

McDowell Mountain Regional Park

Master Plan Update
2019-2039



Maricopa County
Parks and Recreation

McDowell Mountain Regional Park Master Plan Update (2019-2039)

Recommended by:

MARICOPA COUNTY PARKS AND RECREATION DEPARTMENT

R.J. Cardin 3/19/19

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Bill Gates, Chairman

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Fran McCarroll, Clerk of the Board

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United States Department of the Interior



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R. J. Cardin, Director

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Dear Mr. Cardin:

This is in response to a request from Lauren Bromley, of your staff, to review and comment on the McDowell Mountain Regional Park Master Plan Update (2019-2039) related to lands patented to Maricopa County (02-82-0022, 02-71-0086, 02-65-0027, 02-64-0090, 02-71-0043) under the Recreation and Public Purposes (R&PP) Act of 1926.

The Bureau of Land Management (BLM) has reviewed the Master Plan Update and determined that the Plan is consistent with the R&PP Act and the patents listed above. It is our understanding that your Department intends on presenting this Master Plan Update to the Board of Supervisors in April 2019 for final approval. Once approved by the Board, please notify this office and the appropriate BLM files will be noted.

If you have any questions, please contact Jim Andersen at (623) 580-5570.

Sincerely,

Ronald C. Tipton

Acting Field Manager

cc: Lauren Bromley

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Acknowledgements

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Glossary of Terms and Abbreviations

Term	Definition
ADA	American's with Disabilities Act
ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
ADWR	Arizona Department of Water Resources
AMA	Active Management Area
AMSL	Above Mean Sea Level
APS	Arizona Public Service Company
ASU	Arizona State University
ARS	Arizona Revised Statutes
ASLD	Arizona State Land Department
AST	Aboveground Storage Tank
AZGFD	Arizona Game and Fish Department
AZGS	Arizona Geological Survey
BOR (or Reclamation)	Bureau of Reclamation
BOS	Board of Supervisors
BLM	Bureau of Land Management
CIP	Capital Improvement Plan
City	City of Scottsdale
CO	Carbon monoxide
County	Maricopa County
EPA	Environmental Protection Agency
ESA	Endangered Species Act
°F	Degrees Fahrenheit
FCD	Flood Control District of Maricopa County
FEMA	Federal Emergency Management Agency
FTE	Fulltime Equivalent (employee)
FY	Fiscal Year
GIS	Geographic Information System
GPS	Geographic Positioning System
HDMS	Heritage Data Management System
HUC	Hydraulic Unit Code
HURF	Highway User Revenue Fund
I-	Interstate (number)
IBA	Important Bird Area
IGA	Intergovernmental Agreement
IP	Implementation Plan
LEED	Leadership in Energy and Environmental Development
MAG	Maricopa Association of Governments
MCAQD	Maricopa County Air Quality Department
MCDOT	Maricopa County Department of Transportation
MCPRD (or Department)	Maricopa County Parks and Recreation Department
MCSO	Maricopa County Sherriff's Office
MDP	Master Development Plan

Term	Definition
mm	Millimeter
MMRP (or Park)	McDowell Mountain Regional Park
MOU	Memorandum of Understanding
MP	Master Plan (update)
MPA	Municipal Planning Area
NOx	Nitrogen Oxide
OHV	Off-Highway Vehicle
PM	Particulate Matter
PRSG/S	Park Road System Guidelines/Standards
R&PP	Recreation and Public Purposes Act
RR	Restroom
RU-	Rural Residential
RTP	Regional Transportation Plan
RV	Recreational Vehicle
SAG	Stakeholder Advisory Group
SDS	Safety Data Sheets
SERI	Species of Economic and Recreational Importance
SES	Services Entrance Section
SGCN	Species of Greatest Conservation Need
SHPO	State Historic Preservation Office
SR-	State Route (number)
SSMP	2009 Strategic System Master Plan (for MCPRD)
SRP	Salt River Project
SUP	Special Use Permit
SWAP	State Wildlife Action Plan
SWCC	Southwest Wildlife Conservation Center
Town	Town of Fountain Hills
TMM	Trails Management Manual
Tribe	Fort McDowell Yavapai Nation
TSP	Transportation System Plan
USFWS	U.S. Fish and Wildlife Service
VOC	Volatile Organic Compounds
VRM	Visual Resource Management



Chapter 1 – Introduction

This chapter introduces the concept of a regional park, general overview of the project, vision, mission, and the park theme(s). The regional park fills a void between city, state, and national parks. Regional parks are located outside the metropolitan area (although with rapid development, this is becoming less and less the case), but within a reasonable driving distance to the population for which it was planned and attempts to maintain a buffer from urban encroachment.

A regional park is defined as a natural, unspoiled area providing its visitors an escape from city trappings, with enough space and facilities for day and overnight use. A regional park provides opportunities for passive and active recreational activities (e.g. hiking, mountain bike riding, walking, horseback riding, picnicking, camping, nature study and sightseeing) that allow its visitors to unwind and immerse themselves in nature. A regional park may have unique topography, ecosystem features, scenery, and hold special historical or archaeological interest. A regional park may also provide a blend of unspoiled nature, wilderness preserve, refuge, and open space, offering its visitor(s) a sense of remoteness.

Its development, phased in over time, is geared toward facilities that encourage enjoyment of the natural environment while still providing some comforts. All development is carefully patterned and designed to conform to the landscape, avoiding a crowded feeling, and typically includes a nature center, picnic tables and ramadas, campsites, a trail system, and adequate support facilities (parking, restrooms, concessions, etc.).

Therefore, the regional park system serves to preserve the mountains, canyons, washes and rivers, native vegetation and wildlife in their natural state, while also encouraging the enjoyment of these natural resources by providing well planned and appropriate facilities. McDowell Mountain Regional Park (MMRP or Park), is one of twelve Maricopa County regional parks or conservation areas, and offers the opportunity to hike, bike, horseback ride, and explore; allowing us to reconnect with nature and restoring our sense of well-being.

1.1 Project Background

In 1958, approximately 18,273 acres of public land was leased by the Bureau of Land Management (BLM) to Maricopa County (County) via the Recreation & Public Purposes Act



(R&PP). The County received the first land patent for MMRP in 1963, and subsequently, through further land acquisition between 1964 and 1987, the Park grew to encompass nearly 21,099 acres. On May 25, 1967, the Parks and Recreation Advisory Commission (Commission) unanimously recommended the Master Development Plan (MDP) for MMRP. This will be the first update to the MDP since its adoption in 1967. Many components of the MDP have never come into fruition, while at the same time, public use and changing demand have often dictated when and where development occurs. This update to the MDP is to bring those disparities back into alignment, and to steer future development of the Park. This plan is based on a 20-year outlook, and should be referred to on a regular basis and updated as needed. This plan is meant to be flexible, while also providing long-term direction in order to protect the Park's resources.

MMRP is a component of the Maricopa County regional park system, and is to date the third largest park at 21,099 acres. The Park features rugged mountain terrain and gently sloping foothills extending east to the Rio Verde River. The County's regional park system includes twelve parks, two of which are conservation areas, and is comprised of more than 120,000 acres encircling the Phoenix metropolitan area. The regional park system provides recreational and educational opportunities for residents and visitors alike.

1.2 Vision, Mission, and Theme

This plan is meant to align with the vision and mission of the Maricopa County Parks and Recreation Department (MCPRD or Department). The Park's unique combination of backcountry and historic/cultural interests automatically provides a basic direction for the Park's planning and development, and is subsequently reflected in the Park's operational and marketing themes.

1.2.1 Vision and Mission

This plan aligns with the vision and mission set forth by the Department and are as follows:

"Our vision is to connect people with nature through regional parks, trails and programs, inspire an appreciation for the Sonoran Desert and natural open spaces, and create life-long positive memories."

"Our mission, through responsible stewardship, is to provide the highest quality parks, trails, programs, services and experiences that energize visitors and create life-long users and advocates."

1.2.2 Themes

The 1967 MDP for MMRP noted that the Park possesses a unique historical past with the settlement of Fort McDowell in 1865, which was situated directly southeast of where the Park sits today. The area has a rich history of Native-American settlement, fur trapping along the Rio Verde River, mining near the hills, and cattle ranching throughout the area. The 1967 MDP called for the least amount of development that could provide the fullest



amount of enjoyment of the wilderness and beauty that is so abundant in this area. Additionally, the Department has established similar operational and marketing themes that acknowledge the Parks rich cattle ranching history and adventurous frontier life that drew so many people out west.

Operational Theme

The MMRP Master Plan Update (MP) is aligned with the Maricopa County Parks and Recreation 2009 Strategic System Master Plan (SSMP) that recommends maintaining the Park as an “Adventure and outdoor recreation” Park. As such, its priority mandates have been identified in Table 1-1.

Maricopa County Park	McDowell Mountain Regional Park
Operational Theme	Adventure and Outdoor Recreation Park
Priority Mandates	
1 – Preserve the natural setting and environmental aspects of the park by heavily restricted use and limited public access.	
2 – Pursue limited development to enhance the quality and diversity of recreational opportunities.	
3 – Strategically develop facilities that increase the revenue generation capacity of the park and park system.	
Table 1-1: Themes and Mandates Source: Maricopa County Parks and Recreation Strategic System Master Plan, June 2009, page 197.	

Until a new department-wide strategic plan is implemented that changes these priority mandates, any proposed Park improvement project (i.e. capital development or programmatic change) should support one or more of these mandates.

Marketing Theme

Complimentary to its operational theme, each park also carries a marketing theme. Shortly after the 2009 SSMP was adopted, each park developed a “theme” that best represents the park’s spirit or essence. The SSMP sought to develop consistency among the parks, while the themes were used to provide a subtle, yet distinct differentiation between the parks. The themes were vetted through community focus groups and Park staff meetings. A number of Park values were identified during this process (e.g. historical aspects, camping, geology, archaeology and others); however, the key feature identified for MMRP was “mountain biking”. This emphasis on mountain biking was carried forward in the Department Marketing Plan as its marketing theme.¹

Although the MMRP has many amenities to offer from mountain biking to picnicking, with the impressive natural and cultural assets of the Park, there are ample opportunities to promote this theme by providing additional or improved facilities. Any proposed programming should also keep these themes at the forefront.

¹ Themes are further outlined in MCPRD Connecting People with Nature Marketing Plan (12/6/11 revision), page 43.

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Chapter 2 – Master Plan Process

This chapter outlines the purpose of the MP and reviews the process for updating the MP, including public participation, planning issues, and a recreation activity evaluation conducted during the project. This is the third MP update the Department has undertaken in recent years, and utilizes the Estrella Mountain Regional Park Master Plan Update (2016-2036) as its template.

The planning process involved numerous tasks, and relied on input from the planning team, key Department staff members, partner’s advisory group, stakeholder advisory group, and the general public over the course of a year and a half. Some tasks were completed simultaneously but involved gathering or analyzing different sets of information. Each task was tracked on a timeline to provide direction to the planning team,

2.1 Purpose of the Master Plan

The purpose of this planning effort is to update the 1967 MDP to reflect the current use, identify community needs and concerns, characterize and evaluate environmental resource information, and identify other potential recreational opportunities suitable for inclusion in the Park.

The ultimate purpose of developing a MP is to outline the long-range vision for the Park and guide development priorities that will provide for both the public’s enjoyment and the protection of the Park’s resources. The MP provides a conceptual planning framework for establishing those priorities. It will also assist the Park with upholding the standards for a “Quality County Park System” per the 2014 update of the SSMP.

2.2 Previous Planning Efforts

Several existing plans played an important role in shaping this MP. Specifically, the Departments SSMP, which guides the decision-making for future development and management of the park system; it also provides recommendations on how the Park system might be improved. The ‘Connecting People with Nature Marketing Plan’ took additional steps to identify the predominate feature(s) of each park and promote a “theme” for each as well as a timeline for implementation. The annual business plans outline short-term projects and goals to further enhance or maintain Park resources.



This plan consulted the following list of County plans and other documents:

- McDowell Mountain Regional Park Master Development Plan (1967)
- Maricopa County Regional Trail System Plan (2004)
- McDowell Trail Amendment (2008)
- Parks and Recreation Strategic System Master Plan (2009 and 2014 update)
- 2012-2013 Visitor Study Final Report (by ASU) (and previous versions)
- Cultural resource surveys (various)
- Moving Forward in a Time of Change, Maricopa County Strategic Plan (2011-2015)
- Maricopa County Vision 2030 Comprehensive Plan (draft)
- City of Scottsdale General Plan 2035
- Rio Verde Foothills Area Plan
- Scottsdale Trails System Master Plan
- McDowell Sonoran Preserve – Cultural Resource Master Plan
- Town of Fountain Hills General Plan 2020 and Land Use Analysis and Statistical Report.

2.3 Plan Amendments or Updates

This plan should be reviewed annually by Park staff to insure their knowledge of and adherence to this plan and to evaluate implementation progress. At a minimum, this plan should be revised and updated every 20 years to take the changing needs of the County and the community into consideration.

If any major and/or sudden changes take place prior to the 20-year mark, an update or amendment may be needed. Major amendments to this plan may require public notification, and all potential changes should be reported to senior management and planning staff for consideration. Major amendments may include changes to the Management Zone; adjacent land use changes or development that impacts the Park; acts of nature that dramatically alter the Park; any other action that would permanently affect the land; and/or a proposed action that is not within the scope of the MP.

Minor amendments should be posted for a 30-day comment period on the Parks webpage as well as other social media outlets. Examples of minor amendments include but are not limited to; updating demographic and other statistical information; updates to appendices such as insertion or removal of annual reports (such as business and marketing plans, etc.); new or updated resource information; and/or to correct grammatical or formatting issues. The addition of non permanent site amenities such as picnic tables, grills, posts, trash receptacles, etc. Minor amendments or updates should be reported to senior management and planning staff for consideration.



2.4 Agency Participation Program

Department Participation

The MP update was developed internally by Department’s planning staff, Park staff, and senior level management. Department staff worked individually and met as a group throughout the planning process in order to define the scope of the MP, review project information, consult partners, stakeholders and the public, develop and analyze draft Park improvement projects, and to finalize the MP update.

Parks and Recreation Advisory Commission (Commission)

Department planning staff provided periodic updates and/or presentations to the Commission and invited them to provide feedback. These meetings were open for the public to attend and to make comments; however, no members of the public provided feedback during these meetings. Presentations or updates were given on the following dates:

- November 14, 2017
- March 20, 2018
- September 18, 2018
- November 13, 2018
- January 15, 2019 (Park tour)
- March 19, 2019

The Commission provided their approval and recommendations to the Maricopa County Board of Supervisors during the March 19, 2019 meeting commission meeting.

Maricopa County Board of Supervisors (BOS)

This plan was presented to the BOS for their approval at the April 24, 2019 BOS meeting. BOS meetings are also open to the public. The BOS approved this plan as acknowledged on the signature page in the front of this document.

Partners Participation

The planning team identified several agencies or other parties that the Park has either contractual obligations with, or engaged in serious discussions with as interested partners in the planning process. These interests and obligations were identified and disclosed at public and stakeholder meetings at the start of the planning process.

Small group meetings were held with partners such as: the City of Scottsdale (Scottsdale); the Town of Fountain Hills (Town); Arizona Game and Fish Department (AZGFD); Maricopa County Sheriff’s Office (MCSO); Maricopa County Flood Control District (FCD); Maricopa County Department of Transportation (MCDOT); and Southwest Wildlife Conservation Center (SWCC). Additionally, halfway through the planning process SWCC started meeting monthly with the Department to discuss the inclusion of a new wildlife facility/visitor center at the Park. The Department also invited the partners, as well as other agencies, to



attend group stakeholder meetings and public open house meetings to provide additional comments. Partner meetings were held at the following locations:

- McDowell Mountain Regional Park – Nature Center
 - January 4, 2018
- Cave Creek Regional Park – Visitor Center Classroom
 - April 4, 2018
 - July 11, 2018

The majority of Park land within the MMRP boundary was acquired by Maricopa County via the R&PP process and must remain consistent with R&PP requirements and land patents. As a result, the Department consulted with the BLM and received their written approval which is found at the front of the MP.

Planning staff also sought input from the adjacent Fort McDowell Yavapai Nation (Tribe) regarding this MP update. Email invitations for stakeholder meetings and public meetings were sent to the Tribe throughout the planning process.

2.5 Public Participation Program

A public participation program was designed by planning staff in order to inform the public of the planning process, identify recreational needs and resource concerns, and solicit as much public and stakeholder feedback as possible. The various components are included and detailed in Appendix A.

Arizona State University (ASU) Park Visitor Study

ASU periodically performs visitor use surveys on behalf of the Department. Visitors are asked questions by interviewers conducting in-park surveys. Visitors are also asked if they would like to participate in a longer take-home survey and provide more detailed responses to questions. This allows the Department to identify and track trends over time. Survey responses for the years 2012-2013 were taken into consideration when developing the MP.

Stakeholders

Another component of the public participation program was establishing a comprehensive list of stakeholders or special interest groups. The stakeholders group is meant to reach out to a broader audience than just the partners, and includes neighboring jurisdictions and other interested parties. The stakeholders met two times between January 2018 and May 2018 at the Rio Verde Community Center; a list of participants invited to the meetings is included in Appendix A.

- January 23, 2018 (10:30am-12:30pm)
- May 24, 2018 (1pm-3pm)



The group's comments and concerns were integrated into the planning process and assisted in the development of the recommended Park improvements. Comments received during the meetings reflected a general concern regarding a larger updated visitor center, the inclusion of SWCC, potential upgrades to Park infrastructure, and revenue generation. Briefly, those comments included:

- Develop an additional campground loop and primitive camping areas.
- Event area upgrades including competitive track expansion.
- Develop a bike skills park.
- Add a cabin rental option to capture "glamping" trends and create additional revenue streams.

Public Open House Meetings

The public was notified of the planning process and their feedback was sought through three public meetings. Additional comments were captured through surveys or comment cards, the Park website, letters or emails, verbal discussions with citizens, and through social media platforms.

Comment forms were provided at each public meeting in order to gather the public's opinions. Each meeting was followed by a thirty-day open comment period to collect the public's desires and preferences for Park improvements. Also, during the thirty-day periods, poster boards were left on display in the Park's nature center with comment forms available for Park visitors and community members to provide additional feedback.

Public Meeting One

MMRP resides in-between two major communities; both north-northeast and south of the Park. In an effort to capture feedback from both communities, public meetings were hosted on the north and south side of the Park to reduce the attendee's drive time. Presentations, information, and resources distributed at both meetings were identical.

The first of these two meetings was held on February 20, 2018 (5:30pm-7:30pm) at the Town of Fountain Hills Community Center where ten (10) people signed in, eight (8) flip pad comments and twelve (12) sticky notes were collected at the end of the meeting. The second of the two meetings was held on February 22, 2018 (5:30pm-7:30pm) at the Tonto Verde Community Center where five (5) people signed in, three (3) flip pad comments and three (3) sticky notes were collected.

Eighty-eight (88) individual responses were received during the open comment period of February 20 to March 22, 2018 via Survey Monkey (an online survey service), direct emails, and all Park social media outlets. Comments received indicate strong support for the proposed partnership with a SWCC as part of the visitor center, and strong support for additional recreation and camping opportunities, including rustic style cabins. Other respondents expressed their desire for upgraded trail/trailhead signage showing trail mileage, walking trails that are separate from biking trails, American's with Disabilities



Act (ADA) paved paths, additional educational programming, a nature play area, and a bike skills park with a flow trail.

Public Meeting Two

The second public meeting was held November 5, 2018 (5pm-7pm) at the Town of Fountain Hills Community Center where nineteen (19) people signed in. Twelve (12) comment cards were received during the meeting and are summarized below. Planning and Park staff presented the draft proposed Park improvements and answered questions throughout the presentation and afterward. Topics that were raised during verbal conversations and map mark-ups included additional competitive track loops, a bike skills park and flow trail, additional multi-use trails, and implementation of “Dark Sky” lighting principles for the Park.

One hundred sixty-six (166) individual responses were received during the open comment period of November 6 through December 6, 2018 via Survey Monkey, direct emails, and all social media outlets.

The public was asked what they liked most and what they would change from proposed amenities. Trails, again, were the subject of most comments – including a general desire for additional trail options, trail maintenance and trailhead improvements. Mountain bike trails were commonly mentioned (i.e. to install water stations throughout the Park, build a skills park, flow trail and expand the two event staging areas). Briefly, other comments received included: additional shower facilities in the tent campground area, added shade structures or ramadas to the picnic tables, updated interpretive panels on the North Trail, restoration of Pemberton Pond and Ranch house area, park wide hunting ban, and additional RV camping sites.

Project Website

Information was posted on the Park’s “Projects” webpage to keep the public and other interested parties apprised of the planning process.


- <https://www.maricopacountyparks.net/park-locator/mcdowell-mountain-regional-park/park-information/park-projects/>

Media and Social Media Coverage


A general press release was issued to announce public meeting dates at least thirty-days prior to each meeting and was made available on the County and Department websites as well as media outlets via Twitter and Facebook. These news outlets published (or posted online) the following press releases:



County news:



NEWS RELEASE:
Released: February 05, 2018
Comments Accepted Through: Thursday, March 22, 2018 at 5 p.m.
Media Contact: Devona Taylor, Public Information Officer, Office: (928) 501-9204, Cell: (602) 525-9783



McDowell Mountain Regional Park Seeks Public Input on Park's Master Plan Update

The Maricopa County Parks and Recreation Department has begun the process of updating McDowell Mountain Regional Park's Master Plan. The goal of the Park Master Plan update is to develop a long-range vision for the park that takes into account visitor needs, while also protecting the resources and natural open space found within the park.

"The Park's Master Plan was originally developed in 1967," stated Maricopa County Board of Supervisor Chairman Steve Chuen. "McDowell Mountain Regional Park is a point of pride for our county. The plan deserves a fresh look to benefit the changing community and the needs of today's park visitors."

Located four miles north of the Town of Fountain Hills, McDowell Mountain Regional Park is comprised of 21,099 acres within the lower Verde Basin, and is the third largest park in Maricopa County's regional park system.

"With over 60-miles of multi-use trails and 14-miles of competitive track, the park is recognized for its diversity of user experiences, and houses a number of large scale events," said R.J. Cardin, Maricopa County Parks and Recreation director. "In addition, the park is adjacent to Scottsdale's McDowell Sonoran Preserve, which provides users the opportunity to traverse between two great open spaces."

NEWS RELEASE:
McDowell Mountain Regional Park Seeks Public Input on Park's Master Plan Update – PAGE 2

"Given the parks proximity to neighboring communities, diverse use, and collaborative partnerships, we will be hosting an array of meetings to ensure that we capture feedback from as many user groups as possible as we move through the process," added Cardin.

At this time, the department would like to invite the public to attend an open house style public meeting for the project. To accommodate local residents to the north and south side of the park, two identical meetings have been scheduled. Residents may choose to attend either meeting:

- Tuesday, February 20 from 5:30 pm to 7:30 pm at the Fountain Hills Community Center located south of the park at 13001 N. La Montana Dr., Fountain Hills.
- Thursday, February 22 from 5:30 pm to 7:30 pm at the Toano Verde Community Center located north of the park at 18401 El Cerebro Drive, Rio Verde.

Once both public meetings have concluded, presentation materials will be posted on the park's website at <https://www.maricopacountyparks.net/park-locator/mcdowell-mountain-regional-park/park-information/park-projects/>, and the public comment period will begin. Feedback will be collected via a survey link on the page. Public comments will be accepted through the close of business on Thursday, March 22.

For additional assistance, contact the department's parks and open space planner, Lauren Bromley, at (928) 501-9207 or LaurenBromley@maricopa.gov. The department anticipates the whole process to update McDowell Mountain Regional Park's Master Plan take approximately 18 months. To learn more about Maricopa County's regional park system, visit www.maricopacountyparks.net.

30






Figure 2-1: News Release February 5, 2018

Facebook¹ and Twitter² were also utilized as reminders for the public open house meeting dates. Comments were also retrieved from these social media sources during the open comment periods to the extent possible and considered with all other comments.




McDowell Mountain Regional Park shared a link. February 5



MARICOPACOUNTYPARKS.NET
McDowell Mountain Regional Park Seeks Public Input on Parks Master Plan Update - McDowell Mountain Regional...

29 1 Comment 6 Shares



Maricopa County Park @MCParks Feb 5
McDowell Mountain Regional Park Seeks Public Input on Parks Master Plan Update - McDowell Mountain Regional...
fb.me/2uO5IVDLg

Figure 2-2: Facebook post, February 5, 2018

¹ McDowell's Facebook page: <https://www.facebook.com/McDowellMtnPark>

² MCRPD Twitter page: <https://twitter.com/mcpcparks>



The County newsletter delivery system, GovDelivery or GovDocs, was also utilized to distribute newsletters/bulletins and updates to its email-based subscribers. Interested parties were encouraged to register for the subscription service in order to receive updates or other notifications related to the Park. The GovDelivery system offers analytics that can be used to test the system’s effectiveness, whereas other platforms may not (Table 2-1).



Figure 2-3: Facebook post, October 10, 2018

Table 2-1: Delivery and View Rates of GovDelivery system			
Date Sent	Recipients	Delivery Rate	Total Opens
February 12, 2018	1,472	98.8%	252
October 15, 2018	5,029	99%	954

2.6 Planning Constraints

Factors that affected the planning process included existing conditions, trends, and other issues both inside and outside of the Park. The Park is facing a variety of challenges from aging facilities and infrastructure, changing demographics, and changing recreational use activities and patterns (for example, the shift away from picnicking towards increased trail uses as the primary activity). MMRP also faces pressures from adjacent land use and development; this includes newer residential developers that are required by the Town of Fountain Hills planning code or ordinance to include neighborhood parks, trails, and/or open space into their development. The inclusion of outdoor recreational spaces in neighborhoods provides its residents with new options for how they recreate that were not available to them previously. These topics are presented in Chapter 3.

The diverse planning issues identified during scoping for the project were discussed by the planning team and can be grouped into five major categories: develop new facilities; maintain/rehabilitate existing facilities; education/interpretation; administrative; and resource protection.



Additionally, tight budgets and staffing are the typical constraints when addressing planned improvements. Improvement priorities and desires for immediate improvements need to be balanced with “fiscal responsibility.” Budgets and staffing will impact all areas of the Park and are always of concern. The budget will dictate the number of staff employed at the Park and the number of Park improvement projects that can be successfully completed.

The Park improvement recommendations, as detailed in Chapter 7, will address these concerns while supporting the Park’s priority mandates and themes.



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Chapter 3 – Resource Analysis

The resource analysis for the MP includes natural, historical, and cultural resources that could be affected by any additional development and operation of the Park. Limited inventory of Park resources occurred from March 2018 through October 2018. Data collection included reviewing previous reports and documents pertaining to the Park and resources in the area, aerial photo interpretation, GIS analysis, agency contacts, and field investigations.

The Park consists of 21,099 acres, of which approximately 293 acres are developed. This amounts to less than 1.4% of the total acreage that is developed. The 2009 Strategic System Master Plan¹ (SSMP) provides a guideline for keeping developed areas to 10% or less of the total land area.

3.1 General Project Setting

At just over 21,099 acres, MMRP is the third largest regional park in Maricopa County to date, and is located within Sections 1 - 36 of Township 04 North, Range 06 East. The Park is located northeast of the Phoenix metropolitan area as shown on Figure 3-1.

The Park's mailing address is 16300 McDowell Mountain Park Drive, MMRP, AZ 85268. The Park may be contacted by telephone (602) 506-2930 or via email at maricopacountyparks@mail.maricopa.gov. Although subject to change, the current Park operating hours² are:

Park Hours

Sun-Thu: 6:00am – 8:00pm

Fri-Sat: 6:00am – 10:00pm

365 days a year

Nature Center Hours

Summer (May 7th –October 8th)

Mon-Sat: 8:00am – 3:00pm

Sundays: Closed

Winter (October 9th - May 6th)

Sunday thru Saturday: 8am – 4pm

¹ Maricopa County Parks and Recreation, 2009 Strategic System Master Plan, p112.

² Source: Park website as of January 28, 2019. Check website for the most current information.

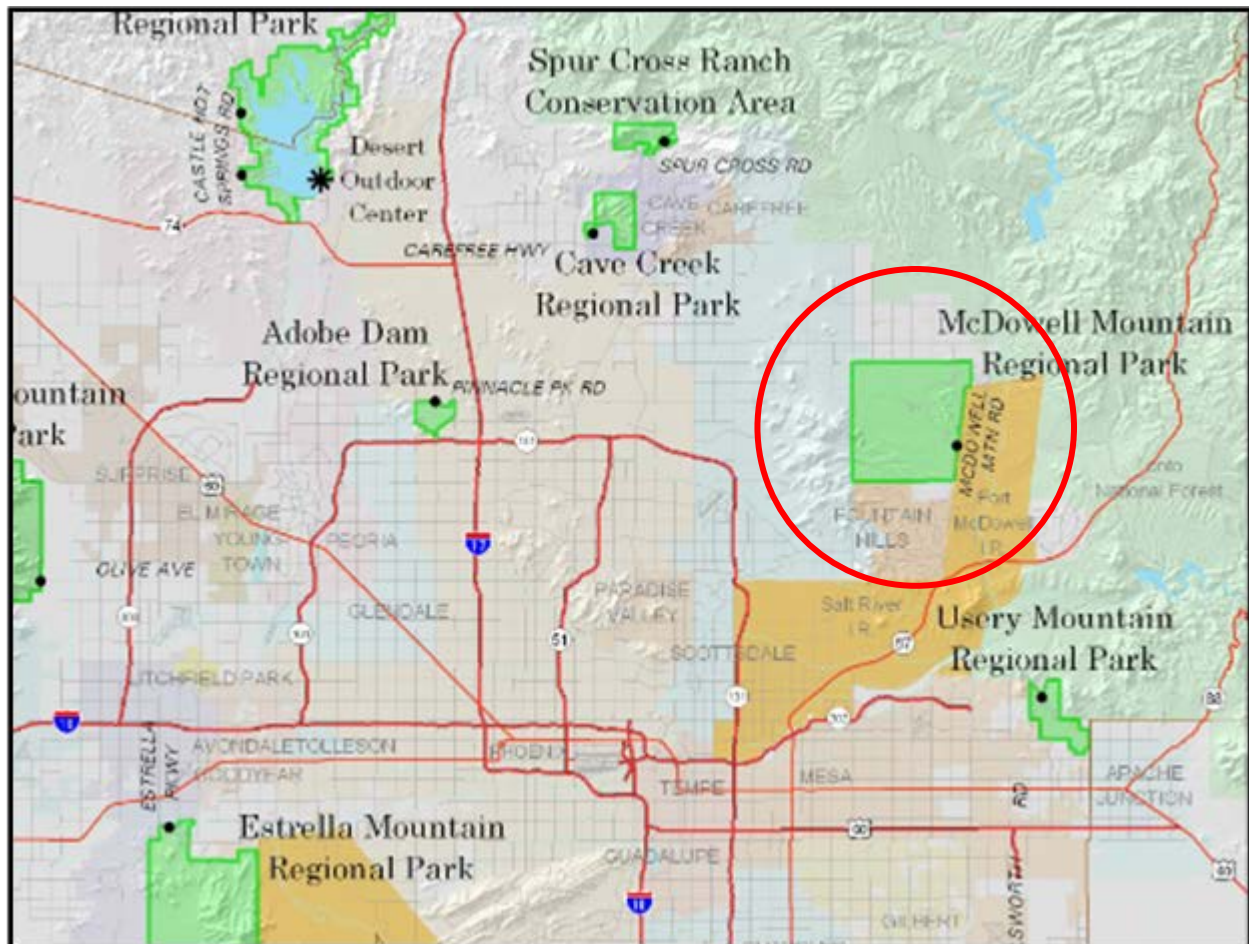


Figure 3-1: McDowell Mountain Regional Park

3.2 History of Area³

Prior to the year 1821, when Mexico broke from Spain, indigenous peoples occasionally encountered Roman Catholic missionaries who attempted to convert them and introduced new crops and technologies; however these indigenous peoples were largely left alone. The Treaty of Guadalupe Hidalgo was signed in 1848, ending the war with Mexico. With this treaty, all lands north of the Gila River were part of the United States territory and all lands south of the Gila River remained with Mexico. Later, through the Gadsden Purchase (1853-1854), the border between the United States and Mexico was moved south to its present day location, placing the land that is now MMRP within the New Mexico territory of the United States.

