Greater Observatory Mesa Trail Plan DRAFT

2023

City of Flagstaff Open Space Program

Table of Contents

Executive Summary

The Greater Observatory Mesa Trail Plan Proposal's purpose is to design a trail system for implementation in the Observatory Mesa Natural Area and the adjacent properties owned by Lowell Observatory and Coconino National Forest. The plan includes recommendations for the restoration of currently disturbed areas and unauthorized trails and also defines appropriate uses of the final completed trail system and ecological preservation commensurate with the Arizona Land Department sale. The final trail concept plan will be adopted by the City of Flagstaff, Lowell Observatory, and the Coconino National Forest and will be used to direct future management and trail implementation.

This proposal was created in partnership with land managers at City of Flagstaff, Lowell Observatory and the Coconino National Forest. Lowell Observatory is interested in retaining undeveloped land within their property to benefit their organization and the Flagstaff community. This plan includes recommendations for the Lowell Observatory property that would provide passive recreation opportunities and increase connectivity for the overall trail system. The Coconino National Forest also reviewed this trail proposal and the long-term plan is to enter into a cross-jurisdictional agreement that would permit the City to implement and maintain trails on Forest Service property. This partnership will also provide trail system connectivity and will increase passive recreation opportunities.

Facility development on the properties will include low-impact trails, interpretive and wayfinding signage, and basic visitor amenities such as a parking areas and restrooms. In the long-term, educational zones are proposed to support education activities on Observatory Mesa.

In summary, this plan proposes as priorities:

- Approximately 23 miles of additional natural-surfaced single-track trail.
- The addition of 2 more formal access points, which will result in a total of 6.
- Recommendations for trail signage that allows for way finding and informs users of regulations.
- Additional parking for residents and visitors along Route 66 near the Public Works Yard and the at the west boundary on Forest Road 515.
- Restoration of 4.8 miles of unauthorized trails and 10.99 miles of abandoned roads.
- Implementing two educational zones to be considered for interpretive signage for the purpose of increasing student and adult awareness of the environmental, cultural, and historical significance.

Next steps for developing a final trail concept include:

- Working with stakeholders to collect feedback and strengthen partnerships.
- Providing opportunities for public input.
- Revising the plan according to partner and public input.
- Final plan approved by the Flagstaff City Council.

Section 1: Value of Flagstaff Trails

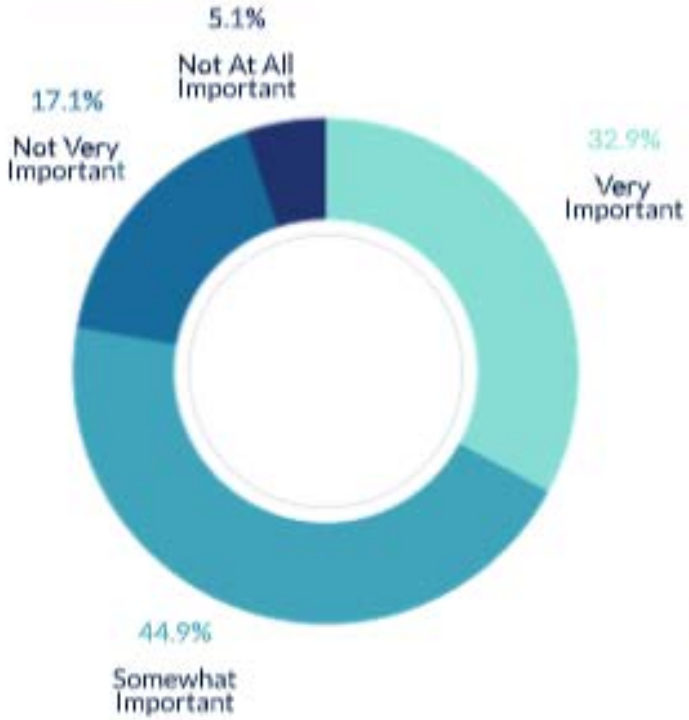
Flagstaff is surrounded by forests, mountains, and canyons. This natural landscape is a defining element in the character of the Flagstaff community. For decades, community members and local organizations have advocated for preserving Observatory Mesa, and for good reason. Observatory Mesa is a critical tract of land for our local flora and fauna and also provides human benefits through recreational opportunities, climate change resiliency, and economic prosperity via tourism.

When open space is incorporated on our blocks, in our neighborhoods, and throughout our city, the community benefits. People living in walkable neighborhoods get about 35–45 more minutes of activity per week, leading to improved health. Parks and preserves help bring people together across social, economic, and racial divides. Research shows open space has a positive impact on low-income urban communities by filling gaps in health inequalities and expanding transportation choices to give more freedom and mobility to all people. Trails also make us a more resilient community. When open space and trails are integrated into our community, they reduce negative impacts of urbanization such as traffic congestion, noise, pollutants, and infrastructure deterioration. They also help prevent changes in community character. Access to trails is one of the key reasons people visit the Flagstaff community. The recent *Economic Value of Trails in Arizona* (2020) survey found that over 83% of non-motorized trail users consider trails when deciding where to visit (p. 42). Approximately 56% of in-state travelers visiting Coconino County travel to Flagstaff to recreate outdoors (p.67-68).

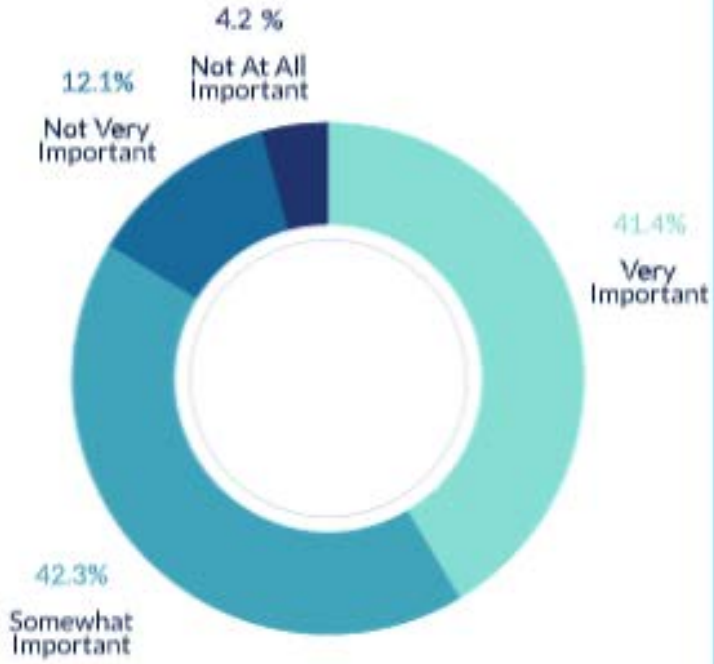
As trail use increases in the Flagstaff area, responsible land management can ensure that the landscape is protected while allowing for the enjoyment of unique outdoor experiences and opportunities. Observatory Mesa, filling the skyline immediately west of downtown Flagstaff, is situated in an ideal location to provide thoughtful trail use, wildlife viewing, and environmental education and programming close to home while protecting the natural landscape.

Value of Flagstaff & Arizona Trails

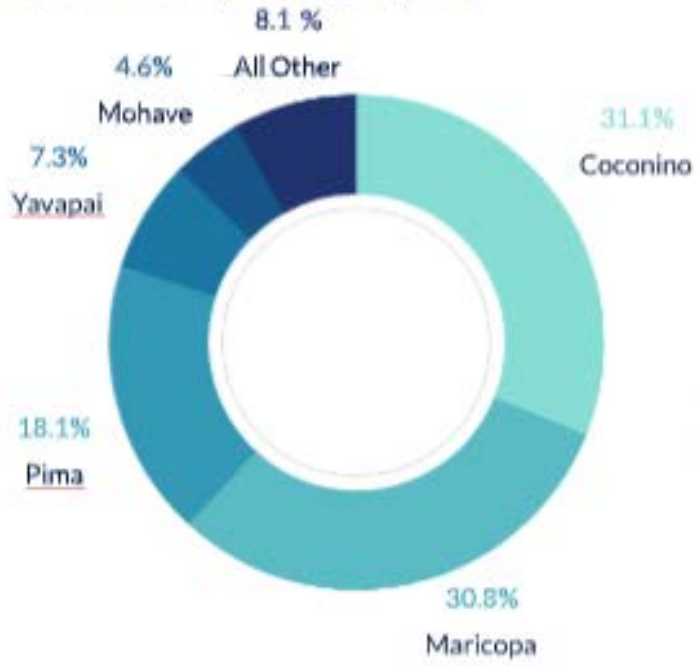
Importance of Nearby Trails in Deciding Where to Live: Non-Motorized Trail Users in Arizona who have used trails in the past year (p. 42)



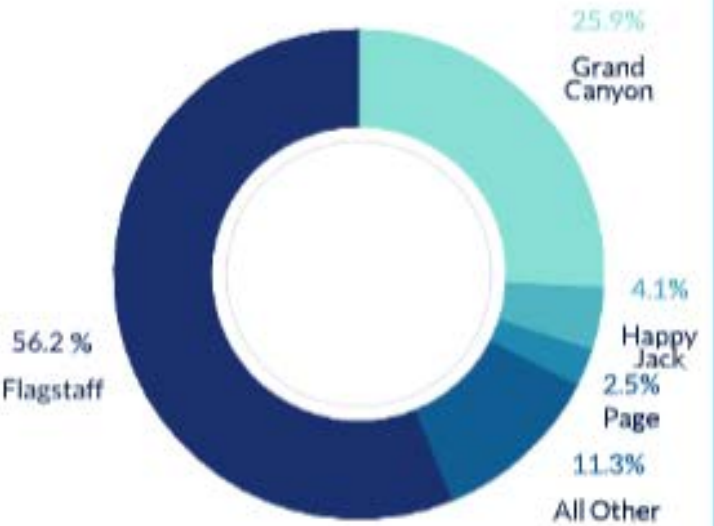
Importance of Nearby Trails in Deciding Where to Visit: Non-Motorized Trail Users in Arizona who have used trails in the past year (p. 43)



Coconino County Non-Motorized Trail Use by User County of Origin (p. 67)



Non-motorized trail use in Coconino County (p. 68)



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Section 2: Background Information

The Greater Observatory Mesa Trail Plan Proposal's purpose is to design a trail system for implementation in the Observatory Mesa Natural Area and the adjacent properties owned by Lowell Observatory and Coconino National Forest. The plan includes recommendations for the restoration of currently disturbed areas and social trails and defines appropriate uses of the final completed trail system. The final trail concept plan will be adopted by the City of Flagstaff, Lowell Observatory, and the Coconino National Forest and will be used to direct future management and trail implementation.

This proposal was developed to comply with policies (see references) from the City and its partners in order to create a plan consistent with the preservation of natural and cultural resources. This proposal is meant to serve as a foundation that can be utilized to generate public feedback and create a revised plan that is consistent with the preservation of the area while considering additional community interests and values.

A. Observatory Mesa Natural Area, City of Flagstaff

Bond initiative funds approved by voters in 2004 provided a match for an Arizona State Parks Growing Smarter grant in 2013. This strategy financed the acquisition of the Observatory Mesa Natural Area (OMNA). The Arizona State Land Department agreed to sell the 2,251 acres that now make up the area, recognizing that the property is vital to preserving environmental and community health. Because grant funds were utilized to purchase the acreage, the grant agreement bestowed Arizona State Parks a conservation easement over the property that requires the acreage to be retained forever in predominantly the condition reflected in the baseline documentation when it was purchased. The easement also includes the right to engage in and permit engagement in recreational uses of the property, including hiking, trail running, cycling, other forms of passive recreation, and educational and scientific study activities. The City's Open Space Management Plan reiterates the importance of preserving the unique conservation values associated with the property, including open space value, unique scenic beauty, native vegetation communities, diverse wildlife habitats, and cultural resources. Observatory Mesa Natural Area is a day-use area, and overnight uses, including camping, are strictly prohibited. Except for authorized use, motorized vehicles are not permitted, and therefore, planning recommendations are solely for passive recreation. A broad array of recreational day activities are currently available on the property, including hiking, bicycling, horseback riding, cross-country skiing, and snowshoeing.

B. Lowell Observatory

Lowell Observatory was established in 1894 by Percival Lowell. The Observatory is privately owned and operated, Section 17 being deeded to Lowell in 1910 by the US Forest Service. Though the primary mission of Lowell Observatory is to pursue the study of astronomy and provide astronomical educational opportunities to the public, the Observatory has always generously permitted walkers and bikers to enjoy their property. In the early 1990's, Lowell Observatory granted the City of Flagstaff an easement for the Mars Hill Flagstaff Urban Trail segment which runs from Thorpe Park through the northern part of Lowell Observatory's Property. The Observatory is also interested in retaining substantial undeveloped space to benefit their campus and the community. With this goal, Lowell Observatory is working with the City to dedicate the Lowell Observatory Trail System through a long term process, on the privately owned Section 17, that complements their campus, the community, and supports this trail plan proposal.

Because Section 17 is the Observatory's private property, Lowell cannot guarantee any trail recommendations in this report to be a permanent improvement of the property. At this time, outdoor recreation and experiential education recommendations in this report are flexible, with changes to any of the trail recommendations possible and dependent on future management and implementation of Section 17 and Lowell Properties.

C. Coconino National Forest

The Coconino National Forest's 2018 Forest, Land, and Resource Management Plan (generally known as the Forest Plan) provides direction for the management of the forest surrounding Flagstaff. The Forest Plan provides integrated multiple-use and sustained-yield of goods and services from the forest to maximize the long-term net public benefits in an environmentally sound manner. Following Forest Service directives, the Coconino National Forest Service is interested in supporting the City by reviewing the feasibility of this trail plan proposal and considering the plan's approval. Upon approval, the Forest Service would conduct an environmental analysis as required by the National Environmental Policy Act (NEPA) and then issue a special use permit to the City to construct and maintain trails across jurisdictional boundaries to provide the best recreational benefits to the public. The Forest Service will also work with the City to ensure compliance with Section 106 of the National Historic Preservation Act (NHPA) for archeological resources on Forest lands. Furthermore, the Forest Service will consider management options such as limiting motorized vehicle access for the Forest's section seven (the section at the center of OMNA) to help to support non-motorized recreation opportunities.

Greater Observatory Mesa Partners:

D. Community Interest

A bond initiative was approved by voters in 2004 to help provide funds to acquire Observatory Mesa Natural Area. In 2013, those funds supported an Arizona State Parks Growing Smarter grant as match to purchase 2,251 acres "for the express purpose of preserving the unique conservation values associated with these properties, specifically their open space value, unique scenic beauty, native vegetation communities, diverse wildlife habitats and historical/cultural resource". CFOSP,2017,p.6). The community's support for the 2004 bond fund is a testament that Observatory Mesa is an important open space area for the entire community, in addition to serving as a "neighborwoods" for downtown Flagstaff and nearby neighborhoods. This trail plan proposal supports the bond approved by voters and full fills the City's commitment to provide community access to secured open space that voters supported.

Since the purchase and preservation of Observatory Mesa Natural Area the community routinely inquires when a trail system will be planned and implemented. Recently the Flagstaff Trails Initiative, completed a public survey to gain public feedback on Flagstaff trails to develop their broader trail planning strategy. Public comments were compiled, evaluated to better understand the public's relationship to outdoor recreation in Flagstaff. Of the 1,700 total comments received,107 of those were specific to Observatory Mesa. FTI prioritized the regional public comments using a set of criteria developed to reflect the objectives of the regional trail strategy. Of the 77 recommendations for regional trail improvements, Observatory Mesa was the focus of six of those recommendations, including:

- Construct a new stacked loop system on Observatory Mesa accessible from downtown Flagstaff and Thorpe Park to help address local demand and unauthorized trails. (priority - high)
- Connect Fort Valley and Observatory Mesa to help link two popular areas. (priority - high)
- Adopt unauthorized trails on Lowell Observatory property as part of Observatory Mesa system improvement. (priority - high)
- Evaluate unauthorized trails on Observatory Mesa for closure and restoration to reduce impacts and reduce redundancy. (priority - high)
- Connect Fort Valley to FUTS with a commuter route on Observatory Mesa that partially uses existing roads. (priority - medium)
- Construct a new FUTS-standard multi use trail along the perimeter of Observatory Mesa.* (priority - low)

Projects that did not receive consensus from the planning team for area indicated by an asterisk (FTI,2019, p.28-30).

