suitable for an easier experience. 2. LANL officials warn of a potential hazardous site that may impact reroute options and/or complicate any reconstruction activities.
- Improve connectivity to town by extending Canyon Rim Trail westward. Enhance this new connection via a new formal pedestrian/cycling crossing of Trinity Drive.

Central/Kinnikinnik

Central/Kinnikinnik describes the lands just north and west of downtown Los Alamos extending north and west to Diamond Drive and Walnut Canyon. This area has high trail densities and connects downtown to the rest of the natural surface trail system and neighborhoods to the west. PEEC and the Larry Walkup Aquatic Center are important focus areas in this zone, with the Aquatic Center also serving as a primary trailhead. It includes portions of Pueblo Canyon (upper) and Acid Canyon. PEEC will be relocating in the near future and this plan encourages continued connection to the future location of this facility. Such a connector will preserve access to the trail system, and opportunities for interpretation and education (PEEC programming).

Formal trails in this area include: Acid Canyon, Ranch School, and North and South Pueblo Bench. Numerous social trails complete the formal network, especially in the drainage



heading toward Mountain Elementary. A highlight for trail users is the Pueblo Canyon Bridge linking the North and South branches of the Pueblo Bench Trail. This area is heavily impacted by additional user created trails and the trail experience currently suffers from lack of navigability and departure from natural conditions.

Actions:

- Improve trail organization. Reduce the trail density and redesign this area to accomplish three goals:
 1. Provide commuter/connectivity routes through the area (connecting North Mesas with "downtown"/LANL). These wider “green” routes will also provide connectivity to the proposed family bike skills area (see below)
 2. Creation/modification of the existing trails to provide for progression (green, blue, black): Preserve the “core trails” through this area where possible. Continue to offer the difficult/challenging trail experience through this area, as it is needed as part of the larger trail system. Realign/rework some of the existing trails into the “green” commuter/connection routes (above) and into "blue" recreational paths.
 3. Protect the environment via trail improvements that eliminate trail braids and allow closure of redundant segments
- Create and enhance recreational loops. The current system is a maze of more challenging segments that are difficult to form into logical loops even by the most locally savvy trail users. As part of reorganization, formalize bridging segments to create continuous “green” and “blue” style loops appealing to entry-level and/or visiting riders. Examples of potential loops are in the middle Pueblo Canyon area (CZ-1) as well as near the Kinnikinnik trailhead.
- Improve and preserve connectivity to key community “nodes.” Specific examples include: PEEC (new location), Aquatic Center, Los Alamos town center. Improved connectivity will also permit that many more local users to access town trails without resorting to driving to a trailhead.
- Improve access to upper Pueblo Canyon across Diamond Drive. This connection is particularly important as it provides a directly link from the heart of the town trails to the Perimeter Zone and the SFNF trails beyond (CZ-2).
- Create a Family Bike Skills Area at the location of the former sewage treatment plant. This site, on the south rim of Pueblo Canyon at the end of Olive Street, is positioned in the heart of existing use so ideally situated to become a natural hub of activity. The landscape is ideal, with a mix of terrain well suited to host a wide range of typical skills area elements. Socially, the location is adjacent to other important trail features (Pueblo Canyon trail bridge) and likely constituencies (Los Alamos High School is close by). Regarding the landscape, at approximately 8 acres, the parcel is perfect for a modestly featured park. The rare-for-Los Alamos relatively level undeveloped landscape presents an ideal canvas for this style of facility. Recently reclaimed from its previous use, the site



has healed into a grassy meadow with dappled groves of ponderosa pine. As a former sewage treatment site, any construction will likely require imported soils, but this dovetails well with the proposed use as most skills areas require volumes, quality, and/or types of soils other than that available in-place. Vehicular access is available from Olive Street where significant surface parking already exists.

The social geography of the site is ideal as well. This area of Los Alamos is already a hub of trail activity, well connected to the entire community. Even more important, the site's close proximity to PEEC and Los Alamos High School will make it convenient to youth, a demographic specifically targeted by the features and amenities of the park.

Potential park elements include: individual bicycle skills stations + a skills loop, pump tracks, dirt jumps, and single-direction bicycle-specific singletrack also known as *flow trail*. As a part of park development, rerouting and reworking of trails adjacent to the facility will be needed to preserve connectivity, provide for progression, and minimize ecological and social impacts to the landscape and adjacent property owners.

North Mesas

North Mesa describes the lands north east of Walnut Canyon south of Diamond Drive and extends to the east along North, Kwage, Otowi, and Deer Trap Mesas. This large zone includes developed facilities for equine and cycling use in addition to the multi use trail system and golf course.

Formal trails in the area include: Walnut Canyon Rim, East Fork, Woodland, Bayo Canyon, North Bayo Bench, Fireline, Kwage Mesa, Otowi Mesa, Deer Trap Mesa, and South Arm. As in the other zones, North Mesas has a number of social trails, mainly centered on the Walnut Canyon area. The exception being a gravity-oriented route descending north off Deer Trap Mesa popular with local downhill mountain bike enthusiasts.

Currently, mountain bike activity is light in Deer Trap Mesa compared to the rest of Los Alamos. Foot traffic (hikers, naturalists and trail runners), especially dog walkers, dominate Deer Trap Mesa. A legacy of significant equestrian activity is established around Kwage Mesa exists, recent utility work on the mesa has created a road out of a once desirable trail experience. Bicycle use on this mesa is less than we observed in the adjacent Walnut and Bayo Canyon areas.

Actions:

- Improve trails for equestrian opportunities around Kwage Mesa/Bayo Canyon. Detailed suggestions include:
 - ✓ Reconstruct Kwage Mesa as trail, existing corridor is a dozer-maintained road. As part of reconstruction, consider shifting the alignment to north edge of canyon.

- ✓ Improve descent to Bayo Canyon, either improve in place or construct new alignment. The existing rock troughs are difficult to navigate for equine users.
- ✓ Improve crossing at roundabout for horses (NMZ-1).
- ✓ Investigate connections between Pueblo Canyon and Bayo Canyon as well as an additional connection from the canyon floor to East Kwage Mesa overlook (NMZ-2). As part of this effort, explore opportunities to create a new canyon bottom trailhead
- Expand trail opportunities on Deer Trap Mesa. Add new trail segments to the east to create multiple loop opportunities linking the Deer Trap Mesa and South Arm Trails (NMZ-3).
- Reconfiguring Deer Trap Mesa into a preferred foot traffic area. This will mesh well with the concept of investing in focused use across the system. When implementing new and/or maintaining existing routes, make design and maintenance decisions to discourage serious bicycle and equestrian use (NMZ-4).
- Echoing a common theme, create/modify the existing trails to provide for progression (green, blue, black): Preserve the "core trails" through this area where possible. Continue to offer the difficult/challenging trail experience through this area as it is needed as part of the larger trail system. Realign/rework some of the existing trails into the "green" + commuter/ connection routes, others into "blue" recreational paths (NMZ-5).



Perimeter Is the Gateway to SFNF's Epic Backcountry

Perimeter/SFNF/Pajarito

Perimeter/SFNF/Pajarito describes the area west of Diamond Drive wrapping east into Rendija Canyon contains many neighborhood trails, less developed trailheads and trails extending outward (west and north) onto USFS lands. Formal county trails in the area include: Perimeter, Quemazon, Quemazon Nature, Upper Pueblo, Upper Walnut, Dot Grant, Rendija, and Barranca Crossing.

The Perimeter Trail is the jumping off point linking town pathways to the epic opportunities to the west in SFNF and Pajarito Mountain.

Actions:

- Improve connectivity of existing perimeter trail. (connections across several surface streets need signage/improvements) (PZ-1).
- Improve connectivity to Quemazon trail across upper Pueblo Canyon. This connection will improve access to Pajarito, USFS, and Bandelier for long distance trail users (PZ-2).
- Improve signage on trails/streets to encourage/protect access to trails for neighborhoods. There is a particular need in this zone as it is not unusual for legal trails to apparently direct users on to the driveways or yards of private residences.