In 1861, as the nation was embroiled in the Civil War, Colonel John R. Baylor of Texas took official possession of the “Territory of Arizona” for the Confederacy – an area that included all of present day Arizona south of the 34th parallel. This action put the Park under the Confederate flag by signature of then Confederate President Jefferson Davis in 1862. In 1863, President Abraham Lincoln signed a bill creating the new Territory of Arizona; the

³ A Historical Survey of McDowell Mountain Regional Park, 1963, Fireman, Bert.



legislation remained law at the end of the war and effectively divided the New Mexico and Arizona territories at their current boundaries.

Fort McDowell and the surrounding area was indirectly established by a series of events, which occurred around 1863. A citizen army led by King S. Woolsey was established in order to chase down and punish a band of Tonto Apaches who had stolen cattle and horses south of Prescott, Arizona. Woolsey and his men marched south down the Hassayampa River and east past the Agua Fria River, continuing on towards the Verde Valley. This citizen army crossed what is now MMRP and made a temporary camp at the site that would later become Camp McDowell eighteen (18) months later. The trail these men blazed would eventually become a secondary supply route known as Stoneman Trail connecting Camp McDowell with Fort Whipple near Prescott.

Camp McDowell (later changed to Fort McDowell) (Figure 3-2) was established in 1865 in order to provide military protection to miners and homesteaders from raiding tribes in the region. It was about this same time that the United States government created the reservation system for American Indians. By the late 1880s, the Tonto Apache raids had ceased. As the outpost was no longer needed for settler protection, troops withdrew from Fort McDowell and the outpost was abandoned by 1890. The area that previously was occupied by the Fort McDowell, as well as additional acreage to the south, was designated as reservation lands for the Fort McDowell Yavapai Nation in 1903.

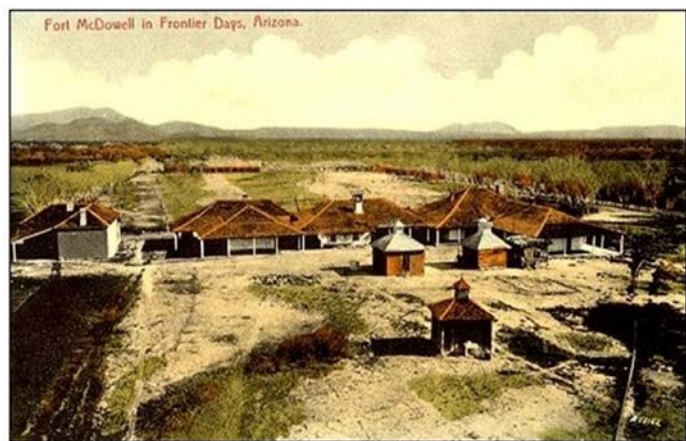


Figure 3-2: Fort McDowell in Frontier Days, Arizona

Homesteading, Ranching and Herding

Cattle roamed the lands in and around MMRP as early as the 1870s. It wasn't until after the establishment of Fort McDowell, that livestock raising gained a foothold in the region. With the continual presence of the military and a steady demand for beef, stock raising became a viable source of income for the area. A few homesteads were located within proximity of the perimeter of the Park. The most notable homesteaders included Clayton Whitehead, Glenn Moor, and Henry Pemberton.

The earliest documented reference to any type of permanent residence in the area was a quit-claim deed dated 1917 for a water source known as Cottonwood Springs. It is thought that this is likely when Henry Pemberton homesteaded his ranch (Pemberton Ranch) on land that is now incorporated into the Park. Several years later, Pemberton Ranch was renamed P-Bar Ranch and in 1935 it was purchased by Lee Barkdoll and Delsie Journigan. From 1935 to the 1950s, the P-Bar Ranch was a viable ranch consisting of over 25,000 acres, 165 head of cattle, and nearly a dozen mining claims in the Dixie Mining District. By



the early 1950s beef prices started to fall. In 1954, Delsie decided to sell P-Bar ranch, which had several other owners before eventually being incorporated into MMRP.

Mining Claims and Mineral Rights

The McDowell Mountain Range lured prospectors in search of mineral wealth, but did not produce anything of significance. The 1963 Fireman Survey of McDowell as well as the original 1967 MP states that no historical records were found for the Dixie Mine in the archives for the Arizona Mining Districts by the United States Bureau of Mines (abolished in 1996 and absorbed into the BLM). Several older reports state that geologists give no credence to mineral wealth in this area and, likewise, archaeologist testimony does not support metalworking by native peoples living nearby.

3.2.1 Historical Resources

The Park has a long and rich history of human exploration with cultural and historical remnants found throughout the Park in the form of petroglyphs, artifacts, cattle tanks and range features, as well as the Dixie Mine.

Stoneman Road

A trail now known as Stoneman Road/Trail was utilized as a military shipping and supply route extending through the Park from Fort Whipple in Prescott, Arizona to Fort McDowell near present-day Fountain Hills between 1870 and 1890. The Stoneman Road bisects the MMRP from northwest to the southeast and has been recognized by the State Historic Preservation Office (SHPO) as the 'Historic Stoneman Trail' (I-2733.SHPO). The National Society - Daughters of the American Revolution (DAR) (Grand Canyon Chapter) first commemorated the Stoneman Trail Military Route (Stoneman Road) on October 25, 1997.

The route is considered a 'Ghost Trail' due to the minimal traces left. Stoneman Road was named after General George Stoneman (Figure 3-3), who on October 1, 1870, took a small band of military troops to scout a route that would be suitable as a wagon-bearing military road connecting Camp McDowell northwest to Cave Creek, Black Canyon, and Fort Whipple in Prescott, Arizona. The road that General Stoneman created later became an important supply and courier route between Camp McDowell and Fort Whipple. (Figure 3.4). By April 1890, Fort McDowell was vacated by the U.S. Military. The U.S. Government established the Fort McDowell Indian Reservation by 1903, now known as Fort McDowell Yavapai Nation⁴.



Figure 3-3: General George Stoneman

⁴ Exploring the Stoneman Road, October 1870 – October 2010. Civil War Roundtable – Scottsdale Chapter, Daughters of the American Revolution, MMRP, Sonoran Conservancy, Scottsdale Historic Preservation Commission, and the Scottsdale Historical Society.

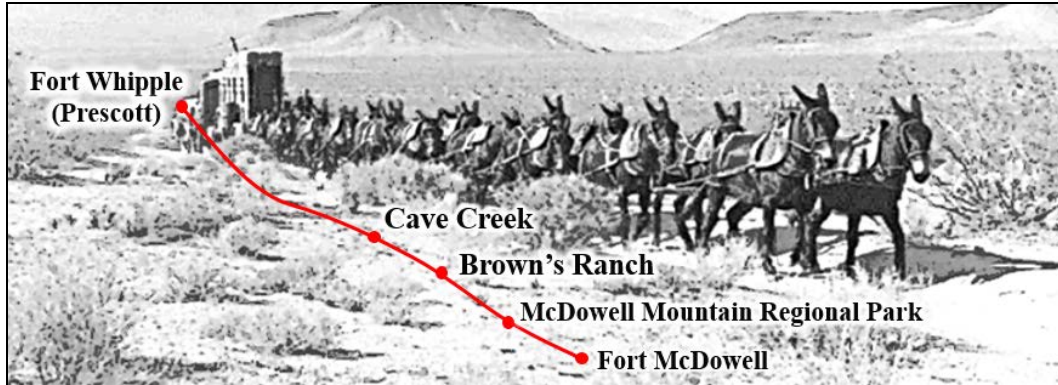


Figure 3-4: Stoneman Road

Pemberton Ranch⁵

The first homestead in the area within the current Park boundary was filed under the Stock raising Homestead Act by Clayton Whitehead on all of Section 22, T2N, R6E, sometime between 1919 and 1922. This claim was relinquished in 1926, however according to the State Land Department, records also show a homesteader filed under the name Pemberton on the SW1/4, of the SW ¼ of the same section⁶. The Ranch changed hands in the early 1920s to “Pink” Cole who passed the ranch on to his son Bill Cole in 1926. It was at this time that the ranch name changed from Pemberton to “P-“(P Bar) ‘P’ presumably for ‘Pemberton’. The Ranch changed hands several more times and was sub-divided. The northern portion of the ranch which includes the original Pemberton Homestead became part of MMRP in 1964. Remnants of the Pemberton Ranch (Figure 3-5) can be found approximately one mile south along the Pemberton Trail. Pemberton Ranch is listed on SHPOs National Register of Historic Places as (AZ U: 6323).



Figure 3-5: Pemberton (P-Bar) Ranch (Above)

⁵ ‘P-Bar’ Ranch Photo Album, Fountain Hills and Lower Verde Valley ‘River of Time’ Museum. Lower Verde Valley Historical Society. May 2003

⁶ A Historical Survey of McDowell Mountain Regional Park, Maricopa County Parks and Recreation Department, Arizona Historical Foundation, July 1963.



Dixie Mine (Figure 3-6)

Originally known as the Red Mountain Mine, the Dixie Mine (located near the southwest corner of MMRP) had a small start as a copper mine; however, the mine never grew large enough to warrant recording on a list of Arizona Mining districts by the U.S. Bureau of Mines. Two (2) clay deposit mining claims were registered in 1961 as Tiger Enterprises within Section 16 and 22 of T4N, R6E.

MMRP has a long history of use by both Native American and Euromerican peoples. Figure 3-7 depicts some of the known historical features of the Park.

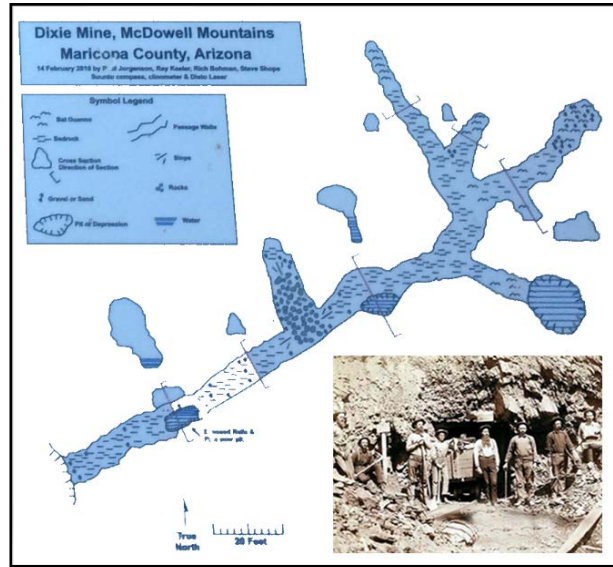


Figure 3-6: Dixie Mine

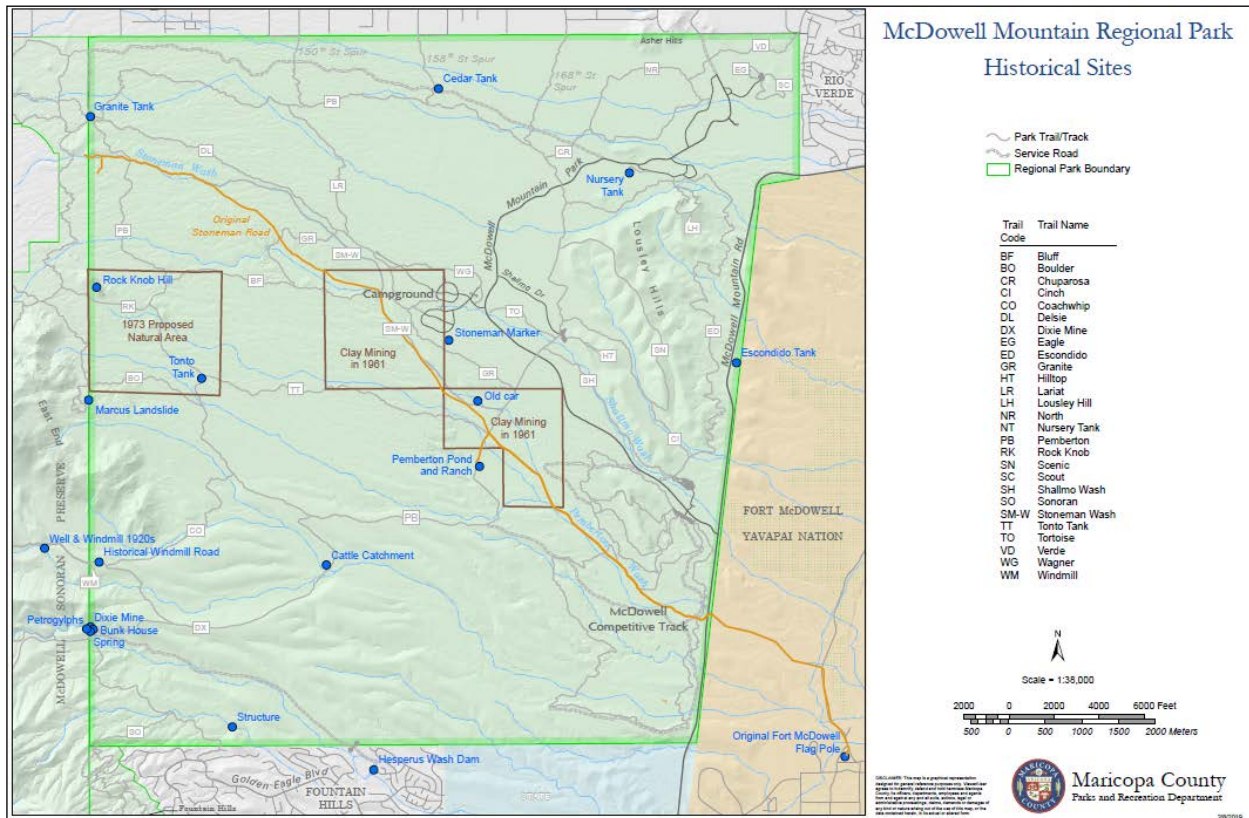


Figure 3-7: Historical Sites



3.3 Cultural Resources

This section offers a brief history of the Park and surrounding area, but by no means, is a complete historical record. The historical names and/or events mentioned in this section may bring context to Park-related naming conventions. While a comprehensive archeological inventory has not been completed on the entire Park, project or site specific surveys have been completed and a number of records are available. These inventories are kept on file at the Park or Department offices. However, due to the sensitive nature of archaeological sites and the need to protect these cultural assets, these reports are not available to the general public.

Historical information contained in this section came from various cultural resource survey's performed in the Park as well as the 1963 Archaeological Resource report for five (5) regional Parks (including MMRP).

3.3.1 Pre-History of Area⁷

Cultural remains may be encountered throughout the Park that may represent the remnants of the prehistoric archaeological culture called Hohokam. However, because of the complex geomorphological conditions in the Park, it is possible for discoveries dating to the earlier Paleoindian and Archaic cultures to be found. Further, the Park is adjacent to the Fort McDowell Yavapai Nation lands, consequently evidence of the Apache and Yavapai use of the area may also be present.

Water was/is a critical element to those who live in this desert region. Unsurprisingly, the Hohokam relied heavily on irrigation for its agriculture in order to produce food and trade goods. Traces of irrigation canals have been found along the Rio Verde River. For unknown reasons, the Hohokam society declined rapidly in the early fifteenth century (1450 A.D.) leaving many of the agricultural centers abandoned.

The Park contains a number of recorded archeological sites predominantly found along major arroyos within the Park Boundaries. Among them, one (AZ: U: 5:10) is thought to be a former Hohokam village with three (3) or four (4) rooms. Additional sites within the Park include prehistoric Hohokam agricultural sites, and geometric and zoomorphic petroglyphs throughout the Park (Figure 3-8). Archaeological sites within the boundaries of the Park include both sherd and small villages. Remnants of pottery sherds possibly represent temporary camps of people participating in hunting and gathering activities, while the villages indicate at least seasonal use of the area for wild plant crop harvesting.

⁷ McDowell Master Development Plan, 1963, Scott, William T.



Figure 3-8: Petroglyphs in McDowell

Petroglyphs are found in many places throughout the Park. Petroglyphs are renderings left behind on rock(s) by ancient peoples. The rocks are covered by a paper-thin coating of dark “desert varnish” or patina⁸ on exposed rocks and boulders. This varnish is what allowed native peoples to leave their etching messages behind. The Park’s Interpretive Ranger occasionally leads educational hikes to some petroglyphs located closer to the MMRP Nature Center and front-country areas. Staff and the Arizona Site Stewards monitor culturally sensitive sites.

3.4 Native American Consultations

Planning staff sought input from potentially interested American Indian communities regarding this MP update. The Fort McDowell Yavapai Nation shares a boundary with the Park and was invited to participate as a stakeholder in the planning process. Invitations to public meetings were also sent out to all of the partners and stakeholders associated with the planning effort. Several representatives from the Fort McDowell Yavapai Nation were present at the stakeholder meetings that were held in January and May of 2018.

Additionally, in order to assist in assessing the cultural significance of or actions needed to protect any significant resources, future MP updates and efforts should go through consultation with representatives of American Indian Communities claiming cultural affiliation to the area.

⁸ Desert Soils, Joseph R. McAuliffe, http://www.desertmuseum.org/books/nhsd_desert_soils.php as accessed April 18, 2012.



3.4.1 Findings

Cultural resource records were reviewed in order to document the extent of previous archaeological surveys within the Park. Several previously recorded archaeological and historical sites had been identified by those surveys. These studies were undertaken in support of a variety of projects such as hiking trail construction, campgrounds, and roadwork near the Park. No new field surveys were undertaken for this plan update. One (1) site within the Park has been listed on the National Register of Historic Places and is identified as Pemberton Ranch (AZ U: 6323). Though unmarked, the Stoneman Trail used by the military between 1870 and 1890 has been recognized by SHPO as the Historic Stoneman Trail (I-2733. SHPO).

Research identified a number of recorded archeological sites. Among them, one (AZ: U: 5:10) is thought to be a former Hohokam village with three (3) or four (4) rooms. Additional sites within the Park include prehistoric Hohokam agricultural sites, geometric and zoomorphic petroglyphs, and the Dixie Mine.

A cultural resource management program should be established to track and monitor known sites. A full cultural resource survey or investigation and SHPO consultation is recommended prior to any new construction or trail project on previously undisturbed ground.

3.5 Natural Resources

Hunting

As per the Arizona Game and Fish Department's (AZGFD) regulations, the Park is currently open for archery-only and some small game (shotgun with birdshot only) during specified hunting seasons. The AZGFD's commission rule states "it is not permitted to hunt within a quarter mile of any: developed picnic area and campground; shooting range; occupied building; boat ramp; golf course; recreational areas developed for public use; and to shoot from, on, or across a roadway or to trespass on private property⁹." Individuals hunting must declare their intent to a Park entry station attendant or other employee, upon entering the Park. Hunting is discussed further in 3.9.3 Hunting.

Non-Attainment or Maintenance Areas¹⁰

Maricopa County's Air Quality Department (MCAQD) is tasked with protecting the public from airborne particulate matter and with complying with federal, state, and local air quality regulations. Nearly the entire Phoenix metropolitan area falls within the non-attainment area. The following designations remain in effect until the United States Environmental Protection Agency (EPA) determines otherwise:

⁹ https://s3.amazonaws.com/azgfd-portal-wordpress/azgfd.wp/wp-content/uploads/2018/04/24093438/2018-19-AZ-Hunt-Regulations_WEB.pdf

¹⁰ Maricopa County Air Quality Department, Planning Area Maps, <https://www.maricopa.gov/2686/Planning-Area-Maps> as accessed on October 3, 2018.



Particulate Matter

Inhalable coarse particulate matter¹¹ is sized at either 2.5 (PM_{2.5}) or 10 (PM₁₀) micrometers in diameter as defined by the Environmental Protection Agency (EPA). The Park is entirely within the PM₁₀ Non-attainment Area, and subject to dust-control measures. PM₁₀ includes dust, soot, and other tiny bits of solid materials that are released into and move around in the air (either from natural or anthropogenic sources). County inspection reports are kept on file in the Park office.

Ozone

The Park is included within the 8-hour Ozone Nonattainment Area boundaries. At ground level, ozone aids in creating smog and is formed by the reaction of VOCs¹² (for example, photochemical smog) and NO_x¹³ (a reaction of nitrogen and oxygen gases in the air, particularly from motor vehicles) in the presence of heat and sunlight.

Carbon Monoxide Maintenance Area

The Park is located entirely within the Carbon Monoxide (CO) Maintenance Area. The Maricopa County Air Quality Department (MCAQD) explains that the area previously designated by the EPA has exceeded acceptable national standards for CO pollution levels. The EPA re-designated this area in attainment of the national CO standards in 2005, thus declaring the area a maintenance area as opposed to a nonattainment area. CO is an odorless, colorless gas that forms when the carbon in fuels does not completely burn. Vehicle exhaust contributes to roughly 60 percent (60%) of all CO emissions nationwide, and up to 95 percent (95%) in cities⁸. Other sources include fuel combustion in industrial processes and natural sources such as wildfires.

Fire Bans

At times it is necessary to implement a ban on all fires (such as campfires, fire pits, and charcoal grills) throughout the entire Park in order to ensure public safety and protect resources during dry periods or windy days. A typical fire ban may be in effect from May 1 through September 30 each year. A violation of Park Rule R-113¹⁴ may result in a citation and Park eviction. Gas and propane use is usually acceptable in designated areas, except during extreme fire bans. Lifting the fire ban is dependent on regional temperatures and the amount of seasonal monsoon rainfall the Park receives and is announced by the Department.

¹¹ EPA, Particulate Matter (PM 10) Information, <https://www.epa.gov/green-book> as accessed September 13, 2018.

¹² Volatile organic compounds (VOCs) are [organic chemicals](#) that have a high [vapor pressure](#) at ordinary, [room-temperature](#) conditions. Their high vapor pressure results from a low boiling point, which causes large numbers of molecules to [evaporate](#) or [sublimate](#) from the liquid or solid form of the compound and enter the surrounding air.

¹³ NO_x is a generic term for mono-nitrogen oxides NO and NO₂ ([nitric oxide](#) and [nitrogen dioxide](#)). They are produced from the reaction of [nitrogen](#) and [oxygen](#) gases in the air during [combustion](#), especially at high temperatures. In areas of high motor vehicle traffic, such as in large cities, the amount of nitrogen oxides emitted into the atmosphere as [air pollution](#) can be significant.

¹⁴ Maricopa County Parks and Recreation, Park Rules, Adopted August 13, 2003 by Maricopa County Board of Supervisors. <https://www.maricopacountyParks.net/Park-locator/mcdowell-mountain-regional-Park/Park-information/Park-rules-and-hours-of-operation/> as accessed September 4, 2018.



A burn permit is not needed from MCAQD for the following activities:¹⁵

- Cooking for immediate human consumption (Regulation III, Rule 314, Section 303.1.a)
- Warmth for human beings (Regulation III, Rule 314, 303.3a, unless under a fire ban)
- Recreational purposes where the burning material is clean, dry wood or charcoal (Regulation III, Rule 314, 303.3b, unless under a fire ban)

However, it should be noted that while a permit may not be needed for these activities, they may be prohibited while under a fire ban.

3.6 Physiography and Climate

This section reviews the physiographic properties of the Park and describes typical climatic conditions and other natural surroundings.

3.6.1 Physiography

MMRP is within the northern edge of the Arizona section of the Cenozoic Basin and Range province of the Southwest United States. An abrupt change in elevation, alternating between narrow faulted mountain chains and flat arid valleys or basins, is typical here. The development of the province is the result of crustal extension that began in the Early Miocene era. As these geologic blocks tilted, sediments from erosion filled the valleys between them, creating the basins.

The Park itself is situated in the lower Verde River basin. As a free-standing mountain range, the McDowell Mountain Range extends approximately ten (10) miles in a northwest to southeast direction and is about five (5) miles wide. The Park is protected by approximately 17,000 acres of the McDowell Sonoran Preserve to the west and the Fort McDowell Yavapai Nation to the southeast. The mountain range features a handful of peaks over 3,000 feet. The two most notable peaks near the center of the range are: McDowell Peak and Thompson Peak, both exceeding 3,900 feet in elevation. Additionally, a highly recognizable feature of the McDowell Mountain Range is Tom's Thumb. This prominent topographic feature located towards the north end of the range is a Mesoproterozoic granite body jutting out of the ridgeline at an elevation of over 3,500 feet.

The Park is located within the Sonoran Desert, one of four deserts in North America, and is the dominate feature of Basin and Range Province. The Sonoran Desert is the most biologically diverse desert in the world and covers approximately 100,000 square miles of the Southwest United States, extending into Mexico. This desert region is one of the hottest deserts in the United States although winter temperatures can sometimes reach freezing. Winter and summer monsoon storms provide much needed water to the rich and diverse

¹⁵ Maricopa County Air Quality Department, Regulation III - Control of Air Contaminants, Rule 314 Open Outdoor Fires and Indoor Fireplaces at Commercial and Institutional Establishments. <https://www.maricopa.gov/DocumentCenter/View/5200/Rule-314---Open-Outdoor-Fires-and-Indoor-Fireplaces-at-Commercial-and-Institutional-Establishments?bidId=> as accessed October 3, 2018.



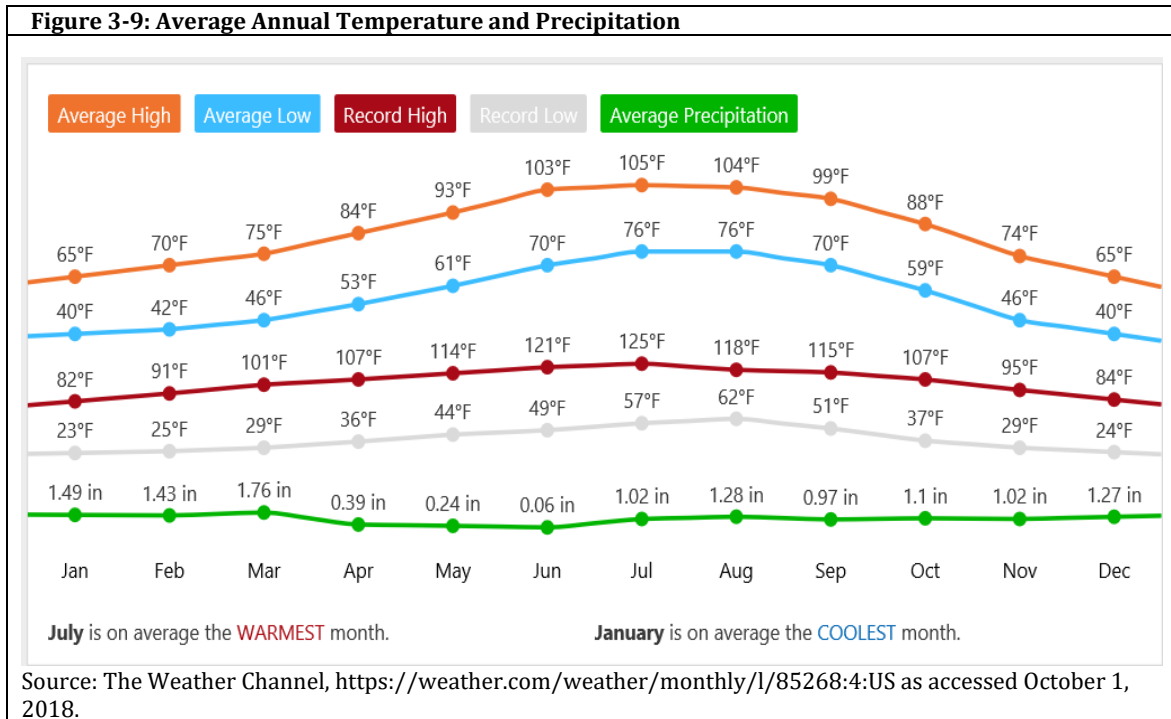
desert life. The winter storms, when they produce enough precipitation, result in an abundant spring flowering season.

3.6.2 Climate

The warmest months are June through August when the average temperature can reach over 100°F and Park activity slows down. Cooler months, November through March, provide visitors with an opportunity to enjoy the scenic beauty without the heat.

Monsoon thunderstorms are also experienced throughout the Phoenix metropolitan area (due to seasonal wind shifts and daytime heating¹⁶) generally in the months of July through September and may produce heavy rain and/or humidity. Occasional wind or dust storms may be experienced as well. On the highest mountain peaks, temperatures can be 8-12 degrees cooler than in the valley. Snow may be seen at least once or twice a year on the highest points of the McDowell Mountain Range typically above 4,000 feet and occasionally near 2,000 feet (AMSL).

Annual rainfall is scant, and largely limited to the winter and late summer seasons (Figure 3-9). Light winter rains produce grasses, forage plants, green up the cacti and ocotillo; and when plentiful, lead to an abundant wildflower season. Summer rain, largely the product of thunderstorms, is frequently torrential.



¹⁶ ASU, School of Geographical Sciences & Urban Planning, Basics of the Arizona Monsoon & Desert Meteorology, <https://sgsup.asu.edu/basics-arizona-monsoon-desert-meteorology> as accessed October 3, 2018.



3.7 Water Resources

The water resources section describes surface and groundwater resources within the Park. The United States Congress established the U.S. Reclamation Services, later the Bureau of Reclamation (Reclamation), in 1902 and by 1903 they had authorized the Roosevelt Dam project on the Salt River. This accelerated growth of the south-central Arizona desert region. Construction of the Roosevelt Dam was completed in 1911, with the construction of several more dams completed by 1920. Near the beginning of 1922, the Phoenix Metropolitan area began withdrawing higher quality groundwater from the Lower Verde River Valley to supplement the supply from the Salt River. Since the initial withdraws in 1922, water resources from the underground aquifer have been continually withdrawn from the Rio Verde floodplain aquifer. However, the majority of the water losses from the basin are due to agricultural diversions via the Fort McDowell Yavapai Nation and nearby groundwater withdrawals. It wasn't until the completion of Bartlett Dam in 1939 that additional surface water resources were utilized in conjunction with stored underground water sources. The completion of Bartlett Dam and Horseshoe Dam to the north, allowed for the storage of flood-waters and controlled releases of water for irrigation.¹⁷

3.7.1 Surface Water Hydrology

Principle perennial streams within the Phoenix Active Management Area (AMA) include the Rio Verde River, Gila River, and the Salt River. However, the Verde River is the only perennial stream throughout the AMA¹⁸. The Rio Verde River flows north to south and is located approximately 1.5 miles east of MMRP. The Park itself is situated within the Lower Verde River Valley basin. While the Park does not have perennial or intermittent streams, it does have a number of natural, ephemeral and mostly unnamed washes, and five (5) major watersheds that distribute storm water runoff throughout the Park. These major washes fall under the United States Environmental Protection Agency's 1986/1988 Regulatory definition of "Waters of the United States" Section 404 Clean Water Act and are identified in (Figure 3-10).

¹⁷ Subsurface Geologic Investigation of Fountain Hills and the Lower Verde River Valley, Maricopa County, Arizona. <http://repository.azgs.az.gov/sites/default/files/dlio/files/2010/u15/CR-03-B.pdf> as accessed October 8, 2018.