The high level of interest in Observatory Mesa as expressed by public comments and prioritized recommendations validate the formal planning efforts underway. The community of Flagstaff values Observatory Mesa as an asset to the quality of life of its residents and enjoyment of its visitors. Detailed information on the Regional Trail Strategy, interactive maps, a complete list of public comments and prioritization criteria can be found at: http://flagstafftrailsinitiative.org/

Section 3: Current Conditions– Greater Observatory Mesa

This section of the plan describes and displays the existing conditions in the Greater Observatory Mesa Area (GOMA), including existing roads, trails, trail heads, parking areas and signage. Some of the trails, roads, and parking areas are authorized uses and some are unauthorized and are therefore proposed to be either naturalized or adopted into the formal trail network. The map below summarizes these existing conditions.

Summary of Existing Trails

The Greater Observatory Mesa Area serves as local access to nature for the Railroad Springs, West Village, Flagstaff Mesa, Flagstaff Townsite, Westridge, Ridge Crest, Anasazi Ridge, and Cheshire neighborhoods. Subsequently, the area receives substantial recreational use due to its proximity to the above-mentioned neighborhoods and the downtown area. Additionally, the site is heavily used by the broader Flagstaff community. As a result, the area shows the effects of un-managed recreation and public use, including visible signs of deterioration and degradation, such as a proliferation in user-created trails, off-road vehicle damage, and trail width expansion.

Currently three designated authorized trails (totaling 5.8 miles) provide some access to the GOMA. However, a 2019-2021 comprehensive survey of the area identified approximately 15 miles of user-created unauthorized trails as well. This vast network of illegal trails, created from the desire for recreational opportunities, can be highly impactful to sensitive resources and confuse users.

The current designated trail system provides minimal access to only two out of the four sections owned by the City, and minimal access to Lowell Observatory's private property. The existing designated trails will require some repair and maintenance, as portions of the trail system have seen trail widening and braiding due to user intensity and weather events. Overall, existing formal trails are mostly adequate when considering condition and alignment, and are important to remain.

Table & Map Series ID Labels Explained	
1	Existing Parking Areas
2	Non-Motorized Access Points
3	Existing Trails
4	Existing Roads
5	Proposed Trail Alignments
6	Existing Signage

ID 3.10: A well built but unauthorized trail connects the Loop trail to the Mars Hill FUTS segment. This trail is labeled for adoption on the Proposed Trail System map.

Current Conditions– Greater Observatory Mesa

B. Existing Parking Areas

Existing authorized parking is limited for the GOMA. The parking lot at the Thorpe Park ball fields currently provides the only formal public parking area to access the mesa. This de-facto trail head is well suited to access the locality via the FUTS Mars Hill trail segment but lacks appropriate trail and way finding information for users. Though the Joe C. Montoya Community & Senior Center parking area is not identified as a formal parking lot, it provides some supplementary parking and access. Lowell Observatory has continued to allow the community to park near their visitor center on private property, though no formal trail access is available there either. In addition, two unauthorized parking locations are being utilized. Unauthorized parking includes the road shoulder along the West 515 Forest Service road and near the intersection of the East 515 Forest Service road and N. Westridge Road.

Series ID	Parking Status	Description/Location	Condition
1.1	Authorized Trailhead	Thorpe Park ball field parking lot located on N Thorpe Rd, Flagstaff.	Adequate parking to accommodate users difficult during events.
1.2	Authorized Trailhead	Joe C. Montoya Community & Senior Center (245 N Thorpe Rd, Flagstaff). Serves the senior center and tennis courts and provides some parking for trail users.	No needs identified.
1.3	Unauthorized Parking	West Forest Road 515 access to OMNA. Users are parking near regulation sign just inside the boundary of OMNA.	Parking is taking place on vegetation.
1.4	Unauthorized Parking	East Forest Road 515 and N. Westridge Road, Flagstaff.	Users often block OMNA gate. Only space for 2 vehicles.

ID 1.4 & 2.5: Unauthorized access on N Westridge Road. Trail users often park in from of the gate blocking emergency access to the Mesa.

C. Existing Non-Motorized Access Points

Six authorized access points provide non-motorized admittance. Two of these points have parking available, Mars Hill and Thorpe Park. Some residents of nearby neighborhoods, including Railroad Springs, West Village, Flagstaff Mesa, Flagstaff Townsite, Westridge, Ridge Crest, Anasazi Ridge, and Cheshire, are within a 10-minute walkable distance (1/4 mile or less) to one of these access points.

Series ID	Access Status	Description/Location	Condition
2.1	Authorized	Mars Hill FUTS pedestrian access. N Thorpe Rd, Flagstaff. Near the Thorpe Park ball field parking lot.	Needs directional routing and signage.
2.2	Authorized	Tunnel Spring FUTS pedestrian access. Located in the Railroad Springs neighborhood (Railroad Spring Blvd. & Adirondack Ave., Flagstaff).	Good condition. No needs identified.
2.3	Authorized	Flagstaff Loop Trail pedestrian access. Located in the Anasazi Ridge neighborhood (N Tillie Ln., Flagstaff).	Good condition. No needs identified.
2.4	Authorized	Mars Hill FUTS pedestrian access, behind the Joe C. Montoya Community & Senior Center. (245 N Thorpe Rd, Flagstaff).	Needs directional routing and signage.
2.5	Unauthorized	Flagstaff Loop Trail pedestrian access via east Forest Service Road 515. (N. Westridge Road Flagstaff).	No needs identified.

ID 2.6: Guiding documents displayed on this sign prohibit motorized used on OMNA lands but signage language does not explicitly prohibit this use.

D. Existing Trails

Accessible Trail Review: The three existing formal trails do not meet the requirements outlined by the Americans with Disabilities Act (ADA) Standards, nor does the parking facility at Thorpe Park allow people with mobility impairments access to existing trails. ADA accessibility limitations are due to extended linear grades that exceed accessible design guidelines and exclude them from consideration. “When extreme or numerous conditions for exceptions make it impracticable to construct a trail that complies with the technical requirements, the entire trail can be exempted from complying with the technical requirements.” (Access Board, 2014, Exceptions 1 & 2). Despite this exception, this plan identifies a potential solution for providing ADA access.

Series ID	Trail Status	Description/Location	Condition
3.1	Authorized	Tunnel Springs segment FUTS segment. 2.4 miles.	Overall good condition, some erosion needs to be addressed.
3.2	Authorized	Mars Hill FUTS segment. 1.4 miles.	Overall good condition, some erosion needs to be addressed.
3.3	Authorized	Flagstaff Loop Trail. 2 miles.	Routine trail maintenance recommended. Erosion damage east of OMNA boundary needs rock armoring at 2 sites.
3.4	Unauthorized	Connector trail partially located on an old road bed. USFS land, Section 7. 0.68 miles.	Narrow, lacks drainage and does not utilize cross slopes.
3.5	Unauthorized	User created trail connects Matson Tanks to private property to the north. 0.15 miles	Poorly aligned on the fall line with no drainage.
3.6	Unauthorized	User created trail in drainage. Connects to old road bed and private property to the north. 0.17 miles.	Poor alignment and narrow. Little used.
3.7	Unauthorized	User created trail begins and ends at private property fences. 0.37 miles.	Does not benefit public trail use. Poorly aligned in drainage with moderate soil excavation.
3.8	Unauthorized	User created trail connecting the Loop Trail with FR 515. 0.58 miles.	Narrow and lacks drainage. Little damage from erosion.

Series ID	Trail Status	Description/Location	Condition
3.9	Unauthorized	Single track on or parallels road bed. 0.27 miles.	Fall line alignment with no drainage.
3.10	Unauthorized	Known as the 'Thorpe Gully', partially constructed single track on the hillside, partial road bed. Parallels FUTS Mars Hill trail. 0.75 miles.	Single track is well constructed but needs more drainage. Provides a short loop and disperses use away from the FUTS.
3.11	Unauthorized	Short connection with FUTS Mars Hill south to Lowell. single track. 0.11 miles.	24" tread width, good condition buts needs additional drainage.
3.12	Unauthorized	Traversing trail above Thorpe Park, connecting Mars Hill Rd with FUTS Mars Hill. Well built and ranges in width from 24 - 48". 0.52 miles.	Sustainable alignment and opportunities from Thorpe Park. Recommend widening north section for consistent width and more drainage. Signage and connections to Thorpe Park needed.
3.13	Unauthorized	Short, redundant trail. North half is road bed, south half is single track. 0.08 miles.	Redundant alignment to ID 3.12.
3.14	Unauthorized	Steep single track provided access to Lowell from Thorpe Park. 0.14 miles.	Poorly aligned on steep fall line with no drainage. Redundant.
3.15	Unauthorized	Provides same connection as ID 3.14. 0.13 miles.	Steep and on the fall line. Extensive reroute needed to provide valuable connection.
3.16	Unauthorized	Parallels ID 3.12. Creates additional loops near Thorpe Park. 0.28 miles.	Narrow, 18" tread. Good construction. Minor reroutes and more drainage needed.
3.17	Unauthorized	User created trail. Narrow and	Lack drainage, redundant.
3.18	Unauthorized	Connects upper and lower traversing trails above Thorpe Park .	Steep, narrow, little used. Reroutes needed.
3.19	Unauthorized	A maze of social trails from the overlook on Mars Hill Rd, accessing a rock feature in the drainage and road beds on the mesa. 0.27 miles.	Confusing network with no clear destination. A formal trail to the 'waterfall' can be established to limit impact.

Series ID	Trail Status	Description/Location	Condition
3.20	Unauthorized	Narrow and steep trail connecting Lowell properties with W Grand Canyon Ave. 0.06 miles.	Little used, crosses private property to access Lowell properties.
3.21	Unauthorized	Narrow and steep, Parallels ID 3.21. 0.08 miles.	Little used, crosses private property to access Lowell properties.
3.22	Unauthorized	Single track at eastern edge of Mesa. Accessed from Lowell Observatory or the Mars Hill Rd. overlook. 0.26 miles.	Provides quality viewpoint of downtown. Better trail definition and established overlook recommended. Trail needs consistent width and 20 drains but is in good shape.
3.23	Unauthorized	User created trail connecting the east edge of the Mesa with interior road beds. 0.26 miles.	Little used and narrow, aligned mostly on cross slopes or on the flats. Minor reroutes to improve drainage and tread width needed.
3.24	Unauthorized	User created single track connects road beds on Lowell properties.	18-24". Good condition.
3.25	Unauthorized	Two narrow trails cut off road bed trails near the access point on Lower Coconino St. 0.12 miles.	Little used, but redundant.
3.26	Unauthorized	Trail descends steeply just west of Lower Coconino St. 0.31 miles.	Steep fall line trail with minor constructed features for bikes. Poorly aligned.
3.27	Unauthorized	Narrow, little used trail traverses mid slope on the south side of Lowell properties, terminating at Lower Coconino St. on the east. 0.59 miles.	Likely a wildlife trail originally, evidence of limited human use.
3.28	Unauthorized	Single track trail along rim of Mesa, south side of Lowell properties. 0.59 miles.	Good alignment and in decent condition. Minor reroutes and drainage improvements needed.
3.29	Unauthorized	Single track connection between road beds, south central zone of Lowell properties. 0.24 miles.	Half the trail is a 6" deep rut. Does not use cross slope. Reroute to align on hill side.

Series ID	Trail Status	Description/Location	Condition
3.30	Unauthorized	Short connection linking 2 road beds and views to the south. 0.06 miles.	Good condition, but needs 6 drains.
3.31	Unauthorized	Provides valuable connection between roads. 0.14 miles.	No cross slope and fall line alignment, reroute for drainage.
3.32	Unauthorized	Constructed single track aligned in drainage. Connects top of mesa with rail-road access road. 0.38 miles.	Enjoyable but short trail. Aligned in the bottom of the drainage but well built.
3.33	Unauthorized	Eastern third of trail is bench cut, northwestern section is seldom used. 0.4 miles.	Potential as a valuable trail. Awkward western junction needs substantial reroute.
3.34	Unauthorized	Traversing single track around the southwest edge of Lowell properties. 0.43 miles.	Well built and in good condition. 3 sections are steep but short.
3.35	Unauthorized	Bottom of trail connects to FUTS Tunnel Springs. Aligned in and near a drainage. 0.49 miles.	Well constructed and only needs minor drainage improvements.
3.36	Unauthorized	Constructed trail uses drainage near FUTS Tunnel Springs. 0.43 miles.	Trail aligned in bottom of drainage—built for MTB.
3.37	Unauthorized	Recently constructed traversing trail connecting FUTS Tunnel Springs with ID 3.35. 0.64 miles.	Narrow trail, traverses before losing elevation quickly. Not well aligned.
3.38	Unauthorized	User created trail descends from the northwest corner of Section 17 to meet FUTS Tunnel Springs. 1.04 miles.	Poorly aligned trail follows fence line then meanders through a meadow, contributes thistle spread.
3.39	Unauthorized	Aligned on an old road bed, near the Mars Hill/Tunnel Springs junction. Short connection.	Fall line alignment in a meadow.
3.40	Unauthorized	User created single track that uses terrain for drainage. 0.67 miles.	In good shape overall, but needs improved drainage.
3.41	Unauthorized	User created trail connects east-west road beds in Section 17.	24 drains or small re-alignments within 100 ft. of trail needed.
3.42	Unauthorized	Short connection near south edge of Section 17. 0.14 miles.	6" deep rut, difficult to drain.

E. Existing Road Beds

Within the OMNA and Lowell Observatory's private property, many unauthorized trails are placed on old roadbeds or utilize portions of old roadbeds that allow users to create loops and extend their experience. From a planning perspective, roadbeds act as connections to other trail use opportunities, but do not necessarily provide high-quality experiences. Roadbeds often have straight alignments and do not provide changing view sheds nor an intimate connection with the natural world. Current roadbeds do provide land managers access for maintenance and ensure wildland fire personnel access to manage forests and fight potential forest fires. Roadbeds throughout the GOMA trail area are proposed for either adoption or decommissioning in this report. The Forest Service holds easements for several roads on the OMNA property, many of which have been closed to public motorized use as part of the Travel Management Rule (TMR) process. Due to resource constraints, these “closed” roads are not signed or physically blocked off, and visitors are required to reference an updated Travel Management Map to know if roads are “open” or “closed” to public use. Decommissioning closed Forest Service roads by physically blocking them generally requires approval through the National Environmental Policy Act planning process of the Coconino National Forest. This process is not necessary for decommissioning roads not included in the Forest Service network. Based on the 2011 Coconino National Forest Travel Management decision, motorized retrieval of big game is limited to Forest Service roads that are designated as “open” under the Travel Management Rule. Motorized cross-country travel to retrieve game is expressly prohibited under the Arizona Game and Fish Department hunting regulations. Un-managed public use has resulted in a maze of unofficial roads that are often unnecessary and lead to dead ends. Some of these are causing erosion, degrading habitat, and facilitating illegal dumping. Parameters of the conservation easement for OMNA limit public use to activities that do not materially degrade the property’s conservation values. Therefore, this proposal’s content focuses only on providing passive recreational benefits within OMNA and neighboring lands to support the preservation of the natural environment. The conservation easement held by Arizona State Parks for the OMNA permits no more than 20 acres total to be developed. The developments in this proposal, including new trails, parking and signage, will amount to approximately 8.215 acres of development.

ID 4.7 (north end): Junction with FUTS Mars Hill is well located, creates loops from Thorpe Park and provides access to Lowell properties.

ID	Description/Location	Condition
4.1	North-south road running the length of the Mesa for pipeline maintenance.	Steep in some locations with erosion damage and abundant loose rocks.
4.2	FR 506. Primary road on north side of Mesa. Connects lands to the west with interior.	Road is in good shape, one of the main contributors to motorized use on OMNA.
4.3	FR 515a. Access to the Mesa from N Westridge Rd. access and parking.	Traveled by non motorized users to access Watson Tank.
4.4	FR 515. Traverses Mesa from the west boundary to N Westridge Rd.	Mostly in good condition, some erosion and wide sections.
4.5	Creates loop for trail users at the west boundary of Section 7 to interior of the mesa.	Will benefit from improved drainage along fall line and steep sections of road bed.
4.6	East-west traverse, north zone of Section 17. Provides separation from FUTS Mars Hill.	In good shape but will benefit from frequent drainage.
4.7	Road connects FUTS Mars Hill to the planned Lowell Observatory facilities.	In good shape but will benefit from frequent drainage.
4.8	East-west road connecting trails at Thorpe Park with the north central area of Section 17.	Fall line alignment needs frequent drainage and narrowing.
4.9	Loop road system in the interior of Section 17.	Frequent drainage needed.
4.10	Road connects Lowell Observatory parking area with a view point of downtown.	Mostly in good shape, will benefit from improved drainage.
4.11	Road south- Lowell parking to Lower Coconino St.	In good shape, improved drainage needed.
4.12	Creates a loop with ID 4.11 from Lowell parking to Lower Coconino St.	Mostly in good shape, will benefit from improved drainage.
4.13	East-west road in south of Section 17.	Steep areas need frequent drainage.
4.14	North-south road connecting the southern rim of the Mesa with the interior of Section 17.	In good shape, will benefit from improved drainage.
4.15	North-south road at the northwest corner of Section 17. Connects to FUTS Mars Hill.	In good shape, needs improved drainage.