The Unique Gravity-Driven Trails Possible at Resorts Like Pajarito are a Key Component to Gaining Ride Center Status



White Rock

White Rock describes the lands within and around its namesake town. The town is laced with trails and greenways providing alternative access throughout the community and to the Rio Grande running in the canyon below. Formal trails in this area include: Canada del Buey, White Rock Canyon Rim, River, Blue Dot, and Red Dot.

Today White Rock is disjoint from the Los Alamos system, offering its own self-contained trail network with unique opportunities and experiences. While connection between the two is physically possible, it requires access to LANL lands.

Actions:

- Organize trails on rim of canyon. Eliminate redundant social braids. Improve wayfinding and signage. Braids and social trail are prolific along this trail. Several of these provide connectivity to residences and neighborhood roads, others provide alternate levels of difficulty and/or a different trail width. These braids can be consolidated, by adopting and maintaining a linear series of these segments that provide the most desirable (socially and managerially) segments. Closing old corridors through re-naturalization will be needed in addition to better definition of the primary/formal route.
- Provide for progression. A greater percentage of trails users can be served by maintaining the main corridors as “green” trails enhanced with optional “blue” lines and features.
- Create a White Rock Loop (WZ-1). Sign a loop return via paved trail/canyon connection to overlook park. Building on the previous comment to provide progression, the loop can be configured as a primary “green” route with formalized optional segments requiring higher skill. In this way a single corridor can provide a wide spectrum of experiences.
- Blue Dot and Red Dot are burly hiking style trails. Some sections are eroding and could use volunteer labor/work to improve.
- Wayfinding improvements to better guide visitors. A specific example: Red Dot needs specific signage and wayfinding guides at its uppermost stream crossing. Today with few aids, many visitors are lured on to an adjoining social trail that captures returning travellers up the canyon on wrong side of creek on a dead end social trail.
- River Trail repairs. Provides a quality backcountry experience but there are maintenance opportunities. A few wet seep crossings could be improved/hardened with armoring. A single steep, narrow and eroding section could benefit from rerouting.
- In the long term, work with LANL management as facility plans change with an eye toward creating a trail link between Los Alamos and White Rock.



Next Steps

Demonstration Project and Setting The Stage

Initial next steps include demonstration projects plus building momentum and laying the groundwork for a potential Phase-1.

Appealing to the broad traditional trail community, design and create a more complete trail network on Deer Trap Mesa by providing loop opportunities. In particular, add the looping opportunity on the east end of the mesa proposed in this report. The terrain and access patterns make this a “hiking preferred” area for trail use. It is recommended that no alterations be made to the entrance trail that would make access for bicycling and equine travel easier/possible. This will ensure the area retains its character and relatively remote feel.

In parallel with efforts on Deer Trap Mesa, begin the planning tasks and build momentum to start the real work of transforming Los Alamos’ trails. Organize stakeholder meetings to share the findings of this report. Use its findings to demonstrate trail needs to local leaders.

Phase-1: “Focus on the Center”

Phase-1 is a collection of improvements and enhancements focused on the center. While an ambitious item, developing the skills area is key. In a single stroke it creates the new focus point for the revised system and demonstrates Los Alamos’ commitment to the project. To show sensitivity to the budget, the skills area itself can be phased, focusing on trailhead and parking elements as well as a selection of park components – pump track, easier dirt jumps, skills loop, and a gladed flow trail as one potential initial configuration.

Radiating from the new center, complimentary improvements provide concrete examples of other suggested themes of the plan. Reorganization is demonstrated via reconstruction and cleanup of the segments surrounding Pueblo Canyon Bridge into an example of family-friendly “green” and true intermediate “blue” loops. Sustainable connectivity extending west of Diamond Drive linking South Pueblo Bench and Upper Pueblo shows a commitment to the local communities.

Improvements to the key linkage made by the Bayo Tunnel demonstrate a commitment to making improvements for other user communities (equestrians) and neighborhoods.

Parallel to these physical improvements is the development of a new formal wayfinding scheme. Signage and blazing architecture/language prototyped here can be further refined and rolled out on subsequent phases.

Including participation by trail professionals and making use of mechanized techniques are key components to phase-1 and raising the trail experiences at Los Alamos to the next level. These contractors will understand the specific needs, materials, and techniques required to successfully execute a project in the area’s challenging terrain and soils. A skilled profession trail builder’s use of mechanized techniques will make it possible to manipulate the terrain to create the needed trail experiences rather than settle for what is possible with hand tools. The use of contractors primarily experienced in landscaping, road or general construction is not recommended as these firms and individuals are not versed in the specific needs of trail users or how to serve them.

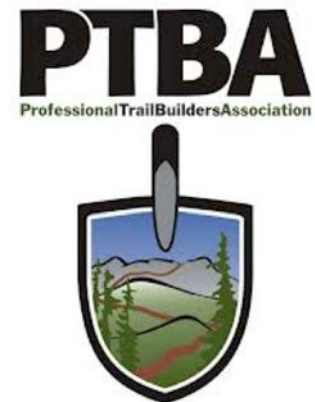
Subsequent Phasing

Sequence of other work is TBD. There is so much potential and so much work, no single project or zone leaps to the fore over others. One suggestion is to combine adjacent reorganization and connectivity projects into “bite-sized” subsequent phases. For example, combine reorganization of loops atop Airport Mesa with the creation of a new link between Pueblo and Bayo Canyons.

IMBA Ride Center and Action Implementation

Los Alamos clearly has the potential to be an IMBA Ride Center. Significant open space coursing through the community and beyond. Supportive advocate and agency communities. Opportunities for bicycle-specific facilities, front country – skills area, and back country – gravity-driven resort-based trails. Significant epic adventures in the adjacent Santa Fe National Forest. All with a back drop of an amazing southwest landscape.

As the report reveals, there are significant challenges as well. But not insurmountable ones. As Los Alamos moves on specific action items, as on the Phase-1 tasks, it is strongly recommended that a trail building professional play a significant role in the planning, design, and construction activities targeting Ride Center status. It is also strongly recommended that the consultant/contractor be a member of a related professional organization, such as the Professional Trailbuilders Association. A PTBA member with extensive shared and bicycle-focused trail experience will be better able to advise and partner with Los Alamos to make good decisions. If not, there is the potential to create a collection of trails that do not meet management goals or user needs and that will fail to become the best-in-class system that is intended.



*Members of the PTBA
Understand the Unique Issues
Involved in Creating a
Successful Trail*

Appendix - Bike Skills Park Primer

Introduction

A bike skills park is an area where a number of paths, trails and other challenges have been adapted or built specifically to be used for unleashing stored kinetic energy on a bicycle. The driving force on these paths and trails is primarily gravitation and the purpose of the activity is quite simply to have fun; riding a mountain bike just for the fun of it. It's the ride downhill that is the sensation and challenge in a bike park.

Why Bike Skills Parks?

The emergence of bike skills parks is fueled by both riders and public land managers. Riders seek more stimulating terrain, jumps, constructed obstacles, and a place to hone their skills. Managers want to reign in unauthorized trail building and provide new recreation options in a central, easily managed location. When constructed, bike parks have, by providing courses for the most energetic riders and those just developing their skills, produced a safer and better cross country trail experience for nearby parks and public lands.



While these parks come in different shapes and sizes, they share the common thread of helping make technically challenging mountain biking more readily available to the public - especially kids. They usually accommodate a wide range of abilities, with opportunities for skill building and progressively difficult challenges. Riders return to these skills parks again and again to session the obstacles and improve their riding. It's important to introduce technical challenges to users sequentially so they can enhance their skills in a managed

environment. A practice area with a wide variety of challenge, from easy to difficult is important to helping visitors improve their skills. The most challenging features should mirror the most difficult obstacles users can expect to encounter on the trail system. Bike skills parks can offer a range of amenities to serve riders from the beginner to the most

advanced. Bike parks do much more than mimic terrain found in nature. They also offer unique obstacles that stretch the imagination.

They're not a replacement for traditional trails. Skills parks serve as an additional outlet for riders, one that's technically oriented, convenient, controlled - and a whole lot of fun. Often, park management wishes to conserve quiet places in the park for those seeking solitude, and concurrently provide a “community changing” mountain bike community, a bike skills park may be the most effective method to accomplish both goals simultaneously.