¹⁸ Arizona Department of Water Resources, <http://www.azwater.gov/> as accessed October 8, 2018.

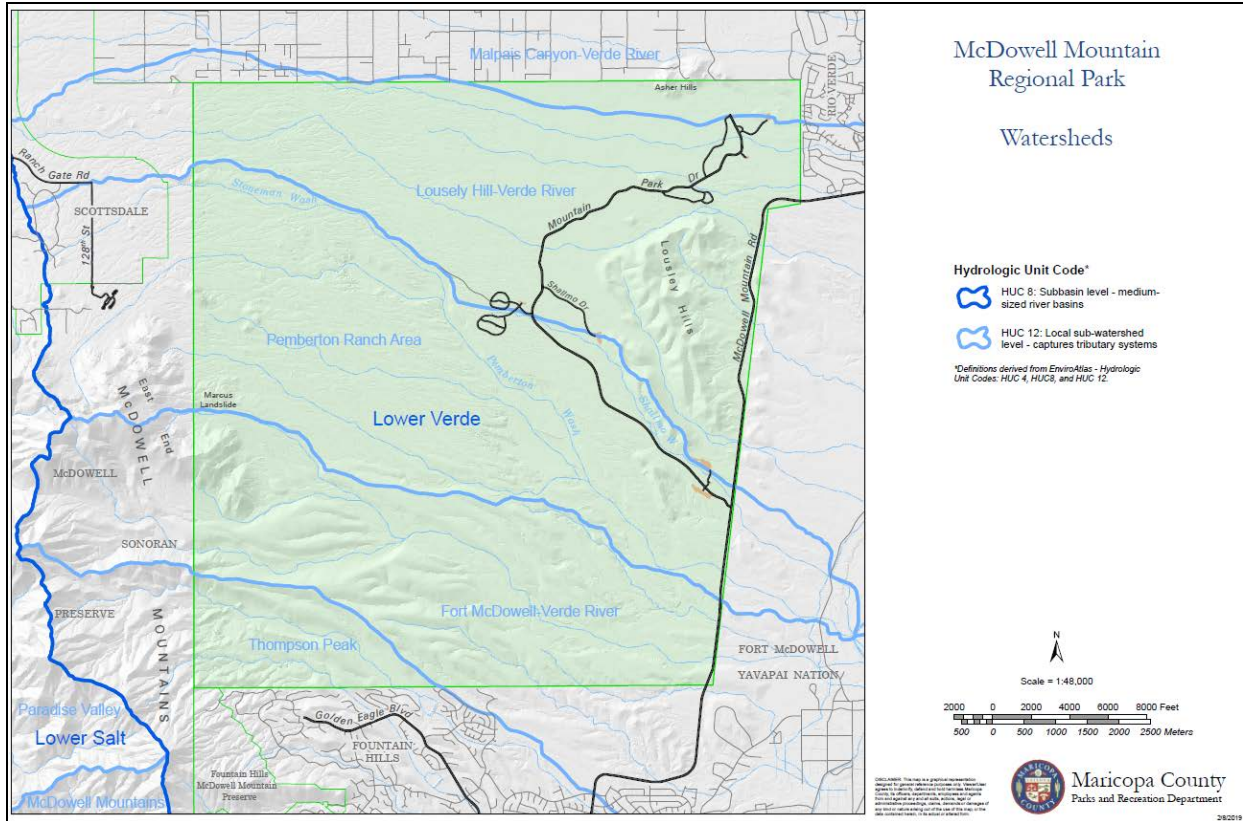


Figure 3-10: Major washes (Section 404) (light blue lines)¹⁹

The Park’s northern most boundary falls within a regulatory floodway and floodplain of the Rio Verde River area (Figure 3-11). The majority of the Park is not located within a major floodway or floodplain.

¹⁹ National Watershed Boundary Dataset (WBD), obtained October 9, 2018. For more information on the WBD, see <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/water/watersheds/>

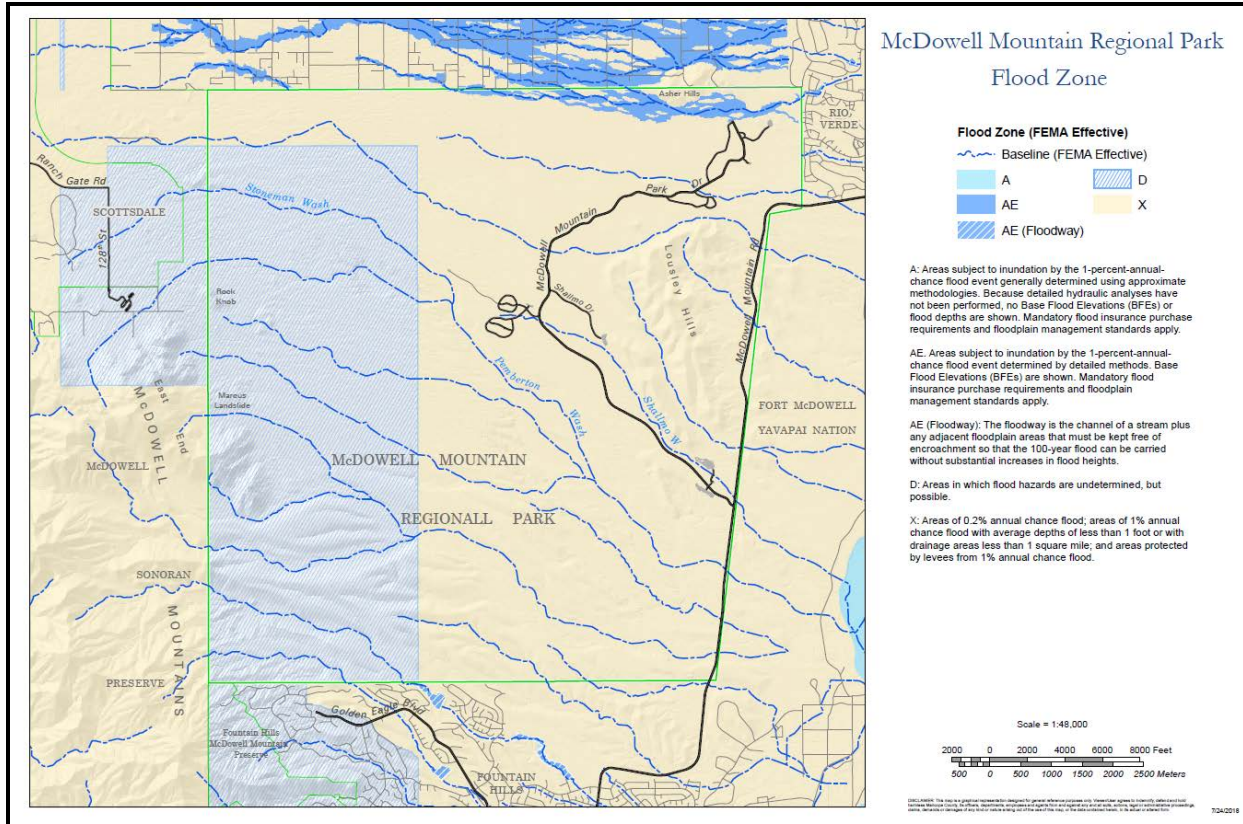


Figure 3-11: Floodway and Floodplain

The Maricopa County Flood Control Department (FCD) monitors precipitation and provides flood alerts through the following monitoring stations (Table 3-1):

Table 3-1: Stream Flow Monitoring			
Station ID	Station Name	Station Type	Install Date
9510000	Rio Verde River below Bartlett Dam	Stream Flow	10/1944
9511300	Rio Verde River near Scottsdale	Stream Flow	3/1961
Flood Alert System			
5900	Asher Hills	Precipitation	8/2/1990
5915	McDowell Mountain Park	Precipitation	8/6/1990
5920	McDowell Mountain Road	Precip/Stage	5/18/204
5978	Golden Eagle Blvd	Precipitation	2/12/1997
5990	Hesperus Dam	Precip/Stage	12/18/1996
5995	Hesperus Wash	Precipitation	3/10/997
Source: Arizona Water Atlas Volume 8 Phoenix Active Management Area (AMA)			



3.7.2 Groundwater Resources

MMRP resides in the AMA²⁰ groundwater basin; these are areas that rely heavily on mined groundwater and require additional withdrawal rate management. According to ADWR there are currently three (3) registered wells (55-614022, 55-623551, and 55-623552) at the Park; however, these wells are not currently active.

3.8 Earth Resources

The Park is located within the Basin and Range Province of the Desert Southwest, as is much of Arizona. Basin and Range is a result of tectonic forces and volcanism over millions of years.²¹ The McDowell Mountain Range (McDowell's) trends in a southeast direction near the southern end and a north-northwest direction towards the northern end of the range. Comparatively, the McDowell's are a relatively low elevation desert mountain range rising abruptly from the surround desert floor from approximately 2,000 feet (AMSL) to a maximum elevation of 4,116 feet (AMSL) Elevations within the range vary widely, with relatively flat areas in the central part of the range to prominent cliffs near the northern part of the range.

3.8.1 Geology

The rock types found are mostly conglomerate and gravel with some areas of sand, granite, and phyllite (Figure 3-12). Conglomerate is a coarse-grained sedimentary rock composed of rounded fragments less than 2mm within a matrix of finer grained material, gravel is a loose aggregation of small water-worn or pounded stones. Sandstone is sedimentary rock composed of mainly sand sized (0.625 to 2mm) grains of mineral particles or rock fragments. Granite is igneous rock that is coarse-grained in texture with some quartz and feldspar. Phyllite differs in that it is foliated metamorphic rock composed mainly of flake-shaped mica minerals that are strongly parallel allowing the rock to be split into sheets (usually gray black or greenish in color). For a full list of rock types and detailed description of locations of occurrence, as compiled by Arizona Geological Survey²² (AZGS) Map Services, see Appendix D.

²⁰ Arizona Department of Water Resources, <http://www.azwater.gov/> as accessed October 3, 2018.

²¹ Structural Evolution of the McDowell Mountains, Brad Vance https://repository.asu.edu/attachments/97688/content//tmp/package-8bTpta/Vance_asu_0010N_12324.pdf as accessed September 14, 2018.

²² The Arizona Geological Survey, AZGS Map Services Geologic Map of Arizona, http://www.azgs.az.gov/services_azgeomap.shtml as accessed August 10, 2018.

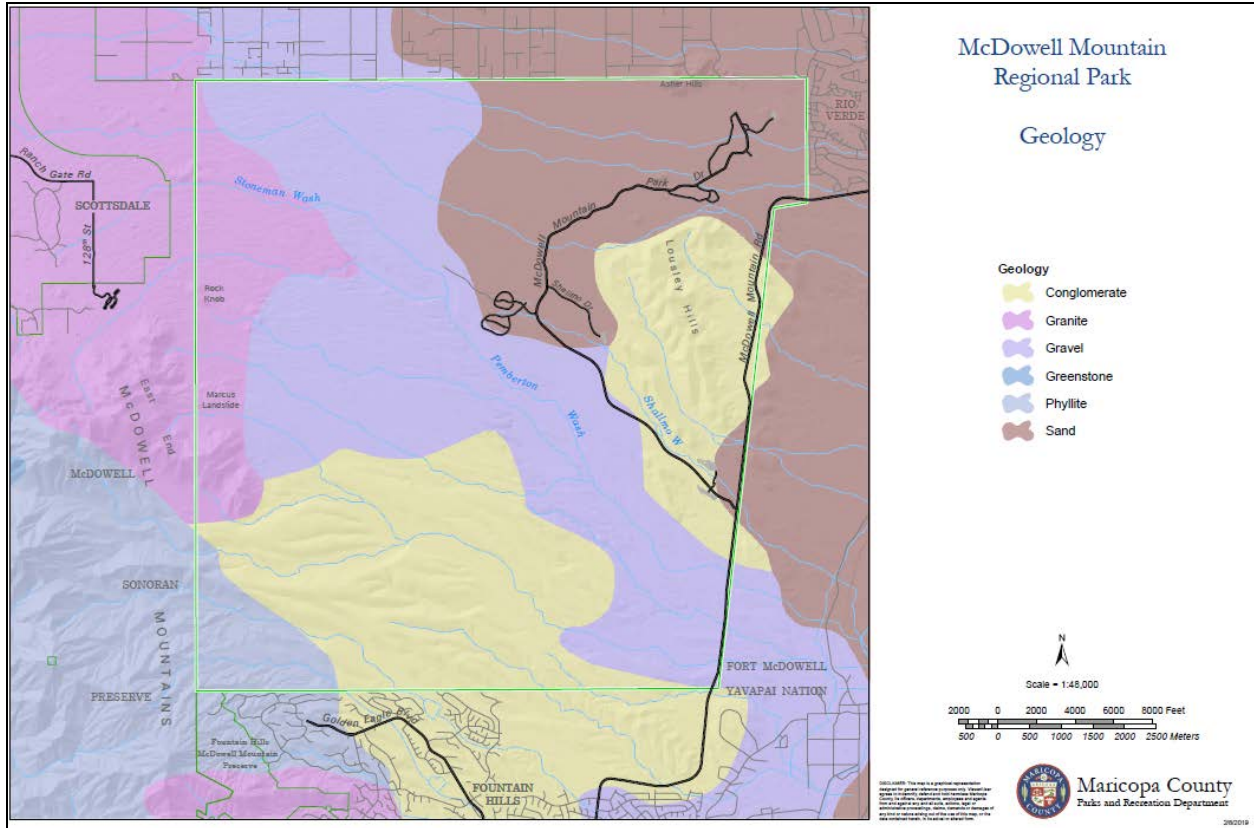


Figure 3-12: Geology

3.8.2 Land Subsidence and Earth Fissures

In addition to water rights, ADWR is also the state agency responsible for identifying and monitoring active land subsidence areas. There are no known land subsidence areas in or near the Park.²³

Effective September 21, 2006, Arizona Revised Statute (A.R.S.) § 27-152.01(3) requires the AZGS to complete comprehensive mapping of earth fissures throughout Arizona and providing earth fissure map data to the ASLD. This information is to be made available online with other Geographic Information System (GIS) map layers for the public to use in building their own customized maps. Parts of Maricopa County were mapped²⁴ and no fissures are currently known within the Park itself.

In 2002, ASU researchers discovered the second largest known landslide in Arizona (Marcus Landslide) located on the northeast side of the McDowell’s. At the time of the Marcus Landslide, approximately 500,000 years ago, a huge avalanche caused loose granite

²³ Arizona Department of Water Resources, Hydrology Division, Arizona Land Subsidence Areas and Interactive Map, <http://www.azwater.gov/AzDWR/Hydrology/Geophysics/LandSubsidenceInArizona.htm> as accessed October 9, 2018.

²⁴ The Arizona Geological Survey, Arizona’s Earth Fissure Center, <http://www.azgs.az.gov> as accessed October 9, 2018.



bedrock to slide at an estimated 44 miles per hour from atop the mountain range. The debris field extends nearly a mile east-northeast and created between 5.5 and 7 million cubic meters of debris (Figure 3-13).

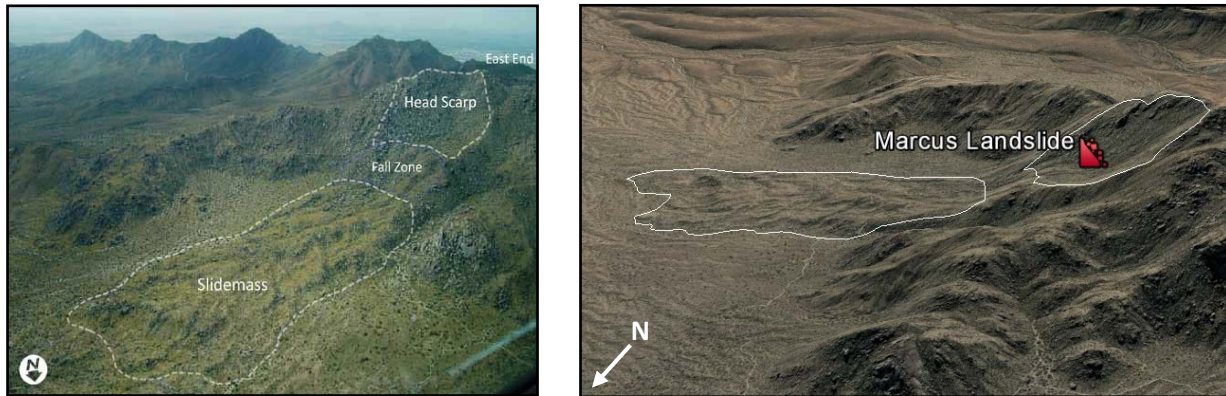


Figure 3-13: Marcus Landslide

3.8.3 Soils²⁵ and Erosion Potential

The major soil types found in the Park are primarily gravelly loam and Pinaleno-Tres Hermanos Complex in the development management zones, and Wickenburg complex including rock outcrop in the primitive management zone areas (Figure 3-14). The soils immediately surrounding the McDowell's have a low to moderate shrink/swell potential.²⁶ See Appendix D for the soils map and definitions.

Due to the steep and rugged slope (20-25% or greater) of the mountains, erosion potential is high in these areas, resulting in talus and alluvium deposits below (and is what slowly fills the “basins” within a Basin and Range system). During an extreme flash flood event, these materials can be transported to lower lying areas below.

²⁵ USDA Natural Resources Conservation Service, Soils website, <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx> as accessed October 9, 2018.

²⁶ USDA, Natural Resources Conservation Service, Soil Properties Shrink/Swell Potential, https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_064581.pdf as accessed October 10, 2018.

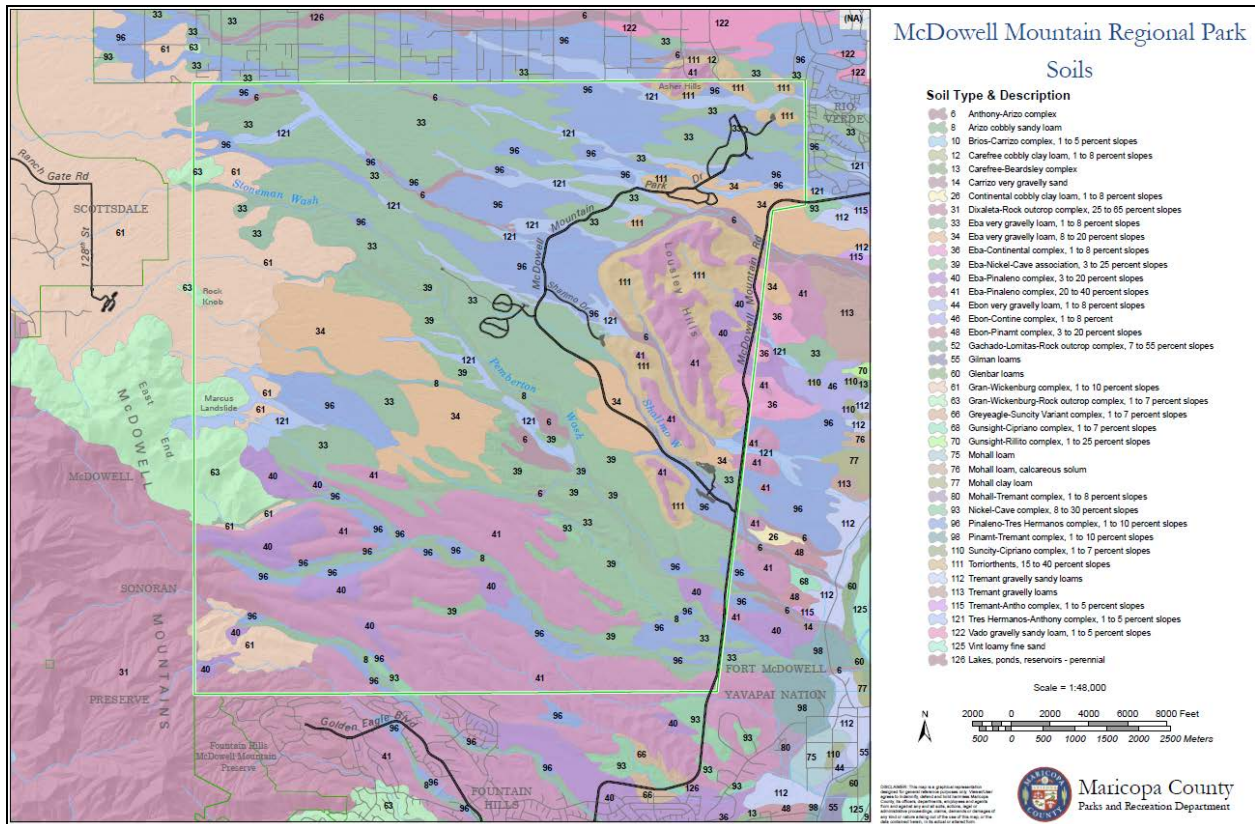


Figure 3-14: Soils

3.9 Biological Resources

The State of Arizona has over 900 animal species and a diversity of landscapes. Maricopa County is located in the central portion of the Sonoran Desert and is home to a variety of plants and animals. The wildlife and vegetation commonly seen in the Park is typical of a Sonoran Desert scrub environment.

Fire is not historically common to an Arizona Upland Subdivision - Sonoran Desert scrub environment, although with intrusion of human influence and adjacent development, it is more of a risk today. Historic cattle activity brought more grasses into the area (as did homesteaders) and these grasses can also serve as fuel to fires.

On July 7, 1995, the Rio Fire burned nearly two-thirds of the Park’s total acreage (approximately 14,000 acres in all). The Rio Fire, which was caused by a lightning bolt from a summer storm combined with 30 mile per hour winds and aggressively-growing non-native grasses lead to the wide spread fire damage which is still visible today (Figure 3-15). Native vegetation is starting to poke back up from the desert floor but it will be at least another six (6) decades before the native saguaro forest returns. Due to the majority of these grasses having been burned away, the Park is rated relatively low for potential fire hazards (Figure 3-16).

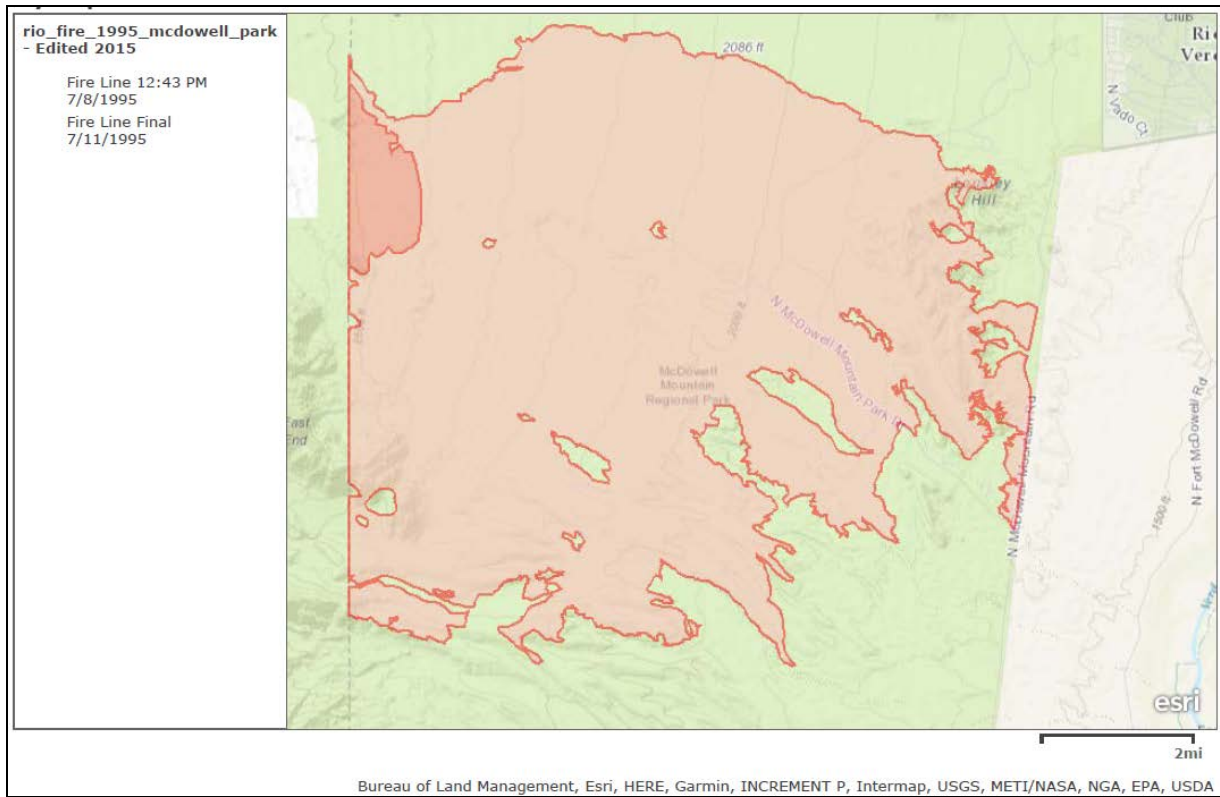


Figure 3-15: 1995 Rio Fire Damage inside McDowell Mountain Regional Park Boundary

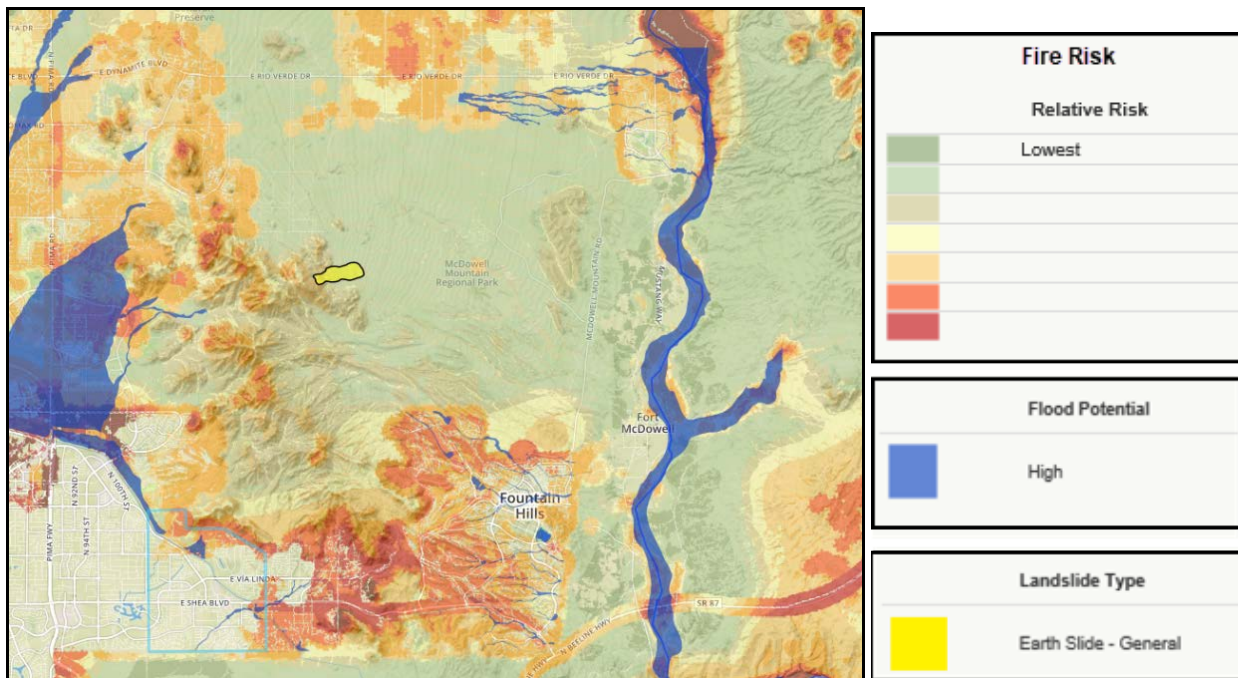


Figure 3-16: Environmental Hazards (Source: <http://data.azgs.az.gov/hazard-viewer>)



The Arizona Upland Subdivision Sonoran Desert scrub occurs on slopes and broken ground and covers the entirety of MMRP. High temperatures and little precipitation are common elements in this biotic community (Figure 3-17).

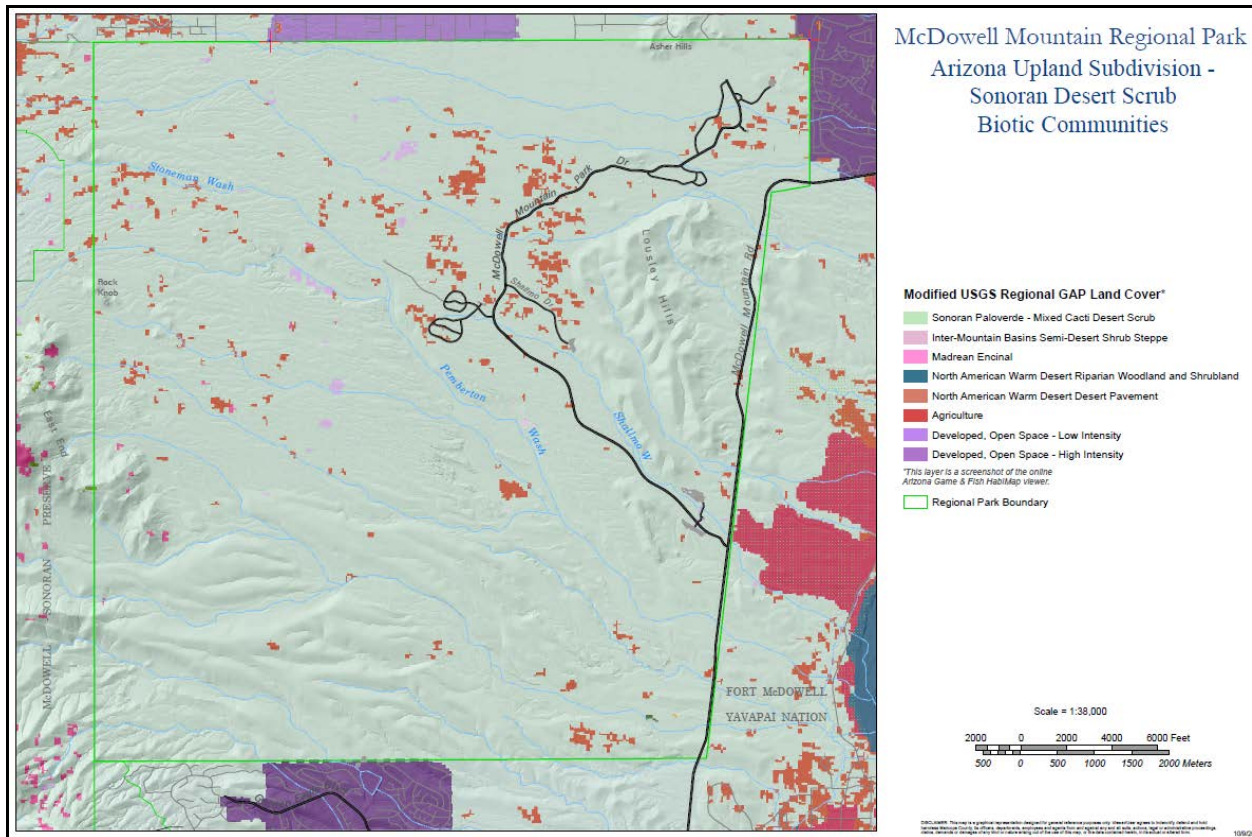


Figure 3-17: Biotic Communities (Source: Arizona Game and Fish Department, HabiMap™)

3.9.1 Wildlife

Common Reptiles and Amphibians

Examples of species adapted to the bajadas, or rocky and steep terrain at the foot of a mountain, and/or brushier vegetation include the Desert tortoise (*Gopherus agassizii*, Sonoran Population) and Gila monster (*Heloderma suspectum*). Other common reptiles found in the Park include: Regal Horned Lizard (*Phrynosoma solare*); Saddled Leaf-nosed Snake (*Phyllorhynchus browni*); Sonoran coral snake (*Micruroides euryxanthus*); Tiger Rattlesnake (*Crotalus tigris*); Variable Sandsnake (*Chilomeniscus stramineus*); Western Diamondback rattlesnake (*Crotalus atrox*); and Mohave Rattlesnake (*Crotalus scutulatus*).