F. Existing Signage There is minimal signage supporting the 5.8 miles of formal trail, primarily posted at previous vehicle entry points to prevent illegal use. See Current Conditions map, page 11.

- 6.1 Regulation/Recreational signs - posted at main access points to educate the public about site regulations and recreational opportunities.
- 6.2 Directional Indicators – posted along trails to assist users to stay on designated trails.
- 6.3 Boundary signs – posted along the Observatory Mesa Natural Area to notify users of entering a protected area with regulations to deter illegal use and facilitate enforcement.
- 6.4 Motorized Vehicles Prohibited – posted at historic vehicle access points to deter illegal use and facilitate enforcement.

Section 4: Proposed Actions

This section of the plan describes proposed trail construction, trail head and parking projects, and restoration efforts for unauthorized trails and roads. The implementation of this integrated trail system will preserve sensitive environmental and cultural resources, reduce inappropriate and impactful activities in the GOMA, and facilitate passive recreation that does not diminish the area's natural beauty.

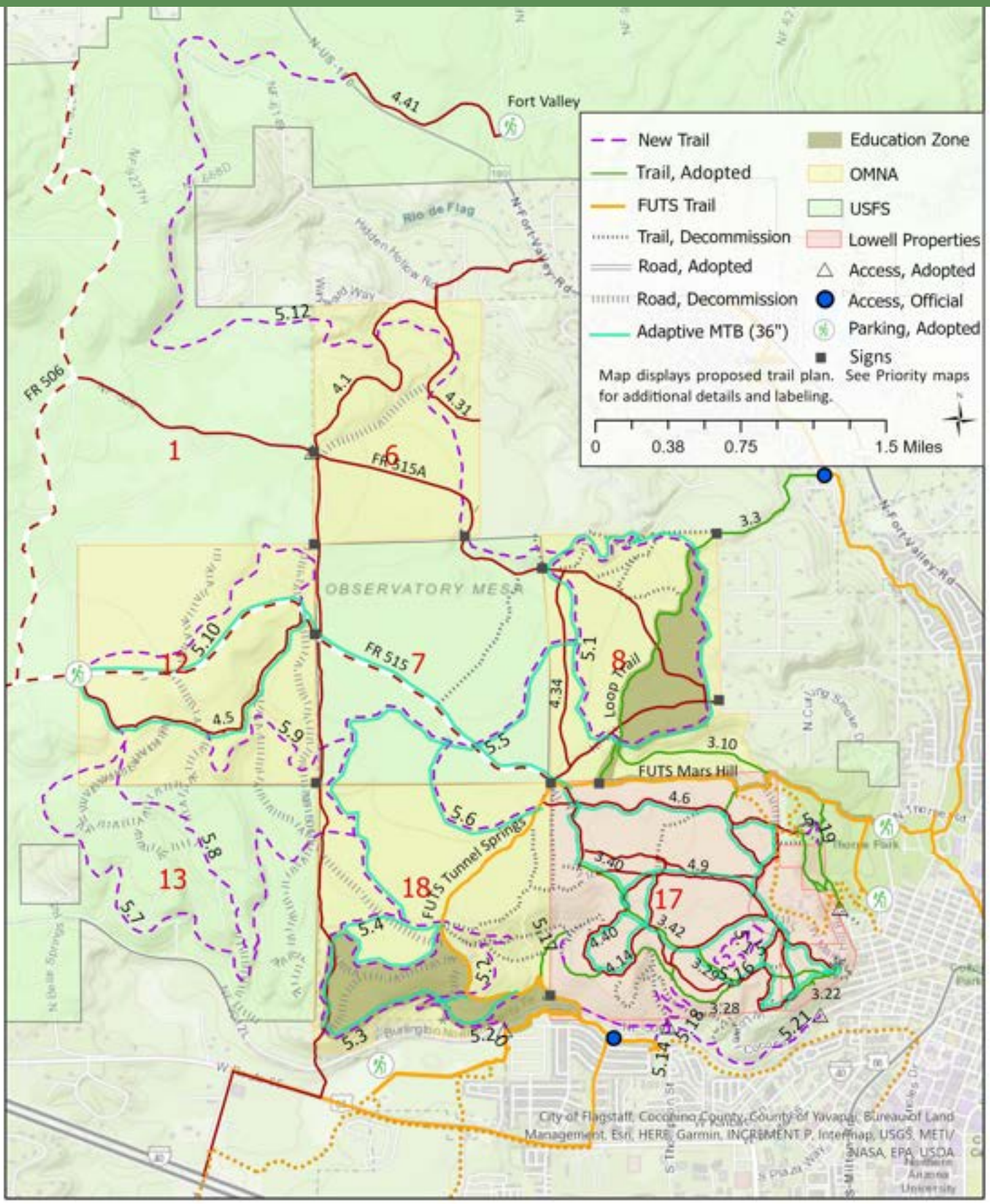
A. Trail Integration and Construction

A field survey of existing trails and roads (both authorized and unauthorized) in the GOMA occurred to select a number of existing unauthorized trails and roads for integration into the formal trail system. The selected segments allow for increased connectivity and coverage of the natural area, while avoiding sensitive environmental and cultural resources. In addition to these existing avenues, this plan is also proposing the construction of 13 segments of new trail, to achieve the same goals and provide additional experiences for trail users. The total mileage of adopted unauthorized trails and roads into the system is approximately 1 miles, and the total mileage of new trail construction is 22 miles. This will increase the mileage of the system from it's current 5.27 miles to a new total of 23 miles. This plan identifies existing and proposed loops for adaptive mountain bike trail conversion. Minor modifications to tread width and in-tread obstacles are needed on the identified roads and trails to create additional opportunities in the Flagstaff area. Total mileage proposed for adaptive mountain bike trails stands at 16 miles, with opportunities to expand mileage via FUTS trails and adopted roads.

B. Trail heads, Parking Lots, and Other Access Points

This plan proposes that a City-owned parcel (Parcel 11201001E or 11201023, ID 2.21 on Proposed Action Map), near the current Public Works Yard on Old Route 66, provide space for a new dedicated trail head for accessing the GOMA from the south. Current access at the southern boundary of the natural area via the Tunnel Springs segment of FUTS does not have dedicated parking for trail users. Trail users currently park along neighborhood streets, which poses a potential conflict with neighboring residents. Infrastructure for this new trail head could include a bladed area for vehicles, simple trail head signage, and a connecting trail to Observatory Mesa. This could service the growing residential areas of West Route 66 and provide access for residents without the need for driving to a trail head. Vehicle access to this area would not require travel on residential streets and will reduce potential conflicts between residents and trail users. The proposed trail head would be located on City of Flagstaff property, but is not within the OMNA boundary. This provides the added benefit of ensuring that the conservation easement held on Observatory Mesa Natural Area by Arizona State Parks is upheld to 'Limit development to not exceed 10% (or up to 20 acres) of the property" (City of Flagstaff Open Space Program, 2017, p.28). Proposed future amenities could include a public bathroom, bike maintenance station, and recycling and trash service.

Long Term Proposed Trail System



This plan also proposes the addition of a bladed parking area at the western boundary between Coconino National Forest Service land and OMNA land (accessed from I-40 and A-1 road and Forest Service Road 515). Unauthorized parking is already occurring at this location, and the open and flat terrain is suitable for conversion into a bladed parking area for dedicated access. The rationale for providing parking in this location includes providing access to proposed trails on Forest Service lands that extend west to Bellemont, provide equestrian parking, and providing a parking location for any others that approach the GOMA from this direction. Since this location is within the Woody Ridge wildlife corridor, this proposal would only suggest adding a small number of designated spaces so that increased traffic is minimal.

The only existing formal parking area for Observatory Mesa is the Thorpe Park ball field parking lot, which also provides parking for the Thorpe Dog Park. Parking at the baseball fields and dog park is adequate for trail head use, but scheduled sporting events fill up available spaces and greatly reduce available parking for trail head access. The only change this plan proposes for this parking area is the addition of signage to assist in directing users to the hiking access. The proposed partnership with Lowell Observatory would provide an ADA accessible parking lot to the GOMA system and would establish another formal access point into the GOMA from their property.

It is important to note that the City of Flagstaff performed an open space access analysis in 2018 in an effort to determine where improvements are needed to meet the City's goal of providing a 10 minute (1/4 mile) walking time to access open space from residents' front doors. While the above additions help improve access to some of the GOMA, the railroad line at the southern boundary and private lands bordering the focus area are challenges that restrict adding additional access to a few locations. Private Property to the east and north of the focus area also limit new points for access along that corridor.

Authorized access points proposed will not provide public parking areas.

Series ID	Description	Access Retention Proposal	Priority
1.1 Trail Head	Thorpe Park ball field parking lot located on N Thorpe Rd, Flagstaff.	Continue to permit use. Improve signage from parking.	High
1.2 Trail Head	Joe C. Montoya Community & Senior Center. (245 N Thorpe Rd, Flagstaff). This parking serves the senior center. It provides some parking for trail users.	Continue to permit use. Improve signage from parking area.	High
2.1 Access	Mars Hill FUTS pedestrian access. N Thorpe Rd, Flagstaff. Near Thorpe Park ball field parking lot.	Maintain existing access point.	High
2.2 Access	Tunnel Springs FUTS pedestrian access. Located in the Railroad Springs neighborhood (Railroad Spring Blvd. & Adirondack Ave., Flagstaff).	Maintain existing access point.	High
2.3 Access	Flagstaff Loop Trail pedestrian access. Located in the Anasazi Ridge neighborhood (N Tillie Ln.).	Maintain existing access point.	High
2.4 Access	Mars Hill FUTS pedestrian access. behind the Joe C. Montoya Community & Senior Center. (245 N Thorpe Rd, Flagstaff).	Maintain existing access point.	High

C. Restoration of Access Points, Trails and Road Beds

There are approximately 46 miles of unauthorized trails and roads within the GOMA. The long term plan proposes to restore and naturalize approximately 20 of these miles.

Within the GOMA, unauthorized trails are primarily placed on old roadbeds, or utilize portions of old roadbeds that allow users to create loops and extend their experience on the Mesa. From a planning perspective, roadbeds act as connections to other trail use opportunities, but these travel ways do not necessarily provide high quality experiences. Roadbeds often have straight alignments and do not provide changing view sheds nor an intimate connection with the surrounding forest. Current roadbeds do provide land managers access for maintenance and ensure wildland fire personnel access to manage forests and fight potential forest fires.

The Fort Valley Connector (Recommendation #47 of the Flagstaff Trails Initiative's *Regional Strategy, 2019)* identifies a road bed connection between the Fort Valley neighborhood and downtown, passing through the GOMA area. General maintenance on identified road beds is recommended for roads on OMNA and USFS lands, with signage for the commuter route that will achieve the goal for the Flagstaff Trails Initiative. The commuter route will remain natural surface, with drainage and surface improvements being the primary recommended efforts.

Unauthorized access points surveyed by the Flagstaff Trails Initiative (2019) on Observatory Mesa total twelve informal access points. Unauthorized access points are all created by residents of the respective neighborhoods and indicate a lack of desired access to public lands. Three of the surveyed unauthorized access points are slated for restoration at this time.

To further illustrate and visualize trail construction, adoption and decommissioning, road adoption and decommissioning, and access and parking considerations, the following implementation plan highlights planning specifics based on prioritized efforts.

Trail & Road Bed Totals, Proposed Trail System

Road/Trail Type	Mileage to Maintain	Mileage to Adopt/Maintain	Mileage to Decommission	Total Mileage
Existing Authorized Trails	5.27			5.27
Existing Unauthorized Trails		6.57	7.68	14.25
New Trail Construction				24.07
Total Trails for Adoption & Construction				**30.64**
Total Trails for Closing & Decommissioning				7.68
Existing Road Beds		20.52	13.43	33.95
Total Road Beds for Adoption				**20.52**
Total Road Beds for Closing & Decommissioning				13.43
Total Proposed Roads & Trails				**56.43**

D. Trail System Implementation

Prioritized trail system improvements detailed on the following pages follow these guidelines for implementation. Implementation plans assume ground truthed and approved trail corridors, and approvals from land management partners.

1. Design all proposed trails and recommended reroutes.
    - Ground truth and flag trail system additions to begin the review process for approval.
    - Update planning maps with changes.
2. Formally adopt all unauthorized trails and roads proposed for system inclusion.
    - Install temporary trail system signage at all junctions for way finding and mileage to next junction using carsonite or wood posts.
    - Install 'Trail Closed' signage at all trail end points proposed for decommissioning.
    - Update trail maps on City of Flagstaff website, FTI website and trail apps. Include adopted trails on Lowell properties, with approval.
    - Maintain and/or reroute to improve sustainability
3. Formally adopt access points proposed for system inclusion.
    - Install official 'Trail Access' signage with relevant information.
    - Update trail maps on City of Flagstaff website, FTI website and trail apps. Include adopted access points on or near Lowell properties, with approval.
4. Construct proposed parking areas for system inclusion.
    - Establish authorized parking prior to closing unauthorized trails/roads and trail construction.
    - Install trail system signage or kiosks at new parking areas
    - Update trail maps on City of Flagstaff website, FTI website and trail apps.
5. Construct proposed trails with priority levels High and Medium.
    - Upon completion of trail construction, install official trail signage at all junctions
6. Decommission all roads and trails proposed for removal
    - Install official 'Trail Closed' signage
    - Physically close start and end points using boulders, downed trees, vertical mulch, etc...
    - De-compact travel way to 4-6 inch depth
    - Full fill recovery of single track trails to re-establish cross slope
    - Native seed placement and install erosion control mats if necessary
7. Construct proposed trails with priority level Low
    - Upon completion of trail construction, install official trail signage at all junctions

Implementation Plan: Priority 1

Priority 1 trails concentrate on providing trails near existing and authorized access points. Trail additions and improvements will create additional loops, provide established trails for education zones, and improve access for the portion of the Mesa that receives the most use. Implementation plans focus on adding value to the current system without eliminating trails or access currently valued by the community.

Priority 1 Snapshot

Trail Maintained: 2 miles

Trail Constructed: 6.92 miles

Trail Adopted/Improved: 0.04 miles

Roads Adopted/Improved: 0

Access Points Adopted: 2

Parking Constructed: 0

Trails Decommissioned: 0.09 miles

Roads Decommissioned: 0

1. Maintain Loop Trail, Construct Priority 1 Trails:

a. Maintain Flagstaff Loop Trail - ID 3.3 (2 miles): Improve drainage, re-establish consistent width, remove loose rocks, armor 2 locations east of OMNA boundary
b. ID 5.1 (3.05 miles): In proximity to FUTS Mars Hill and Tillie Lane Loop Trail access.
c. IDs 5.3, 5.2, 5.4 (3.67 miles): Short loop opportunities near FUTS Tunnel Springs will expand access for Greater Observatory Mesa trails.

2. Adopt, Reroute and Maintain Thorpe Park Trails:

a. Perform trail maintenance (0.04 miles), construct reroutes on ID 3.15 (Trail 5.19, 0.2 miles), decommission existing ID 3.15 (0.09 miles). Perform trail maintenance on ID 3.12 (0.48 miles).
b. Install signage to establish formal access from the disc golf course.