Not everyone who mountain bikes wants a high speed ride, or to jump over obstacles, or to encounter a high number of other cyclists. The system should be developed that allows for the high energy, high intensity cycling to occur in one location while preserving a backwoods/getaway experience for cyclists on the cross country trails.

Examples

While many of the seminal bike skills parks were at resort areas, recent developments have occurred on public lands. Recent best-in-class examples include Valmont Bike Park (Boulder, CO), Rockburn Branch Skills Park (Howard County, MD), and Duthie Hill (King County, WA).

Bike Skills Park Elements – Pump Track

Pump tracks are manmade closed circuits with rollers in between and berms at each end. They are designed to be ridden without pedaling. A full-body workout, riders use their body to pump— or push down into the dip after an elevation and pull up before the crest of a mound— throughout the continuous loop.

By absorbing and compressing your bike over rollers, gravitational force and downward thrust are converted into speed. It's been said that pump tracks were first designed by professional bike racers to advance their skills and racing times. Today, pump tracks can be found worldwide and enjoyed by riders of all levels. Pump tracks are designed for a range of skill levels to allow cyclists to learn and perfect their riding



skills. This track will have a designed direction-of-use to allow for progression of skills and fitness for riders hoping to advance to the more organic and advanced Pump and Jump Park.

Bike Skills Park Elements – Pump and Jump Park

The Pump and Jump Park concept will be a unique combination of features that more readily mimics the riding of intermediate and advanced flow trails as opposed to stand-alone facilities (e.g., dirtjump lines, freeride trails). The tracks will be designed to allow users to create their own routes through the features, thus encouraging creativity and progression.



Bike Skills Park Elements – Technical Trail Features

Alongside of, and integrated into, the Pump/Jump Park will be short technical trail segments that will provide a range of challenges for cyclists based on their abilities. By incorporating rocks and manmade structures, this facility will serve to increase riders' confidence and skills through progressively more difficult routing.

Bike Skills Park Elements – Flow Trails

Making the most of what the natural terrain provides by using the trail to explore the topography and features present (rocks, trees, waterways), flow trails provide a floating sensation to users. These are the most desirable distance trails. Some describe a trail with good flow as one that has been revealed, not so much as constructed. These trails contain the follow these design principles:

- *Opposition to user forces:* Flow trails maximize the efficiencies afforded by using a bicycle, and are designed to counteract forces that direct a user off the trail. Bermed turns and cambered tread surfaces, for example, promote traction, safety, sustainability, and enjoyment.
- *Conservation of momentum:* The ideal trail avoids 'flow killers' such as sharp turns, incongruent features, and disjointed climbs and descents. Instead, it utilizes undulations and cambered turns to reward smooth, deliberate riding and maximize forward motion. A flow trail encourages a better understanding of the

bicyclist/bicycle interface, allowing riders to reach that unique sensation of floating through the landscape.

- *Leading the user forward:* A sense of discovery, combined with a design that maximizes a rider's forward momentum, helps to draw the user forward. The trail is never repetitive or predictable, nor is it 'awkward', with variety and innovation combining to create an intuitive feel.
- *Frontcountry:* Accessible by the widest range of mountain bicycle enthusiasts. May be located in a backcountry setting as well but within the context of a similarly aerobic & technically accessible loop.



- *Forgiving:* Never extreme, dangerous, or steep; challenge is provided by rewarding progressive skills development and incorporating features that can always be rolled but may be jumped. While a Flow Trail is singletrack, the tread surface itself should be wider in areas where it is that anticipated less-experienced visitors may need a larger margin for error. More challenging features may be included if well-marked rollable alternate lines are provided.
- *Consistent:* Preferably a Flow Trail is its own segment. When part of a longer trail or system, the entire trail should generally adhere to Flow principles of accessibility and progression.



Appendix - Wayfinding Aides

Signs are the most important communication vehicle between the landowner and trail users. A well-implemented and maintained sign system has the potential to greatly enhance the user experience, navigating visitors through the trail network and providing information about the area. Signs also play a critical role in managing risk and the rapid deployment of emergency services.

It is important to develop a comprehensive sign program that meets the needs of everyone, from the savvy, daily trail user to someone who is experiencing the trails for the first time. In order to serve this variety of visitors, sign placement should be strategic and frequent. Keep in mind, however, that signs sometimes intrude on the natural outdoor experience. Balancing these competing interests is the key to developing a successful signage program.

What signs accomplish:

- Trail identification
- Route selection
- Route reassurance and confirmation
- Guidance to destinations and key points of interest
- Describe regulations and allowed uses
- Location identification
- Visitor education about responsible recreation and trail etiquette
- Resource protection and education
- Risk and hazard description

Signs can be divided into three categories:

1. Informational/Directional
2. Regulatory/Warning
3. Educational/Interpretive

INFORMATIONAL/DIRECTIONAL SIGNS

Directional signs provide navigational information, from a simple blaze to elaborate maps. Informational signs, usually positioned at the trailhead, provide details such as trail length and difficulty.

Trailhead Identification Signs

Clear roadside signs directing users to trailheads serve two key purposes: encouraging trail use, and preventing users from creating unauthorized access routes. Signs on roadways must typically be approved and installed by transportation officials in adherence to local guidelines, such as the U.S. Manual on Uniform Traffic Control Devices.

Trailhead Signs/Trailhead Kiosks



Trailhead signs, often called trailhead kiosks, are relatively large installations at the entrance to a trail or trail system. Well-designed kiosks include a complete map and description of all the nearby trails and facilities, local regulations, emergency contact information, and educational messages. The main trailhead kiosk is an ideal place to describe trail length and relative difficulty. Visitors armed with this information can make smart decisions about which trails to travel.

Kiosks might also have information about the area’s natural and cultural resources, volunteer projects, a message board, and portable maps or fliers.

Trailhead signage will also depend on the type of trailhead:

Primary Trailheads are the major access points to trail systems and should include all types of signage: informational, regulatory, and educational.

Secondary Trailheads are smaller and less-developed than primary trailheads, but serve similar functions. They should have a map with a “you are here” location, basic rules, and emergency contact information.



Tertiary Trailheads are less-formal access points and are often used by locals familiar with the area. Possible elements include a map with a “you are here” location, basic rules, and emergency contact information.

Nine Key Elements for a Trailhead Sign/Trailhead Kiosk:

1. Map
2. Trail Information
3. Emergency Contacts

4. Location Identification
5. Trail Difficulty Ratings
6. Risk and Hazard Warnings
7. Responsible Recreation and Trail Etiquette Tips
8. Rules and Regulations
9. Interpretive Information

Trail Intersection Signs

Signs at intersections need to provide clear, concise directions for how to stay on the trail or return to a trail- head. If access rules are different among trails at the intersection, be sure to indicate both allowed and prohibited activities using standard icons. Intersection signs could also post location identification information to aid in emergencies.



Waymarks

Waymarks are small, simple signs that direct users along a trail. Examples include blazes painted on trees, aluminum or plastic diamonds affixed to trees, and posts sunk into the ground. These signs can be small, so long as they are obvious and clearly mark the way. Don't overuse them if the route is easy to follow. Directional arrows or user icons should contrast vividly with the background.

Difficulty Rating Signs

Signs that indicate trail difficulty provide considerable information yet are simple to create and easy to understand. They help users make informed decisions and select trails that match their skill level. Placing this

information at the beginning of a trail and at trail intersections helps manage risk and minimize injuries. Typically, trail difficulty signs indicate the technical challenge, not the physical exertion.

Trail Length and Elevation Gain/Loss

The best way to indicate physical exertion is by posting trail length, and possibly even elevation change, in addition to rating the trail's technical difficulty.

REGULATORY/WARNING SIGNS

Regulatory signs delineate rules, such as prohibited activities, direction of travel, or other restrictions. Warning signs are used to caution trail users of upcoming hazards or risks.

Visitor Rules and Regulation Signs

Regulatory signs should be simple and easily digested. Be sensitive to language. The goal is to engage and direct, not scold trail users. To that end, use language that encourages good behavior, rather than raising hackles. It's as simple as writing "No bicycles, please," rather than "No bikes!"