Common Birds

Within the AZGFD's HabiMap™ online planning tool, the Arizona Breeding Bird Atlas query identifies reproductively active birds that occur or have the potential to occur within Park boundaries. There are many resident species that inhabit the Park such as: Turkey Vulture (*Cathartes aura*); Great Horned Owl (*Bubo virginianus*); Gila Woodpecker (*Centurus uropygialis*); Common raven (*Corvus corax*); Cactus Wren (*Campylorhynchus brunneicapillus*); Canyon Wren (*Catherpes mexicanus*); Rock Wren (*Salpinctes obsoletus*);



Phainopepla (*Phainopepla nitens*); House Finch (*Caprodacus mexicanus*); Cardinal (*Richmondema cardinalis*); and the Western burrowing owl (*Athene cunicularia hypugaea*). There are no riparian corridors located within the Park boundaries. However, there is an Important Bird Area (IBA) located east-northeast of the Park along the Rio Verde River which supports a variety of migratory birds. Many migratory species overwinter in Arizona or migrate thorough to their winter home.

Common Mammals

The Park is home to a variety of animals species that are typical of the desert environment. Most commonly seen are Coyote (*Canis latrans*), Mule Deer (*Odocoileus hemionus*), Black-tailed Jack Rabbit (*Lepus californicus*), Desert Cottontail (*Sylvilagus audubonii*), Bobcat (*Lynx rufus*), Arizona Pocket Mouse (*Perognathus amplus*), Harris’ Antelope Squirrel (*Ammospermophilus harrisi*), Javelina (*Tayassuidae*), and at least eleven (11) different species of bat.

3.9.2 Special Status Wildlife

The U.S. Fish and Wildlife Service (USFWS) - Federal Register (Register) (Table 3-2) currently has 43 federally Threatened or Endangered²⁷ animal species listed under the U.S. Department of Interior’s Endangered Species Act (ESA) within the State of Arizona. The Register is updated daily and species may be added or dropped and should be checked regularly to ensure compliance. See Appendix E for a listing of these animals that occur within Maricopa County.

Staff is in the beginning stages of updating a natural resource plan for the Department that will include updated species list, best management practices and prioritize the management and natural resource needs.

Federal Register Listed Species for MMRP			
Scientific Name	Common Name	Category	Status
<i>Coccyzus americanus</i>	Yellow-billed cuckoo	Bird	Threatened
<i>Empidonax traillii</i> <i>extimus</i>	Southwestern Willow Flycatcher	Bird	Endangered
<i>Rallus obsoletus</i> <i>occidentalis</i>	Yuma ridgeway's rail	Bird	Endangered
<i>Leopardus paradisi</i>	Ocelot	Mammal	Endangered
<i>Panthera onca</i>	Jaguar	Mammal	Endangered

Table 3-2: Federal Register Listed Species

²⁷ U.S. Fish and Wildlife Service, Species Report, http://ecos.fws.gov/tess_public/pub/statelistingIndividual.jsp?state=AZ&status=listed as accessed October 9, 2018.



3.9.3 Natural Heritage Program – Heritage Data Management System (HDMS)

Additionally, AZGFD tracks animals of state concern through its HDMS.²⁸ Of those listed, the following may be found in the Park: a total of sixteen (16) species including two (2) plants, five (5) mammals, four (4) birds, four (4) reptiles and one (1) mollusk (Table 3-3).

Listing Status Definitions:

Federal U.S. - Fish and Wildlife (FWS) Status:

BGA - Bald and Golden Eagle Protection Act: Prohibits take of bald and golden eagles without prior FWS permit.

SC – Species of Concern

Endangered Species Act (ESA): (FWS)

LE - Listed Endangered

LT - Listed Threatened

PS - Partial Status; Listed Endangered or Threatened, but not in entire range

XN - Experimental nonessential population

PDL - Proposed for delisting

SAT - Listed Threatened, due to similarity of appearance

PE - Proposed Endangered

PT - Proposed Threatened

FWS Candidate for Conservation

CCA - Candidate for Conservation

FWS Critical Habitat

Y - Yes Critical Habitat

P - Proposed Critical Habitat

DPS - Distinct Population Segment

USFS US Forest Service-Animal Status

S - Sensitive

BLM US Bureau of Land Management

S - Sensitive

P - Population (Only those populations of Banded Gila Monster that occur north and west of the Colorado River are sensitive.

NPL Native Plant Law (also refer to Vegetation Chapter 3.6.8 for more plant species information)

HS - Highly Safeguarded- no collection

SR - Salvage Restricted- permit collection only

ER - Export Salvage-Transport out of state prohibited

²⁸ Arizona Game and Fish Department, Natural Heritage Program, <https://azhgis2.esri.com/> and HabiMap™ HDMS query <http://habimap.org/habimap/> as accessed October 9, 2018.



SA - Salvage Assessed- Permits required to move live trees

HR - Harvest Restricted-permits required to remove plant by-products

Special Status Species						
Scientific Name	Common Name	FWS	USFS	BLM	NPL	
<i>Agave murpheyi</i>	Hohokam Agave	SC	S	S	HS	
<i>Corynorhinus townsendii pallescens</i>	Pale Townsend's Big-eared Bat	SC	S	S		
<i>Ericameria brachylepis</i>	Rayless Turpentine Bush					
<i>Falco peregrinus anatum</i>	American Peregrine Falcon	SC	S	S		
<i>Gopherus morafkai</i>	Sonoran Desert Tortoise	CCA	S	S		
<i>Haliaeetus leucocephalus</i> (wintering pop.)	Bald Eagle - Winter Population	SC, BGA	S	S		
<i>Haliaeetus leucocephalus</i> pop. 3	Bald Eagle - Sonoran Desert Population	SC, BGA	S	S		
<i>Heloderma suspectum cinctum</i>	Banded Gila Monster	SC				
<i>Heloderma suspectum suspectum</i>	Reticulate Gila Monster					
<i>Leptonycteris yerbabuenae</i>	Lesser Long-nosed Bat	SC				
<i>Lithobates yavapaiensis</i>	Lowland Leopard Frog	SC	S	S		
<i>Macrotus californicus</i>	California Leaf-nosed Bat	SC		S		
<i>Maricopella allynsmithi</i>	Squaw Peak Talussnail	SC				
<i>Myotis velifer</i>	Cave Myotis	SC		S		
<i>PCH for Coccozyus americanus</i>	Yellow-billed Cuckoo (Proposed Critical Habitat)					
<i>Rallus obsoletus yumanensis</i>	Yuma Ridgway's Rail	LE				

Table 3-3: Special Status Species

MMRP (+2mile proximity) also had a Bat Colony listed and both the Fort McDowell Yavapai Nation and Salt Verde Riparian Ecosystem as IBAs. In the special species status list, all of which are found within the two (2) mile proximity buffer. There were also three (3) aquatic species listed: Desert pupfish (*Cyprinodon macularis*-LE), Roundtail Chub (*Gila robusta*-CCA, S, S), and Gila topminnow (*Poeciliopsis occidentalis occ.* LE); however, these species require permanent water, which MMRP does not have and therefore these species are found just outside the Park in the Rio Verde River.

3.9.4 Species of Greatest Conservation Need (SGCN)²⁹

The State of Arizona has identified certain species with the greatest need for conservation actions in its State Wildlife Action Plan (SWAP)³⁰ and those are indicative of the diversity and health of the State's wildlife. The list includes species that are currently listed as threatened or endangered under the ESA as well as many others with significant vulnerability such as low and declining populations. Overall, it is AZGFD's intent to highlight the needs of these species, as well as Special Status Species, in an effort to "keep common species common" and maintain as much of Arizona's biodiversity as possible in

²⁹ Arizona Game and Fish Department, HabiMap™ SGCN query, <http://habimap.org/habimap/> as accessed October 9, 2018. 23

³⁰ Arizona Game and Fish Department, State Wildlife Action Plan, 2012 – 2022. https://www.azgfd.com/PortallImages/files/wildlife/2012-2022_Arizona_State_Wildlife_Action_Plan.pdf



light of development pressures and habitat loss. These species within the Park planning area (or within a two (2) mile proximity) are included in the (Table 3-4).

Each species in the ‘Species of Greatest Conservation Need’ (SGCN) list, was scored for each of the following vulnerability criteria (categories): Extirpated from Arizona, Federal or State status, declining status, Disjunct status, Demographic status, Concentration status, Fragmentation status and/or Distribution status. The list generated for the species within the Park as well as within a two (2) mile proximity, has identified 61 species of SGCN, including 18 Mammals, 29 birds, 10 reptiles, 3 Amphibians and 1 Mollusk.

Status-Tiers

1A Vulnerable (in at least one of the eight (8) categories listed above) and matches at least one (1) of the following additional criteria: listed as endangered or threatened under the ESA; Candidate species under ESA; is specifically covered under a signed conservation agreement (CCA, CCAA; recently removed from the ESA and currently requires delisting monitoring; Closed season species (i.e. no take permitted) as identified by Arizona Game And Fish Commission Orders 40, 41-43.

1B Vulnerable in at least one of the vulnerability categories but do not match the other criteria as listed in Tier 1A.

1C Unknown status species. Scored “0” for vulnerability in one of the eight categories, meaning lacking data to address the categories, and vulnerability status cannot be assessed at this time. More research is needed.

Species Of Greatest Conservation Need						
Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Chionactis occipitalis klauberi</i>	Tucson Shovel-nosed Snake	SC				1A
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
<i>Empidonax traillii extimus</i>	Southwestern Willow Flycatcher	LE				1A
<i>Falco peregrinus anatum</i>	American Peregrine Falcon	SC	S	S		1A
<i>Gopherus morafkai</i>	Sonoran Desert Tortoise	CCA	S	S		1A
<i>Haliaeetus leucocephalus</i>	Bald Eagle	SC, BGA	S	S		1A
<i>Heloderma suspectum</i>	Gila Monster					1A
<i>Leopardus pardalis</i>	Ocelot	LE				1A
<i>Leptonycteris yerbabuenae</i>	Lesser Long-nosed Bat	SC				1A
<i>Lithobates yavapaiensis</i>	Lowland Leopard Frog	SC	S	S		1A
<i>Panthera onca</i>	Jaguar	LE				1A
<i>Aix sponsa</i>	Wood Duck					1B
<i>Ammospermophilus harrisi</i>	Harris' Antelope Squirrel					1B
<i>Anaxyrus microscaphus</i>	Arizona Toad	SC		S		1B
<i>Aquila chrysaetos</i>	Golden Eagle	BGA		S		1B
<i>Athene cunicularia hypugaea</i>	Western Burrowing Owl	SC	S	S		1B
<i>Botaurus lentiginosus</i>	American Bittern					1B
<i>Buteo regalis</i>	Ferruginous Hawk	SC		S		1B

Table 3-4: Species of Greatest Conservation Need



<i>Castor canadensis</i>	American Beaver					1B
<i>Chilomeniscus stramineus</i>	Variable Sandsnake					1B
<i>Colaptes chrysoides</i>	Gilded Flicker			S		1B
<i>Coluber bilineatus</i>	Sonoran Whipsnake					1B
<i>Corynorhinus townsendii pallescens</i>	Pale Townsend's Big-eared Bat	SC	S	S		1B
<i>Crotalus tigris</i>	Tiger Rattlesnake					1B
<i>Euderma maculatum</i>	Spotted Bat	SC	S	S		1B
<i>Eumops perotis californicus</i>	Greater Western Bonneted Bat	SC		S		1B
<i>Incilius alvarius</i>	Sonoran Desert Toad					1B
<i>Kinosternon sonoriense sonoriense</i>	Desert Mud Turtle			S		1B
<i>Lasiurus blossevillii</i>	Western Red Bat		S			1B
<i>Lasiurus xanthinus</i>	Western Yellow Bat		S			1B
<i>Macrotus californicus</i>	California Leaf-nosed Bat	SC		S		1B
<i>Maricopella allynsmithi</i>	Squaw Peak Talussnail	SC				1B
<i>Melanerpes uropygialis</i>	Gila Woodpecker					1B
<i>Melospiza lincolni</i>	Lincoln's Sparrow					1B
<i>Melospiza aberti</i>	Abert's Towhee		S			1B
<i>Microtus mexicanus</i>	Mexican Vole					1B
<i>Micruroides euryxanthus</i>	Sonoran Coralsnake					1B
<i>Myotis occultus</i>	Arizona Myotis	SC		S		1B
<i>Myotis velifer</i>	Cave Myotis	SC		S		1B
<i>Myotis yumanensis</i>	Yuma Myotis	SC				1B
<i>Nyctinomops femorosaccus</i>	Pocketed Free-tailed Bat					1B
<i>Passerculus sandwichensis</i>	Savannah Sparrow					1B
<i>Phrynosoma solare</i>	Regal Horned Lizard					1B
<i>Phyllorhynchus browni</i>	Saddled Leaf-nosed Snake					1B
<i>Setophaga petechia</i>	Yellow Warbler					1B
<i>Tadarida brasiliensis</i>	Brazilian Free-tailed Bat					1B
<i>Toxostoma lecontei</i>	LeConte's Thrasher			S		1B
<i>Troglodytes pacificus</i>	Pacific Wren					1B
<i>Vireo bellii arizonae</i>	Arizona Bell's Vireo					1B
<i>Vulpes macrotis</i>	Kit Fox	No Status				1B
<i>Calypte costae</i>	Costa's Hummingbird					1C
<i>Cistothorus palustris</i>	Marsh Wren					1C
<i>Empidonax wrightii</i>	Gray Flycatcher					1C
<i>Micrathene whitneyi</i>	Elf Owl					1C
<i>Myiarchus tyrannulus</i>	Brown-crested Flycatcher					1C
<i>Oreoscoptes montanus</i>	Sage Thrasher					1C
<i>Oreothlypis luciae</i>	Lucy's Warbler					1C
<i>Sphyrapicus nuchalis</i>	Red-naped Sapsucker					1C
<i>Spizella atrogularis</i>	Black-chinned Sparrow					1C
<i>Spizella breweri</i>	Brewer's Sparrow					1C
<i>Vireo vicinior</i>	Gray Vireo		S			1C

Table 3-4: Species of Greatest Conservation Need (continued)

While six aquatic species were identified on the list, the Park does not have a permanent body of water large enough to sustain fish populations. The species that were identified in the list were found to be located within the two (2) mile proximity area and include Longfin Dace, Desert Sucker, Sonora Sucker, Gila Topminnow (LE), Roundtail Chub and Speckled Dace.



3.9.5 Other Types of Wildlife

Occasionally, Park staff finds other types of animals within the Park; usually domestic pets and non-native species that have been abandoned or lost inside the Park. When discovered, these animals are turned over to the appropriate agency for their care and potential re-homing.

3.9.6 Wildlife Linkages

AZGFD has extensively researched and recorded critical wildlife linkage areas for the entire county and this part of the Phoenix Metropolitan Valley (Valley) (Figure 3-18). The Park is considered a wildlife block due to its adjacency to other vast expanses of undisturbed lands; namely Tonto National Forest. The closest wildlife corridor is located along the Rio Verde River extending south where it connects with the Salt River. Additionally, the area along the Rio Verde River is considered a wildlife linkage corridor for a variety of wildlife species. It is also considered an Important Bird Area (IBA).

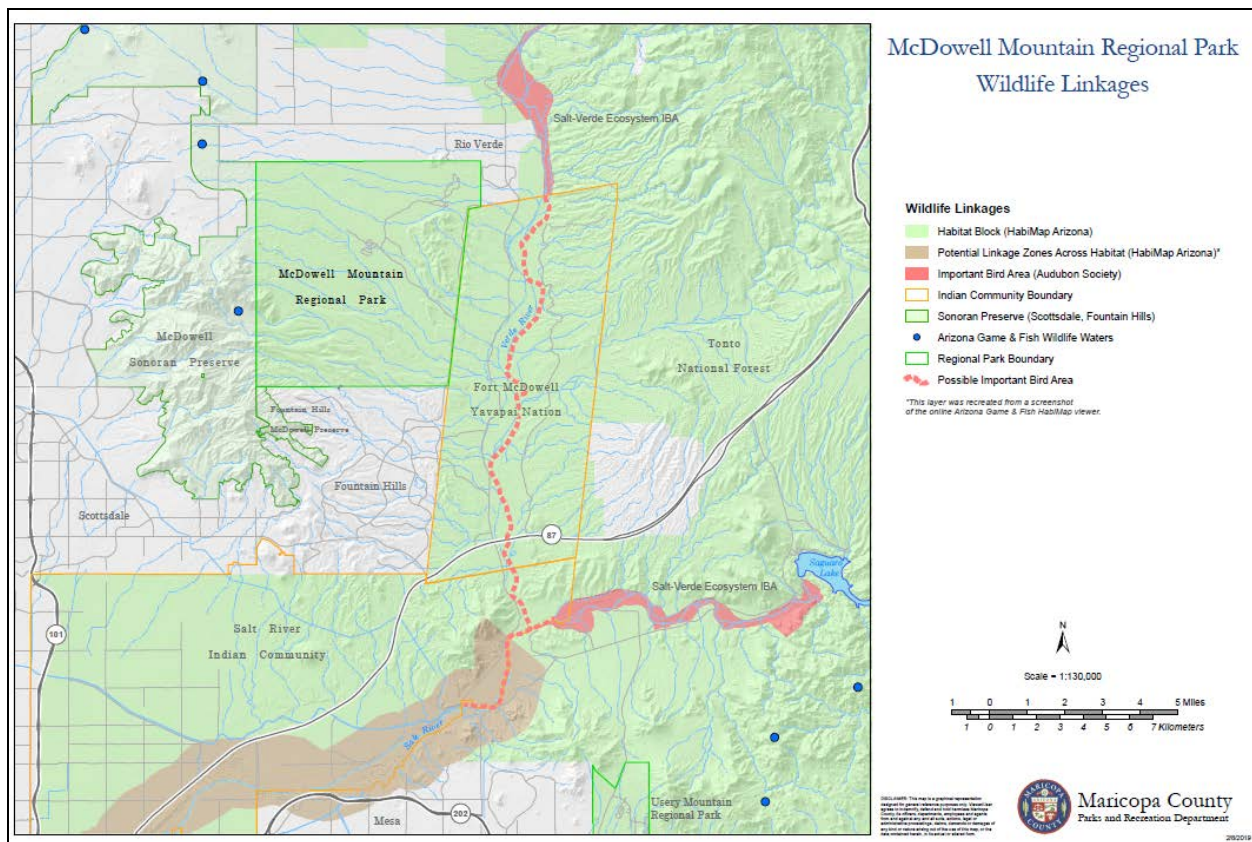


Figure 3-18: Wildlife Linkages

The McDowell's are considered to be part of a wildland block; meaning it is part of a large contiguous natural area capable of supporting a diverse array of wildlife into the foreseeable future. Currently, these mountains are connected to undeveloped mountainous terrain to the north via a small undeveloped portion of land associated with the Preserve which also borders the United States Department of Agriculture's Tonto National Forest to



the north and east. With Dynamite Road/E. Rio Verde Drive and McDowell Mountain Road becoming infinitely busier with the increase of housing developments, these two roads are becoming significant barriers to the movement of wildlife through this area. Currently, there are no designated critical wildlife linkage zones (or corridors) within Park boundaries however, the Park provides an important refuge for wildlife. Working with the Park's surrounding neighbors to find additional wildlife linkages would be beneficial to animals and humans alike. Likewise, the riparian corridor along the Rio Verde River is considered a potential linkage zone across habitat as well as an IBA.

The City of Scottsdale draft [General Plan 2035](#) (page 115) outlines six main goals for protecting and managing Sonoran Desert biodiversity and native ecosystems, which include maintaining natural washes as wildlife movement corridors and avoid disturbances to preserve habitat linkages.

Additionally, the Town of Fountain Hills (Town) [General Plan 2002](#) (page 59-63) recognizes the importance of undeveloped washes as wildlife linkages between the two (2) preserves, the Town, and the Park designates these areas for open space preservation.

3.9.7 Vegetation

A flora inventory completed in 1981³¹ showed 289 species and variations occurring within the Park; the inventory and a searchable database are available on the [Southwest Environmental Information Network](#) website³². The following native plants are commonly seen in the Park: California sage (*Salvia columbariae*), Ocotillo (*Fouquieria splendens*), Saguaro cactus (*Carnegiea gigantean*), Creosote bush (*Larrea tridentate*), Showy Desert-Marigold (*Baileya multiradiata*), Buckhorn cholla (*Cylindropuntia acanthocarpa*), California poppy (*Eschscholzia californica*), Thornber's buckhorn (*Cylindropuntia acanthocarpa*), Teddy-bear cholla (*Cylindropuntia bigelovii*), Soap tree yucca (*Yucca elata*), as well as desert trees such as Ironwood (*Olneya tesota*), Palo Verde (*Parkinsonia microphylla/florida*), and Velvet mesquite (*Prosopis velutina*). Much of the flora in MMRP was burned in the 1995 Rio Verde Fire. It would be beneficial to update the Park's flora inventory prior to the 2039 Master Plan Update.

There are currently twenty-four (24) species of plants listed on the Noxious Weeds list (Table 3-5) for the State of Arizona; of which, only one is known to occur at MMRP. Buffelgrass (*Pennisetum ciliare*), which is both a Regulated Pest and Prohibited Noxious Weed. It is found widespread in disturbed habitats, spreads very quickly on abandoned land below 3,000ft (914 m); introduced throughout the warmer, drier regions of the world including the southwest U.S. from California to Texas. Invasive Species obtain a foot hold in disturbed areas within the Park, especially near campsites, parking lots, washes and along trails which are ripe ground for noxious weeds and invasive species. The most common

³¹ Lane, Meredith A. 1981. Vegetation and flora of McDowell Mountain Regional Park, Maricopa County, Arizona. Journal of the Arizona-Nevada Academy of Science, <https://www.jstor.org/stable/40025615?origin=JSTOR-pdf>

³²SEINet Arizona – New Mexico Chapter – Arizona Flora – McDowell Mountain Regional Park

<http://swbiodiversity.org/seinet/checklists/checklist.php?clid=4&pid=1> SEINet, accessed October 10, 2018



invasive species within the Park include buffelgrass (*Pennisetum ciliare*), fountain grass (*Penisetum setaceum*), red brome (*Bromus rubens*), Tamarisk (*Tamarix chinensis*), Bermuda grass (*Cynodon dactylon*) and perennial starthistles.

Many native desert scrub plant species have a zone of degradation with no vegetation surrounding each plant. This area has “no” fuel load and will help slow and stop the fire progression from moving into the desert scrub habitats. Invasive Species, especially buffelgrass, were introduced to repair the landscape from over-grazing. However this also increased the fire fuel load across the Sonoran desert, making damaging fires more likely by providing vertical and horizontal contiguous fuel load. Saguaro cactus and many other desert scrub plant species do not have adaptations to recurrent fires.

Invasive Plant Species							
ScientificName	Common Name	Noxious Weed	NatureServe Arizona Conservation Status	Global NatureServe Status	Nativity	A/B/P	Lifeform
<i>Bromus rubens</i>	Red Brome		SNA/EXOTIC	GNR	INVASIVE	Annual	Graminoid
<i>Centaurea melitensis</i>	Maltese Star-Thislte		SNA/EXOTIC	GNR	INVASIVE	Annual	Forb
<i>Cynodon dactylon</i>	Bermuda Grass		SNA/EXOTIC	GNR	INVASIVE	Perenial	Graminoid
<i>Pennisetum ciliare</i>	Bufflegrass	PNW & RNW	SNA/EXOTIC	GNR	INVASIVE	Perenial	Graminoid
<i>Pennisetum setaceum</i>	Fountin Grass		SNA/EXOTIC	GNR	INVASIVE	Perenial	Graminoid
<i>Schismus arabicus</i>	Arabian Mediterranean Grass		SNA/EXOTIC	GNR	INVASIVE	Annual	Graminoid
<i>Sonchus asper</i>	Spiny-leaf Sow-thistle		SNA/EXOTIC	GNR	INVASIVE	Annual	Forb
<i>Sonchus oleraceus</i>	Common Sow-thistle		SNA/EXOTIC	GNR	INVASIVE	Annual	Forb
<i>Tamarix chinensis</i>	Chinese Tamarisk		SNA/EXOTIC	GNR	INVASIVE	Perenial	Tree

Table 3-5: Invasive Plant Species

Noxious Weed Status and Code: PNW – Prohibited noxious weed, RGNW – Regulated noxious weed, RNW – Restricted noxious weed

The MCPRD is in the beginning stages of writing a Natural Resource Plan for all of the regional parks within the county park system and will include updated species list, best management practices, management priorities and natural resource needs. Please refer to the Management Plan for updated species lists and management objectives and actions.

3.9.8 Special Status Vegetation

The USFWS - Register currently has 21 federally threatened or endangered³³ plant species listed under the ESA within the State of Arizona (Table 3-6). The Register is updated daily

²⁵ U.S. Fish and Wildlife Service, Species Report, <https://azhgis2.esri.com/project/mcdowell-mountain-regional-Park-master-plan-update-29041> as accessed October 9, 2018.



and species may be added or dropped. Currently, there are no known federally threatened or endangered plant species within the Park. Regular review of this list should occur periodically for new species that may be found inside the Park. The State of Arizona's 'Native Plant Law' provides a list of State protected species which are considered to be the most vulnerable. Of the 289 plant species found in the Park, twenty (20) plant species are protected; sixteen (16) plant species are protected as Salvage Restricted (SR), two (2) plant species are Harvest Safeguarded (HS), three (3) plant species are Salvage Assessed (SA) and three (3) plant species are Salvage Restricted (SR). Of the twenty (20) species; four (4) are listed under more than one of protected categories including Desert agave (*Agave deserti*), Giant saguaro (*Carnegiea gigantea*), Desert ironwood (*Olneya tesota*), Velvet mesquite (*Prosopis velutina*) and Banana Yucca (*Yucca baccata*). Table 3-6 includes all twenty (20) species.

NatureServe® is an excellent resource that provides information about species status locally, nationally and globally. Information at their website is updated regularly. They provide detailed information on the status of most plant species.

NPL Native Plant Law

- HS - Highly Safeguarded- no collection
- SR - Salvage Restricted- permit collection only
- ER - Export Salvage-Transport out of state prohibited
- SA - Salvage Assessed- Permits required to move live trees
- HR - Harvest Restricted-permits required to remove plant by-products

NatureServe State Conservation Status

- SH – Possibly Extirpated
- S1 – Critically Imperiled
- S2 – Imperiled
- S3 – Vulnerable
- S4 – Apparently Secure
- S5 – Secure
- SNR/ SU – Not raked or Under Review
- SNA Exotic or Hybrid without conservation value.

NatureServe Global Conservation Status Rank

- GX – Presumed Extinct or Eliminated
- GH – Possibly Extinct or Presumed Eliminated
- G1 – Critically Imperiled
- G2 – Imperiled
- G3 – Vulnerable
- G4 – Apparently Secure
- G5 – Secure

NatureServe Variable Ranks

- G#C# - Range Rank
- GU – Un-rankable



GNR – Unranked
GNA – Not Applicable
? – Inexact Numeric Rank Denotes Inexact number (i.e. G2?)
Q – Questionable Taxonomy
C – Captive or Cultivated Only
T#- Intraspecific Taxon (Trinomial)

Additionally, AZGFD tracks over 130 plants of state concern through its Natural Heritage Program.³⁴ See Appendix E for a listing of these plants that occur within Maricopa County and how other agencies rank them. Of those listed, the following may be found within the Park or conditions exist that may support:

- Hohokam Agave (*Agave murpheyi*)

³⁴ Arizona Game and Fish Department, Natural Heritage Program, <https://azhgis2.esri.com/project/mcdowell-3-29065>. HabiMap™ HDMS query <http://habimap.org/habimap/> as accessed October 10, 2018.



Resource Analysis

ScientificName	Common Name	National Plant Law Status	NatureServe State Conservation Status	NatureServe Global Status	Nativity	A/B/P	Lifeform
Agave deserti	Desert Agave	SR	SNR	G4	NATIVE	Perennial	Succulent
Agave murpheyi	Hohokam Agave	HS	S2	G2?	Native	Perennial	Succulent
Carnegiea gigantea	Saguaro	SR, HS	SNR	G5	NATIVE	Perennial	Tree
Cylindropuntia acanthocarpa var. major	Buckhorn Cholla	SR	Variety is not recognized; same as Staghorn Cholla	NATIVE	NATIVE	Perennial	Tree/Shrub
Cylindropuntia acanthocarpa var. thornberi	Staghorn Cholla	SR	SNR	G4	NATIVE	Perennial	Tree/Shrub
Cylindropuntia bigelovii	Teddy-Bear Cholla	SR	SNR	G3?	NATIVE	Perennial	Tree/Shrub
Cylindropuntia fulgida var. fulgida	Jumping Cholla	SR	SNR	G4/G5	NATIVE	Perennial	Tree/Shrub
Cylindropuntia leptocaulis	Desert Christmas Cholla	SR	SNR	G4?	NATIVE	Perennial	Shrub
Cylindropuntia x tetracantha	Tucson Prickly-Pear	SR	SNA	GNA	HYBRID	Perennial	Shrub
Ferocactus cylindraceus var. lecontei	California Barrel Cactus	SR	SNR	G5T4?Q	NATIVE	Perennial	Shrub
Fouquieria splendens	Ocotillo	SR	SNR	G5	NATIVE	Perennial	Shrub
Mammillaria grahamii	Graham's Niple Cactus	SR	S3	G4	NATIVE	Perennial	Shrub
Olmeya tesota	Desert Ironwood	SA, HR	S4	G4/G5	NATIVE	Perennial	Tree
Opuntia engelmannii	Cactus Apple	SR	S3	G5	NATIVE	Perennial	Shrub/Tree
Parkinsonia florida	Blue Palo-verde	SR	SNR	G5	NATIVE	Perennial	Tree
Parkinsonia microphylla	Little Leaf or Foothill Paloverde	SA	SNR	G5	NATIVE	Perennial	Tree
Peniocereus greggii var. transmontanus	Desert Night-blooming Cereus	SR	S3	G3G4T3T4	NATIVE	Perennial	Shrub
Prosopis velutina	Velvet Mesquite	SA, HR	S5	G5	NATIVE	Perennial	Tree
Yucca baccata	Bannana Yucca	SR, HR	SNR	G5	NATIVE	Perennial	Succulent
Yucca elata var. elata	Soaptree Yucca	SR	SNR	G5TNR	NATIVE	Perennial	Succulent

Table 3-6: Plant Species Listed (Federal/State)

For definitions on the Native Plant Law categories: <https://agriculture.az.gov/sites/default/files/Native%20Plant%20Rules%20-%20AZ%20Dept%20of%20Ag.pdf>

Global and National Definitions can be found at this website: <http://explorer.natureserve.org/granks.htm>

State definitions are provided based on each species and is located through this website, after you enter the genus species at <http://www.natureserve.org/>.