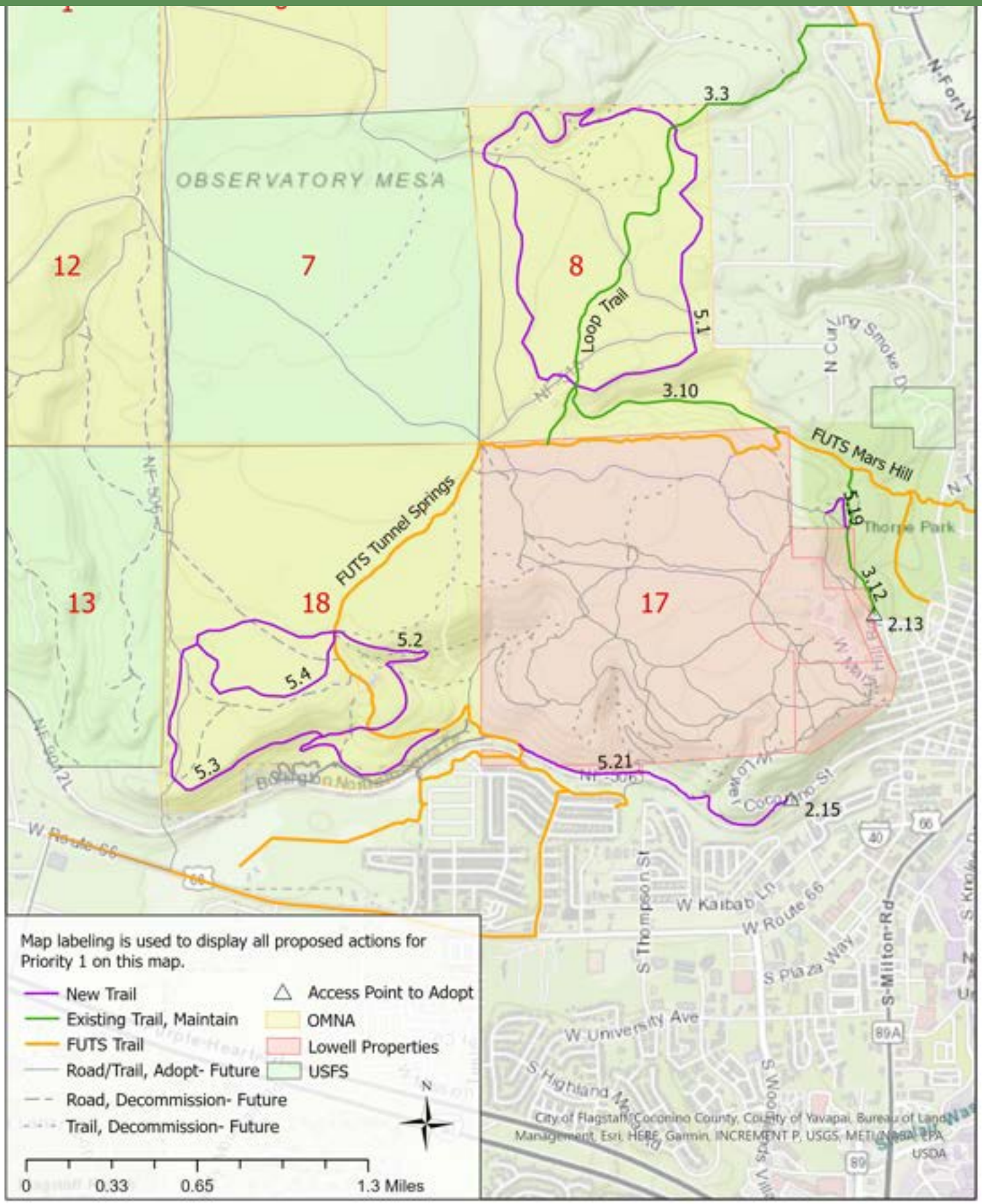
3. Adopt Access Points, Install Signage, Construct trail connection:

a. ID 2.13 (Lower Mars Hill Rd): Install trail access signage to establish an additional access point from downtown.
b. ID 2.15 (W Lower Coconino St): Install trail access signage at the existing but unauthorized access point.
c. ID 5.21: Construct single track trail between FUTS Tunnel Springs and Lower Coconino St. using a waterline easement along the western portion of the alignment (1 mile).

4. Formally Adopt Meadow Trail (ID 3.10) and Maintain:

a. Perform trail maintenance (0.75 miles).
b. Install trail signage, top and bottom of trail and where single track joins the road bed.

Priority 1


OBSERVATORY MESA
12
7
8
13
18
17
3.3
5.1
Loop Trail
3.10
FUTS Mars Hill
5.19
3.12
2.13
FUTS Tunnel Springs
5.2
5.4
5.3
5.21
2.15
Thorpe Park
N Curling Smoke Dr
W Route 66
W Kaibab Ln
S Thompson St
S Plaza Way
S Milton Rd
W University Ave
S Highland Ave
Map labeling is used to display all proposed actions for Priority 1 on this map.
New Trail
Existing Trail, Maintain
FUTS Trail
Road/Trail, Adopt- Future
Road, Decommission- Future
Trail, Decommission- Future
Access Point to Adopt
OMNA
Lowell Properties
USFS
N
0
0.33
0.65
1.3 Miles
City of Flagstaff, Coconino County, County of Yavapai, Bureau of Land Management, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA

Step	Series ID	Priority 1 Description	Proposal
1	5.1 New Trail	Loop bisected by the Flagstaff Loop trail near Tillie Ln. and West ridge Rd. access points. Purpose: Exercise/ Loops. 3.05 miles.	Low construction intensity, with a short (0.35 miles) section of steep, rocky slopes necessitating hand construction.
1	5.2 New Trail	Crosses FUTS Tunnel Springs for loops. Purpose: Loops. 1.5 miles.	High construction intensity due to steep cross slopes.
1	5.3 New Trail	Trail connects ID 5.2 with the top of the mesa to provide loops west of FUTS Tunnel Springs. Purpose: Solitude/Loops. 1 mile.	Moderate construction intensity with cross slopes suitable for mechanized construction.
1	5.4 New Trail	Loop that connects ID 5.3 with ID 5.2 and FUTS Tunnel Springs. Purpose: Solitude/Loops. 1.17 mi.	Low construction intensity ideal for efficient mechanized construction.
1	3.3 Existing Authorized Trail	Flagstaff Loop Trail, 2 miles.	Remove loose rocks, improve drainage, re-establish width, construct rock armoring east of OMNA boundary.
2	3.12 Existing Unauthorized Trail	Thorpe Park Mid Slope Traverse. Provides loop option from Thorpe Park with additional connection at Mars Hill Road. 0.52 miles.	Adopt. Subject to discussion with Parks & Rec Department and their approval. Maintain existing alignment.
2	3.15 Existing Unauthorized Trail	Thorpe Mesa Access. Provides access to the top of the Mesa and Lowell Properties. 0.04 miles.	Adopt only the upper .04 miles to connect to trail 5.19.
2	5.19 New Trail	Re-route of trail 3.15. 0.2 miles	Moderate construction intensity close to town for volunteer event.
3	2.13 Access	Lower Mars Hill Road.	Formalize. Provides an additional access point nearThorpe Park.
3	2.15 Access	West Lower Coconino Ave.	Formalize access point on W. Lower Coconino Ave.
3	5.21 New Trail	Connection between FUTS Tunnel Springs & Lower Coconino St. 1 mile	Subject to discussion with land owners and their approval.
4	3.10 Existing Unauthorized Trail	Mars Hill alternative (Meadow Trail). Trail is well constructed, utilizes a roadbed for a portion of the alignment, and provides a loop from Thorpe Park. 0.75 miles.	Adopt as part of formal trail system with minor drainage improvements. May be reviewed as a potential FUTS alignment.

Implementation Plan: Priority 2

Priority 2 plans emphasize additional parking for trail users and concentrate on improving recreation infrastructure throughout the western and southwest regions of the Mesa.

In addition to formalizing access points implemented during Priority 1, expanded parking areas proposed for Priority 2 will reduce parking congestion at Thorpe Park while taking advantage of newly constructed trails. Trail system expansion intends to disperse use in to areas currently under utilized by non-motorized recreation while beginning the process of decommissioning unsustainable trails and roads.

1. Construct Trail Head at APN: 11201001E (ID 2.21): The primary trail head for parking expansion beyond Thorpe Park, a parking lot with trail head facilities west of the City facilities yard will give trail users valuable access options.

2. Construct Trail Head at FR 515 (ID 1.3): Trail users seeking expansive views and greater sense of solitude will be provided non-motorized access along the western boundary of OMNA.

3. Construct Priority 2 Trails: Significant expansion of the single track system accessed from Lowell properties, FUTS Mars Hill and the west boundary.

a. ID's: 5.5, 5.6, 5.7, 5.8, 5.9 (8.53 miles)

Priority 2 Snapshot

Trail Maintained: 0 miles

Trail Constructed: 8.53 miles

Trail Adopted/Improved: 0 miles

Roads Adopted/Improved: 14.05 miles

Access Points Adopted: 0

Parking Constructed: 2

Trails Decommissioned: 2.49 miles

Roads Decommissioned: 9.63miles

4. Adopt Priority 2 Roads: Adopted roads on OMNA and USFS lands will expand non-motorized travel and provide administrative access for maintenance and fire fighting. Adopted roads on Lowell properties are a key component to the proposed trail system.

a. OMNA and USFS lands - ID's: 4.1, 4.2, 4.3, 4.4, 4.5, 4.31, 4.34 (14.05 miles). Increased signage, fencing and public outreach regarding prohibiting motorized use is needed on OMNA lands.

5. Decommission Trails: Close junctions, de-compact, fill slope recovery, replace organics

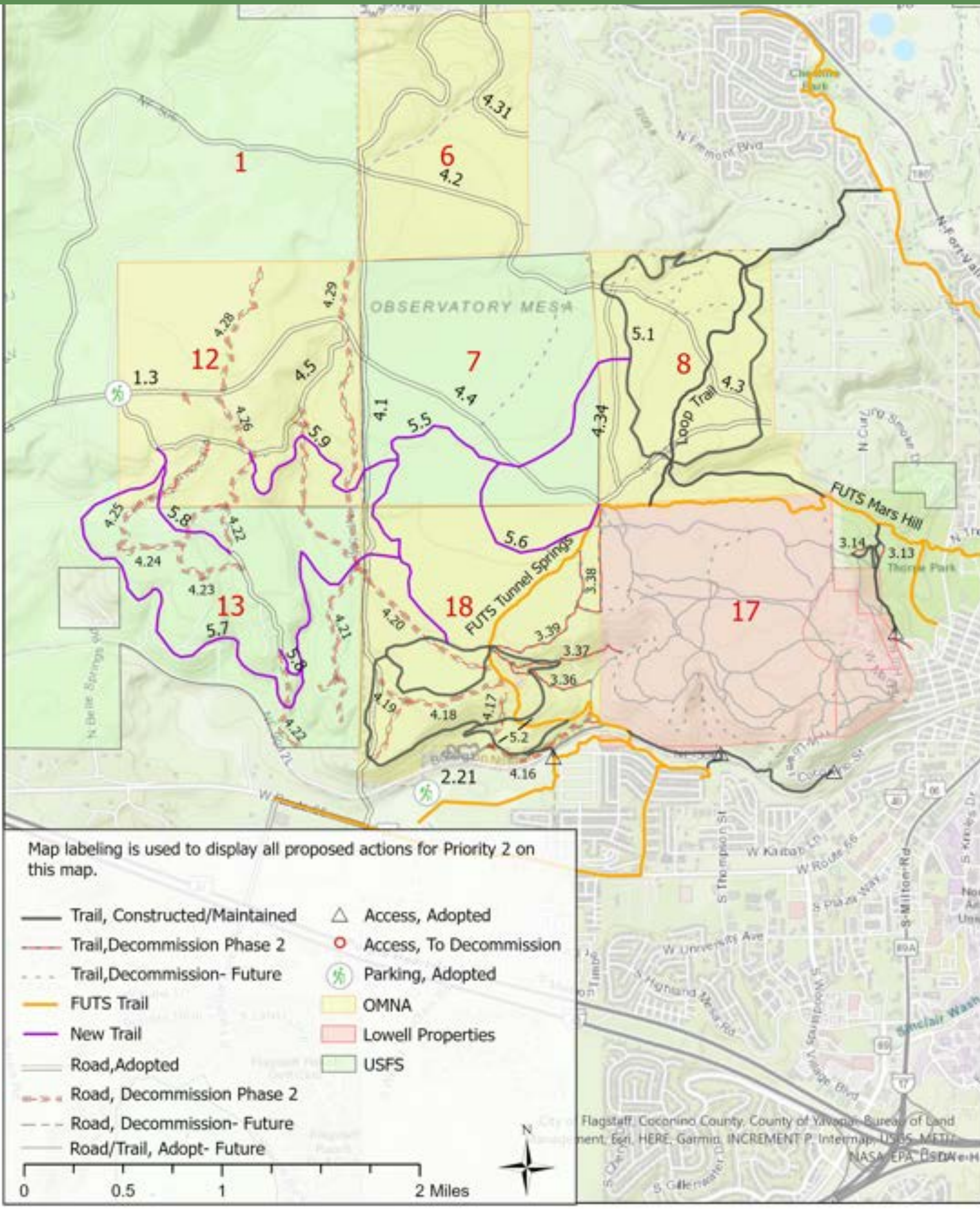
a. Thorpe Park trails - ID's: 3.13, 3.14 (0.16 miles)

b. FUTS Tunnel Springs area trails - ID's: 3.36, 3.37, 3.38, 3.39 (2.33 miles)

6. Decommission Roads: Close junctions, de-compact, fill slope recovery, replace organics

a. ID's: 4.16, 4.17, 4.18, 4.19, 4.20, 4.21, 4.22, 4.23, 4.24, 4.25, 4.26, 4.27, 4.28, 4.29 (9.63 miles)

Priority 2



1
6
4.31
4.2
12
1.3
4.28
4.29
4.5
4.26
5.9
OBSERVATORY MESA
7
4.4
4.1
5.5
4.34
5.1
8
Loop Trail
4.3
FUTS Mars Hill
5.8
4.25
4.22
4.24
4.23
13
5.7
5.6
FUTS Tunnel Springs
3.38
3.14
3.13
18
4.20
4.21
17
3.39
3.37
3.36
4.19
4.18
4.17
5.2
4.16
2.21
Map labeling is used to display all proposed actions for Priority 2 on this map.
Trail, Constructed/Maintained
Trail,Decommission Phase 2
Trail,Decommission- Future
FUTS Trail
New Trail
Road,Adopted
Road, Decommission Phase 2
Road, Decommission- Future
Road/Trail, Adopt- Future
Access, Adopted
Access, To Decommission
Parking, Adopted
OMNA
Lowell Properties
USFS
0
0.5
1
2 Miles
N

Step	Series ID	Priority 2 Description	Proposal
1	2.21 Trail Head	APN: 11201001E (50.29 acres)-the parcel north west of the Public Works yard on West Route 66.	Construct a small aggregate parking area to accommodate 25-30 vehicles-bathrooms to be considered.
2	1.3 Trail Head (Equestrian)	West Forest Service Road 515 access to OMNA.	Construct a small aggregate parking area to accommodate 10 vehicles. Install 'Motorized Access Prohibited' signage and fencing.
3	5.5 New Trail	Meandering trail connecting both Priority 1 trail systems. Purpose: Solitude/Loops. 2.34 miles.	Low construction intensity well suited for mechanized construction.
3	5.6 New Trail	Short connection linking FUTS with ID 5.5 to reduce mileage from all authorized access points. Purpose: Connectivity. 0.88 miles.	Low construction intensity well suited for mechanized construction.
3	5.7 New Trail	Single track connects the west boundary with ID 5.5 and provides longer distance loops. Purpose: Solitude/Exercise. 3.25 miles.	Moderate to high construction intensity. Built to eliminate the needs for the numerous road beds in the area.
3	5.8 New Trail	Loop opportunity uses a portion of an existing road. Purpose: Solitude/Exercise. 0.91 miles.	Moderate construction intensity. Completes southwest loop network south of the West boundary.
3	5.9 New Trail	Connects the West boundary with ID 5.5. Purpose: Solitude/Exercise. 1.15 miles.	Moderate construction intensity. Well suited for mechanized construction.
4	4.1 Existing Road	Hidden Hollow Pipeline Road. 5.43 miles.	Sign and Maintain for administrative access and non-motorized recreation.
4	4.2 Existing Road	FR 506. 1.27 miles.	Sign and Maintain for administrative access and non-motorized recreation.
4	4.3 Existing Road	FR 515a. 0.9 miles.	Sign and Maintain for administrative access and non-motorized recreation.
4	4.4 Existing Road	FR 515. Provides administrative access and non-motorized recreation on the west side of OMNA. 3.49 miles.	Sign and Maintain for administrative access only and non-motorized recreation.
4	4.5 Existing Road	Existing Road. For non-motorized use on the west side of OMNA. 1.08 miles.	Sign and Maintain for non-motorized use. Install way finding and 'non-motorized use only' signs.