Allowed Activities

Signs at all trailheads and major intersections should indicate which activities are allowed and which are prohibited, using the well-established icons almost all visitors are used to seeing.



Warning Signs

Signs play a vital role in managing risk. When appropriate, warning signs should be used to mark known hazards. Position them well in advance of the hazard or risk so that visitors have enough time to read the sign and react. Also, consider adding signs before unexpected challenging technical trail features, like drop-offs, narrow bridges, or other elements of increased risk.

Road/Trail Intersections

Specific signs can be used to alert motorists and trail users to the intersections of trails and roads. Road crossings can be addressed with yield signs and stop signs. The amount of traffic will affect the type and number of signs needed. Where a trail approaches a road crossing, both "slow" and "stop" signs could be placed in succession on the trail. Additionally, consider placing information signs, such as trail name and allowed uses, on either side of a road crossing, as these are trail-system access points.

Emergency Signs

To facilitate emergency service access, each trailhead or access point could be assigned a physical address by an appropriate local agency and mapped by GPS. This physical address



and GPS coordinates might be included on trailhead signs along with emergency contact information. Locations within the trail system could have location identification as well.

EDUCATIONAL/INTERPRETIVE SIGNS

Educational signs provide guidelines for responsible recreation and trail etiquette. Interpretive signs describe natural or cultural resources.

Educational/Responsible Use Signs

Occasionally it is helpful to provide trail etiquette tips, such as reminding visitors to stay on-trail and asking bikers to yield to hikers and equestrians.

Interpretive Signs

Interpretive signs can provide information about points of interest along the trail, teach bike skills, or inform visitors about the local environment.



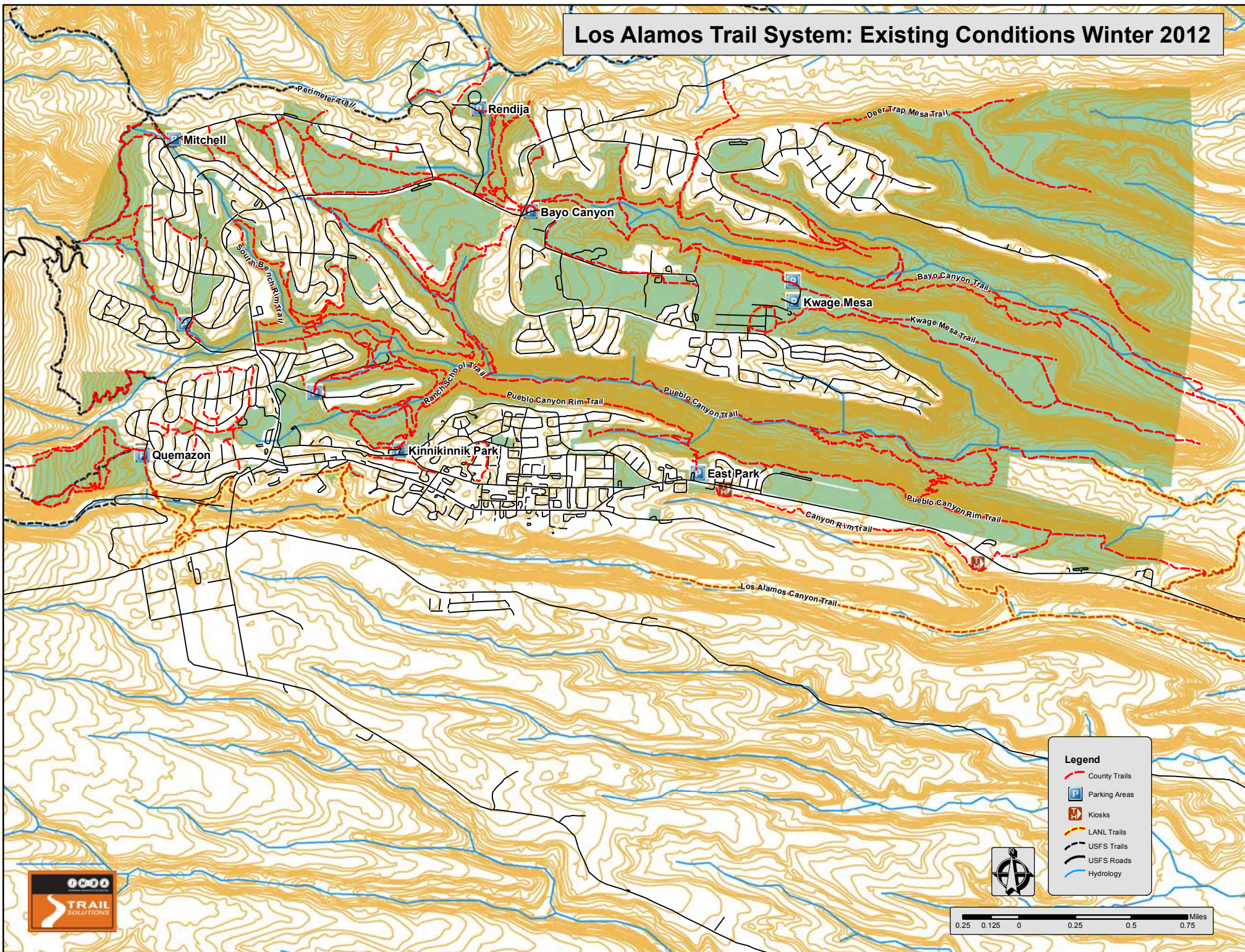


Appendix - Maps

Maps Contents:

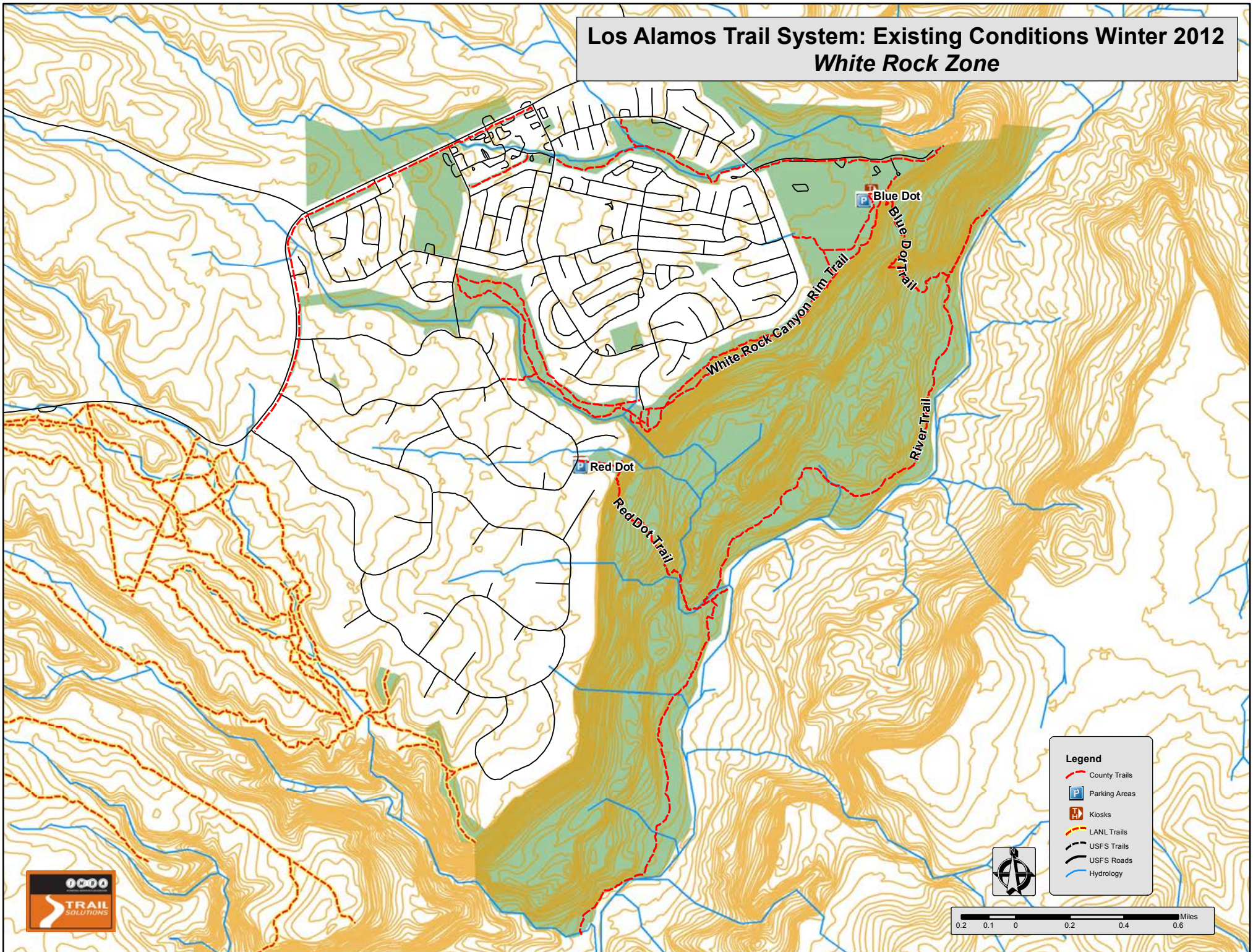
- Los Alamos Trail System: Existing Conditions 2012
- Los Alamos Trail System: Existing Conditions 2012, *White Rock Zone*
- Los Alamos Trail System: Proposed Trail Improvements
- Los Alamos Trail System: Zones Key
- Los Alamos Trail System: Proposed Trail Improvements, *Airport Zone*
- Los Alamos Trail System: Proposed Trail Improvements, *Central Kinnikinnik Zone*
- Los Alamos Trail System: Proposed Trail Improvements, *North Mesas Zone*
- Los Alamos Trail System: Proposed Trail Improvements, *Perimeter/FS Connections Zone*
- Los Alamos Trail System: Proposed Trail Improvements, *White Rock Zone*