3.10 Visual Resources

Important views for public enjoyment, trail development and vegetation management are identified in this section. Management actions to classify and retain selected views from key observation viewpoints should be taken into consideration with any new development within the Park. Park general guidance is provided by the Department's mission statement, and management zoning definitions to protect its scenic views.

3.10.1 Sensitive Views

Residential Views

The Park shares its boundary with a number of residential homes on the north, east and south boundaries. Planned communities are expected to occur at a future date near the southeast boundary of the Park.

Recreation Views

The Park's trail system includes several prominent spots where visitors are likely to stop and admire the view. Providing unobstructed natural views is important to the recreational experience. These views include:

- Scenic Trail (accessed via the staging area at the end of Shallmo Drive)
- North Trail (Interpretive loop, with excellent views of pristine desert and the natural saguaro forest that once covered the majority of the Park prior to the Rio Fire.
- Lousley Hill Trail which can be accessed from Lousley Way and provides unobstructed views of several prominent peaks located within the Tonto National Forest to the east.

Transportation Views

The McDowell Mountain Park Drive provides travelers with excellent views of the McDowell's and open space to the west. Lousley Way (access via Lousley Loop), offers clear views of the Four Peaks in the Mazatzal Mountains to the east.

3.11 Recreation Resources

A unique amenity found in the Park is the competitive track and event area(s). MMRP is considered a premier event park for mountain bikers and cross country runners alike. Several events hosted at the Park throughout the year have as many as 3,000 people over multiple days. The competitive track offers mountain bikers, hikers, and equestrians an array of technical loops designed to test their skill and endurance. Further, as a result of the abundant natural and cultural resources, the Park offers visitors a number of more passive recreational and educational opportunities:

- Picnicking
- Trails (hiking, equestrian, mountain bike)
- Playgrounds
- Wildlife viewing
- Nature photography



- Camping
- Interpretive displays and Educational programs

3.11.1 Off - Highway Vehicles (OHV)

OHV use is not an approved recreational activity within the Park boundaries or on its trails and therefore is not detailed further in this MP. As of the date of publication of this plan, OHV use within Park boundaries may violate Park Rule R-107 regarding motor vehicle use. However, OHV use may be permitted by Department staff for Park maintenance or by authorized first responders for emergency search and rescue purposes or fire mitigation and suppression.

3.11.2 Interpretation and Environmental Education

Interpretive ranger(s) at the Park lead visitors on a variety of educational hikes and programs throughout the year and incorporate the local history and nature components to tell the story of the Park. The Park provides other events and programs such as:

- Guided nature hikes
- Guided fitness walks
- Youth-oriented events
- Stargazing
- Moonlight group bike rides

3.11.3 Hunting

The AZGFD allows archery hunting of mule deer, javelina, and rabbit. Dove and quail hunting is permitted with a shotgun only using birdshot during specified hunting seasons and as regulated by AZGFD according to A.R.S. The Park currently falls within Region 6, Game Unit 25M on the AZGFD Game Management Unit Map.

A valid hunting license is required and each hunter should state his/her intention to hunt at the Park contact station or with the Park supervisor (or his/her designee) and pay any applicable Park fees. All hunters must comply with the most current version of ARS, AZFG Commission rules and regulations, and Park rules.

It is illegal and a revocable offense to shoot a firearm or bow and arrow within a quarter of a mile of any developed picnic area, developed campground, shooting range, occupied building or other recreational area developed for public use; or to shoot from, on, or across a roadway; or to trespass on private property.

Participation

Hunting is not a large recreational component of the Park. The 2012-2013 ASU Park Visitor Study (as well as some of the previous studies) reported no visitors engaged in hunting during the survey period. In the 2005-2006 survey year, only 0.4% of visitors responded that they hunted in the Park. The most recent (2012-2013) Visitor Study did not record any hunters during this time, although Park staff are aware of occasional visitors lawfully hunting in the Park.



When surveyed during the 2007-2008 Visitor Study, approximately twenty-two percent of McDowell’s respondents agreed that hunting was an appropriate activity with the county’s Park system. This question was not asked in the 2012-2013 visitor study.

Species of Economic and Recreational Importance (SERI)

This category, developed by AZGFD, represents the economic and recreational importance of 13 of Arizona’s game/hunting species. The distribution of these species influences important aspects of wildlife-related recreation and the distribution of consumer spending across the state. Together, the economic and recreational importance of game species to hunters, the community, and to AZGFD provide a realistic view of the importance of game habitat for conservation. At MMRP there are six known game species as listed in the table below. However there is currently a societal shift in the way people value and interact with wildlife; with more people wanting to view wildlife and hike among the wildlife; hunting and fishing is still a valuable resource for the AZGFD. Hunting/fishing, wildlife viewing, hiking and other recreational activities bring revenue into the local economy. Table 3-7 includes species that are found in MMRP and within 2 mile proximity, that are of economic and recreation Importance.

<https://www.azgfd.com/wildlife/planning/wildlifeguidelines/statusdefinitions/>

Species of Economic and Recreation Importance		
Scientific Name	Common Name	Category
<i>Callipepla gambelii</i>	Gambel's Quail	Bird
<i>Odocoileus hemionus</i>	Mule Deer	Mammal
<i>Pecari tajacu</i>	Javelina	Mammal
<i>Puma concolor</i>	Mountain Lion	Mammal
<i>Zenaida asiatica</i>	White-winged Dove	Bird
<i>Zenaida macroura</i>	Mourning Dove	Bird

Statewide, anglers and hunters spend \$958 million, creating an economic impact of \$1.34 billion to the state of Arizona. This spending supports over 17,000 jobs, provides residents with \$314 million in salary and wages and generates more than \$58 million in state tax revenue.³⁵

Table 3-7: Species of Economic and Recreation Importance

Since the 2012 statewide survey, Arizona Governor Doug Ducey proclaimed that September 24, 2016 be recognized as Hunting and Fishing Day for the State of Arizona. This proclamation boasted economic impact statistics to be closer to \$1.2 billion. Additionally, this spending supports over 18,220 local jobs and provides approximately \$132 million in state tax revenue.³⁶

According to AZGFD, fishing and hunting within Maricopa County accounts for \$409.1 million (or 43% of the statewide total) in expenditures (or \$515 million using an economic

³⁵ Arizona Game and Fish Department, Economic Impact, https://s3.amazonaws.com/azgfd-portal-wordpress/PortallImages/files/wildlife/FISHING_HUNTING%20Report.pdf as accessed November 26, 2018.

³⁶ State of Arizona Proclamation, https://azgovernor.gov/sites/default/files/proc_huntingandfishingday2016 as accessed November 26, 2018.



impact multiplier effect). Salary and wages of the 5,382 outdoor industry professionals is about \$103 million and provides \$21.1 million in state tax revenue.³⁷

3.12 Land Use

3.12.1 Ownership & Jurisdiction

Ownership

Of the 21,099 acres, just over 3,373 acres of Park land was acquired through the State Land Department between 1980 and 1987. However, the other approximate 17,725 acres were acquired through the R&PP process in the 1960s, 1970s, and 1980s. The R&PP is administered by the BLM and authorizes the sale or lease of public lands for recreational or public purposes. All land uses must comply with the R&PP Act³⁸ and the patents as issued. The Park has not acquired any additional lands since 1987. Appendix G details land use. The Department holds these areas as patents (Table 3-8; Figure 3-19):

Table 3-8: Distribution of Land Ownership		
Type	Date	Acres
Federal Patent (02-64-0090)	Dec-1963	627.20
Federal Patent (02-65-0027)	Aug-1964	653.24
Federal Patent (02-71-0043)	Dec-1970	627.36
Federal Patent (02-71-0086)	June-1971	15,740.74
Federal Patent (02-82-0022)	Jan-1982	77.02
State of AZ (6765)	1980	556.82
State of AZ (6766)	1980	634.72
State of AZ (6763)	1980	625.04
State of AZ (6768)	1980	116.61
State of AZ (6764)	1980	640.00
State of AZ (6767)	1980	640.00
State of AZ (7263)	1987	160.00
Total Park acres:		21,098.71

³⁷ Arizona Game and Fish Department, The Economic Importance of Fishing and Hunting, http://www.azgfd.gov/pdfs/w_c/FISHING_HUNTING%20Report.pdf, page 30-31, as accessed November 26, 2018.

³⁸ BLM, Recreation and Public Purposes Act, https://www.blm.gov/sites/blm.gov/files/uploads/Media_Library_BLM_Policy_h2740-1.pdf as accessed November 26, 2018.

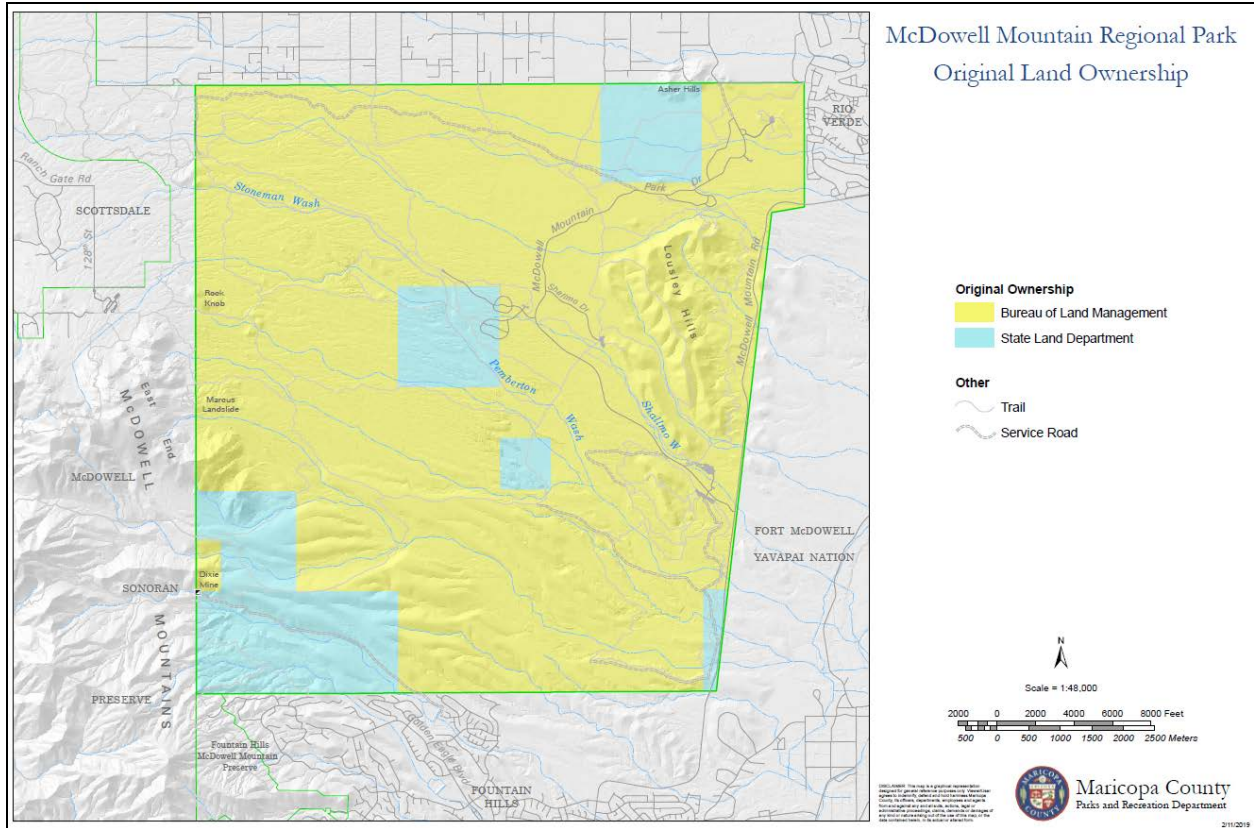


Figure 3-19: Land Ownership

Jurisdiction

McDowell Mountain Regional Park is located within or adjacent to the following jurisdictions (Table 3-9) or service areas:

Table 3-9: Jurisdictions	
Political Unit	District
Legislative	23
Congressional	6
Maricopa County Board of Supervisors	2
Maricopa County Parks Commission	2
Municipal	
Town of Fountain Hills (traffic, planning, etc.)	adjacent
City of Scottsdale (traffic, planning, etc.)	adjacent
School Districts	
Fountain Hills District	adjacent
Scottsdale District	adjacent
Law Enforcement	
Maricopa County Sheriff's Office	Services



3.12.2 Existing Land Use and Zoning

Existing Land Use

Much of the lands adjacent or near the Park's north, east, and south boundaries, are either zoned for residential or are undeveloped and largely under private ownership (Figure 3-20). The land north and northeast of the Park is utilized for residential development and is located within an unincorporated area of Maricopa County. Lands to the east and southeast belong to the Fort McDowell Yavapai Nation, which today stands at about 24,680 acres or approximately 39 square miles.

The State of Arizona owns two adjacent parcels totaling approximately 1,232 acres of undeveloped land (zoned R-190 for rural zoning district – 190,000 square feet per dwelling unit)³⁹ located near the southeast corner of the Park. R-190 is typically utilized for larger scale development such as hotels, community centers, nature reserves, Parks, or schools. The land within these two large parcels are subject to disposal by the ASLD; however, no information is currently available regarding interested parties. In the past, the two parcels were purchased and proposed to be developed as a resort which later reverted back to the ASLD and currently remains undeveloped. The Town's planning boundary covers the area of land south of the Park. The Town's General Plan 2010⁴⁰ and the Land Use Analysis and Statistical Report (2017)⁴¹ identifies these lands as a mix of open space areas, commercial, lodging, and the majority as residential lots including: low, medium, and high density plots. West of these residential zoning areas near the southwest corner of the Park is approximately 740 acres of land associated with the Fountain Hills' McDowell Mountain Preserve. The Fountain Hills McDowell Mountain Preserve connects directly with both MMRP to the north and Scottsdale's McDowell Sonoran Preserve to the northwest.

A large portion of the McDowell's lay within the 30,580 acre McDowell Sonoran Preserve directly West and adjacent to the Park. This preserve is owned by the City of Scottsdale and managed cooperatively with the McDowell Sonoran Conservancy. The conservancy's mission is to be a leader in urban preserve management through excellent stewardship of the lands.

³⁹ Maricopa County Assessor's Office <https://maps.mcassessor.maricopa.gov/> as viewed on 12/10/2018.

⁴⁰ Fountain Hills General Plan 2010, Adopted January 7, 2010. <https://www.fh.az.gov/224/Fountain-Hills-General-Plan>

⁴¹ Town of Fountain Hills – Land Use Analysis & Statistical Report, 2017. <https://www.fh.az.gov/DocumentCenter/View/3844/2017-Land-Use-Analysis-PDF>

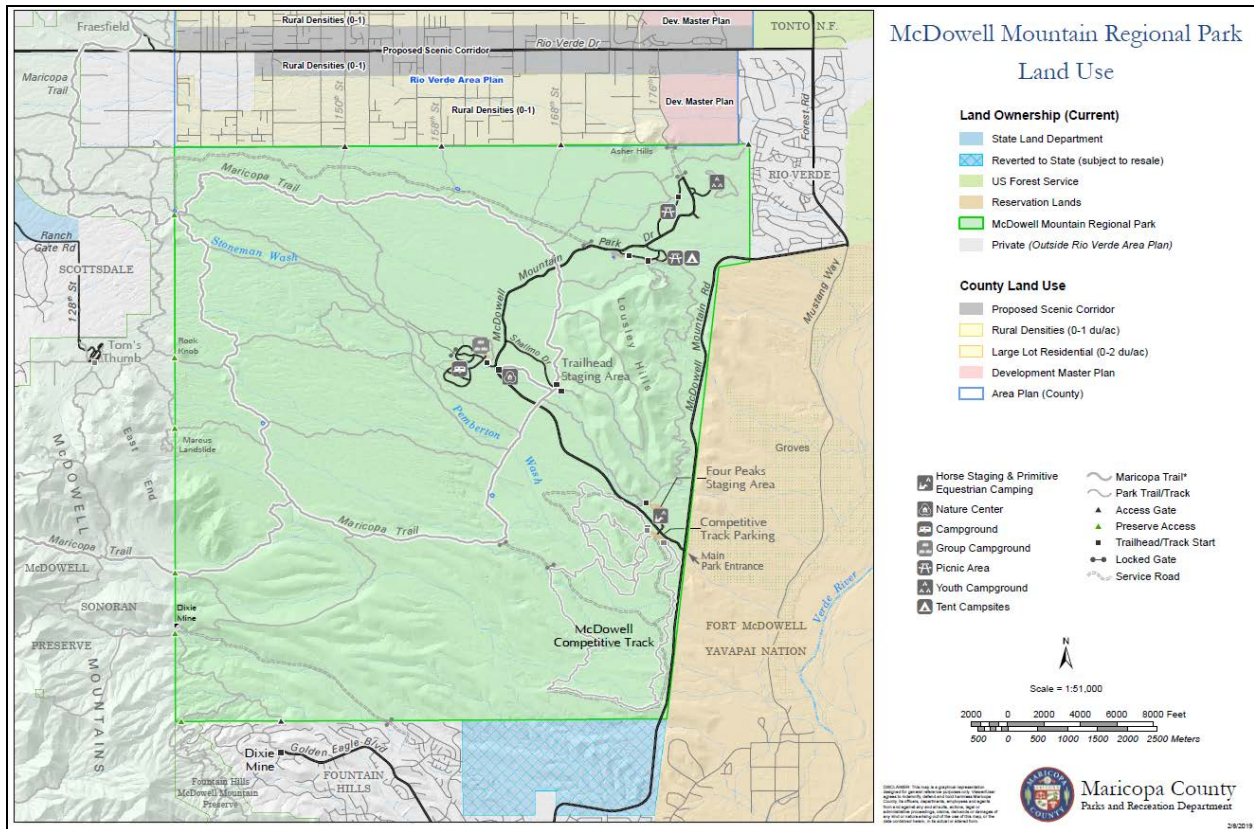


Figure 3-20: Existing Land Use

Zoning

The area within Park boundaries is zoned R-190 by Maricopa County. The unincorporated parcels immediately outside of Park boundaries are zoned RU-43 or RU-190 on which some properties have mining exemptions.

- RU-43 (Rural Residential): one dwelling unit⁴² per 43,000 square feet - protects farm and agricultural uses and permits recreational and institutional uses.
- RU-190 (Rural Residential): one dwelling unit⁴³ per 190,000 square feet - protects farm and agricultural uses and permits recreational and institutional uses.

Land use surrounding the Park is a mix of residential, preserve land, Fort McDowell Yavapai Nation lands, and undeveloped state trust land, but, much of the area is currently undeveloped and natural regardless of its current zoning category.⁴⁴ The Preserve west of

⁴² Maricopa County Zoning Ordinance, Chapter 5 Rural Zoning Districts, Pages 13-15 of 15. <https://www.maricopa.gov/DocumentCenter/View/4785/Maricopa-County-Zoning-Ordinance-PDF?bidId=> as accessed December 22, 2018.

⁴³ Maricopa County Zoning Ordinance, Chapter 5 Rural Zoning Districts, Pages 1-11 of 15. <https://www.maricopa.gov/DocumentCenter/View/4785/Maricopa-County-Zoning-Ordinance-PDF?bidId=> as accessed December 22, 2018.

⁴⁴ Fountain Hills General Plan 2010, Adopted January 7, 2010. <https://www.fh.az.gov/224/Fountain-Hills-General-Plan>



the Park falls within the City of Scottsdale's planning area. The area north and northwest while unincorporated, fall under the Rio Verde Community planning area. The Town of Fountain Hills planning area abuts the southern boundary and southeast corner of the Park.

3.12.3 Future Land Use

The entire western Park boundary is shared with the Preserve and the majority of the land adjacent to the east boundary is owned by the Fort McDowell Yavapai Nation. Much of the land bordering the north and south Park boundaries is privately owned and zoned for residential development. Two quarter sections of land located near the southeast corner of the Park is held in trust by ASLD and could be sold or leased at market value for development purposes. Other jurisdictions have planning documents in place to facilitate development surrounding the Park. Land use maps are not zoning maps; they merely reflect the general desired use of the area rather than specific zoning/development standards at a specific site.

Maricopa County (unincorporated areas) and Private Property

Privately owned parcel(s) just outside of the Parks northern boundary and within unincorporated Maricopa County and are currently zoned RU-43 and RU-190 which limits housing density to protect the agricultural or rural character of the area. This is subject to change pending any new zoning or variance applications.

City of Scottsdale

The City of Scottsdale General Plan 2001 was ratified in March 2002 by City voters and will remain in effect until a new general plan is approved by voters. Page 73 of Scottsdale's plan outlines the preferred land use specifically as it relates to preserve lands on the west boundary and the rural residential /tourism resort designated lands near the northwest corner of the Park. Additionally, a full chapter on Open Space and Recreation (page 109) outlines goals and approaches for those areas.

Town of Fountain Hills

The Town of Fountain Hills General Plan 2010 (adopted January 2010) outlines the Towns desire to see the two quarter section parcels of undeveloped land located near the southeast corner of the Park, be developed for both residential and resort/ tourism uses. The Town's plan also identifies the need for open space, recreation, and connectivity including designating the natural washes open space for those opportunities.

Arizona State Land Department (ASLD)

As stated above, the lands just southeast of the Park boundary are owned by the ASLD and are currently vacant but subject to purchase and future development. These two areas fall within the Town's planning boundary. The visions, goals and objectives discussed in Chapter 6 - Open Space Element, outlines the Town's desire to establish recreation and open space needs as they pertain to these two (2) undeveloped sections of land.



Additionally, the Department and the Town are interested in creating recreational connectivity from the Park to the future community in this area via a public trailhead.

3.13 Facilities and Infrastructure

Most of the Park’s existing development occurs within three (3) main areas (located in the yellow boxes in Figure 3-21) of the Park. Figure 3-21 outlines the major facilities and infrastructure found in this portion of the Park and is further discussed within this section.

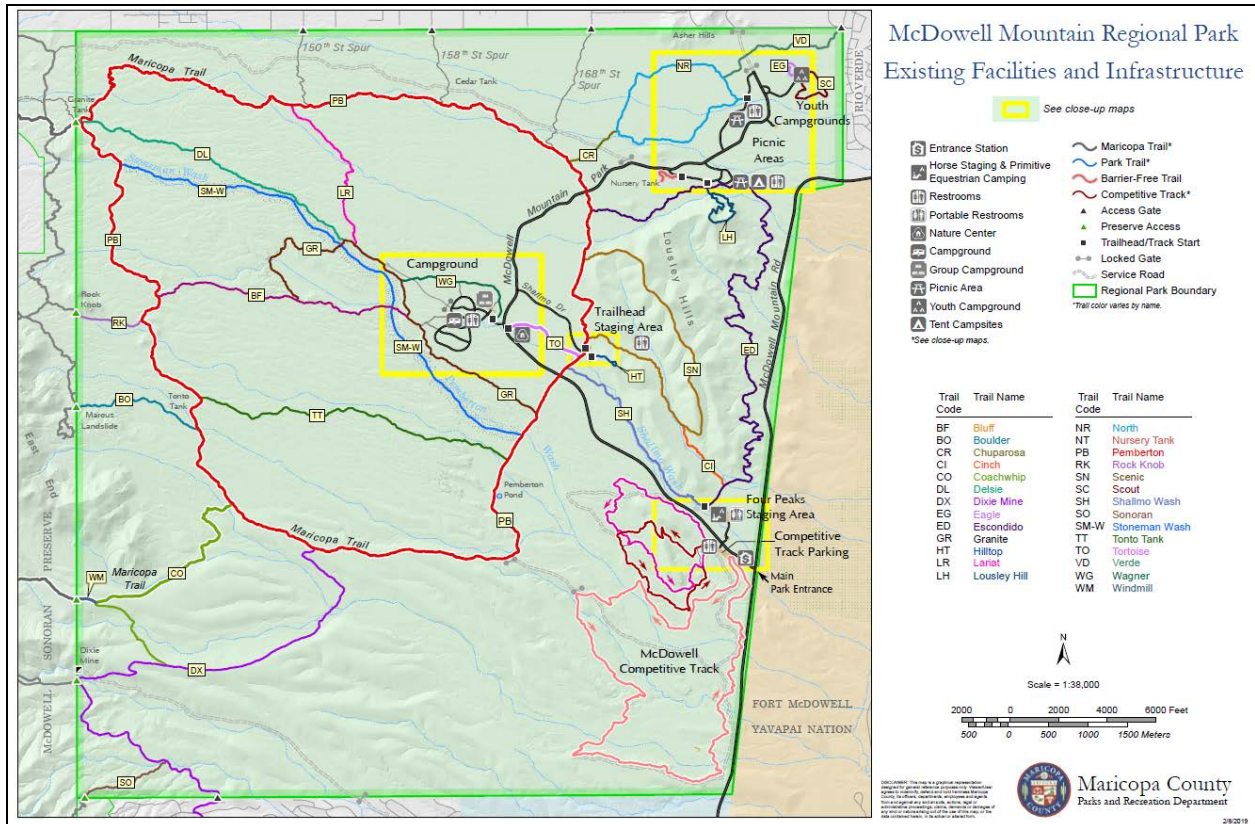


Figure 3-21: Existing Park Facilities

3.13.1 Entrance Station

The main entrance and contact station is located off of McDowell Mountain Park Drive on the southeast side of the Park and is the Park’s primary entrance.

3.13.2 Nature Center

The Nature Center a recycled/converted mobile office building, which opened in 2005, and provides, the Parks administrative offices and space to purchase retail items and Park souvenirs. Interpretive displays offer Park guests a chance to view some of the local native wildlife. South of the building is an outdoor patio space with mountain views. This space is often used for educational purposes by the Park interpretive ranger.



3.13.3 Maintenance Compound

Once inside the Park, Thomas Thumb Drive provides access to the maintenance compound. A fueling station, vehicle storage area, tools, and other equipment is housed within the maintenance compound. The asphalt paved compound is surrounded by a chain link fence. Surface drainage flows from the west side of the compound to the east. One (1) 6,000-gallon double wall unleaded gasoline tank is located on site. The tank is equipped with a secondary containment sensor, access port, vent, and emergency warning light in case of a leak.

A construction wash drain slab and drainage sump is located near the southeast corner of the compound. This area may be utilized as a wash rack for vehicles; however, the discharge permit will need to be renewed every five (5) years though the Arizona Department of Environmental Quality (ADEQ).

A 1,250-gallon septic tank and clean out are located near the northeast corner of the compound just outside the fence opposite of the two core volunteer sites. The septic tank releases into a leach field directly northwest of the tank location.

All storm water runoff from the site leaves the site one of two ways: runoff sheet flow which flows east from the site or into the wash rack and spill control drains and thereby into the underground rock pit located southeast of the outside of the compound.

For maintenance, inspection, and spill control measures for this area, refer to the onsite Safety Data Sheets (SDS) sheets and the spill containment kit.

A 100,000 gallon steel plate ring wall water reservoir is located at the southwest corner of the compound which receives its water from Rio Verde Utilities Inc., supplied by the pump station located near the northeast corner of the Park.

3.13.4 Picnic Areas

MMRP currently offers three reservable picnic ramadas with a total of 15 picnic tables within those areas. Ramadas may be reserved for a fee. If not marked as reserved, all picnic ramadas are available on a first-come, first-served basis. All picnic sites are considered day-use only; all have restrooms nearby. Additionally, there are over 100 picnic tables throughout the developed areas of the Park that may be utilized on a first-come-first-serve basis. Table 3-10 describes each picnic ramada.



Ramada	Description
1 & 2	On the north side of the staging area, this area has two ramadas each has 4 picnic tables and 1 large grill and share a large fire ring. For a total of 8 tables, this area can seat about 48-64.
Small	On the east side of the staging area, has 1 picnic table, one large grill and a fire ring. This area can seat about 6-8.
Group	On the north side of the Thom's Thumb Drive, has 6 picnic tables and can seat about 36-48, and 2 large grills and a fire ring. This ramada is closest to the Playground located between the two campground loops.

3.13.5 Campgrounds

The 1967 MP designated approximately 1,097 acres for camping which included tent, trailer attached, and trailer detached sites. Individual campsites would include a cleared area for a tent or trailer, picnic table, fireplace grill, and are located not more than 300 feet from running water and a comfort station. Within those designated 1,097 acres, nearly 6,582 individual camping sites would have been incorporated; the majority of those sites utilized for tent camping. The 1967 MP acknowledges the importance of providing camper's access to a range of camping types from basic tent to developed Recreational Vehicle (RV) camping as well as the prime landscape to offer this type of recreation. Today MMRP is one of the most sought after RV camping parks out of all of the regional parks and offers 80 RV camp sites, as well as group camp, youth camp, semi-developed, and primitive campsites. Campground amenities include access to a dump station along with the following as per the Department's Camping Policy:

- Developed: includes electricity, water, and is in close proximity to restrooms with or without showers, picnic table, and a grill/pit.
- Semi-Developed: may have shade, plumbed restrooms with or without showers within close proximity, picnic table, and a grill/pit.
- Primitive: may include picnic tables, and grill/pit. These campsites are generally in areas with no utilities or plumbed restrooms.
- RV Core Volunteer Sites: Include shade, electrical/water/sewer hookups, picnic tables, and grills. These sites are reserved for camp core volunteers, but may occasionally be available to rent.

Campsites are still not considered exclusive to one type of camping; the various campgrounds provide various amenities to accommodate differing camping types. RV camp sites can be reserved either online or by phone. Reservations for tent camp sites are taken by phone. All campground (with the exception of the youth and group camp areas) restrooms offer flush toilets and showers.

Youth Camp Area (Developed in the early 1970s) – This area is used for scout groups and other youth groups under the age of 18 years (up to 100 people). Groups must be adult-supervised. The Youth Camp Area offers 1.5 acres of primitive camping



. Site amenities include: two (2) grills, a large fire ring, two (2) shade structures, flagpole, four (4) picnic tables and three (3) Port-A-Johns. Running water is not available; however, potable water can be obtain via a water spicket located near the center of the camp. Additionally, the day use trailheads and hiking trails located on Asher View Drive are equipped with restrooms (shower facilities are not available yet).

North Loop Campground (Developed in 1985) – The North Loop Campground (Figure 3-22) has 38 campsites and two (2) core volunteer sites all with water and electrical hookups, picnic table and barbeque grill at each site, close proximity to the playground, as well as access to the dump station. This campground is considered "developed" camping. Two (2) free standing restroom/shower houses are located at either end of the loop along Thom's Thumb Drive.



Figure 3-22: RV Back-in space

South Loop Campground (Developed in 1991) – The South Loop Campground has 36 campsites and two (2) core volunteers, all with water and electrical hookups, picnic table and barbeque grill at each site, close proximity to the playground, as well as access to the dump station. This campground is considered "developed" camping. Two (2) free standing restroom/shower houses are located at both ends of Whitehead Way and two (2) are located along the outside loop roads.

Group Campground (Developed in 1958) – The three (3) acre Group Campground Parking area can accommodate 30 RV units for day use or overnight camping. It features restrooms with flush toilets, a covered ramada with six (6) picnic tables, a large barbecue grill, and a large fire ring for campfires. This area also serves as an overflow camping area during the busy season.

Tent Camping at Asher Circle and Palo Verde (Developed in 2010 - Originally developed for day use in the early 1970s) – The Tent Camping Area provides thirteen (13) individual tent pads, picnic table, fire pit, and grill. Restrooms with flush toilets are typically located within 500 feet of every site (Figure 3-23).