Step	Series ID	Priority 2 Description	Proposal
4	4.16 Existing Road	Parallels train tracks and may be needed by railroad.	Must discuss with railroad officials as to signage recommendations.
4	4.31 Existing Road	Road travels north east from ID 4.30. 0.66 miles.	Private easement access. Adopt.
4	4.34 Existing Road	Connects FR 515 and 515a. 0.83 miles.	Adopt and maintain for additional option in this area.
6	3.13 Existing Unauthorized Trail	Redundant with ID 3.12 and provides no additional value to system. 0.08 miles.	Decommission. Install 'Trail Closed' sign, de-compact soil, full fill recovery.
6	3.36 Existing Unauthorized Trail	Recently constructed trail uses drainage east of FUTS Tunnel Springs. 0.43 miles.	Decommission. Install 'Trail Closed' sign, de-compact soil, full fill recovery.
6	3.37 Existing Unauthorized Trail	Recently constructed traversing trail connecting FUTS Tunnel Springs with ID 3.35. 0.64 miles.	Decommission. Install 'Trail Closed' sign, de-compact soil, full fill recovery.
6	3.38 Existing Unauthorized Trail	User created trail descends from the northwest corner of Section 17 to meet FUTS Tunnel Springs. 1.04 miles.	Decommission. Install 'Trail Closed' sign, de-compact soil, full fill recovery.
6	3.39 Existing Unauthorized Trail	Aligned on an old road bed, near the Mars Hill/Tunnel Springs junction. Short connection to other user created trails.	Decommission. Install 'Trail Closed' sign, de-compact soil, full fill recovery.
7	4.16 Existing Road	Along south OMNA boundary. 1 mile.	Decommission - Mechanized
7	4.17 Existing Road	Little used road bed- fall line, parallels FUTS Tunnel Springs. 0.29 miles.	Decommission - Hand
7	4.18 Existing Road	Connects to FUTS Tunnel Springs north of water tanks. 0.7 miles.	Decommission - Mechanized

Step	Series ID	Priority 2 Description	Proposal
7	4.19 Existing Road	Short road connection from ID 4.18 and the Pipeline Road. 0.17 miles.	Decommission - Mechanized
7	4.20 Existing Road	Prominent road between FUTS Tunnel Springs and FR 515. 1.65 miles.	Decommission - Mechanized
7	4.21 Existing Road	North - south road, light motorized use. dead ends twice in the southwest corner of the Mesa. 1.69 miles.	Decommission - Mechanized
7	4.22 Existing Road	Proposed to utilize 0.5 miles as trail connection for trail 5.8. 1.46 miles.	Decommission 0.96 miles - Mechanized
7	4.23 Existing Road	Eroded connection south of FR 515 on Forest Service land. 0.22 miles.	Decommission - Mechanized
7	4.24 Existing Road	Road bed connects to ID 4.23. 0.56 miles.	Decommission - Mechanized
7	4.25 Existing Road	Road enters OMNA lands west of ID 4.25. 0.66 miles.	Decommission - Mechanized
7	4.26 Existing Road	Road connection between FR 515 and ID 4.5. Fall line alignment.0.27 miles.	Decommission - Mechanized
7	4.27 Existing Road	Motorized user created road, dead ends at a fire ring. 0.06 miles.	Decommission - Mechanized
7	4.28 Existing Road	Motorized user created road, dead ends at boundary fence to the north. 0.61 miles.	Decommission - Mechanized
7	4.29 Existing Road	Well established road bordering USFS Section 7 on the west. 0.26 miles	Decommission - Mechanized

Implementation Plan: Priority 3

Priority 3 will complete the Greater Observatory Mesa trail system. All remaining new trails will be constructed, and unnecessary roads and trails will be decommissioned. Trail 5.12 will provide connectivity between GOMA trails and FR 164B to the Fort Valley trail system trailhead.

1. **Construct Priority 3 Trails, Maintain/reroute FUTS trails**: Expands and completes the new single track trail system.

a. ID's: 5.10, 5.12, (6.72 miles)

b. ID's: 3.1, 3.2 (maintenance, 3.27 miles)

2. Formalize Access Points: 2.7

3. Decommission Trails/Access - north Mesa:

a. ID's: 3.4, 3.5, 3.6, 3.7, 3.8. 3.9 (2.22 miles)

4. Decommission Roads -north Mesa: Close junctions, de-compact, fill slope recovery, replace organics

a. ID's 4.30, 4.32, 4.33 (1.36 miles)

Priority 3 Snapshot

Trail Maintained: 3.27 miles

Trail Constructed: 6.72 miles

Trail Adopted/Improved: 0 miles

Roads Adopted/Improved: 1 mile

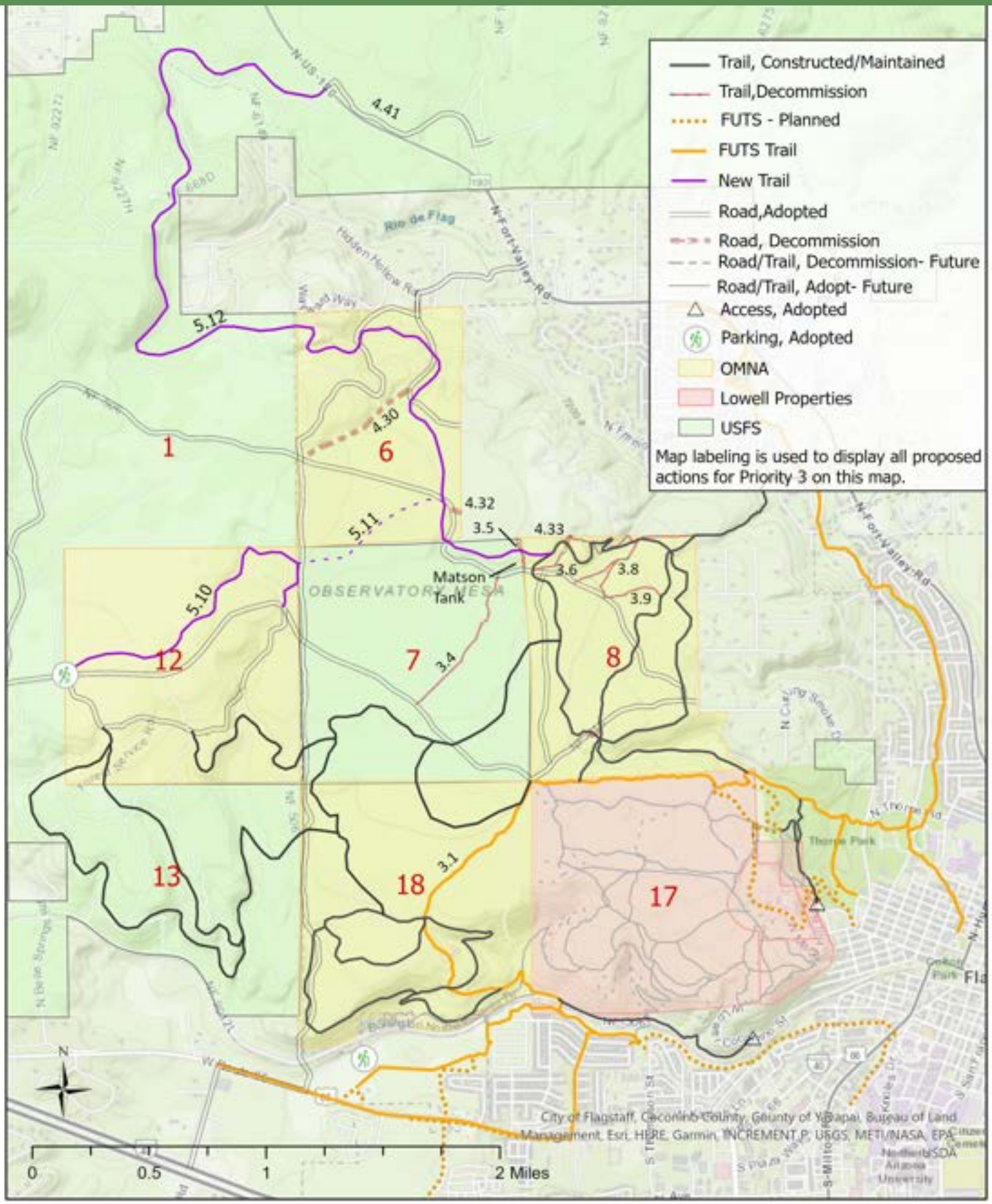
Access Points Adopted: 1

Parking Constructed: 0

Trails Decommissioned: 2.22 miles

Roads Decommissioned: 1.36 miles

Priority 3


Trail, Constructed/Maintained
Trail,Decommission
FUTS - Planned
FUTS Trail
New Trail
Road,Adopted
Road, Decommission
Road/Trail, Decommission- Future
Road/Trail, Adopt- Future
Access, Adopted
Parking, Adopted
OMNA
Lowell Properties
USFS
Map labeling is used to display all proposed actions for Priority 3 on this map.
4.41
5.12
4.30
4.32
3.5
4.33
5.11
3.6
3.8
3.9
5.10
3.4
3.1
1
6
12
7
8
13
18
17
Matson Tank
OBSERVATORY MESA
N Fort Valley Rd
Rte de Flag
Hidden Hollow Rd
Thorpe Park
0
0.5
1
2 Miles
N

Step	Series ID	Priority 3 Description	Proposal
1	5.10 New Trail	Provides a loop with great views from the west boundary. Purpose: Views/Loops. 1.56 miles.	Low construction intensity well suited for mechanized construction or as a volunteer project.
1	5.11 New Trail	Connector linking ID 5.10 and 5.12, provides a valuable connection in the north of the Mesa. Purpose: Connectivity. 0.71 miles.	Low construction intensity well suited for mechanized construction.
1	5.12 New Trail	Connects the Greater Observatory Mesa trail system with the Fort Valley trails north of Highway 180 to expand trail connectivity in Flagstaff. Purpose: Connectivity. 5.16 miles.	Low to moderate construction intensity well suited for mechanized construction.
1	4.41 Existing Road	Existing road bed north of Hwy 180. Connects trail 5.12 to Fort Valley trail head. 1.0 miles.	Install 4 directional trail signs to direct users to and from the Fort Valley trail head.
1	3.1 Existing Authorized Trail	Tunnel Springs FUTS segment. 1.75 miles. Overall good condition, some erosion needs to be addressed.	Complete all trail repairs.
1	3.2 Existing Authorized Trail	Mars Hill FUTS segment, 1.52 miles. Steep grades exist along the trail will benefit from proposed reroute to reduce grades (0.74 miles).	Complete all trail repairs (1.52 miles) and the proposed reroute (0.74 miles).
2	2.7 Access	FR 506 and OMNA Boundary.	Maintain existing access point. Install 'No Motorized Access' signage.
3	3.4 Existing Unauthorized Trail	Connector trail partially located on an old road bed. USFS land, Section 7. 0.68 miles.	Decommission - Mechanized
3	3.5 Existing Unauthorized Trail	User created trail connects Matson Tank to private property to the north. 0.15 miles.	Decommission - Hand
3	3.6 Existing Unauthorized Trail	User created trail in drainage. Connects to old road bed and private property to the north. 0.17 miles.	Decommission - Hand

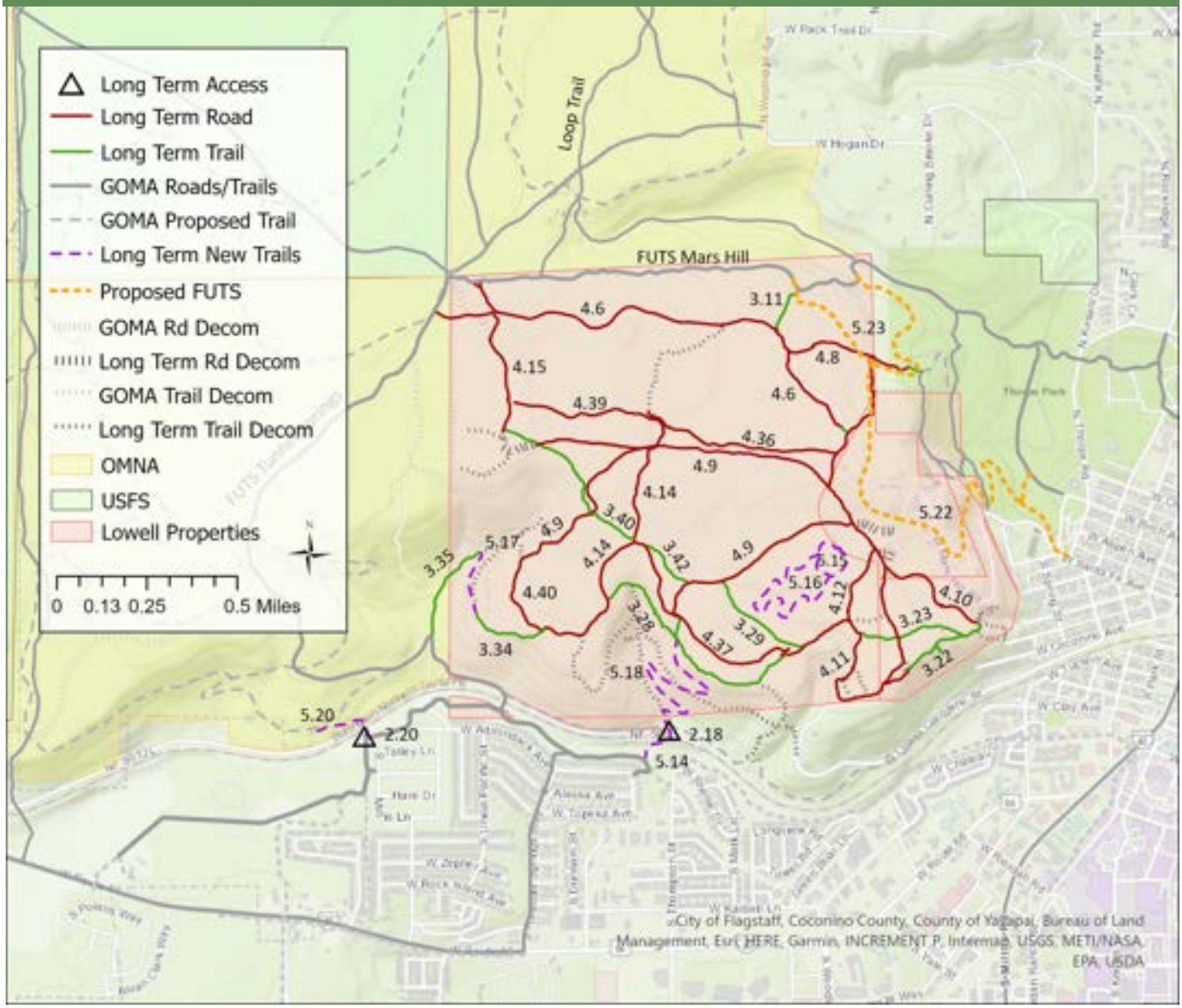
Step	Series ID	Priority 3 Description	Proposal
3	3.7 Existing Unauthorized Trail	User created trail begins and ends at private property fences. 0.37 miles.	Decommission - Hand
3	3.8 Existing Unauthorized Trail	User created trail connecting the Loop Trail with FR 515. 0.58 miles	Decommission - Mechanized
3	3.9 Existing Unauthorized Trail	Single track on or parallels road bed. 0.27 miles.	Decommission - Mechanized
4	4.30 Existing Road	Well established road. 0.56 miles.	Decommission - Mechanized
4	4.32 Existing Road	Short road connection to private property. 0.02 miles.	Decommission to OMNA Boundary, repair fence - Mechanized
4	4.33 Existing Road	Short fall line road connecting to unauthorized trails. 0.08 miles.	Decommission to OMNA Boundary, repair fence - Mechanized

Long Term Planning Efforts

At this time, elements of this trail plan require additional conversations before funding and implementation can be pursued. The following map and tables detail the plan elements that will be pursued when the timing is more appropriate and implementation efforts can be sequenced accordingly.

The City of Flagstaff intends to re-new conversations with relevant jurisdictions to pursue the full intent of this plan when pertinent. The planning elements below are recorded for future approvals and implementation strategies.