Los Alamos Trail System: Existing Conditions Winter 2012



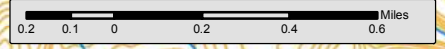
Los Alamos Trail System: Existing Conditions Winter 2012

White Rock Zone

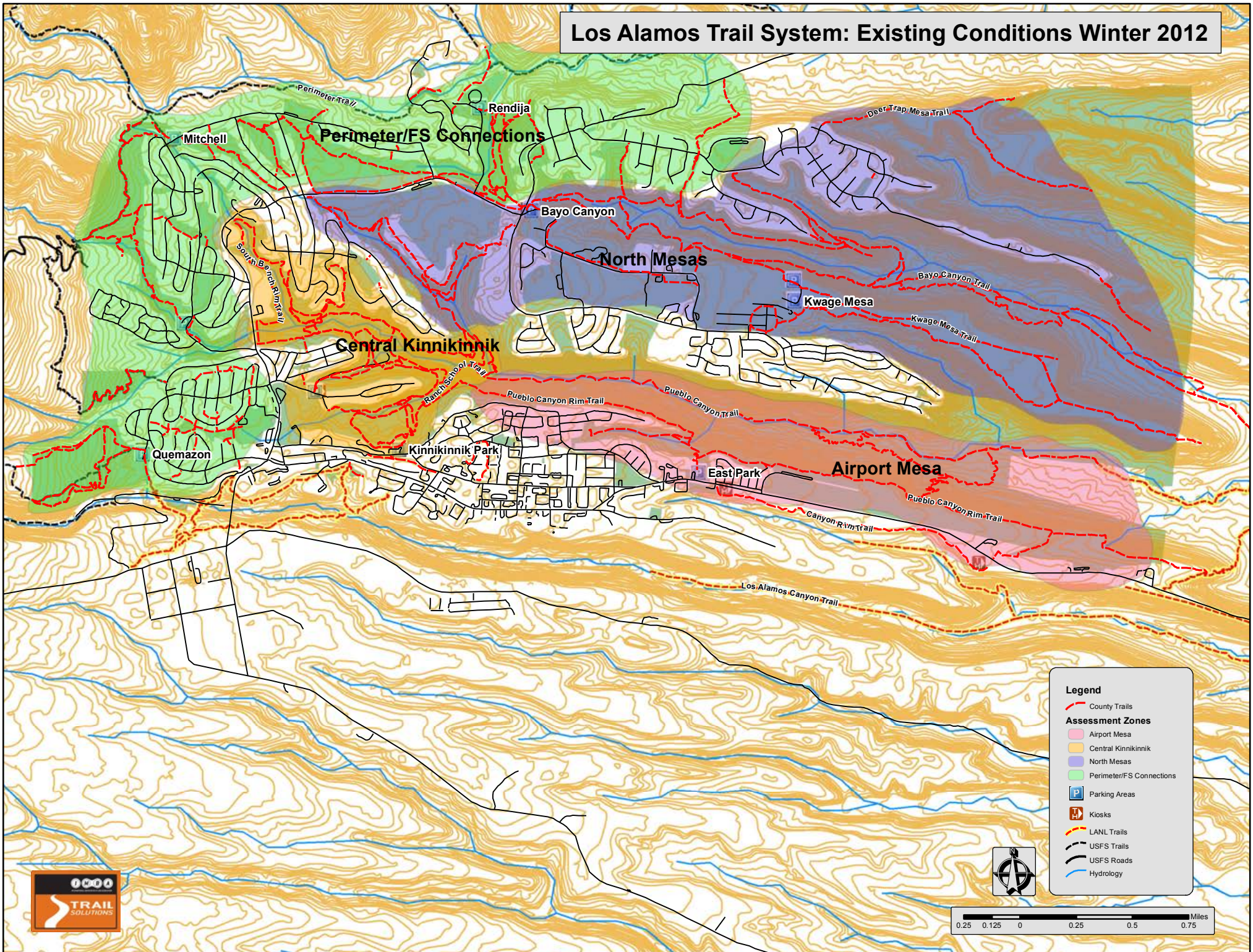


Legend

- County Trails
- Parking Areas
- Kiosks
- LANL Trails
- USFS Trails
- USFS Roads
- Hydrology