Figure 3-23: Dispersed Camping



Figure 3-24: Four Peaks Staging Area



Other camping areas – When necessary, the Trailhead Staging Area, is utilized for overflow camping space. Both group camp sites can be rented out as well. Minks Camp is approximately 0.30 acres in size and includes two (2) shade structures, picnic table, grill, ring fire pit, and a single Port-A-John. The second of the smaller group camps is Eagle Camp which sits at about 0.10 acres in size and includes a shade structure, picnic table, grill, ring fire pit and a single Port-A-John. Park’s core volunteers are provided with sites that can accommodate up to a 45' RV and are considered "Developed Sites" with water, septic and an electrical hookup, as well as a picnic table, barbecue, and fire ring.

Backcountry Camping

Overnight backpacking, with a permit, is allowed. This is for “low impact” camping; i.e., no fires and pack out what is packed in.

3.13.6 Playground

The Park renovated an old playground with new nature themed playscape equipment in 2013 (Figure 3-25). The Park has one playground which is currently located between the north and south campground loops. With the construction of a new nature center, it is expected that the playground will be relocated to the new nature center site. Improvements to the equipment are also expected to occur during the construction of the new nature center and will complete the playscape experience with additional pieces, shade, and seating.



Figure 3-25: Campground Playground Equipment

Playgrounds are inspected regularly by Park staff for obvious signs of disrepair. A certified playground inspector from the Park’s Department inspects the playground annually, to ensure each playground is safe and compliant with safety standards. Inspection reports are kept on file at MMRP’s administrative office.

3.13.7 Staging and Event Areas

MMRP is considered a destination and events park due to the many events that are held each year. The Park has three (3) main areas utilized for events: the Four Peaks staging area; the Trailhead staging area; and the Competitive Track staging area. In FY18, between



September 2017 and May 2018, the Park issued 32 Special Use Permits (SUPs) with a total of nearly 10,000 participants registered. Of those 32 planned events, 19 were considered multi-day events and included over-night camping. All three (3) staging areas have access to shade, restrooms with flush toilets, and potable water. The Four Peaks staging area is anticipated to have electricity brought to the site by 2020.

3.13.8 Potable Water

The Park receives its potable water from Rio Verde Utilities Inc., via a six-inch diameter connection to a six-inch diameter water main pipeline. The pipeline enters the Park near the northeast corner just west of the Rio Verde Community, feeding into a pump station. Two (2) vertical turbine pumps add pressure to the water and send it through a 6" x 4" eccentric reducer, past a pressure gage. The water is then pushed through a six-inch water main to a 100,000 gallon steel walled water reservoir located at the maintenance compound. The main pipeline traverses east thru the Campground where it eventually connects with McDowell Mountain Park Road and continues north and south along that road throughout the Park. As-built drawings show that several two-inch diameter feeds have been installed in various locations and connect to the six-inch waterline.⁴⁵

3.13.9 Electrical

MMRP receives its electricity from Salt River Project (SRP). Telecom is provided by Century Link. Both electrical and telecom enter the Park from the Main entry located at the intersection of McDowell Mountain Park Road and McDowell Mountain Road.

3.13.10 Asset Inventory

MMRP was the fourth regional county Park established, and as such, many Park facilities were built in the 1960s through 1980s and are showing their age; however, a number of facilities have been renovated in the last five years. By assigning each building type an estimated lifespan, Park management can better plan budgets for the years when major repairs or replacements are estimated to occur. Regarding building(s) expected usefulness, or lifecycle terms, management will have to decide whether to renovate or replace the existing infrastructure; this appendix section is to be updated and replaced as needed.

For example, the most visible Park assets are the monument sign and the entrance station which were both rebuilt in 2010/2011. With a 50-year useful lifespan for these two structures, it can be estimated that both will need replacement or extensive renovation by 2060. Another highly visible asset to the Park is the nature center (purchased/placed from another County Department in 2005). This building consists of a triple wide mobile unit which was previously owned and operated out of by the Maricopa County Coroner's Office. MMRP is the only county park that does not have a newly built Leadership in Energy and Environmental Design (LEED) certified nature center. (Appendix H contains a full asset inventory for MMRP).

⁴⁵ McDowell Mountain Park Improvements Phase 9, Utility Infrastructure Report, February 1985.



3.14 Socioeconomics

Nearly 40% of the state’s residents live in Maricopa County. This section compares population characteristics in more detail at the state, county, and Park levels.

3.14.1 Population Characteristics

The 2018 Census reveals that the State of Arizona has 7,171,646 people (a 28.5% increase from the US 2000 census⁴⁶) with 4,307,033⁴⁷ residing in Maricopa County. Women slightly outnumber men in the State and County; and women also outnumber men as visitors to the Park. There were 443,971 households with people under the age of 18⁴⁸ years old. County-wide, the median age was 34.6 years compared to 42.5 for the Park. This is detailed in Table 3-11.

Population by Sex/Age	State of Arizona¹	Maricopa County¹	McDowell MRP (2007-2008)² Visitors	McDowell MRP (2012-2013)³ Visitors
Total Population	6,392,017	3,817,117	76,423	66,126
Male	3,175,823 (49.6%)	1,888,465 (49.5%)	(68.4%)	(45%)
Female	3,216,194 (50.0%)	1,928,652 (50.5%)	(31.6%)	(52%)
Under 18	1,629,014	1,007,861	<i>n/a</i>	<i>n/a</i>
18 & over	4,763,003	2,809,256	<i>n/a</i>	<i>n/a</i>
20 - 24	442,584	266,872	<i>n/a</i>	<i>n/a</i>
25 - 34	856,693	541,126	<i>n/a</i>	<i>n/a</i>
35 - 49	1,249,516	786,104	<i>n/a</i>	<i>n/a</i>
50 - 64	1,141,752	640,768	<i>n/a</i>	<i>n/a</i>
65 & over	881,831	462,641	<i>n/a</i>	<i>n/a</i>
Median Age	35.9	34.6	45.91	46.75
¹ Source: https://www.census.gov/programs-surveys/popest/data/tables.html ² ASU Park Visitor Study and visitation for 2007-2008. ³ ASU Park Visitor Study and visitation for 2012-2013. Note: totals may not equal 100% due to rounding. <i>n/a</i> = data not available for direct comparison				

The most noticeable differences in race or ethnicity during the 2012-2013 ASU Park Visitor Study were among the following: 93.5% of Park visitors self-identified as white (up slightly from 93.4% in 2007-2008); and 3.0% as Hispanic (down slightly from 3.9% in 2007-2008).⁴⁹

⁴⁶ As result of the population increase, Arizona gained one member to the House of Representatives, bringing the number to nine for the state.

⁴⁷ Population and Housing Unit Estimates, Maricopa County, Vintage 2017 Population Estimates, <https://www.census.gov/programs-surveys/popest/data/tables.html> as accessed December 15, 2018.

⁴⁸ 2010 US Census Bureau, <https://www.census.gov/programs-surveys/decennial-census/decade/decennial-publications.html> as accessed December 15, 2018.

⁴⁹ 2012-2013 ASU Park Visitor Study Final Report, page 232.



3.14.2 Census Tracts

The Maricopa County census tracts that include or are adjacent to the Park (tracts 101.01, 9807, 2168.43, 2168.51, 2168.49, 2168.19, 2168.20, and 9412) have a total population estimate of over 30,300 people⁵⁰ (Figure 3-26).

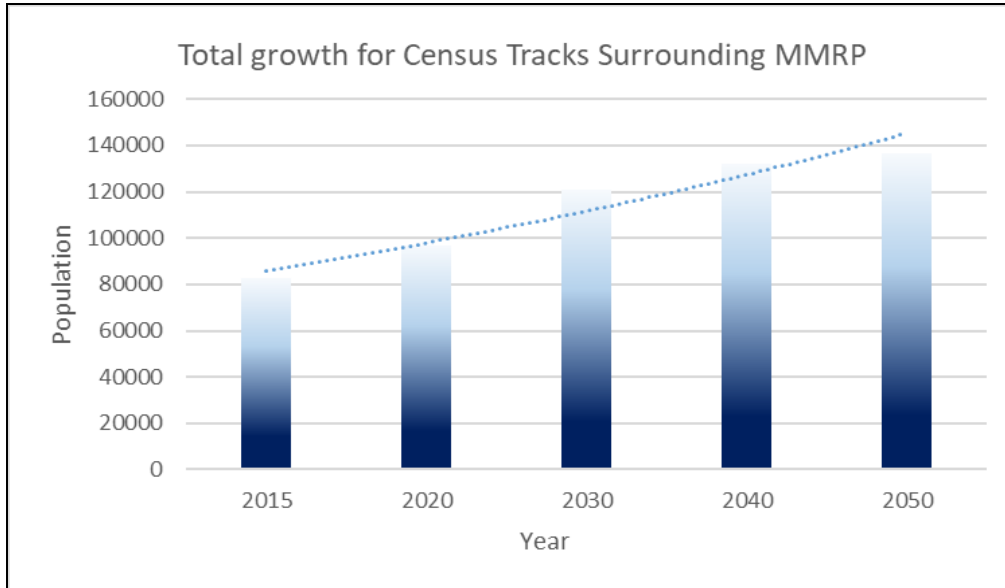


Figure 3-26: Population Growth via Census Tract

3.14.3 Population Forecast

In the Maricopa Association of Governments (MAG) document entitled “Socioeconomic Projections; Population, Housing, and Employment by Municipal Planning Area and Regional Analysis Zone” (June 2016),⁵¹Maricopa County is forecasted to increase by roughly 25% over the 2015 base population by the year 2050. This means that the region will experience a growth of just under one million people during each decade.

The Scottsdale Municipal Planning Area (MPA) alone is projected to grow by nearly 100,000 people, requiring the Park to pay close attention to growth in the eastern part of the metro-area. Those MPA’s closest to the Park are shown in Table 3-12.

⁵⁰ U.S. Census <https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk> as accessed December 15, 2018.

⁵¹ Socioeconomic Projections. June 2016. http://www.azmag.gov/Portals/0/Documents/2016-06-23_2016-MAG-Socioeconomic-Projections_June-2016_FINAL.pdf

**Table 3-12: Total Resident Population
(July 1, 2010 and Projections July 1, 2020 to July 1, 2050)**

	2010	2020	2030	2040	2050
Fountain Hills	23,300	26,000	28,300	30,400	32,600
Scottsdale	231,300	255,000	290,800	308,700	312,000
Fort McDowell Yavapai Nation	1000	1000	1000	1100	1100
County Total	3,823,900	4,507,200	5,359,300	6,175,000	7,410,800

Source: MAG, Socioeconomic Projections, June 2016. http://azmag.gov/Portals/0/Documents/2016-06-23_2016-MAG-Socioeconomic-Projections_June-2016_FINAL.pdf as accessed January 7, 2019.

3.14.4 Employment, Income, and Educational Attainment

The State of Arizona had an unemployment rate of 4.7% in November 2018 according to the Bureau of Labor and Statistics.⁵² U.S. Census data also shows that 31.4% of Maricopa County residents have attained a bachelor's degree or higher; over 2% higher than the state as a whole. Likewise, the median household income was \$58,580 which is over \$5,070 above the statewide median (Table 3-13).

Table 3-13: Employment and Education

Population	State of Arizona ¹	Maricopa County ¹	McDowell MRP (2007-2008) ²	McDowell MRP (2012-2013) ³
Employed	1,374,222	889,499	49.3%	59.9%
Median household income	53,510	58,580	25% (More than \$120,000)	31.4% (More than \$120,000)
College coursework	1,143,553	666,344	63.8% Bachelors	45.9% Bachelors
Bachelor's degree or higher (graduate school)	1,284,657	858,772	24.7% Graduate School	48.7 Graduate School

¹ US Census Bureau, State and County Quick Facts, <http://quickfacts.census.gov/qfd/states/04/04013.html> as accessed June 18, 2015.

² ASU Park Visitor Study, 2007-2008, page 143.

³ ASU Park Visitor Study, 2012-2023, page 205.

⁵² U.S. Bureau of Labor Statistics. <http://www.bls.gov/eag/eag.az.htm> as accessed January 7, 2019.



3.14.5 Obesity

The Centers for Disease Control and Prevention reports that 63.2% of adults in Arizona were either overweight (34.2%) or obese (29%) in the year 2016.⁵³ The Maricopa County Department of Public Health reports that 62.9% of adults in Maricopa County were either overweight (40.0%) or obese (22.9%) between 2006 and 2010⁵⁴.

3.15 Visitation and Tourism Trends

The State of Arizona attracted 43.97 million domestic and international overnight visitors or equal to roughly 120,465 visitors per day in 2017.⁵⁵ Of those visitors, 87% of overnight visitors were domestic travelers and 13% were international travelers.⁵⁶ Domestic visitors were approximately 43.6 years old, stayed in Arizona for 3.5 nights, and spent over \$645 per visit.⁵⁷

3.15.1 Residency⁵⁸

During fiscal year (FY) 2012-2013, 13.9% of the Park's visitors were from out of state and 2.5% were from out of the country⁵⁹ (Figure 3-27). Most Park visitors are residents of Arizona (77%), predominantly coming from the metropolitan area and driving an average of 81.38 miles⁶⁰ to arrive at the Park. The top five metro-area locations include:

- Scottsdale 21.2%
- Phoenix 18.7%
- Fountain Hills 10.3%
- Gilbert 5.4%
- Mesa 5.4%

⁵³ Nutrition, Physical Activity and Obesity Data, Trends and Maps web site. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion, Division of Nutrition, Physical Activity and Obesity. Available at https://nccd.cdc.gov/dnpao_dtm/rdPage.aspx?rdReport=DNPAO_DTM.ExploreByLocation&rdRequestForwarding=Form

⁵⁴ Maricopa County Community Health Assessment 2012, Page 10.

https://www.maricopa.gov/DocumentCenter/View/40794/Recommendations_for_Maricopa_County_Health_Assessment_Abt_Associates_2012 as accessed December 14, 2018.

⁵⁵ Arizona Office of Tourism, <https://tourism.az.gov/research-statistics/economic-impact> as accessed December 12, 2018.

⁵⁶ Arizona Office of Tourism, <https://tourism.az.gov/sites/default/files/AOT%20Quarterly%20visitor%20tracking%202017Q4.pdf>, as accessed December 12, 2018.

⁵⁷ Arizona Office of Tourism, <https://tourism.az.gov/sites/default/files/Arizona%20Visitor%20Profile%202017%20v.%202016.pdf>, as accessed December 12, 2018.

⁵⁸ 2012-2013 ASU Park Visitor Study Final Report, page 32, table 1.18.

⁵⁹ 2012-2013 ASU Park Visitor Study Final Report, page 32, table 1.18.

⁶⁰ 2012-2013 ASU Park Visitor Study Final Report, Question 5, page 234.

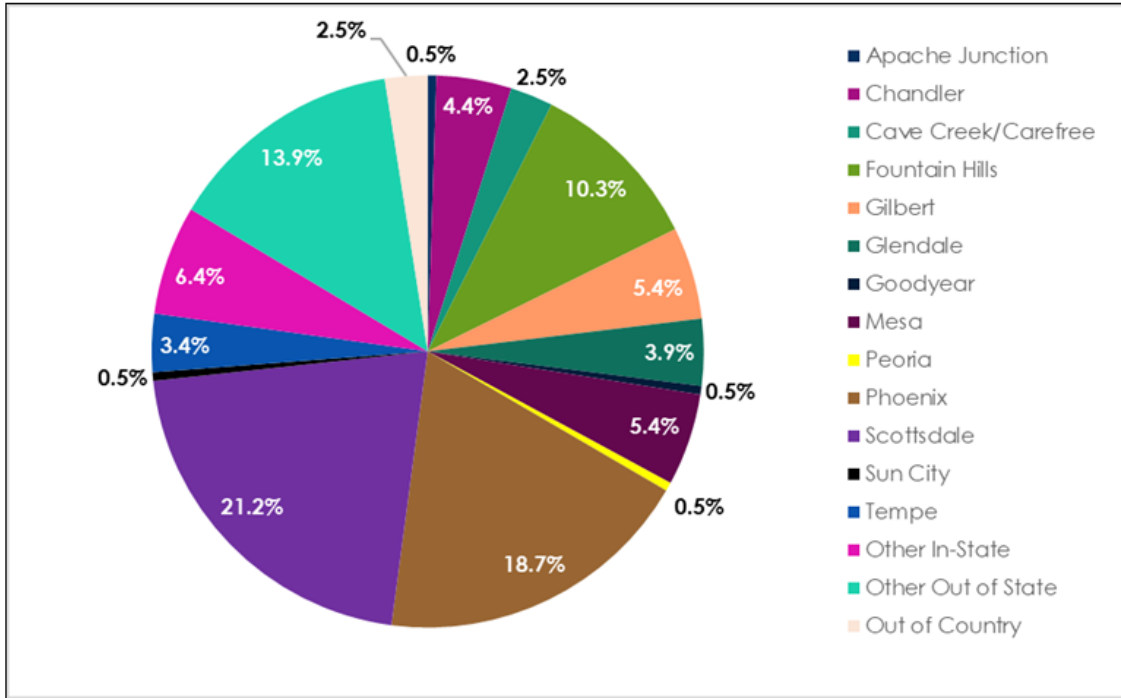


Figure 3-27: Visitor Residency

3.15.2 Park Visitation

During FY 2012-2013, 59,089 visitors entered the Park, the lowest visitation out of the last 10 fiscal years (Figure 3-28). Park visitation has fluctuated greatly over the previous 10 fiscal years with the average holding at about 75,527 visitors over the past ten years.

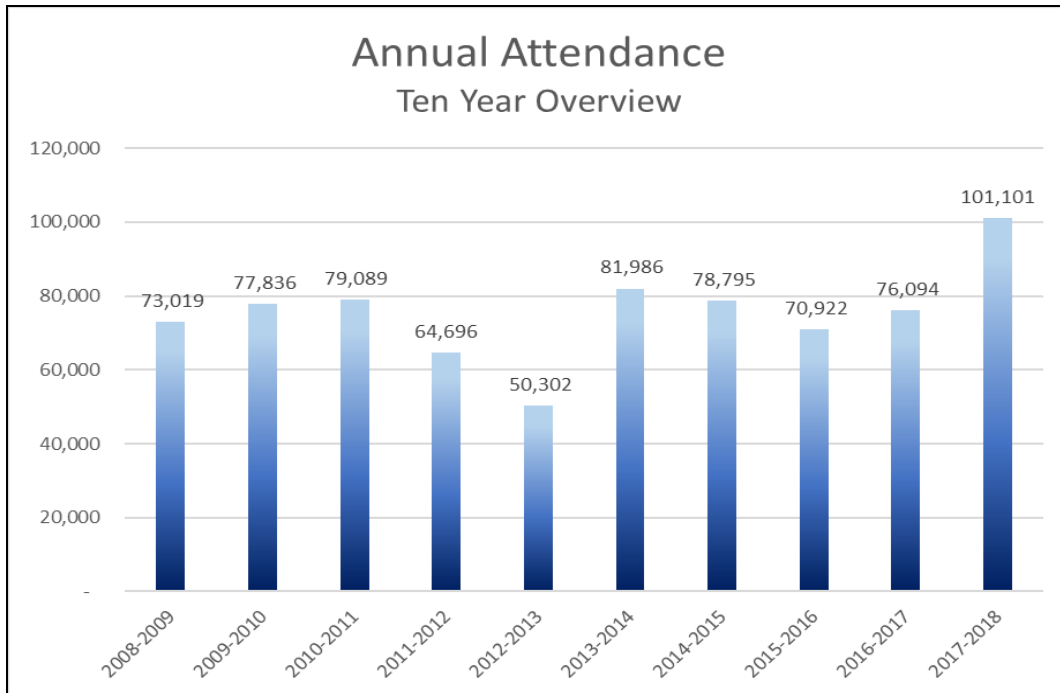


Figure 3-28: Visitation by Fiscal Year



Visitation can fluctuate for a variety of reasons and in the case of MMRP, cooler temperatures usually result in November through March being the busiest months with the exception of December when a good portion of the seasonal visitors leave for the holidays and return after the New Year. Nearly all of the events the Park’s hold during the year are held between October and March. The months with the lowest visitation are July and August when temperatures soar (Figure 3-29).

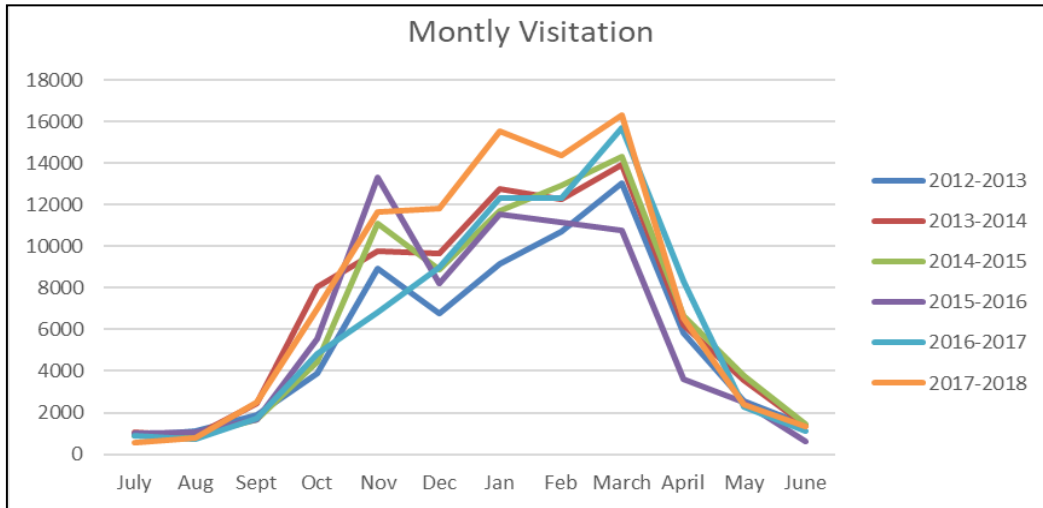


Figure 3-29: Visitation per fiscal month within fiscal year

Forecasting future visitation carries with it its own uncertainties; preliminary trend analysis indicates a positive trend line to future visitation (as shown by the exponential trend line applied in Figure 3-30). This estimate of future visitation does not take into account any Park improvement proposals mentioned later in this master plan and is based solely on past visitation data and standard spreadsheet trend line functions.

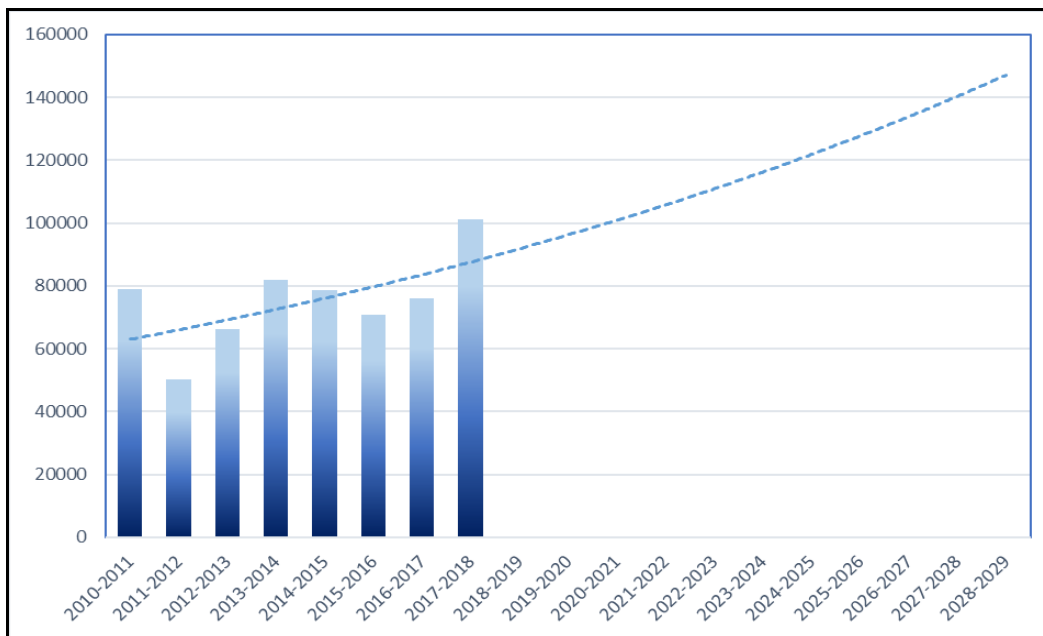


Figure 3-30: Actual and forecasted (exponential trend line) visitation per fiscal year



3.16 Park Use and Visitor Preferences

This section describes Park visitor attitudes, preferences, or use patterns as gathered by ASU and as reported in the 2012-2013 Park Visitor Study Final Report.

3.16.1 Day and Overnight Use^{61, 62}

About 93% of visitors were in the Park for a “day use” activity, spending an average of 2.97 hours. This is up from 2.66 hours reported in the 2007-2008 visitor use survey. Of the 7% of visitors that camped, the average stay was 2.97 nights (up from 2.66 nights in 2007-2008).

According to the Department’s Point of Sale (POS) system, the FY18 analytics obtained for day users verse overnight users indicates that about 65% of all visitors were in the Park as day users leading to a 28% increase of over night campers compared to the 2012-2013 survey years.

3.16.2 Primary Activity⁶³

Park visitors engage in a range of activities during their visit (trail hiking, picnicking, photography, mountain biking, nature study, and more); one activity is usually considered the primary activity, or what the visitor specifically came to the Park to do. The top five primary activities in 2012-2013 were:

- Mountain biking (58.9%)
- Trail hiking (29.2%)
- Special Event (9.6%)
- Horseback riding (7.2%)
- Photography (6.7%)

3.16.3 Return Visits

Seventy-eight percent (78%) of those surveyed were return visitors, visiting the Park nearly 21.4 times on average in the previous twelve months⁶⁴. When asked what prompts visitors to return to the Park, trail-related responses were most common; other written responses included the Park being close to home, the competitive track, and the Parks wildlife viewing opportunities.⁶⁵

Return visits based on activity revealed that runners/joggers made 41 return visits and mountain bikers returned twenty-seven (27) times within the last twelve (12) months from when the survey was conducted (both by far the highest mean averages in the

⁶¹ 2012-2013 ASU Park Visitor Study Final Report, Question 4, page 232

⁶² 2012-2013 ASU Park Visitor Study Final Report, Question 4, page 232.

⁶³ 2012-2013 ASU Park Visitor Study Final Report, Question 6, page 232.

⁶⁴ 2012-2013 ASU Park Visitor Study Final Report, Question 1, page 232.

⁶⁵ 2012-2013 ASU Park Visitor Study Final Report, Question 7b, page 247.



system). Hikers made over 13 return visits in the previous twelve (12) months and horseback riders averaged about seven (7) return visits.⁶⁶

3.16.4 Reasons for Use⁶⁷

Visitors come to the Park for a variety of reasons, the top reasons identified by survey takers included:

- Enjoy physical exercise
- Observe the scenic beauty
- Improve my physical health
- Enjoy the sounds and smells of nature
- To experience the open space.
- To experience or do something new

3.16.5 Satisfaction

When asked about their level of satisfaction with the Park, 73% of those surveyed were extremely satisfied and 27% were very satisfied with the Park; no responses were identified in the lower three categories.⁶⁸

3.16.6 Attachment to Park

Park visitors often form strong attachments to their favorite Park or locations within a Park and about 75.6% of the Parks visitors agreed that they are, indeed, very attached to this Park. Nearly 68% agreed that the Park means a lot to them; 70% agreed that this Park offers the best settings and facilities for the activities that they enjoy most.⁶⁹ Favorite parts of the Park included many trail-related responses, specifically mentioning Pemberton Trail and the Park's views.

3.16.7 Visitor Spending and Economic Impact

The 2012-2013 ASU Visitor Use Survey shows that visitors reported spending \$309.38 per group for their visit to the Park (down significantly from \$397.50 in 2007-2008). Despite the drop over the years, MMRP is significantly higher than the system-wide average of \$157.63 per visit.⁷⁰

In 2014, the Department asked ASU to study the economic impacts⁷¹ of the County Park system. Impacts were estimated by inputting operating expenses, visitor spending, and other data into IMPLAN© software to determine multiple types of impacts. MMRP ranked

⁶⁶ 2012-2013 ASU Park Visitor Study Final Report, Table 3.4 page 88.

⁶⁷ 2012-2013 ASU Park Visitor Study Final Report, Question 6, page 235 Responses of *Important* and *Extremely Important*.

⁶⁸ 2012-2013 ASU Park Visitor Study Final Report, Question 1, page 234.

⁶⁹ 2012-2013 ASU Park Visitor Study Final Report, Question 7, page 236.

⁷⁰ 2012-2013 ASU Park Visitor Study Final Report, Question 8, page 237 and Table 2.9, page 59.

⁷¹ 2014 MARICOPA COUNTY PARKS AND RECREATION DEPARTMENT STUDY REPORT Economic Impact of the Maricopa County Parks and Recreation System, Chhabra, et al.



third highest out of all of the Maricopa County Regional Parks in visitor spending related impacts and in operating expenses (Table 3-14).

Table 3-14: Economic Impact Based on Visitor Spending and Operating Expenses		
Park level	Visitor Spending	Operating Expenses
Full-time jobs created	16.0	12.4
Total economic impact	\$1,374,465.10	\$1,430,856.01
System-wide		
Full-time jobs created	138.9	116.4
Total economic impact	\$11,310,284	\$12,864,318

3.16.8 Importance and Use of Park Facilities

Park visitors were surveyed about which facilities are most important to them. In the 2012-2013 survey, restrooms, parking availability, trail mileage signs, multi-use trails, and informational displays or kiosks were the most important features at the Park. The least important facilities were: playground, showers, equestrian facilities, Park camp sites⁷²

When visitors were surveyed about what facilities they would be likely to use, if provided, outdoor education seminars (in-depth), Park programs, special interest programming (i.e. stargazing, yoga, etc.), special events, and guided tours/programs, rounded out the top five responses. The facilities that they would not use or don't know if they would use were: mountain bike rentals, horses for rent/stables, WiFi connection/hotspots, and mobile apps.

⁷³

3.17 Local Recreation, Needs, and Opportunities

MMRP has a unique opportunity to offer visitors camping, competitive tracks, multi-use trails, wildlife viewing, picnicking, hunting, and other opportunities as approved Park activities. The Park also offers educational and interpretive events on a regular basis. Many of these activities cannot be found elsewhere in the community. Other recreational opportunities near MMRP include (Table 3-15 and Figure 3-31):

Table 3-15: Local Recreational Opportunities			
Facility	Distance from Park	Acres / Miles of trails	Recreational Opportunities
McDowell Mountain Ranch Park	~5 miles	n/a	Aquatics, sports fields or turf areas, splash pad, Skateboard Park, fitness center, and more.

⁷² 2012-2013 ASU Park Visitor Study Final Report, Question 4, page 252.

⁷³ 2012-2013 ASU Park Visitor Study Final Report, Question 10, page 256.



City of Scottsdale – Sonoran Preserve	Adjacent (west)	30,580 acres	Mountain biking, hiking, horseback riding, archery hunting
George Cavalliere Park	~3.77 miles	34 acres/1mile loop	Basketball, hiking, and playground
Pinnacle Peak Park	~5 miles	150 acres/1.75 miles	Hiking
Town of Fountain Hills – Open Space, Botanical Garden, and four local Parks	~2 miles	100 + acres	Nature Trails, open turf, hiking, walking paths, playgrounds, tennis and basketball courts, Dog Park, and more
Town of Fountain Hills – McDowell Mountain Preserve	Adjacent (south)	16,000 acres/11.5 miles	Mountain biking and hiking
Tonto National Forest	~2 miles	3 million acres	Mountain biking, hiking, horseback riding, camping, nature watching, cultural sites. Needle Rock Recreation Area, Horseshoe Dam Campground, Bartlett Lake Recreation Area, Sutton Recreation Area, etc.