Long Term Planning Map



Series ID	Long Term Description	Proposal
2.14 Access	Mars Hill Road overlook.	Install 'No Trail Access' signage.
2.18 Access	Formalize access utilizing FUTS Santa Fe trail.	Existing underpass provides users access to OMNA without using FUTS Tunnel Springs. Provides loops/educational opportunities in the area. Subject to discussion with BSNF and their approval.
2.20 Access	Existing underpass is the closest OMNA access point to the proposed Railroad Spring trail head (APN: 11201001E). Formalize.	Subject to discussion with BSNF and their approval.
2.22 Proposed Parking	New Lowell Observatory visitor parking lot.	Construct an ADA compliant parking lot or include 4 ADA spaces in future parking lot at Lowell Observatory. Subject to discussion with Lowell Observatory and their approval.
2.23 Access	Access near W Grand Canyon Ave. Little used, requires crossing private property.	Install 'No Trail Access' signage At Lowell property boundary.
3.11 Existing Unauthorized Trail	Short Connection from FUTS Mars Hill to road beds at the northeast corner of Section 17. 0.11 miles	Adopt as part of formal trail system with minor drainage improvements.
3.14 Existing Unauthorized Trail	Steep, fall line trail with no ability to maintain for sustainability.	Decommission. Install 'Trail Closed' sign, de-compact soil, full fill recovery.
3.16 Existing Unauthorized Trail	Thorpe Park Mesa Crest. Additional loop with ID 3.12 for short hikes from Thorpe park. 0.28 miles.	Adopt. Establish consistent trail width, improve drainage, add way finding signage Decommission south of ID 3.18 junction.
3.18 Existing Unauthorized Trail	Thorpe Traverse Connector. Trail connection between ID 3.12 and 3.16. 0.16 miles.	Adopt. Reroute to reduce grades and improve switch back.
3.19 Existing Unauthorized Trail	Confusing network of social trails off Mars Hill Road. 0.27 miles	Decommission - Hand

Series ID	Long Term Description	Proposal
3.20 Existing Unauthorized Trail	Narrow and steep trail. .06 miles	Decommission - Hand
3.23 Existing Unauthorized Trail	Southeast Lowell Single Track. Provides road bed connections to enhance loops near Lowell Observatory. 0.26 miles.	Adopt. Minor drainage improvements needed. Reroute sections to establish drainage.
3.25 Existing Unauthorized Trail	Two short, user created cut off trails near access ID 2.15. 0.12 miles.	Decommission - Hand
3.26 Existing Unauthorized Trail	Trail descends steeply just west of Lower Coconino St. with minor features for bikes. 0.31 miles.	Decommission - Hand
3.27 Existing Unauthorized Trail	Narrow, little used trail traverses mid slope on the south side of Lowell properties, terminating at two locations on Lower Coconino St. on the east. 0.62 miles	Decommission end points and at junctions - Hand
3.28 Existing Unauthorized Trail	Southern Mesa Trail, Section 17. Provides a valuable trail with view sheds to the south. 0.59 miles.	Adopt. Minor drainage improvements and remove downed trees. Good alignment overall but minor reroutes needed to reduce grades.
3.29 Existing Unauthorized Trail	South Section 17 Connector. Provides enhanced loop opportunities from Lowell Observatory Mesa. 0.24 miles	Adopt. Realign to utilize nearby cross slopes to improve sustainability. Establish consistent 48" trail width with minimal obstacles, desirable tread features, improve drainage, add way finding and adaptive MTB signage.
3.30 Existing Unauthorized Trail	Short connection linking 2 road beds and access to views to the south. 0.06 miles.	Adopt. Maintain for drainage improvements.
3.32 Existing Unauthorized Trail	Provides access to the trail system from Access ID 2.18 east of FUTS Tunnel Springs. 0.38 miles.	Decommission. Realign away from bottom of drainage (5.18) and improve drainage.

Series ID	Long Term Description	Proposal
3.33 Existing Unauthorized Trail	Unsustainable trail with no connections identified for adoption. 0.40 miles	Decommission - Hand
3.34 Existing Unauthorized Trail	Southwest Loop, Section 17. Loops options to rejoin FUTS Tunnel Springs or access other trails. Remove 0.25 miles of trail to avoid important wildlife area. 0.43 miles.	Adopt. Well built and in good condition. 3 sections are steep but short, necessitating reroutes. Improve drainage throughout.
3.35 Existing Unauthorized Trail	Lower Tunnel Springs Connector. Provides access and loops from the bottom of FUTS Tunnel Springs. 0.49 miles.	Adopt the lower 0.23 miles to connect with recommended reroute of 3.34 to avoid wildlife area. Decommission 0.26 miles during priority 3.
3.40 Existing Unauthorized Trail	Provides important connection at the west side of Section 17. 0.56 miles.	Adopt. Establish consistent 60" trail width with minimal obstacles, desirable tread features, add way finding and adaptive MTB signage. Frequent drainage needed throughout but in maintainable condition.
3.41 Existing Unauthorized Trail	Short connection between east-west roads, Section 17. 0.33 miles.	Adopt. 24 drains needed or small realignments within 100 ft. of trail to improve condition. Decommission short connection between east-west roads, Section 17. Adopt 0.33 miles.
3.42 Existing Unauthorized Trail	Short connection on Lowell properties, 0.14 miles.	Adopt. Reroute to establish on cross slopes. Establish consistent 36" trail width with minimal obstacles, desirable tread features, improve drainage, add way finding and adaptive MTB signage.
4.6 Existing Road	Road parallels FUTS Mars Hill on the north side of Section 17 for loops from the Observatory and Thorpe Park. 1.07 miles.	Sign and Maintain for non-motorized and adaptive MTB use. Remove large obstacles, improve drainage.
4.7 Existing Road	Northeast corner of Section 17, connects FUTS Mars Hill to the Observatory. 0.46 miles. Northern segment (0.18 miles) to be decommissioned Phase 3.	Sign and Maintain for non-motorized and adaptive MTB use, south segment. Remove large obstacles, improve drainage.

Series ID	Long Term Description	Proposal
4.8 Existing Road	Provides loops for Thorpe Park trails, Lowell Observatory and FUTS Mars Hill. 0.31 miles.	Sign and Maintain for non-motorized and adaptive MTB use. Remove large obstacles and improve drainage.
4.9 Existing Road	Looping road from the new proposed parking at Lowell Observatory. 1.41 miles.	Sign and Maintain for non-motorized and adaptive MTB use. Remove large obstacles and improve drainage.
4.10 Existing Road	Valuable connection from the Observatory to the downtown view point. 0.29 miles.	Sign and Maintain for non-motorized and adaptive MTB use. Remove large obstacles and improve drainage.
4.11 Existing Road	Loop creation and connects the Observatory to Lower W Coconino St. 0.83 miles.	Sign and Maintain for non-motorized and adaptive MTB use. Remove large obstacles and improve drainage.
4.12 Existing Road	Short connection from the Observatory - south. 0.2 miles.	Sign and Maintain for non-motorized and adaptive MTB use. Remove large obstacles and improve drainage.
4.13 Existing Road	Connects to system from the Observatory to the southwest. 0.17 miles.	Sign and Maintain for non-motorized and adaptive MTB use. Remove large obstacles and improve drainage.
4.14 Existing Road	Connects single track for adoption to the interior of Section 17. 0.7 miles.	Sign and Maintain for non-motorized and adaptive MTB use. Remove large obstacles and improve drainage.
4.15 Existing Road	Short connection from Section 17 to FUTS Mars Hill. 0.3 miles.	Sign and Maintain for non-motorized and adaptive MTB use. Remove large obstacles and improve drainage.
4.35 Existing Road	Short, forked road segment from existing trail access, Lowell Observatory. 0.09 miles.	Decommission - Mechanized
4.36 Existing Road	Road parallels ID 4.9. 0.47 miles.	Decommission - Mechanized
4.37 Existing Road	Southern Section 17. 0.53 miles.	Decommission - Mechanized
4.38 Existing Road	Northwest corner of Section 17. 0.20 miles.	Decommission - Mechanized

Series ID	Long Term Description	Proposal
4.39 Existing Road	Looping road segment, redundant to proposed trail system. 0.97 miles.	Decommission - Mechanized
4.40 Existing Road	Southwest corner of Lowell properties. 0.41 miles.	Sign and Maintain for non-motorized and adaptive MTB use. Remove large obstacles and improve drainage.
5.14 New Trail	Short Connector trail east of the FUTS Tunnel Springs underpass, 0.11 miles.	Subject to discussion with BSNF and their approval.
5.15 ADA Trail	Accessible trail from Lowell visitor center, provides educational opportunities. 0.28 miles.	Construct FUTS style, soft surface trail to ADA guidelines with educational panels.
5.16 ADA Trail	Accessible trail , longer loop connecting to ID 5.15. 0.54 miles.	Construct FUTS style, soft surface trail to ADA guidelines with educational panels.
5.17 New Trail	Short re-route of trail 3.34 to reduce grades on Section 17. 0.15 miles.	Moderate construction intensity—Hand
5.18 New Trail	Sustainable re-route of trail 3.32. 0.58 miles.	Moderate construction intensity—mechanized
5.20 New Trail	Short Connector trail west of the FUTS Tunnel Springs underpass, 0.17 miles.	Subject to discussion with BSNF and their approval.
5.22 Planned FUTS trail	Proposed Lowell Trail.	Future discussions with the FUTS program for implementation.
5.23 Planned FUTS trail	Proposed FUTS Mars Hill reroute.	Future discussions with the FUTS program for implementation.

Section 5: Next Steps

A final trail concept will require further work on behalf of the City and partners. The following list is meant to be a guide and is subject to change:

- Preliminary review of alignments by Coconino National Forest to ensure no interference with the forest plan, archaeological sites, and ecological resources.
- Preliminary review of alignments by Lowell Observatory to ensure no interference site plans, archaeological sites, and ecological resources.
- Work with interested partners to solicit feedback
    - Potential list of partners:
        - Arizona State Parks and Trails
        - Arizona Game and Fish Department
        - Audubon Society
        - City of Flagstaff Commissions/Committees/Boards:
            - Commission on Inclusion and Adaptive Living
            - Heritage Preservation Commission
            - Housing Commission
            - Indigenous Commission
            - Open Spaces Commission
            - Parks and Recreation Commission Planning and Zoning Commission
            - Sustainability Commission
            - Tourism Commission
            - Transportation Commission
        - City of Flagstaff Fire Department
        - City of Flagstaff Park and Recreation Sections
        - City of Flagstaff Property & Development
        - Coconino County Parks and Recreation
        - Coconino National Forest
        - Flagstaff Biking Organization
        - Flagstaff's Convention and Visitors Bureau (CVB)
        - Flagstaff Mesa Homeowners Association
        - Flagstaff Trails Initiative
        - Flagstaff Urban Trail System (FUTS)
        - Friends of Flagstaff's Future

    - Friends of the Rio de Flag
    - Kinlani Dorms
    - Linwood Heights Homeowner's Association
    - Lowell Observatory
    - The Nature Conservancy
    - Northern Arizona Adaptive Sports Association
    - Northern Arizona Trail Runners Association
    - Railroad Springs 66 Homeowner's Association
    - Sierra Club
    - State Historic Preservation Office
    - Westridge Neighborhood Association
- Providing opportunity for public input
    - Public Comment Stage 1: 40 day comment period
- Draft a revised trail concept inclusive of public and partner feedback
- Provide opportunity for public input
- Public Comment Stage 2: 40 day comment period
- Finalize a trail concept in partnership with stakeholders (Lowell Observatory, Coconino National Forest) that considers all public feedback
- Conduct the final archaeological survey review
- Submit a completed SF-299 form to the Coconino National Forest
- Conduct a National Environmental Policy Act (NEPA) analysis for federal property
- Submit project for the State Historic Preservation Office review and approval
- Finalized proposal review 30 day comment period
- Flagstaff City Council trail plan adoption

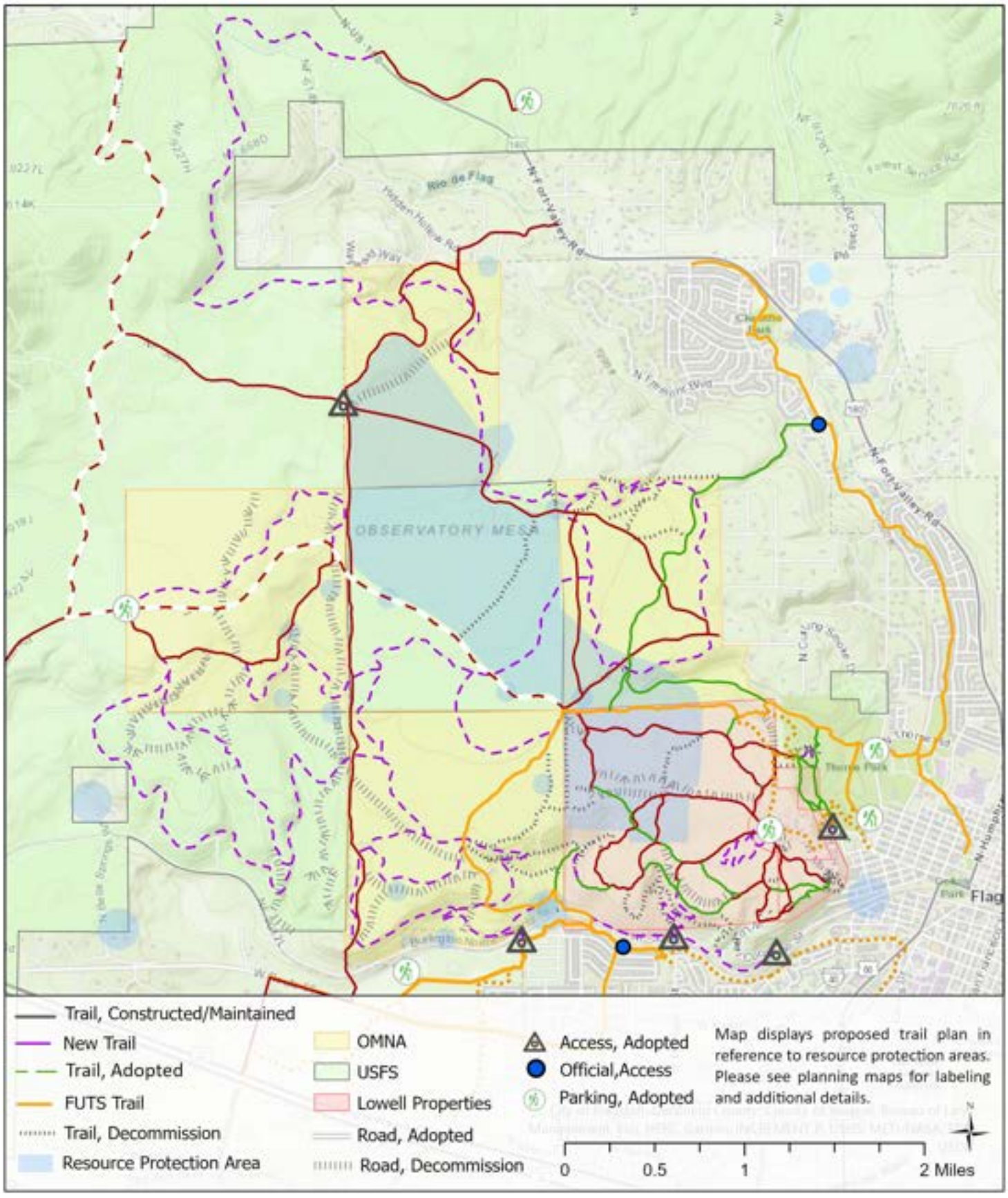
Appendix A: Development of Trail Plan

The purpose of the City's purchase of Observatory Mesa Natural Area and the directive outlined in the Arizona State Parks' held conservation easement is to assure that the Property will be retained forever in predominantly the condition reflected in the baseline documentation when the Property was purchased. This directive is to prevent any use of the Property that will significantly impair or interfere with conservation values. The conservation easement confines the use of the Property to passive recreation compatible with the maintenance of the Property's conservation values. OMNA is restricted from development that would exceed 20 acres total. Any proposed work must be approved by Arizona State Parks before implementation. Rights reserved in the conservation easement, include the right to engage in, or permit or invite others to engage in, all uses of the Property that are not expressly prohibited and are not inconsistent with the purpose of the easement. This includes the right to engage in and permit engagement in recreational uses of the Property, including hiking, horseback riding, cycling, and other forms of passive recreation, and the ability to engage in and permit others to engage in educational and scientific study activities.