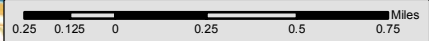


Los Alamos Trail System: Existing Conditions Winter 2012

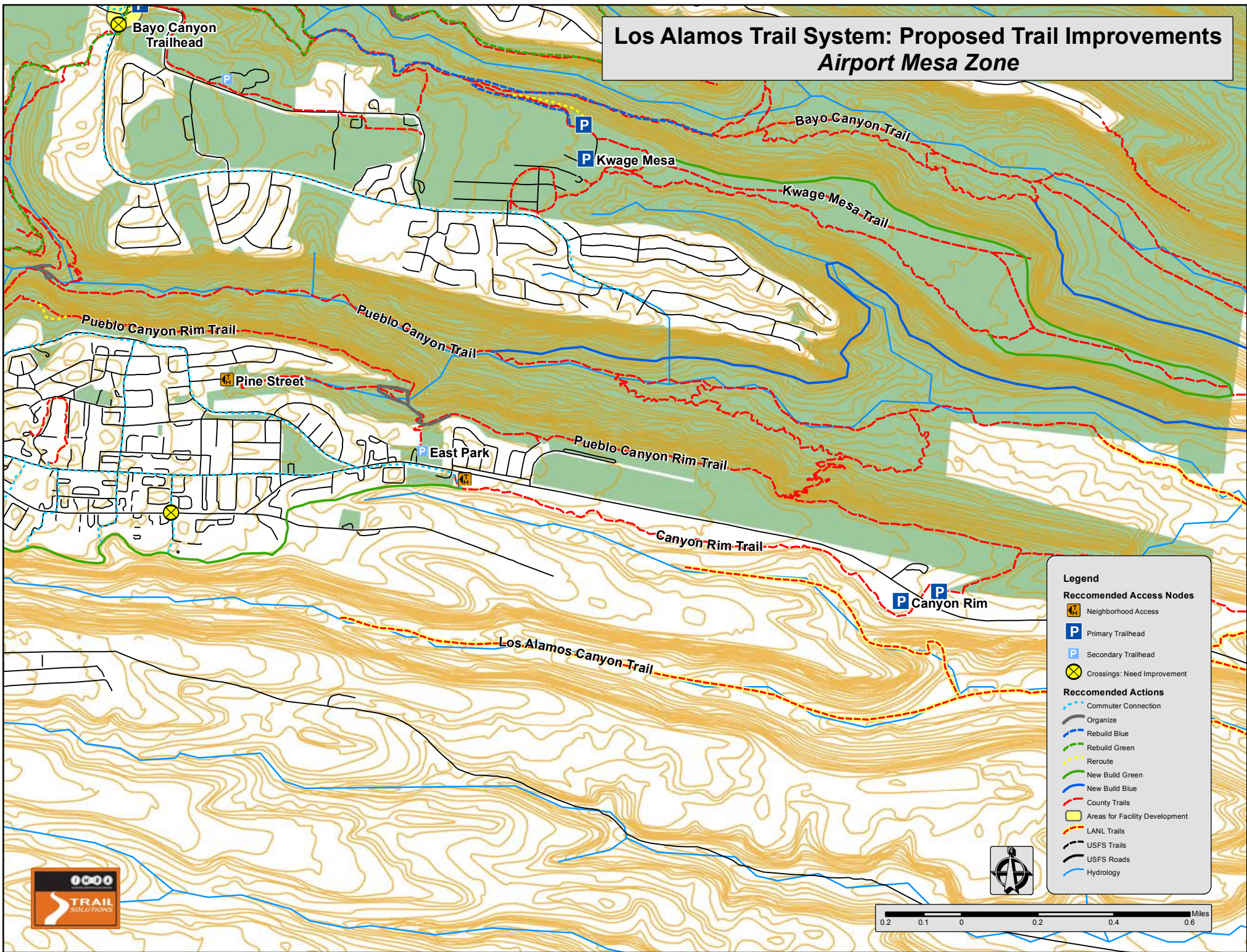


Legend

- County Trails
- Assessment Zones**
 - Airport Mesa
 - Central Kinnikinnik
 - North Mesas
 - Perimeter/FS Connections
- Parking Areas
- Kiosks
- LANL Trails
- USFS Trails
- USFS Roads
- Hydrology



Los Alamos Trail System: Proposed Trail Improvements Airport Mesa Zone



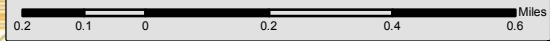
Legend

Recommended Access Nodes

- Neighborhood Access (Yellow square with 'A')
- Primary Trailhead (Blue square with 'P')
- Secondary Trailhead (Light blue square with 'P')
- Crossings: Need Improvement (Yellow circle with 'X')

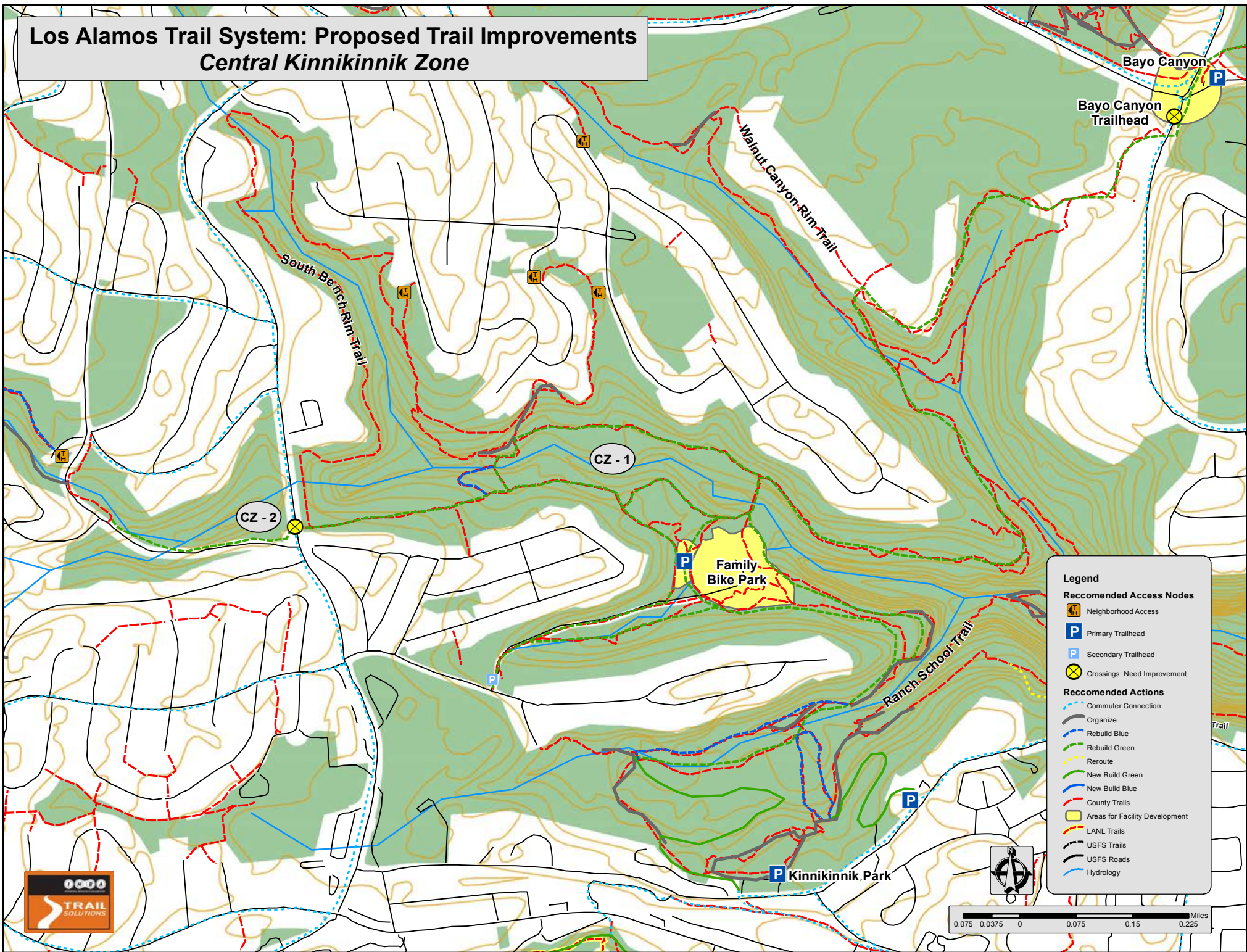
Recommended Actions

- Commuter Connection (Dashed blue line)
- Organize (Grey line)
- Rebuild Blue (Dashed blue line)
- Rebuild Green (Dashed green line)
- Reroute (Dashed yellow line)
- New Build Green (Solid green line)
- New Build Blue (Solid blue line)
- County Trails (Solid red line)
- LANL Trails (Dashed orange line)
- USFS Trails (Dashed black line)
- USFS Roads (Solid black line)
- Hydrology (Solid blue line)



Los Alamos Trail System: Proposed Trail Improvements

Central Kinnikinnik Zone



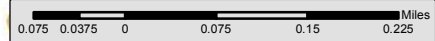
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Recommended Access Nodes