Additional recreational opportunities:

Undeveloped Camping: Camping is allowed on National Forest lands throughout the area. Camping on in these areas requires a permit from the Forest Service.

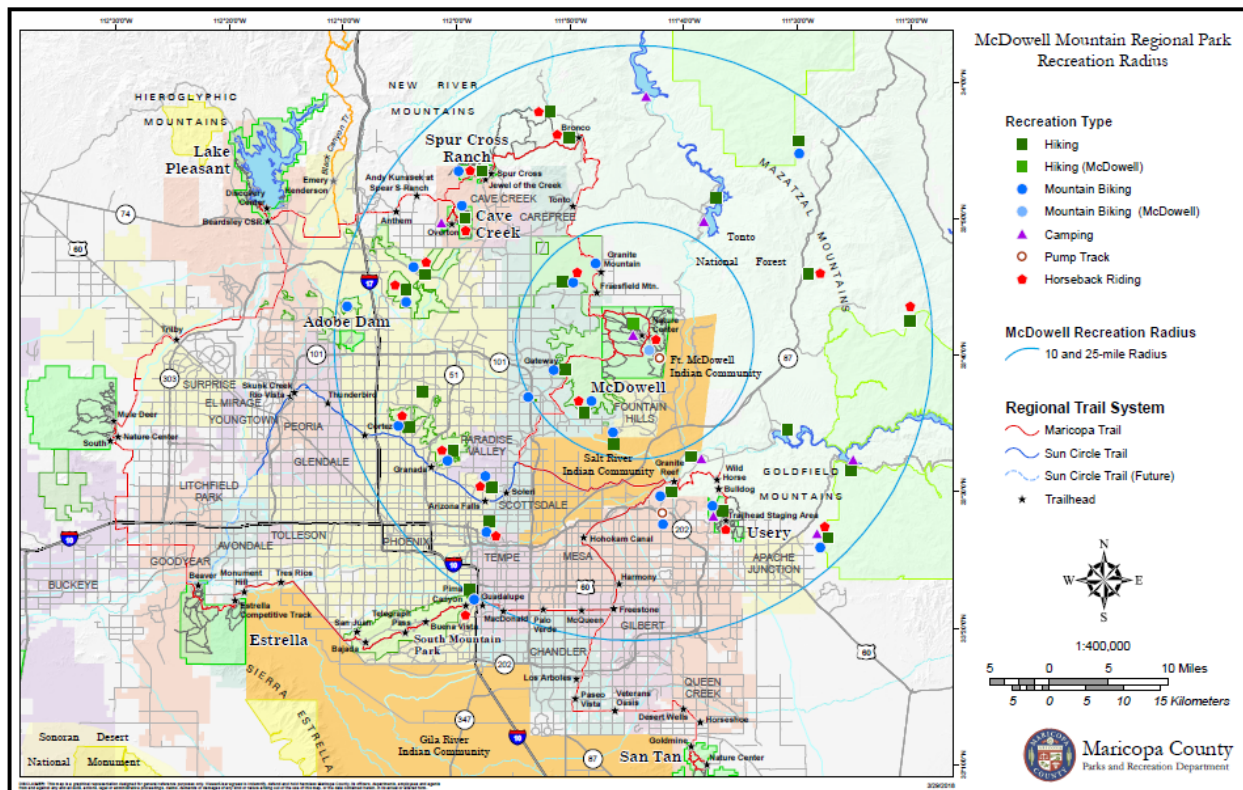


Figure 3-31: Recreation Opportunities



3.18 Park Administration and Special Functions

This section provides a brief overview of Park staffing. Additional detail may be found within the Park's annual business plan.

3.18.1 Staffing

Currently, the Park is staffed by five (5) full-time employees. This includes the Park supervisor, one (1) administrative assistant, one (1) interpretive ranger, and two (2) Park maintenance workers. The Park currently has one (1) part-time employee.

A **park supervisor** plans, organizes, coordinates and is responsible for all operations of the park while protecting park resources. This position supervises all aspects of work and performance of subordinates to facilitate productivity and efficiency. The park supervisor coordinates activities for maximum revenue and most efficient utilization of facilities including outdoor education and wellness programs for park users. This position is also responsible for marketing efforts to promote the park, operating within the budget and providing detail for formulation of budget as related to grants, capital improvement projects and park projects.

An **administrative assistant** performs clerical duties in support of park operations to include but not limited to: proper cash handling during fee collection, preparing daily deposits, reconciliation, revenue recording and reporting, administrative reporting and support, processing camping and ramada reservations, souvenir program oversight, and customer service via the phone, mail and email.

An **interpretive ranger** plans, organizes, promotes, conducts, and evaluates outdoor recreation and environmental educational programs to include maintaining and demonstrations of live animal and plant displays. This position provides customer service by assisting and providing information and park interpretation to park visitors, the general public, County departments, other agencies, volunteers, and community groups. Responsibilities also include accurate reporting of program attendance, fee collection and reconciliation, and occasional response to emergency situations.

A **park maintenance worker** performs general facilities management to include, but not limited to: cleaning and maintaining restrooms, trash collection, painting interiors and external structures, graffiti removal, minor plumbing and electrical repairs, fence repair, trail maintenance and signage, desert landscaping maintenance, and customer service to park visitors.

3.18.2 Volunteers

The volunteers in FY15-18 provided over 20,907 hours of service in roles such as core volunteers, entrance station attendants, nature center hosts, among other roles (Table 3-16). The Independent Sector estimates that the value of volunteer time was worth \$24.51



per hour for the state of Arizona in 2018.⁷⁴ This translates to volunteers providing \$512,406.06 worth of services or the equivalent of almost nine (9) full-time⁷⁵ employees, providing an enormous economic value to the Park each year.

Fiscal Year	Hours	Dollar Value ^{2*}	FTE ^{3*}
2014-2015	2,796	\$68,529.96	1.34
2015-2016	5,165	\$126,569.64	2.48
2016-2017	7,267	\$178,114.17	3.18
2017-2018 ^{1*}	5,679	\$139,192.29	2.73

1* Through 2.12.18
2* Hourly Wage of \$ \$24.51 based on Independent Sector's value of volunteer time for the state of Arizona (2017)
3* Total Hours / 2080 = Full-time Equivalent (FTE)

Table 3-16: Volunteer value by fiscal year

Core Volunteers assist the Park supervisor and serve as ambassadors to Park visitors by providing information and promoting resource protection and recreational opportunities through visitor education. Duties may include fee collection, light maintenance work, clerical tasks, trail maintenance, and special projects. In return for 40 hours of service, the Core Volunteer(s) is allowed to utilize camping sites and use Park facilities while they are serving as core volunteers.

Service volunteers may provide administrative, trails, education, special event, or maintenance assistance. Service volunteers give their time for a special project, rather than volunteering on an on-going basis. See the Volunteer Manual, Making a Difference and webpage⁷⁶ for more details on volunteer roles and responsibilities.

Episodic volunteers may assist in short-term, special projects. For example, Gravity Riders Organization of Arizona volunteers designed and constructed the pump track located at the competitive track staging area. This recreation activity is very popular amount the biking community and is one of only three like pump tracks/ bike Parks in the County.

3.18.3 Partnerships

MMRP has identified several partners or other organizations with a mutual interest in the Park's operation and success. Table 3-17 specifies existing and potential partners and their roles in the operation and improvement of the Park.

⁷⁴ Independent Sector, dollar value by state for year 2017, <https://independentsector.org/wp-content/uploads/2016/05/Value-of-Volunteer-Time-by-State-2001-2017-1.pdf> as accessed February, 2018.

⁷⁵ FTE = total volunteer hours divided by 2,080 hours (2,080 = 40 hours week * 52 weeks).

⁷⁶ Website and Volunteer Manual available here: <http://www.maricopa.gov/Parks/volunteer.aspx>



Partner	Potential or existing role
Maricopa County Agencies	MCPRD Advisory Commission: Advisory role, recommends broad policies in all planning, development, maintenance and management matters. Flood Control District (FCD): wash corridor and dam related issues. Sheriff's Office (MCSO): Regularly patrols Park, trails, and boundaries. Department of Transportation (MCDOT): Road construction and maintenance.
State Agencies	Arizona Office of Tourism: Cooperative work on attracting tourism, especially "Watchable Wildlife" tourists. Arizona Game and Fish Department: Variety of wildlife issues, advice and enforcement. Arizona State Parks: Site Steward Program (and SHPO) Volunteers regularly patrol and check on archaeological sites in Park.
Federal Agencies	BLM: Land exchange/purchase, R&PP consultation.
Local cities/towns	City of Scottsdale: Trail connections, public safety, and other partnerships. Town of Fountain Hills: Trail connections, public safety, and other partnerships.
McDowell Mountain Friends Group	A voice and advocate for the Park.
Equestrian, RV, Mountain Bike, Special Interests	Work with individual groups on special interest desires when possible.

3.19 Public Safety

The Park relies on the Maricopa County Sherriff's Office (MCSO) for law enforcement and public safety. MCSO keeps track of all incident reports and calls to the Park (Table 3-18). Note that inconsistencies with the data may exist based upon where the call was located; i.e. if it was actually outside the Park boundary but responding units did not correct that location with dispatch. The following statistics within Table 3-18 were provided by MCSO on February 5, 2019.

The Town contracts with Rural Metro to provide additional public safety and rescue support. Park staff and its volunteers also provide Park visitors with safety messages and summon assistance when needed. Park visitors are expected to know and comply with all Park rules.



**Table 3-18: MCSO Statistics
McDowell Mountain Regional Park
On View – Deputy Initiated Activities Calls for Service -initiated by a member of the public**

Calls for Service				On View			
Park	2017	2018	2019	Park	2017	2018	2019
McDowell Mountain Regional Park	31	76	2	McDowell Mountain Regional Park	957	821	63
Total	31	76	2	Total	957	821	63
Top 20 Calls For Service				Top 20 On View			
	2017	2018	2019		2017	2018	2019
ANIMAL PROBLEM - LIVESTOCK PROBLEM		3		ANIMAL PROBLEM	2		
ASSIST OTHER AGENCY	1	2		ANIMAL PROBLEM - LIVESTOCK PROBLEM	1		
ATTEMPT TO LOCATE	1	3		ASSIST TO FIRE/EMS	1	1	
BURGLARY FROM VEHICLE		1	1	CITIZEN/MOTORIST ASSIST	8	5	
CITIZEN/MOTORIST ASSIST	2	4		COMMUNITY POLICING*	3	8	
CIVIL ACTION	2	1		FOLLOW UP		2	
FOLLOW UP		2		LOUD NEIGHBORS DISTURBING		1	
INJURED/SICK PERSON	6	10		PATROL/VACATION WATCH	899	756	58
INJURED/SICK PERSON - CONTACT EMS - FIRE	1	4		SPECIAL DETAIL	2		
LOST PERSON ASSIST	2	4		SPEEDERS	4	9	5
LOUD NEIGHBORS DISTURBING	1	1		SUSPICIOUS PERSON	1		
PATROL/VACATION WATCH	1	1		SUSPICIOUS PERSON AND VEHICLE	3		
SUSPICIOUS ACTIVITY		3		SUSPICIOUS VEHICLE	4		
SUSPICIOUS PERSON	1	1		TRAFFIC CONTROL	2	2	
THEFT		2		TRAFFIC HAZARD		3	
TRAFFIC HAZARD	2	5		TRAFFIC HAZARD - TRAFFIC HAZARD LIVESTOCK		2	
TRAFFIC HAZARD - TRAFFIC HAZARD LIVESTOCK	2	16		TRAFFIC VIOLATION*	26	29	
UNWANTED GUEST		2		VEHICLE CRASH (NO INJURIES)*		1	
VEHICLE CRASH (NO INJURIES)*	2			WELFARE CHECK	1	2	
WELFARE CHECK	2	6		Total	957	821	63
Total	26	71	1				

3.19.1 Fire and Fire Bans

Park Rule R-113 outlines acceptable use of fire and grills. The Department enters into an annual fire ban during the warm summer months to help prevent destructive fires, protect the natural resources, and ensure visitor safety. The bans are lifted as soon as the prevailing wind conditions permit. Limited use of grills may be permitted, unless under an extreme fire ban.

3.20 Finances

This section includes Park budget and revenue trends. The charts or tables exhibited below reflect year-to-year trends when available. This section should not be considered a



complete audit-level look into Park finances, but rather a generalized view of some specific categories and a general trend analysis.

From the data presented here, the reader may ascertain the more recent revenue intake is less than the Park expenditures. For example, in FY 2018, the Park's revenue was \$675,910.00, but its expenses were \$395,448. This means the Park was at 100% self-sufficiency level for FY 2018.

3.20.1 Park Budget

The Park budget consists of components shown below such as: Park revenue, Park expenditures, and Park donations. Park staff is responsible for revenue generation and staying within the budget formulated by the Department's finance team.

3.20.2 Park Revenue

Park revenue comes from many sources but primarily from visitor entrance fees, camping, and souvenir sales, etc. Special use permits for events also generate revenue for the Park along with concessionaire agreements.

Other funding sources may come from grants or other partnerships, but those funds are generally earmarked for specific projects or purposes. Revenue is generally increasing each year and nearly doubled from FY2012 to FY2018 (Figure 3-32) due to improved or additional facilities as well as from improved marketing and fee increases.

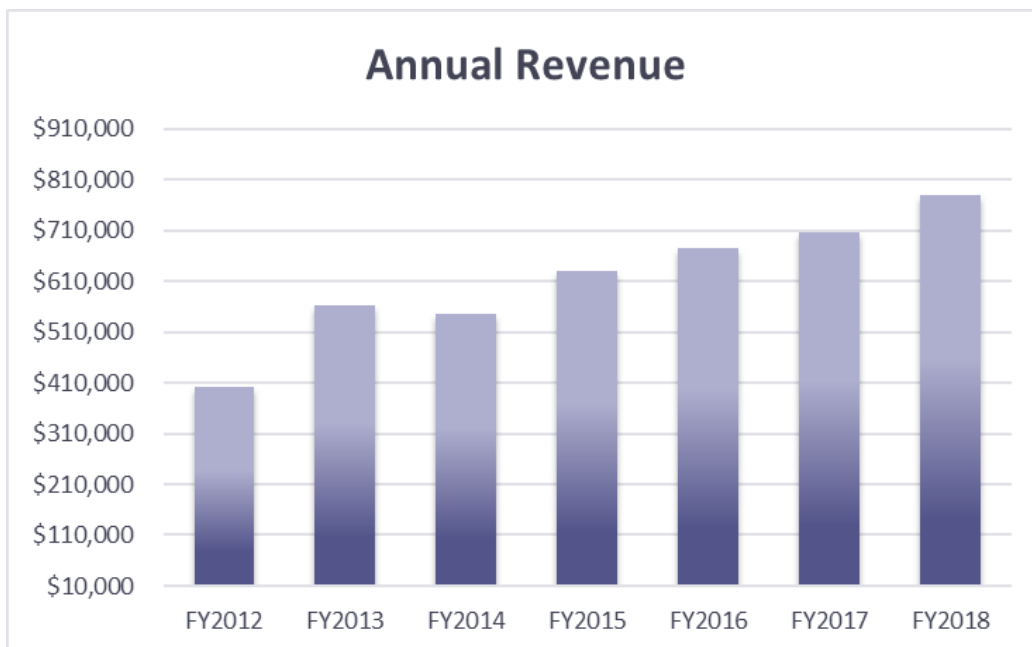


Figure 3-32: Revenue per Fiscal Year



Figure 3-33 below, demonstrates the monthly breakdown of the FY 2018. While August is the least busy month of the year for the Park, the monthly breakdown shows the highest revenue for the year. This is due to the online reservation system opening for the season allowing camping reservations to be made in advance. The cooler months of the year, especially for November and March generate the most revenue due to higher visitations and better weather.

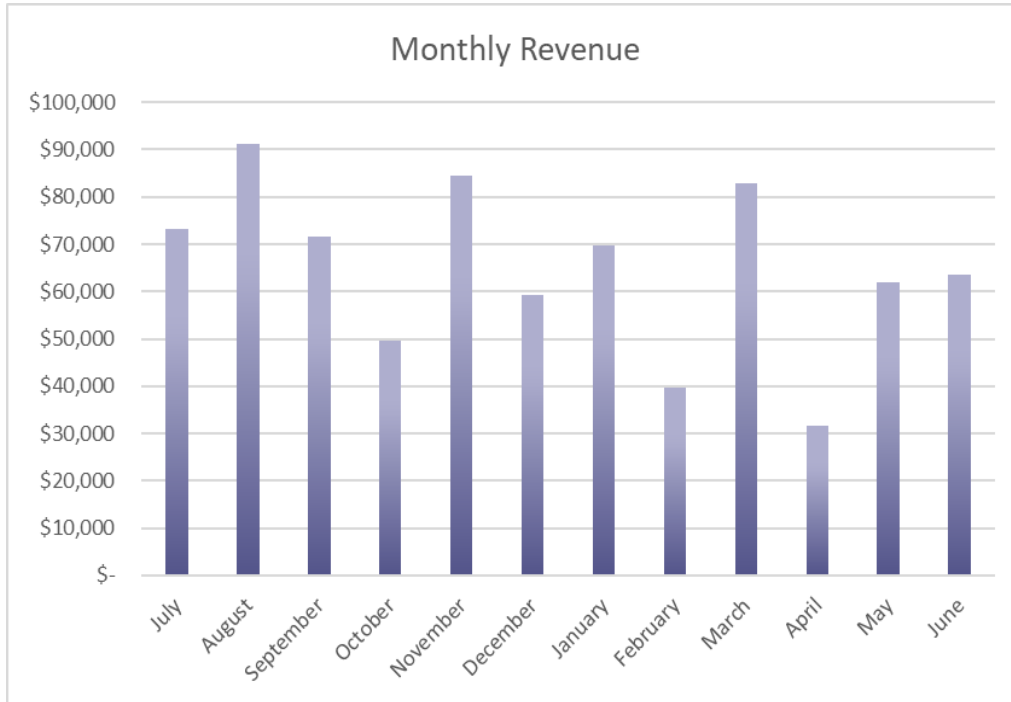


Figure 3-33: Revenue by Month in FY18

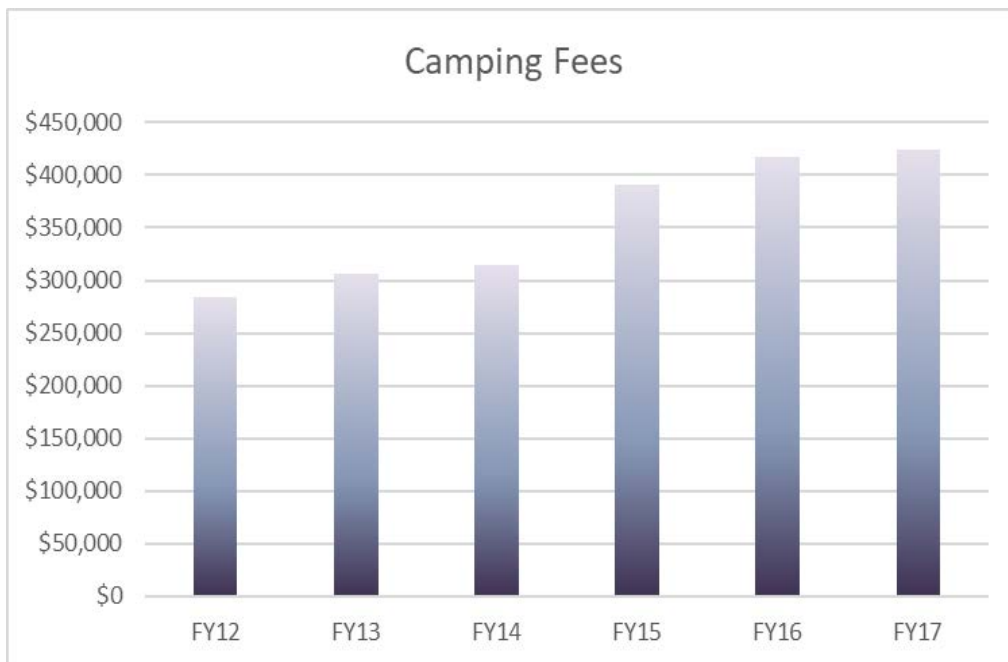


Figure 3-34: Annual Camping Revenue



Facility rentals are consistently dropping over time which may correlate with the how the Park patrons prefer to use the Park. (Figure 3-35). Rental areas include Ramadas #1, #2, and the Group Ramada.

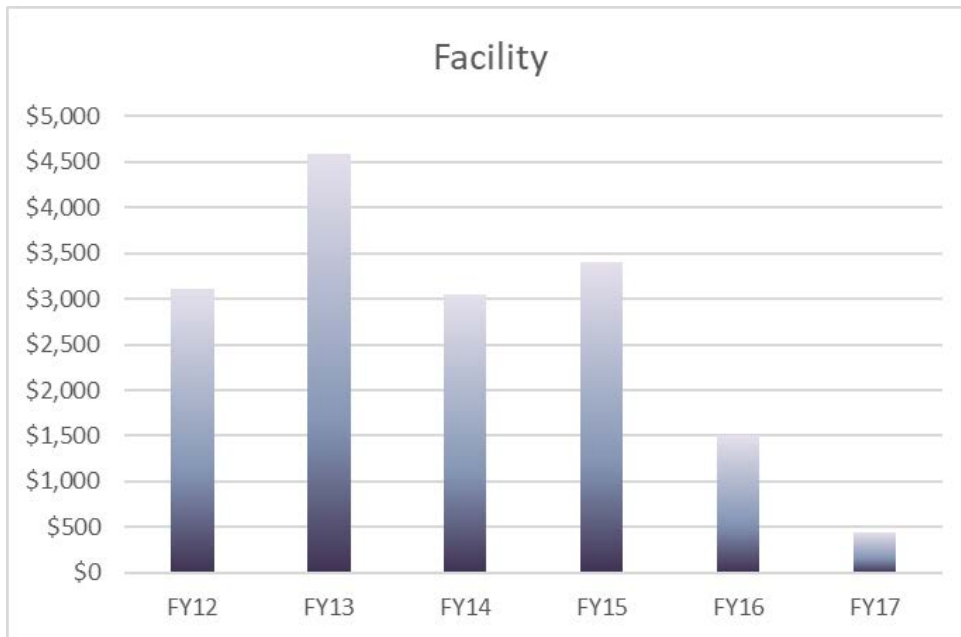


Figure 3-35: Facility Rentals

Annual pass sales show an overall upward trend from year-to-year (Figure 3-36) and are expected to increase. Park visitors have expressed their satisfaction with the annual pass program.

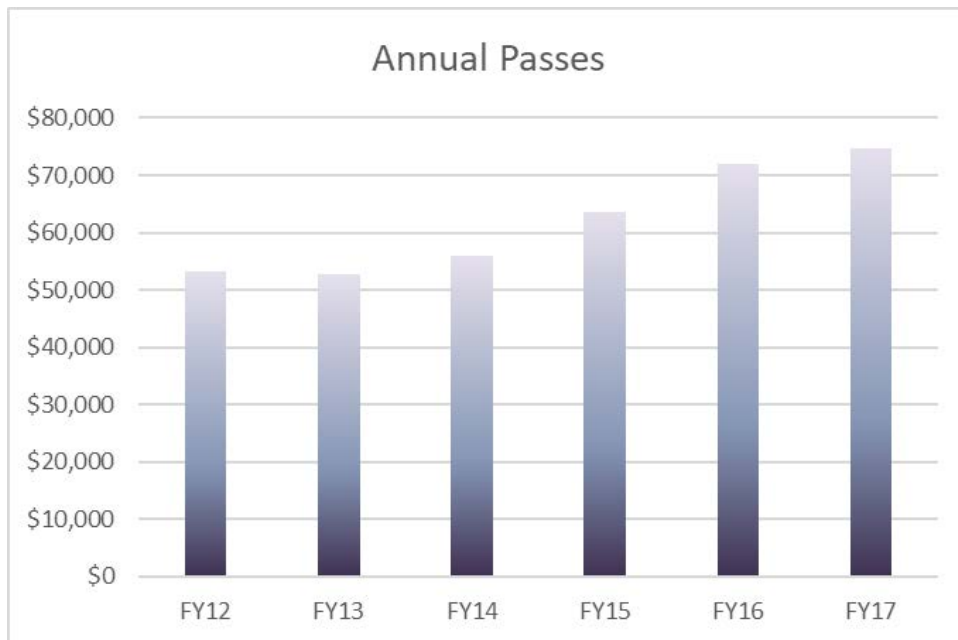


Figure 3-36: Annual Pass Revenue

Daily entry pass levels fluctuate with overall visitation (Figure 3-37).

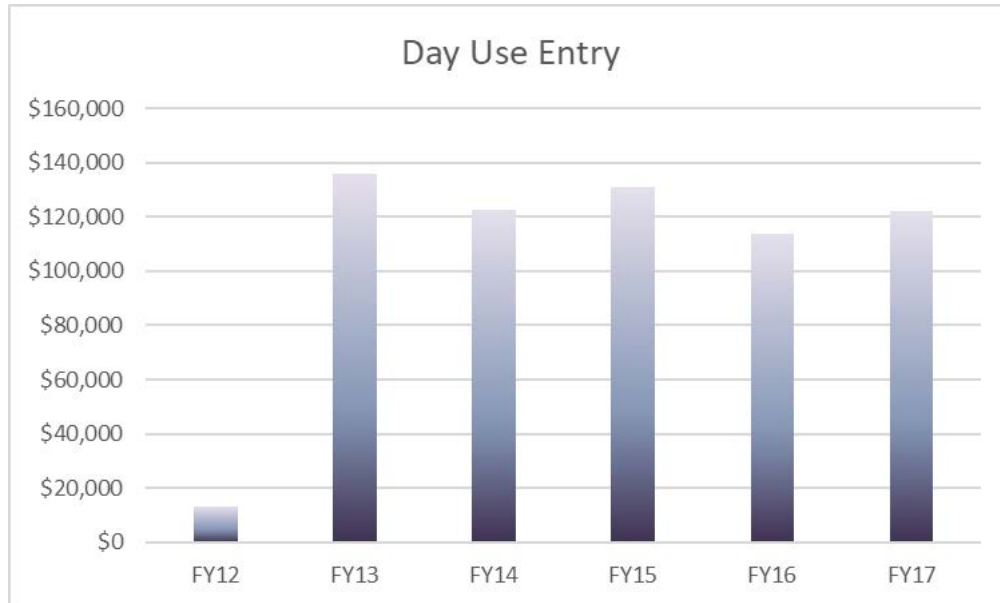


Figure 3-37: Daily Pass Entries

3.20.3 Expenditures

Park expenditures cover everything from Park staff wages and benefits, maintenance, as well as general office supplies, vehicle maintenance and fueling (Table 3-19). Although facility needs have increased, staff levels have remained the same for several years. The Park covers extra staffing needs with volunteers.

Expense type	FY 2017	FY 2018
Personal Services (wages and benefits)	\$263,578.10	\$327,187.31
General Supplies	\$21,403.93	\$21,950.28
Fuel	\$4,047.46	\$5,321.76
Utilities – electricity/water	\$62,947.96	\$63,276.32
General Services	\$33,720.14	\$38,310.43
Repairs and Maintenance*	\$9,261.65	\$8,595.06
Other	\$33,490.60	\$26,552.72
TOTAL EXPENSES (all types)	\$428,449.84	491,193.88

*includes expense categories 8203 and 8250

3.20.4 Donations

Donations to the Park are accepted pursuant to [ARS §11-941](#), Paragraph A and are used for designated items such as memorial benches, ramadas, brochures, critter care, or general use. Donations (Table 3-20) to the Park represent a small, but important, percentage of income to the Park.

	FY 2016	FY 2017
Amount	\$1,564.00	\$2,560.18



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Chapter 4 – Roads and Access

4.1 Existing Roads, Access, and Parking

4.1.1 External Roads and Access

McDowell Mountain Park Drive serves as the main access road through the Park. The paved roadway enters the Park from its intersection with North McDowell Mountain Road near the southeast corner of the Park and meanders northward through the Park for approximately 6.27 miles.

The intersection of McDowell Mountain Park Drive and McDowell Mountain Road is currently the only vehicular public access point into the Park. The Park has two other vehicular administrative access points, one of which is an unpaved extension of McDowell Mountain Park Drive extending past the north boundary and becomes the 176th Street alignment, connecting with East Rio Verde Drive approximately one (1) mile to the north. The other unpaved entrance is known as Old Jeep Trail and is located on the southern boundary near Hesperus Wash Dam. These entry points are generally gated and locked and are unused by the general public.

The Park maintains several trailhead entry points on the west and northern borders for non-motorized entry. Currently, the Rio Verde Trailhead located near the northeast corner of the Park is maintained by the community of Rio Verde. A second trailhead, Eagles Nest is located in and maintained by the Eagles Nest private community near the southwest corner of the Park.

Table 4.1: Roadway Jurisdiction and Functional Class		
Road	Jurisdiction	Functional Class
McDowell Mountain Park Road	MCDOT	Class 1 - Primary Access Road
East McDowell Mountain Road	MCDOT	Arterial
Notes* MCDOT assigns a roadway function class to every road based on roadway engineering standards.		

4.1.2 Internal Park Roads and Parking Lots

Park roads are designed and built to conform to the Park Road System Guidelines/Standards (PRSG/S) that are in place at the time of construction, and also



adhere to the MCDOT roadway design manual. McDowell Mountain Park Drive is designed with 27-28ft wide roads with no paved shoulders. Vehicles, pedestrians, and bicyclists must all use the 12ft. wide lanes that are available in both directions. The design speed for a principle Park road with 12ft. wide lanes and rolling terrain is set at a maximum speed of 35 miles per hour (MPH) with a preferred speed of 25 MPH. It's standard practice for MCDOT to post all Park road speed limits and 10 MPH under the road design speed.

MMRP has just over eight (8) miles of existing paved roads and approximately 0.6 miles of unpaved roads that allow Park visitors to circulate between activity areas. The Park also has about 9.77 miles of unpaved service roads that allow Park staff to provide maintenance in hard to reach areas. The Park provides multiple parking lots throughout the Park, totaling over 2,101 parking spaces. Table 4.2 below details MCDOT's roadway inventory for MMRP.

Roads	Miles	Parking Lots	Vehicle Spaces
Paved	8.08	Designated	223
Unpaved public roads	0.61	Undesignated	1,878
Unpaved service roads	9.77	n/a	n/a

4.1.3 Classification

PRSG/S defines three (3) types of roads: primary access, circulation, and area roads. Primary roads constitute the main access route, circulatory tour or thoroughfare for Park visitors. Circulatory roads provide access within a Park to areas of scenic, scientific, recreational or cultural interest, such as overlooks, campgrounds, etc. Area roads provide circulation within public use areas such as campgrounds, picnic areas, visitor center complexes, concession facilities, etc. Often area roads are designed for low speed traffic and are typically one-way circulation. Table 4.3 identifies roads within MMRP and their classifications.

Roadway	Classification
McDowell Mountain Park Drive	Primary
Thomas Thumb Drive	Circulation
N. Palisades Way	Area
Pemberton Loop Drive	Area
Whitehead Way	Area
Rock Nob Road	Area
N. Shallmo Drive	Circulation
Lousley Drive	Area
Lousley Way	Area
Asher View Drive	Circulation
Asher Circle	Area
Scout Camp Drive	Area

The design matrix guidelines for roadway classifications is shown in Table 4.4.