These directives were closely considered during the development of this proposal and recommendations were developed to balance preservation and recreation. This plan applies a 500-foot buffer around springs, a 250 foot buffer around stock tanks, a 500 foot buffer around all archaeological areas (sites and isolated occurrences), avoidance of the Northern Goshawk post fledgling area, and avoidance of the Woody Ridge wildlife corridor. The following topics were considered during the development of this proposal to prevent or limit impact.

ID 3.28. User created trail, south side of Lowell Private Properties.

Resource Protection & Trail Concepts



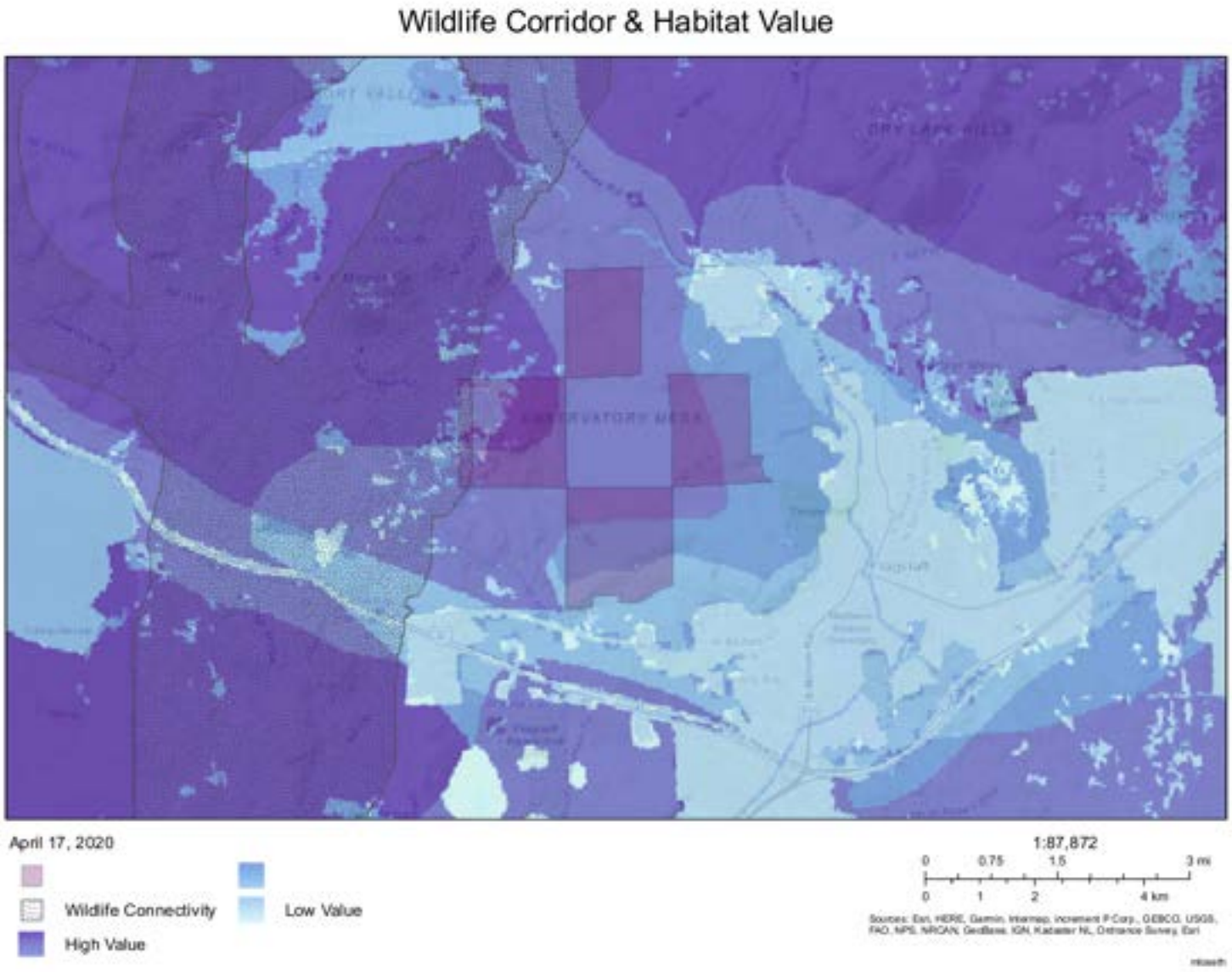
i. Ecological Summary

Geographically, the Observatory Mesa land form is located on the Coconino Plateau within the San Francisco Volcanic Field. Ranging in elevation from 7,050 to 7,560 feet, it is defined by moderately steep slopes rising from the surrounding area and capped by a relatively flat plateau.

The over-story of Observatory Mesa is comprised primarily of Ponderosa pine, with small pockets of Gambel oak. During a recent field inventory, a small number of Douglas fir trees were also identified on north-facing slopes. The under-story shrubs and grasses are mostly composed of: Arizona rose, Arizona fescue, mountain muhly, western wheat grass, blue grama, squirrel tail, silver lupine, and Rocky Mountain iris (CFOSP,2017,p. 73). Despite the absence of perennial streams, Observatory Mesa has a variety of springs, seeps and drainages that make it important to the Rio de Flag watershed (CFOSP,2017, p.67). Seasonally available water sources within the OMNA support a variety of seasonal and year-round species.

The location, water sources, and vegetative biodiversity of Observatory Mesa provide for a variety of wildlife habitats and “provide essential resources for diverse wildlife, including: elk, mule deer, pronghorn, grey fox, several species of squirrels, chipmunks and other small mammals, porcupine, mountain lion, black bear, various species of bats, turkey, raptors including red-tailed hawk, sharp-shinned hawk, and several owls, migratory and resident songbirds, and reptiles and amphibians such as chorus frogs and short-horned lizards”(CFOSP,2017,p.81). The undeveloped lands along the western portion of Section 12 of OMNA and beyond are considered an important wildlife corridor connecting habitat on the San Francisco Peaks with lands along the Mogollon Rim to the south. Known as the Woody Ridge corridor, the area provides numerous species with access to seasonally available resources throughout the year. The Arizona Game and Fish Department’s Species and Habitat Conservation Guide identifies the majority of Section 12 as “the highest wildlife conservation potential” (Arizona Game and Fish Department, 2012, p.50) due to its proximity to the Woody Ridge wildlife corridor. The corridor frames the Mesa to the west and provides habitat for special status species, including Northern goshawk, Mexican spotted owl, and bald eagle and are known to utilize the Mesa during their life span (CFOSP,2017, p.67).

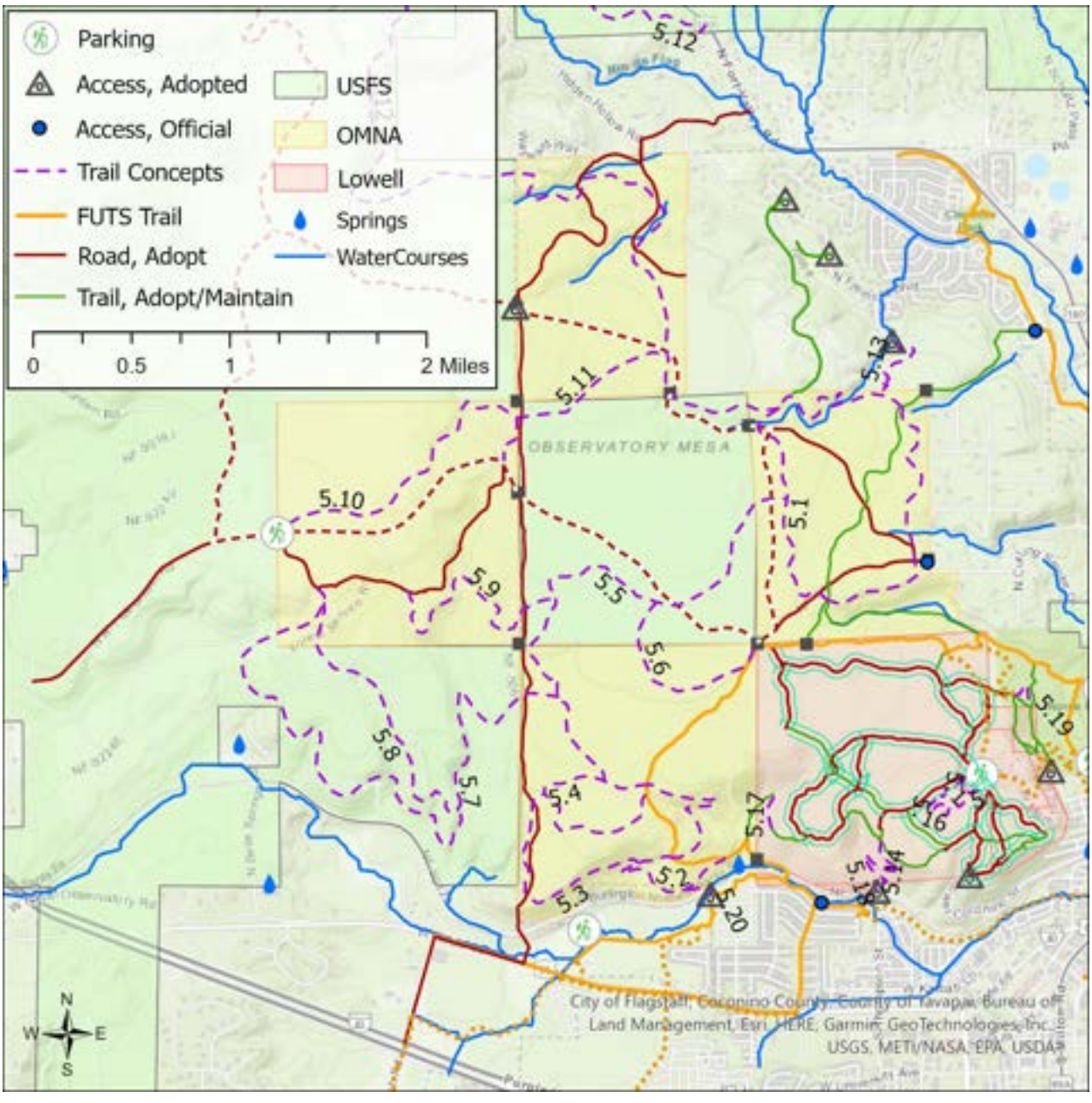
i. Ecological Summary



Wildlife Corridors and Habitat Value of Observatory Mesa Natural Area (shown in purple) and surrounding area. Map courtesy of Arizona Game and Fish Department's Online Environmental Review Tool: https://azhgis2.esri.com/

ii. Sensitive Watersheds and Springs

There are several significant first order ephemeral streams/drainages which flow to the north and west into the Rio de Flag, and to the south into Clay wash which flow directly into the Rio de Flag. Two intermittent streams in Section 6 are tributaries of the Rio de Flag. Another intermittent stream in the northeast quarter of Section 8 flows to the east into the Rio de Flag. Section 12 has three intermittent streams, one of which feeds into Belle Spring in the adjacent Forest Service section. Section 18 has an intermittent stream that originates from Tunnel Spring. Sections 6 and 8 also contain ephemeral water sources that feed Matson Tank on the adjacent Forest Service section. These intermittent streams make Observatory Mesa Natural Area an important component of the Rio de Flag watershed. Watersheds support habitat for plants and animals with a greater variety of vegetation. Efforts to avoid watersheds were deliberate.



iii. Sensitive Species

Northern Goshawk Habitat

Observatory Mesa is ideal habitat for the northern goshawks, which rely on habitats composed of tall, old-growth trees with intermediate to heavy canopy coverage (often more than 40%) and minimal density of undergrowth. In 1993, a post fledgling area (PFA) was identified by the Forest Service. The PFA spans across City, Forest Service, and Lowell Observatory properties. In 2016, the Forest Service located two northern goshawk nest trees in Section 6 of the Natural Area. Though a PFA has not been formally identified, the drainage area was deferred from the mechanical cutting area to protect the sensitive species.

Post-fledgling areas (PFA) are typically 600 acre areas surrounding a nesting site, that are used by young goshawks before being independent of parents. Northern goshawks are protected under the Migratory Bird Treaty Act and are listed as “Species of Concern” (CFOSP,2017, p.83). In North America, several non-governmental conservation organizations petitioned the Department of Interior, United States Fish and Wildlife (1991 & 1997), to list the goshawk as “threatened” or “endangered” under the authority of the Endangered Species Act. Both petitions argued for listing due to historic and ongoing nesting habitat loss, specifically the loss of old-growth and mature forest stands throughout the goshawk’s known range. The northern goshawk is also listed in Appendix II of the Convention on International Trade in Endangered Species.

Research indicates that high levels of noise often causes nesting failure during the critical incubation stage. Arizona studies show that nests within 50 to 100 m (160 to 330 ft) of active logging failed. Other noisy activity, such as camping, can cause nest failure. To avoid disrupting the northern goshawk trail alignments are limited in the PFA boundary and avoid all nest stands to reduce human interaction. In addition, mechanized or hand construction of trails in the PFA area will avoided during breeding season; March 1 - September 30, to reduce loud noises that may disrupt natural behavior (CFOSP,2017, p.83).

Bat Species Habitat

Six sensitive bat species have been identified within a 5-mile radius of Observatory Mesa, requiring habitat consideration. Bats tend to roost in snags, tree cavities, downed logs, or rock piles. Bats generally forage along forest edges, forest roads, trails, or natural openings, Additionally, they prefer a heterogeneous forest structure, and rely on clean, pooled, open bodies of fresh water as their water source. Trail alignments avoid water sources and will limit disruption to snags and downed woody debris.

iv. Cultural Resources

In 2013, the city of Flagstaff worked with Cornerstone Environmental Consulting, LLC to complete a cultural resource survey for OMNA. One site from the Formative Period (A.D.400-1542) was identified and contains a moderate density of prehistoric flaked stone. During this time, the Sinagua people occupied arable soils near the upper Rio de Flag along the northeastern edge of Observatory Mesa (Edwards et al,2013, p.5). The survey relocated two previously recorded sites (neither recommended for National Register), and discovered four additional sites, and twenty isolated occurrences (all ineligible for National Register of Historic Places). The survey also identified 25 historic resources. Sites are predominantly euro-American refuse scatters from 1915-1955. The expansion of ranching and logging followed the arrival of the railroad. According to the Coconino National Forest, Observatory Mesa was logged between 1926 and 1928, but similarly to many adjacent areas, was likely logged prior to 1900 as well. The Mesa was also used for grazing during this period, and artifacts near Tunnel Spring show evidence of ranching during the 1930's and 1940's (Edwards et al.,2013, p.10).

Cultural resource protection has been carefully considered. Regardless of resources at each site or occurrence, a 500-foot buffer was established around all archaeological areas within OMNA. The Forest Service has conducted a preliminary review of trail alignments on the Coconino and have not come across any concerns. Archeological surveys and clearances of the proposed trail corridor would be obtained prior to ground disturbing activities. State Historic Preservation Office review and approval would be necessary before implementation. The scope of archaeological support services for this project would include (1) pre-work consultation with the Arizona State Historic Preservation Office (SHPO); (2) field assessment of the trail work proposed within the boundaries of and within 50 feet of the project area's archaeological sites; (3) documenting any archaeological materials within the trail right-of-ways and marking any areas for avoidance from ground disturbance; (4) conduct post-treatment inspections for the trail work occurring within and adjacent to sites; and (5) prepare a brief technical memorandum for submittal to the City and SHPO.

v. Arizona State Parks and Trails Conservation Easement

In accordance with the conservation easement held by Arizona State Parks, no more than 20 acres total may be eligible for alteration or development and no changes may be made to the parcel that would seriously or negatively affect its conservation values. This proposal identifies 8.215 acres of OMNA for trail development within the Natural Area boundary, approximately 41% of the total available 20 acres.