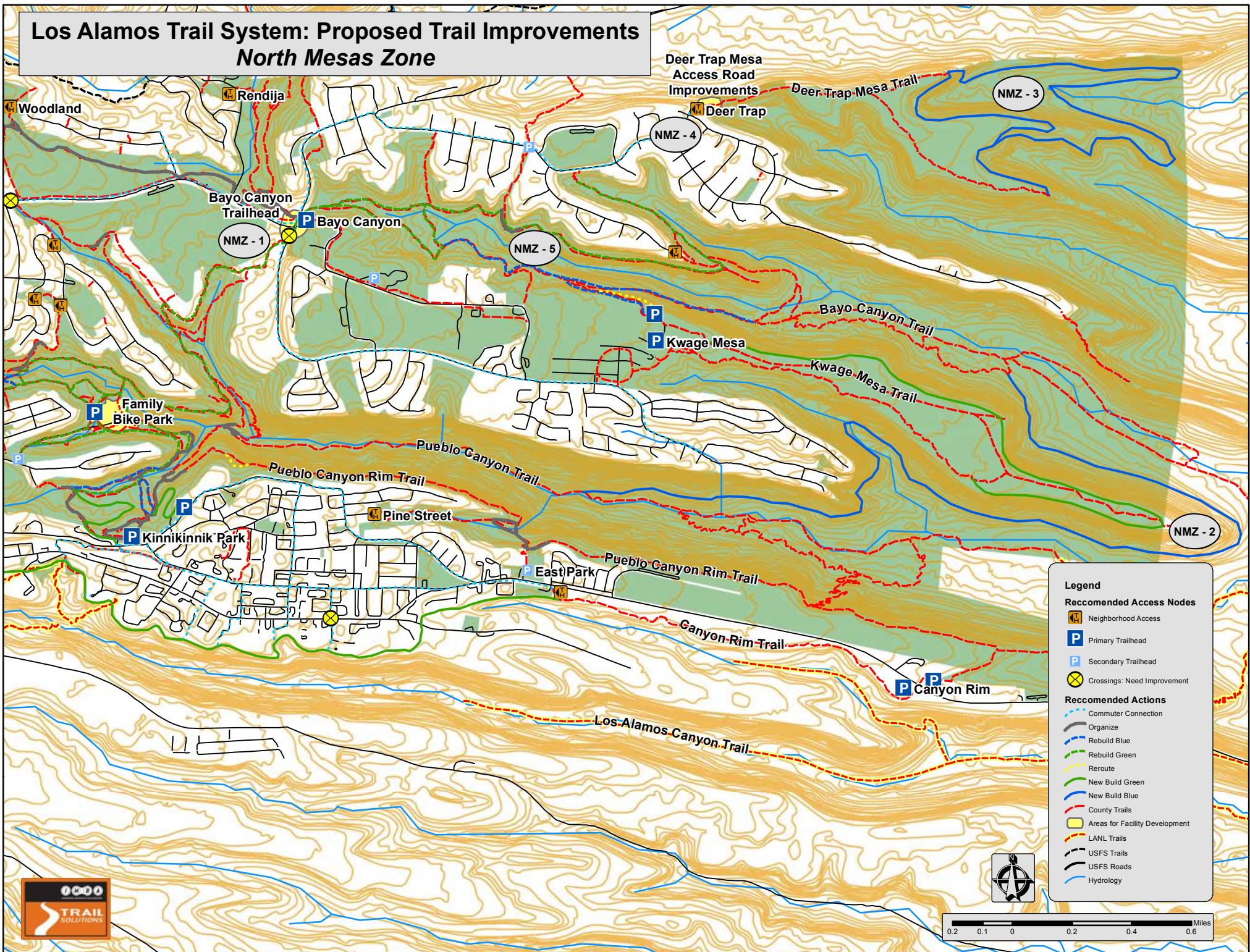
- Neighborhood Access
- Primary Trailhead
- Secondary Trailhead
- Crossings: Need Improvement

Recommended Actions

- Commuter Connection
- Organize
- Rebuild Blue
- Rebuild Green
- Reroute
- New Build Green
- New Build Blue
- County Trails
- Areas for Facility Development
- LANL Trails
- USFS Trails
- USFS Roads
- Hydrology



Los Alamos Trail System: Proposed Trail Improvements North Mesas Zone



Deer Trap Mesa
Access Road
Improvements

NMZ - 3

NMZ - 4

NMZ - 5

NMZ - 2

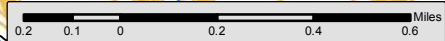
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Recommended Access Nodes

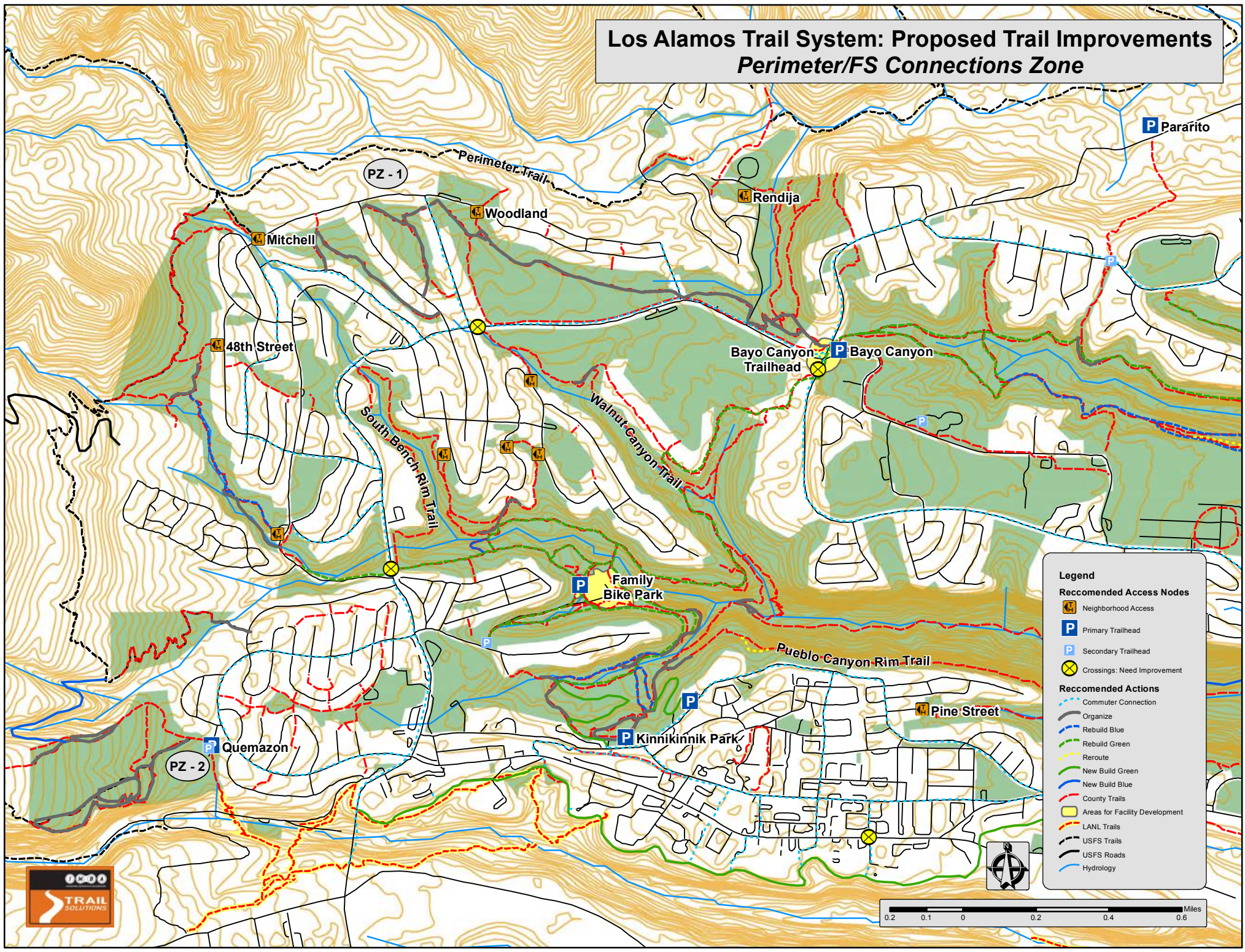
- Neighborhood Access
- Primary Trailhead
- Secondary Trailhead
- Crossings: Need Improvement

Recommended Actions

- Commuter Connection
- Organize
- Rebuild Blue
- Rebuild Green
- Reroute
- New Build Green
- New Build Blue
- County Trails
- Areas for Facility Development
- LANL Trails
- USFS Trails
- USFS Roads
- Hydrology



Los Alamos Trail System: Proposed Trail Improvements Perimeter/FS Connections Zone



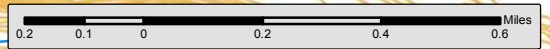
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Recommended Access Nodes

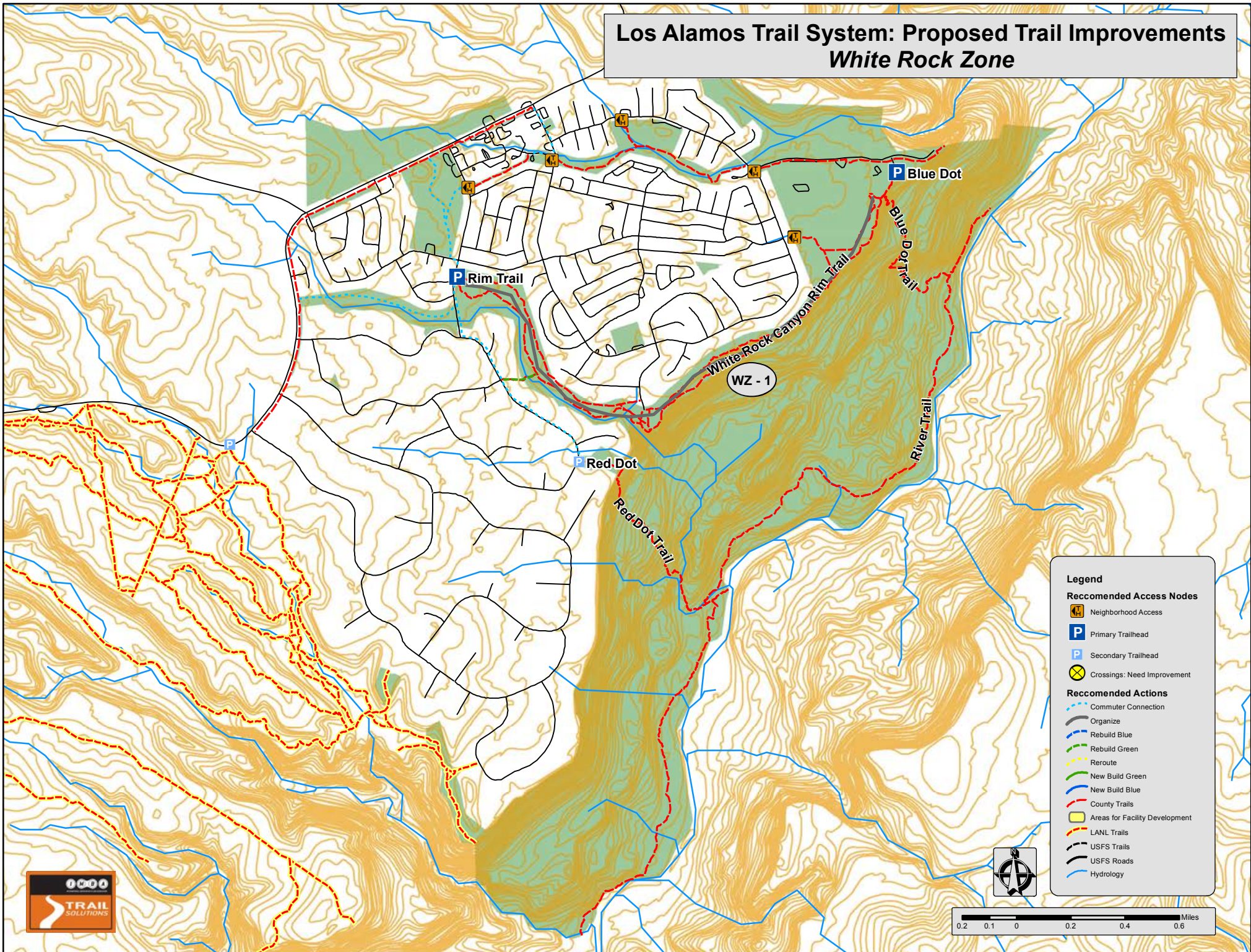
- Neighborhood Access
- Primary Trailhead
- Secondary Trailhead
- Crossings: Need Improvement

Recommended Actions

- Commuter Connection
- Organize
- Rebuild Blue
- Rebuild Green
- Reroute
- New Build Green
- New Build Blue
- County Trails
- Areas for Facility Development
- LANL Trails
- USFS Trails
- USFS Roads
- Hydrology



Los Alamos Trail System: Proposed Trail Improvements White Rock Zone



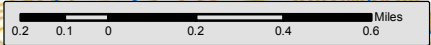
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Recommended Access Nodes

- Neighborhood Access
- Primary Trailhead
- Secondary Trailhead
- Crossings: Need Improvement

Recommended Actions

- Commuter Connection
- Organize
- Rebuild Blue
- Rebuild Green
- Reroute
- New Build Green
- New Build Blue
- County Trails
- Areas for Facility Development
- LANL Trails
- USFS Trails
- USFS Roads
- Hydrology



IMBA PLAN SUGGESTED PROJECTS

Zone	Trail	Condition	Project	Can Be Completed with Local Resources	Constraints and challenges
Airport	Graduation Canyon	trail braided and confusing	Organize trails, close off routes	Yes	Wait until new sewer line is constructed
Airport	Pueblo Canyon Rim	too steep	Create green loop, move airport fence, contour trail through old landfill site	Maybe	Airport requirements, additional clean up of old land fill?
Airport	Pueblo Canyon Rim	too steep	Find new route for trail as it climbs 50 feet over 200 feet	Maybe	Gas line, cliff make for difficult trail routing
All	All	signage is inadequate	Develop and implement signage plan	Yes	Cost, some objections to trail signs
Central	Kinnikinnik Park	lack of easy bike trails	Build easy bike trail	Yes	This area is considered a natural area not suitable for bikes
Central	Ranch School	new nature center has no connection to trail network	Construct new trail from center to canyon	Maybe	Steep terrain
Central	South Bench	multiple routes	Create specific skill level loops	Maybe	Big project
Central	South Bench	no easy crossing of Diamond Drive	Construct safe crossing	No	Cost, traffic flow
Central	South Bench	no connection to Perimeter Trail	Build trail along Pueblo Canyon	Maybe	
Central	South Bench	multiple routes	organize trails, close off routes, rebuild as blue	Maybe	
Central			Build family bike park	No	Possible objections from neighbors
North Mesas	Barranca Crossing	multiple routes	Organize trails, close off routes	Yes	Upper "trail" is used by Utilities as a road
North Mesas	Bayo Canyon	Descent from mesa top to canyon is rutted and difficult for horses and bikes	Reroute trail	Maybe	This is an historic road listed on the state register of historic places
North Mesas	Bayo Canyon	Roundabout is difficult for horses	Improve roundabout crossing for equestrians	Yes	
North Mesas	Bayo Canyon and North Bayo Bench	parking area ill-defined and lacks trail information	Delinate parking, provide trail information	Yes	Sledding area
North Mesas	Bayo Canyon and North Bayo Bench	easy trail with a few difficult stretches	Identify difficult sections and reroute trails to bypass	Maybe	Historic road
North Mesas	Deer Trap	parking area ill-defined and lacks trail information	Delinate parking, provide trail information	Yes	Used for snow storage
North Mesas	Deer Trap	No loop trail	Create natural area, construct loop trail	Yes	Regular users may object
North Mesas	East Fork	multiple routes	Organize trails, close off routes	Yes	Utility road used by Utilities and LANL for stormwater sampling
North Mesas	Kwage Mesa	sewer project obliterated trail and created wide road	Rebuild trail along the north rim	Yes	
North Mesas	Pueblo Canyon	trail is a road	Build new blue route on north slope of Pueblo Canyon	Maybe	Cultural resources, threatened species nesting area
Perimeter	North Pueblo	multiple routes	Organize trails, close off routes	Yes	residents each have their own access route
Perimeter	Satch Cowan	multiple routes	Create natural area, define loop trails for foot and bike traffic	Yes	Neighborhood trail network with frequent, regular users
Perimeter	Walnut Canyon	unclear access	define access	Yes	Work with private land owners
Perimeter	Woodland	multiple routes	Organize trails, close off routes	Yes	residents each have their own access route
White Rock	White Rock Canyon Rim	braided trails	Organize trails, close off routes	Yes	residents each have their own access route