Project	Approximate Mileage
Forest Restoration and Thinning Projects (EXEMPT)	1,255
Rain Gauge	0.25
Westridge Gate	0.05
Matson Gate	0.05
Kiosks (4)	0.10
Dog Waste Bag Dispenser	0.05
TOTAL APPROXIMATE ACREAGE CURRENTLY DEVELOPED	**0.275**
APPROXIMATE REMAINING ACREAGE	19.725
Proposed Trail Installation	5.62
Existing Trails Adopted (includes Loop Trail on OMNA lands)	0.6
Proposed Supporting Infrastructure (5 kiosks (0.2/sign), 4 cultural protection (.01/ sign), 5 non-motorized (.01/sign), ~ 15 trail markers (.01/sign), 14 interpretive (.02/ sign), 5 temporary notice boards (.02/sign)).	0.72
Proposed Parking area at West Boundary	1
CURRENT & PROPOSED ACREAGE DEVELOPED AT 100% IMPLEMENTATION	**8.215**
APPROXIMATE REMAINING ACREAGE WITH TRAIL SYSTEM AT 100% IMPLEMENTATION	11.785

Arizona State Park grant funds were utilized to purchase Observatory Mesa Natural Area. The grant agreement bestowed Arizona State Parks a conservation easement over the Property that requires the acreage to be retained forever in predominantly the condition reflected in the baseline documentation when it was purchased. The conservation easement also necessitates the right to engage in, or permit or invite others to engage in all uses of the Property that are not expressly prohibited and are not inconsistent with the easement's purpose. The easement includes the right to engage in and permit engagement in recreational uses of the Property, including hiking, horseback riding, other forms of passive recreation, and the ability to engage in and permit others to engage in educational and scientific study activities.

vi. City of Flagstaff Open Space Program Directives

The Flagstaff Open Space Program's Management Plan for Legally-Designated Open Space properties contains detailed recommendations for proper management of OMNA. There are 5 overarching management goals for legally-designated open space properties:

1. To maintain, restore, and enhance the natural ecosystem processes of these properties, including watershed health (including intermittent streams), forest structure, native plant communities, and rare habitat types.
2. To protect cultural resources present within these properties.
3. To maintain and protect diverse and healthy wildlife populations.
4. To provide opportunities for public use of these properties through passive recreational use, resource interpretation, education, scientific research, and other compatible activities in a manner that is consistent with the preservation of the conservation values of the site and the management goals.
5. To maintain and develop partnerships that facilitate resource management, stewardship, and conservation.

This proposal will uphold Open Space Program goals in the following ways:

1. Encourage users to recreate in approved locations.
2. Restore unauthorized trails and closed roads.
3. Reduce visitor travel in watersheds, rare habitats, wildlife corridors, and cultural site areas.
4. Provide passive recreational opportunities for multiple user groups.
5. Provide additional access points to provide additional 10-minute community walking access time to open space.
6. Advance land use planning that minimizes the distance people have to travel by car by promoting transportation by biking and walking.
7. Partners with Coconino National Forest, Lowell Observatory, neighboring property owners, and the community to design and implement a trail plan that preserves the landscape and provides recreational opportunities.

Appendix A: vii - ix

vii. Scientific Education

The potential for developing scientific education for K-12 programs, graduate education, life-long learning, and applied research on forest and grassland restoration is outstanding given the rich natural resources of the location. Potential local educational partners including Willow Bend Environmental Education Center, Northern Arizona University Centennial Forest, Lowell Observatory, Museum of Northern Arizona, Flagstaff Unified School District, Coconino Community College, and Coconino National Forest.

Developing educational signage and interpretive panels that highlight the biology, natural history, regional cultural landscapes and astronomy within the first 3 miles of trail heads and especially throughout trails on Lowell properties can create intentional educational opportunities that reflect the values of the community at large.

viii**. Recreational Uses**

Recreational trails will be highly compatible with conservation purposes and environmental education. Careful design and signage will protect natural and cultural resources by guiding visitors along paths to minimize impacts to sensitive resources. Perimeter viewing areas with interpretive signage will be designed to provide public opportunities to experience and learn about wildlife. Partnering with Arizona Game & Fish Department will offer opportunities to develop a *Watchable Wildlife* program that will enhance the public's enjoyment of the area.

E-bikes are allowed only on certain trails within the GOMA area. (See map for locations)

i**x. Partnership Opportunities**

Coconino National Forest, Lowell Observatory, and the City of Flagstaff are key partners in the success of this trail proposal. Consultation with these agencies was conducted during the development of this proposal to ensure ideas expressed in this report conform to best practices and have consensus between the land agencies. During the development of the final trail plan this partnership will continue. Furthermore, Section 5, "Next Steps," of this proposal, identifies many diverse partners and stakeholders that will be included in the review and development of the final trail concept.

Flagstaff Trails Initiative (FTI), a Flagstaff non-profit with the mission, "To improve the quality, connectivity and community support for a sustainable trail system that balances the demand for recreation with the community's vision for conservation, development, and health" will be a great partner. FTI will provide a variety of resources, such as providing review and comment during the development of the final concept, involving the public during the review process, and providing volunteer trail building and maintenance support for the trail system. The Regional Trail Strategy, FTI developed, is a collaboration between land management agencies, non-profit organizations, volunteer groups and trail contractors that is yielding results for Flagstaff's trails.

Appendix B: Sustainable Trail Recommendations

For trails to be sustainable, they must be developed in the context of the landscape. By seeing the trail as a feature on the landscape we are able to make the right decisions for the land and the trail. Soils, watersheds, climate and geology all play a factor in how trails are used and how they hold up over time. Amounts and types of use, and maintenance levels are also factors in how a particular trail acts upon the landscape. Existing and planned trails on Observatory Mesa can benefit by considering the following environmental condition factors.

i. Natural Surface Trails

Constructing trails using native soils physically connects users to the landscape and allows for an intimate experience with their surroundings. The ability of single-track natural surface trails to continually engage users with their surroundings is valuable to all trail user communities. Natural surfaced trails are a cost-efficient means of trail construction and maintenance, and can be built in a partnership between a professional crew and volunteers.

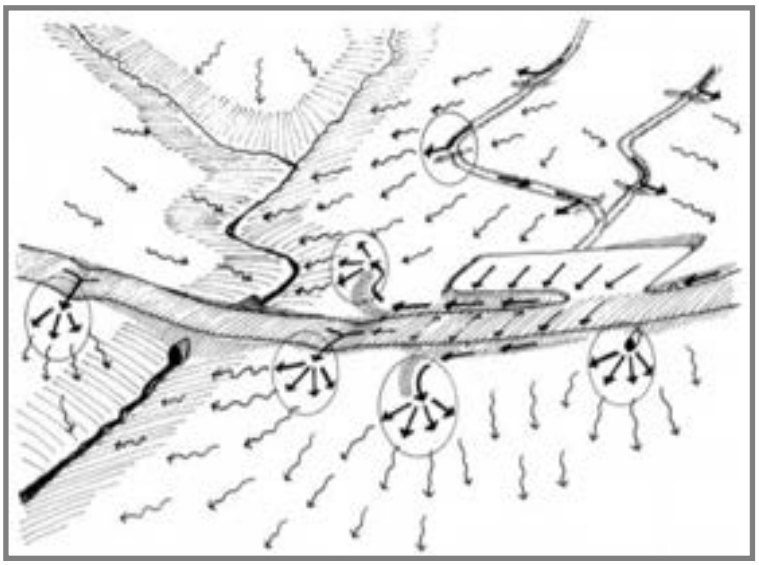


Diagram of how sheet flow affects trails, courtesy of State of New Hampshire Department of Resources & Economic Development, Division of Parks & Recreation; Bureau of Trails. (2017, January).

ii. Hydrology

On average, the Flagstaff region receives 25 inches of precipitation per year, with the majority occurring from summer monsoonal rains and winter snow fall. Erosion is at its highest during summertime precipitation resulting in short but intense bursts of rain but can also occur during springtime snow melt. Water flowing over the surface, known as overland flow or sheet flow, is the primary source of erosion for trails in the Flagstaff area. Sheet flow should be considered in building trails and how maintenance is conducted.

iii. Vegetation

The Ponderosa Pine forest community provides for welcome level of interception for trails under the forest canopy. Interception refers to the precipitation that does not reach the soil, but is intercepted by the leaves and branches of plants and the environments floor. Trees, shrubs and forbs create an organic layer on the forest floor, helping to infiltrate precipitation before sheet flow occurs. Interception should be considered during final trail alignment selection.

For trails to be sustainable, they must be developed in the context of the landscape. By seeing the trail as a feature on the landscape we are able to make the right decisions for the land and the trail. Soils, watersheds, climate and geology all play a factor in how trails are used and how they hold up over time. Amounts and types of use, and maintenance levels are also factors in how a particular trail acts upon the landscape. Existing and planned trails on Observatory Mesa can benefit by considering the following environmental condition factors.

iv. Slope Angles

Trails that do not affect hydrological processes allow for sheet flow to continue unabated by the tread surface. Placing trail alignments on moderate to steep slopes of the Mesa can promote trail sustainability by providing enough velocity for water flow. Slow moving sheet flow on shallow or flat slopes tend to trap water on trails more easily, contributing to erosion, puddling and user response to muddy trails.

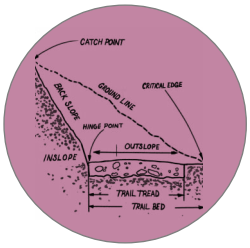
v. Soils

Substrate within the planning area is dominated by clay soils formed on basalt lava flows (Edwards et al.,2013, p.1). Clays are very fined grained soils, with their particles being plate like and oily and can attract and hold large amounts of water. They do not have enough pore space for water drain through. This soil type tends to be muddy and will drain poorly when wet. It can also be the cause of trail erosion since the water will run atop the surface. When clays are dry, the particles bond together and provide trail stability. If compacted appropriately (mechanical or from trail use), clay soils can be very resistant to erosion (State of Minnesota,2017, p.6.8; Basch, et al.,20017, p.50).

Existing rock in the trail tread can improve trail stability. Fractured rock (not rounded) of any size can work to resist mechanical and environmental erosion and bind smaller soil particles together. Rocky terrain and trails tend to hold up better over time and limit subsequent maintenance requirements. Substrate should be considered when improving the trail surface.

Left: Soil sample from the Loop Trail, OMNA property in early April, 2020. The Sample was rolled and squeezed by hand to determine soil characteristics. Clay soils do not break apart when squeezed or pressed, as opposed to soils with more dominant levels of loam and silt.

Trail Design Recommendations: Sustainability

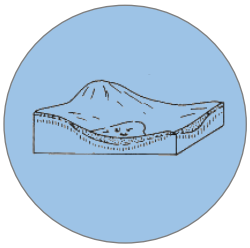


Trails located on shallow to flat slopes will not successfully shed water over time, due to trail travel ways compacting and losing sediment. Trail braiding and widening are more likely to occur during wet season.

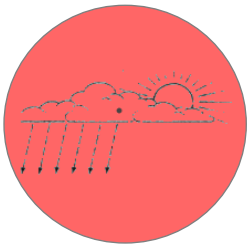
Trails located under the forest canopy are preferred over trails in open meadows for potential interception and limiting the effects of strong monsoonal rains.

Clay soils and trail stability are greatly affected by water. Wet conditions can reduce trail conditions quickly, while dry conditions can provide well compacted and enjoyable trails. Grade reversals should be designed in to all alignments at 100 foot intervals or less to limit the distance water can flow down the trail at any given location.

Trails located on moderate to steep hillsides will better allow for sheet flow to continue over and past well-constructed trails without altering natural hydrological processes.

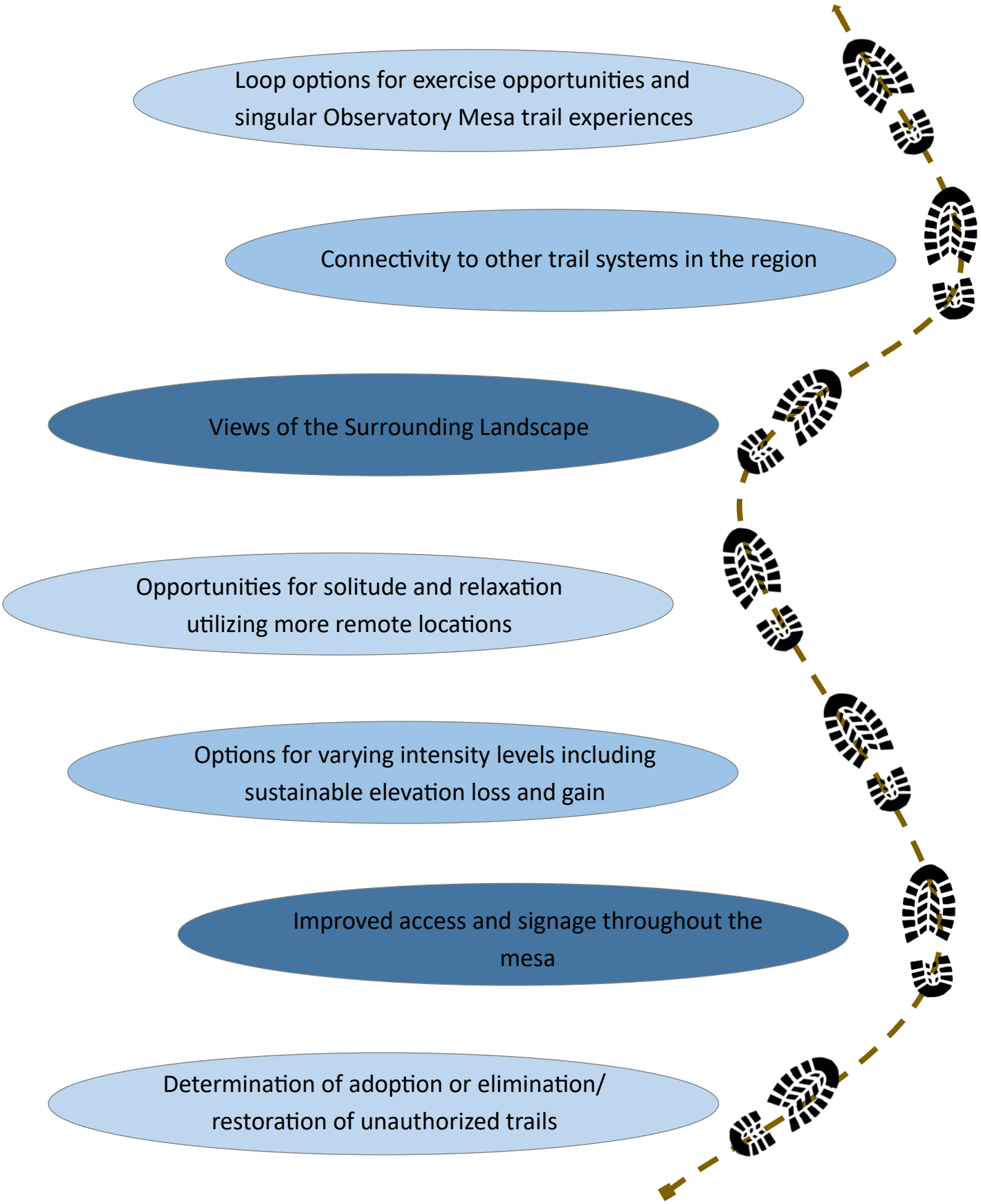


Strong monssonal rains and snow melt can cause erosion quickly, and should be considered during trail design.



Due to the nature of seasonal precipitation and soil type, linear grades should be limited to 8% overall (distances of 50 feet or more) with short (50 feet or less) sections not to exceed 14% unless rock structures are built to mitigate erosion. Rocky terrain may allow for steep grades over short distances.

Recommendations: User Experience



Proposed Trail Plan: Resources

The GOMA trail system is intended to provide meaningful experiences for non-motorized users: adaptive cyclists, equestrians, hikers and mountain bikers. There are a variety of great resources that can be applied when building trails for the user experience. This plan intends to blend design and construction standards to balance the varying interests of outdoor recreationists, and implementation of the approved trail plan should consider the array of desired trail characteristics of the community. Below is a list of links to resources for trail design and construction standards.

- American Trails Resource Library: A large collection of resources pertaining to trail planning, design, construction and maintenance.
- American Trails Resources– Hiking: A filtered selection of resources from the Resource Library.
- Equestrian Design Guidebook for Trails, Trailheads and Campgrounds: A comprehensive manual for designing trails and providing experiences for equestrian use. Produced by the Forest Service Technology and Development Center.
- Guidelines for a Quality Trail Experience– mountain bike trail guidelines: A comprehensive analysis of providing varied trail experiences for mountain bikers. Produced by the International Mountain Bike Association and the Bureau of Land Management.
- Kootenai Adaptive Sport Association– Adaptive Trail Standards– 2020: Recently completed design and construction standards for safe and high quality adaptive cycling trails.

Guiding documents from local jurisdictions inform and expand the geography beyond the Greater Observatory Mesa. Additional planning resource are included on the References page of this document. Resources are linked below for comparison.

- City of Flagstaff: Active Transportation Master Plan: The guiding document for active transportation in Flagstaff.

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