Roadway classification	Number of Lanes	Lane Width (feet)	Lane Surface	Paved Shoulder Width (feet)	Earthen Shoulder Width (feet)
Class I Primary Access Roads	2	11-12	Paved	5	4
Class II Circulation Roads	2	10-12	Paved	5	0
Class III Area Roads	1-2	One lane: 9-12 Two lane: 8-10	Paved	2	4
Class IV Administrative Access Roads Class V Restricted Roads	1-2	Varies	Paved or Unpaved	Varies	0

Table 4.4: Park Roadway Design Matrix

4.1.4 Capacity

Physical capacity at the Park is currently limited by the number of parking spaces. There are 2,101 designated and undesignated parking spaces throughout the Park. Using the Park's average of 1.9¹ people per vehicle, this would put peak capacity at about 3,992 visitors at any one time based on available parking alone. MMRP is the most popular regional Park for road biking; however, the Park roads do not have bike lanes. Further study is needed to determine the physical, environmental, and social capacity of the Park. As Park roads are upgraded and widened, the addition of bike lanes to the road shoulders should be considered in order to provide Park patrons with a safe and enjoyable riding experience.

4.1.5 Maintenance

The BOS recently updated a resolution dated April 25, 2018, which identifies MCDOT as the primary department responsible for County Park roadway design, construction, and maintenance. These activities may utilize the federal Highway User Revenue Fund (HURF) monies for roads identified for public use. All paved and named roads are constructed and maintained by MCDOT and conform to County guidelines for Park roadway systems at the time of construction. As Park roads become eligible for upgrades, the road should be designed to meet the newest standard.

Most paved parking lots also have curbing; however, the curbing is deteriorating and crumbling in many areas. Any parking lot improvements should also include curbing repairs/replacement, as well as making sure that the curb cut-outs are located by the designated ADA parking spaces. As improvements are made, all parking areas must meet ADA requirements.

Unnamed and unpaved roads are maintained by the Park's maintenance staff or the Department's trade's crew. Paved and unpaved parking areas are likewise constructed and/or maintained by the Park maintenance staff or trades crew, but the Department will

¹ 2012-2013 ASU Park Visitor Study Final Report, Table 1.20A, page 34.



periodically contract MCDOT for these services. Table 4.5 below identifies all roadways within MMRP that fall under MCDOT's jurisdiction.

Roadway Name	Year Constructed	Most recent maintenance	
		Begin Date	Type
Asher Cir	16-May-83	8/15/2012	Penetration Seal
Scout Camp Dr. (unpaved)	16-May-83	n/a	n/a
Asher View Dr.	16-May-83	3/27/2017	Penetration seal
Lousley Way	16-May-83	8/15/2012	Penetration seal
Thomas Thumb Dr.	17-Mar-86	3/17/2016	Crack-fill
Palisades Way (Pemberton Dr.)	16-Dec-83	3/28/2017	Crack-fill
Rock Nob Loop	16-Dec-83	8/21/2012	Penetration Seal
Pemberton Loop	16-Dec-88	3/28/2017	Crack-fill
Shallmo Dr.	17-Mar-86	8/21/2012	Penetration Seal
Whitehead Way	16-Dec-88	8/21/2012	Penetration Seal
Lousley Dr.	16-May-83	8/15/2012	Penetration seal
McDowell Mountain Park Dr. (N)	Between 1970 -1976	3/27/2017	Penetration Chip
McDowell Mountain Park Dr. (S)	28-May-85	8/21/2012	Penetration seal

4.1.6 Drive-time Analysis

As part of the 2009 Strategic System Master Plan, created by Pros Consulting, LLC² (PRO's) examined drive times (Figure 4-1) from the Park entrance on roadways traveling at designated 'minute' increments. PRO's used the 2000 Census Tract estimates for 2007 populations, simplified into density categories:

- Urban (2.0 people per acre or more; 0.5 acres per person or less);
- Exurban (0.5 people to 2.0 per acre; 0.5 to 2.0 acres per person); and
- Rural (less than 0.5 people per acre; 2.0 acres per person or more).

PRO's then derived proportional population estimates for each drive time and weighted against the drive time acreages to establish average correlated people per acre and the inverted ration of acres per person. This effort to measure population against acres available is to demonstrate the need and pressure each county Park will be under for the future and how to plan to meet that need in updated master plans and to serve all age groups despite pressure on the Park's per person per acre ratio. Table 4.6 below, demonstrates population numbers within certain drive time segments/distances from MMRP.

² 2009 Strategic System Master Plan, PROs Consulting, LLC. Page 45-47.



Table 4.6: Drive Time/Acres Analysis for McDowell Mountain Regional Park			
Total Population by Time Segment (minutes)			
Year	15	30	45
2007*	5,673	62,841	651,733
2017	7,305	81,303	913,941

Source: 2009 Strategic System Master Plan, PRO's Consulting, page 46, 48, 52.
*2000 Census Tract estimates for year 2007.

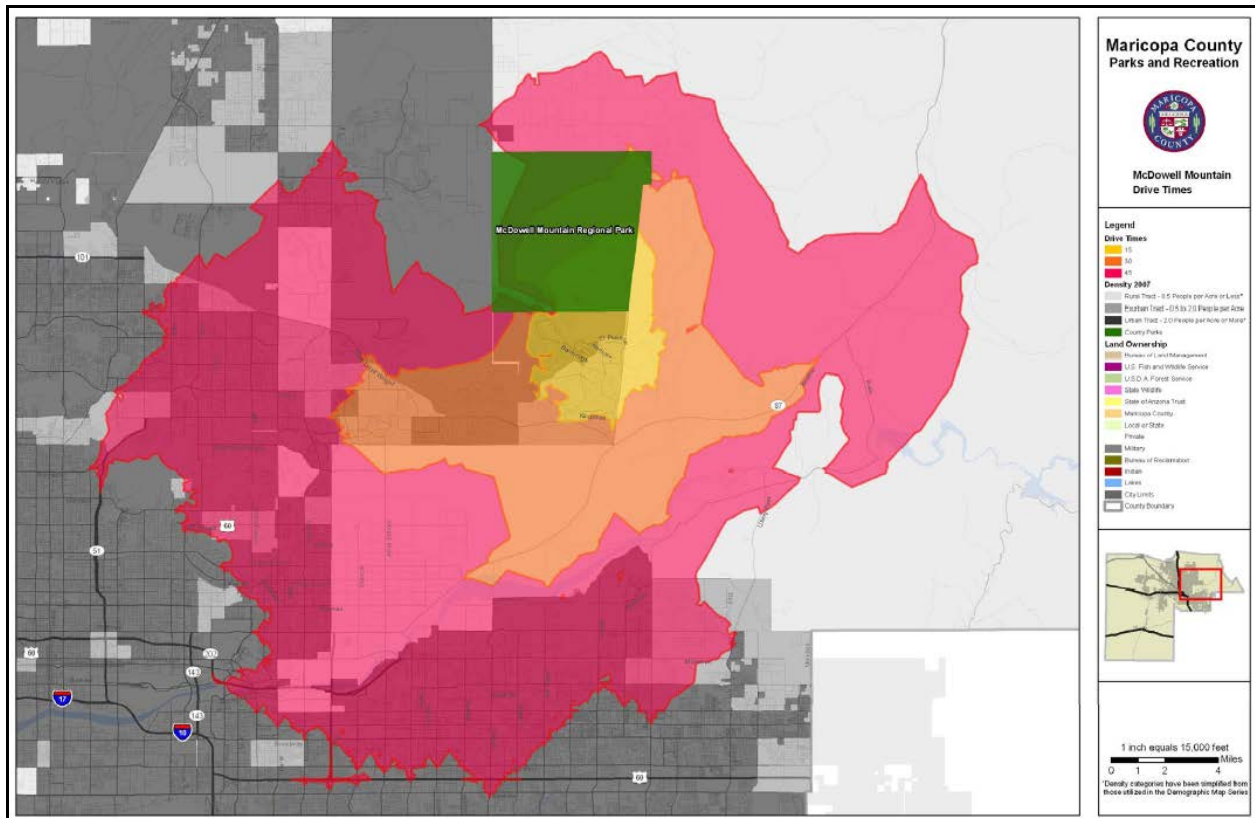


Figure 4-1: Drive time analysis (Source: 2009 Strategic System Master Plan, PROs Consulting, page 60)

4.2 Proposed or Planned Roads, Access, and Parking

Current land use designations adjacent to the Park are mostly preserve and residential. With any level of development, roadways are required to serve the residents and businesses. With the predicted level of development located near the southeast corner of the Park, the Department should remain aware and involved with each appropriate jurisdiction to influence or guide roadway development, to the extent possible. Roads that run parallel to Park boundaries are not preferred as they tend to provide nearly unlimited and uncontrolled Park access and increase the opportunities for illegal Park access. Parallel roads also serve as a barrier to wildlife and other biological movement patterns.



4.2.1 Proposed or Planned Roads

MCDOT

In 2017, MCDOT updated the Countywide Transportation System Plan (TSP) which outlines the vision for the planning and construction of transportation facilities through the year 2035. One of the main goals of this plan is to provide transportation connections that improve Maricopa County resident's lives.

Town of Fountain Hills

Currently, the Town is operating under the 2010 General Plan which outlines the need to widen and possibly relocate portions of McDowell Mountain Road once the former State Trust Land located on Section 2 and 3 of Township 3 North, Range 6 East, is developed. Once developed, this land will generate additional traffic which will funnel to a proposed minor arterial road extending north from Fountain Hills Boulevard and connecting with McDowell Mountain Road near the northeast corner of Section 2.

4.2.2 Future Access Points

The 1967 MDP identified north and south boundary access routes. From the early 1970s to the mid-1980s, the only access point into the Park was via the unpaved 176th street near the northeast corner of the Park. In 1985, roadways within MMPR were being designed and constructed by MCDOT in order to create a more accessible regional park. As part of the new roadway design and the increasingly growing community to the south, the main entry to the Park shifted to the southeast corner of the Park with the main Park entrance connecting to McDowell Mountain Road. By 1989, the Town of Fountain Hills had grown large enough to incorporate and became the gateway town to the Park. The unpaved road extending from E. Rio Verde Drive and 176th Street into the Park was gated and no longer utilized as the main Park entrance. Data collected from the ASU Park Visitor Surveys between 1999 and 2013 indicated the majority of local Park patrons live in the residential neighborhoods north of the Park. As part of this planning process, both the public and the department brought forward the north entrance from the MDP into the current MP. This north entrance should be developed as future growth and need dictates. Additional access points proposed are identified in Figure 4-2 below.

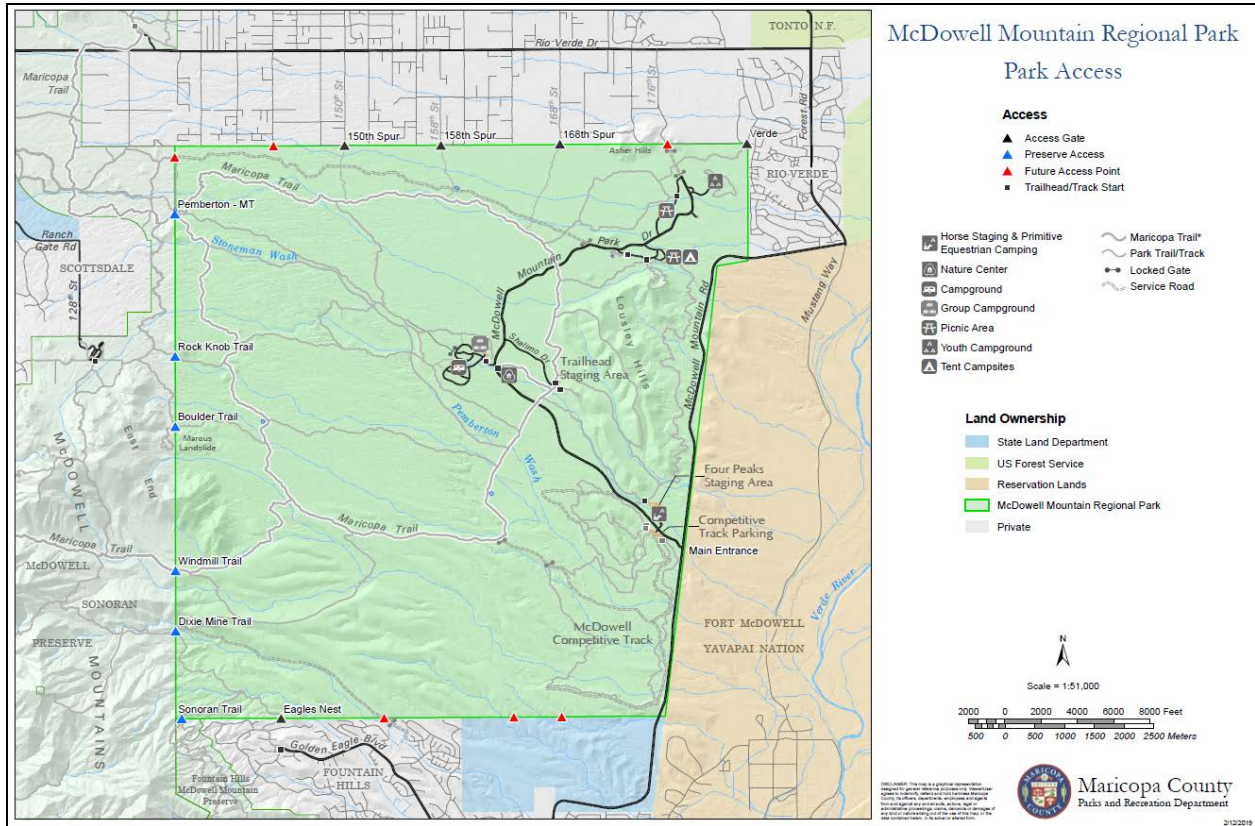


Figure 4-2: Existing and Planned Future Access Points

Outside of the approved roadways and access points identified in the MP, the Department has a specific decision making protocol to follow when deciding when and where to install a new access point, whether it be a trailhead or a roadway. Similarly, adjacent residents sometimes request access within neighborhoods. In all cases, the Park will follow the Department’s access matrix protocol to determine which of these preferred entry point locations may be suitable for the Park. The protocol involves looking at all aspects of the access point and may require its own and separate public involvement.

The 2010 General Plan³ for the Town discusses the existing development agreements for the former State Trust Land south of the the southeast corner of the Park. The plan recommends that portions of these lands remain as open space. Additionally, MCPRD and the Town have both identified the need and desire to have an established public trailhead located on the shared boundary of the Park.

4.2.3 Future Internal Park Roads and Parking Lots

The PRSG/S should be followed when Park roads require extensive maintenance or as new roads are designed and developed. All roadway classifications are adequate to accommodate the design vehicle - a motorhome with a boat trailer.

³ Town of Fountain Hills, 2010 General Plan, January 7m,2010. <https://www.fh.az.gov/224/Fountain-Hills-General-Plan>, as accessed December 12, 2018.



Improvements are recommended to unpaved portion of North McDowell Mountain Park Road aligning with 176th Street north of the boundary. Once plans to develop the north Park entrance are underway, this road should be fully paved.

As new amenities are added to the Park, adequate parking and biking lanes should also be incorporated into its site design. Some existing parking lots can be expanded or realigned to accommodate future parking needs. As trail use continues to increase in popularity with Park visitors, trailhead parking must also be evaluated. Some trailheads may require additional parking.



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Chapter 5 – Trails

The trails chapter details the existing trails within the Park, as well as proposes additional trails based on current requests and needs identified in the MP update process. The trail system is a vital component of the Park and provides visitors with diverse recreational experiences from educational interpretive trails to rugged mountain hikes.

Trails serve multiple purposes including exercising, walking, jogging, hiking, bicycling, bird-watching, and equestrian use. They can also provide safe alternative transportation routes as well as create connectivity from one facility or municipality to another. Connecting people and places enhances the user experience and promotes long term stewardship of the trail systems, parks, and the Sonoran Desert as a whole. (Figure 5-1).

The McDowell Regional Park Trail System Plan (Trail System Plan) (Appendix J) was adopted in 1999, amended in 2008, and updated in 2011. The Trail System Plan and amendments describe the desired future condition of the trail system, including trail access points, service road access, and prescribes actions to achieve the planned condition.

The MP update provides conceptual trail recommendations based on public feedback received during the open public comment periods. The feedback received will help to guide trail alignment planning for the trail development manager. Trail alignments will be



Figure 5-1: Trails Crew hard at work.

periodically updated in this chapter of the MP as an amendment. Additional trails or deletions to the trail system may require an Amendment to the Trail System Plan listed in Appendix J. The Park Planner and Trail Manager are tasked with providing recommendations and guidance to the Park Supervisor and Planning and Engineering Manager, and are also responsible for implementing the changes that may be required.



The Trails Management Manual (TMM) provides further detail on policies, standards, and guidelines for planning, design, construction, and maintenance of the trails and system in Maricopa County parks.

5.1 Existing Trails

MMRP offers approximately 68 miles of multi-use trails, ranging in length from 0.6 mile to 15.3 miles (Figure 5-2). Trails are rated from easy to strenuous and include two (2) diamond-rated trails (Table 5-1). In addition, there are 0.6 miles of barrier-free trails.

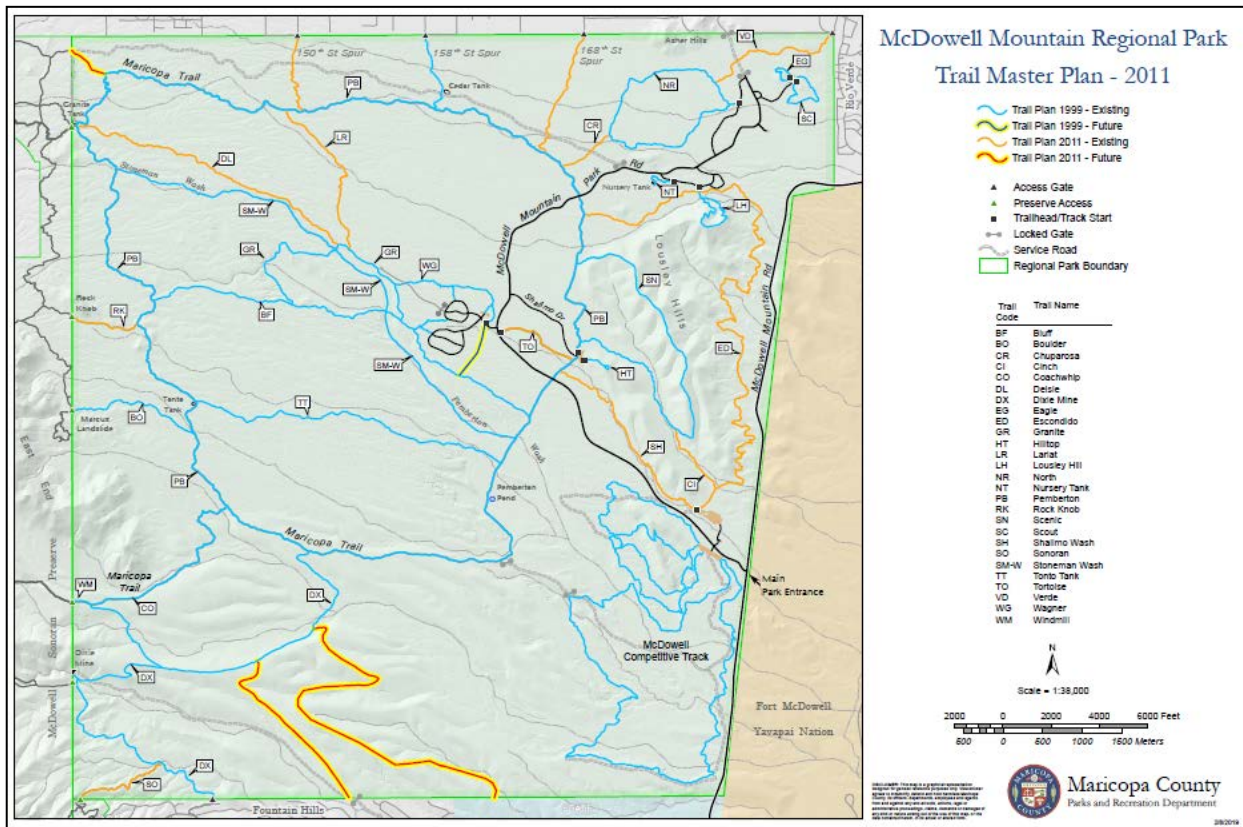


Figure 5-2 Identified Trails from the 1999 Trails Plan and the 2011 Trails Plan Update

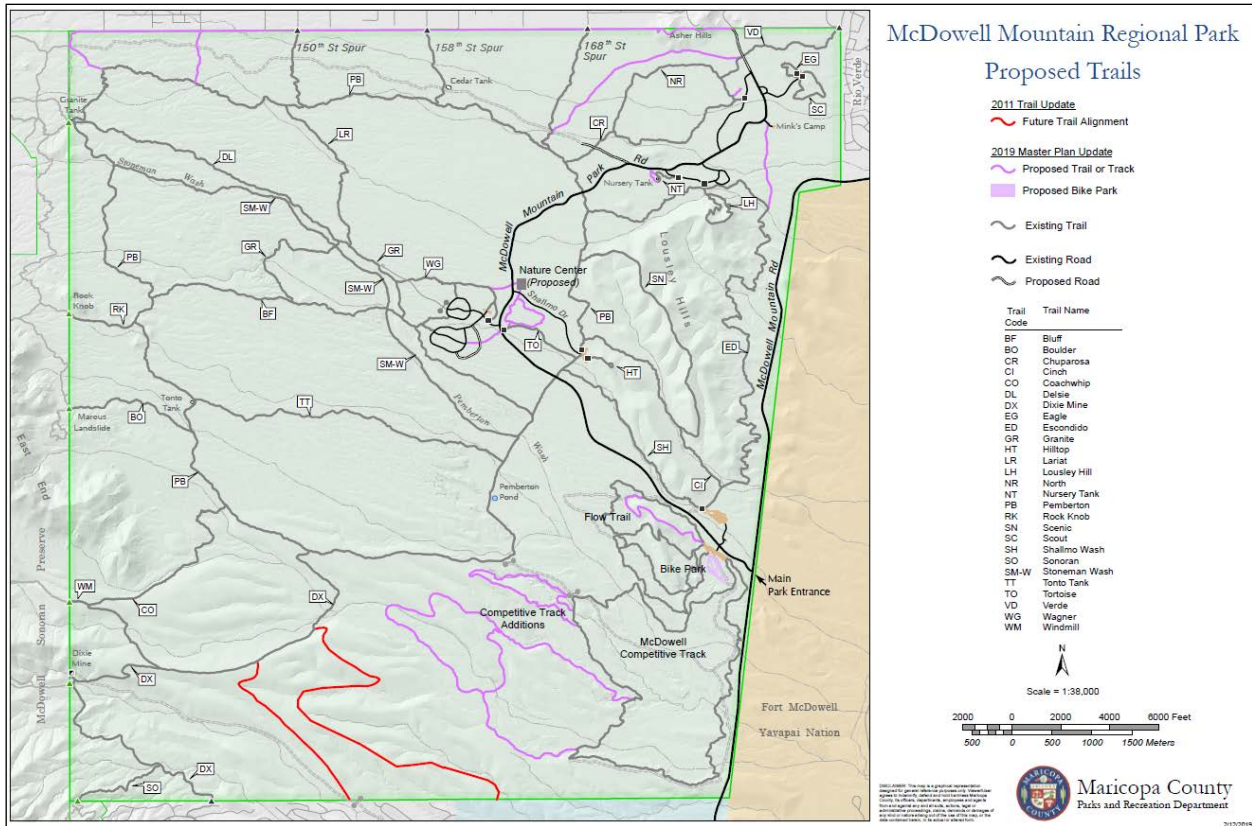


Figure 5-3: Future Trails identified as part of the Park Master Planning Process

Table 5-1: Designated Trails					
Name	Miles ¹	Kilometers ¹	Notes	Rating ²	Management Classification
Bluff	2.2	3.5	Shared use	■	Primary
Boulder	1.1	1.8	Shared use	●	Primary
Chuparosa	0.5	0.8	Hike/Bike Only	●	Primary
Cinch	0.6	1.0	Shared use	●	Secondary
Coachwhip	2.6	4.2	Shared use	◇	Primary
Delsie	2.5	4.0	Shared use	●	Primary
Dixie Mine	5.6	9.0	Shared use	◇	Primary
Eagle	0.4	0.6	Hike (Youth Only)	●	Secondary
Escondido	6.2	10.0	Shared use	■	Primary
Granite	3.5	5.6	Shared use	●	Primary
Hilltop	0.5	0.7	Hike	■	Secondary



Lariat	1.5	2.4	Shared use		Primary
Lousley Hill	1.2	2.0	Hike		Secondary
North	2.9	4.7	Hike		Primary
Nursery Tank	0.6	0.9	Hike		Barrier Free
Pemberton	15.3	24.6	Shared use		Primary
Rock Knob	1.1	1.7	Shared use		Primary
Scenic	3.5	5.6	Shared use		Primary
Scout Camp	0.8	1.3	Hike/Bike (Youth Groups only)		Primary
Shallmo Wash	1.7	2.8	Shared use		Primary
Sonoran	2.6	4.2	Shared use		Primary
Stoneman Wash	4.3	6.9	Shared use		Primary
Tonto Tank	2.7	4.3	Shared use		Primary
Tortoise	0.7	1.1	Hike/Bike Only		Primary
Verde	1.2	2.0	Hike/Bike Only		Primary
Wagner	1.1	1.8	Hike/Bike Only		Primary
Windmill	1.1	1.8	Shared use		Primary
Competitive Tracks					
Sport Loop	3.0	4.8	Distances are round-trip from trailhead		Competitive Track
Technical Loop	2.7	4.4	Distances are round-trip from trailhead		Competitive Track
Long Loop	7.9	12.8	Distances are round-trip from trailhead		Competitive Track
Spurs	3.3	5.3	Varies		Multiple locations
1 Distances may have been rounded					
2 Rating symbols are defined in Table 4-3 below or online at https://www.maricopacountyparks.net/assets/1/6/2018_Trails_Management_Training_Manual_Update.pdf					

5.1.1 Competitive Track

The Park offers approximately 14-miles of Competitive Tracks (Figure 5-4), in addition to its trails. The Competitive Tracks are designed to provide challenging, strenuous, and high-speed outdoor recreation for individuals, groups, and organized events. The Competitive Tracks are designed for single direction, multiple-use activities such as: cross-country runners and joggers; fast bicyclists and racers; and trotting/galloping equestrians and endurance riders. The tracks may be closed to general use when organized and/or large scale



events are taking place (i.e., Ragnar Trail Relay, Javelina Jundred, XTerra, Hike for the Homeless, etc.). (Table 5-2).

Fiscal Year	Number of Events	Attendance
2015-2016	38	9795
2016-2017	37	9312
2017-2018	36	9103

Attendance is for events with pre registration requirements and does not include numbers for events open to the public.

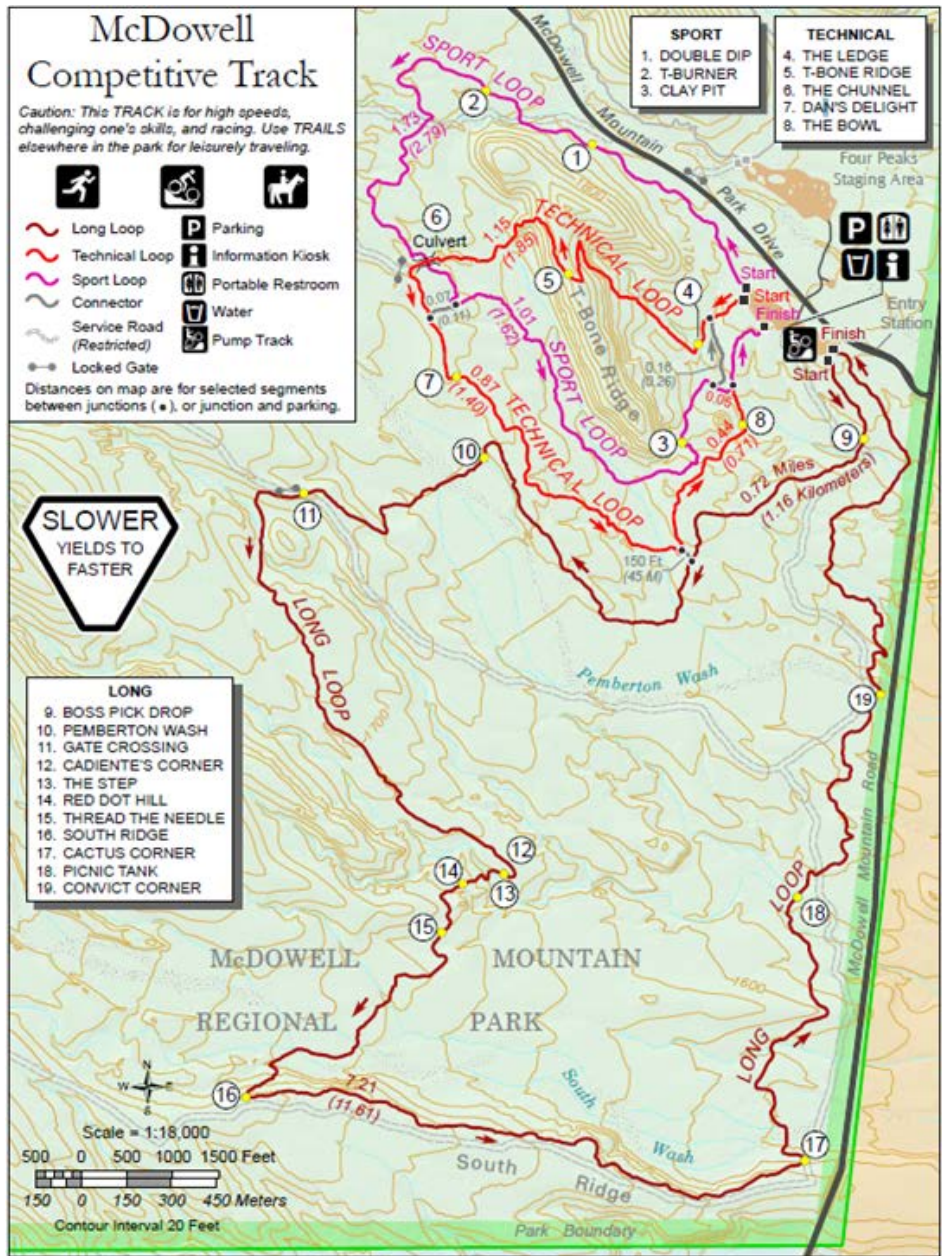


Figure 5-4: McDowell Competitive Track



5.1.2 Maricopa Trail

The Maricopa Trail has two (2) connections (or trail spurs) into the Park which align with Windmill/Coachwhip Trail near the southwest boundary, and the second with Delsie Trail near the northwest boundary of the Park. Once on the trail spurs, a trail user can circumnavigate the interior of the Park via the Pemberton Trail. The Maricopa Trail is part of a regional trail plan that links all of Maricopa County regional parks and provides connections to metropolitan areas, municipal trails, communities, and neighborhoods with regional non-motorized multi-modal corridors. It also provides an outlet for competitive hikers, mountain bikers, and equestrians who are seeking long distance routes.

5.2 Proposed Community Trails/Trailheads

Scottsdale's General Plan 2035¹, outlines its desired future trails, trailheads, and access points to the Preserve which borders the Park to the west. Any future updates to the Trail System Plan should take these desired locations into consideration and utilize the access matrix to determine the precise location, suitability, and public benefit of adding an access point.

The Town's General Plan 2010², outlines the Town's desire to protect the natural wash corridors and encourage the use of major and contiguous open space with pathways outside of the wash corridors. In regards to the former ASLD located adjacent to and south of MMRP, the Town recommends preserving some of the land for open space while also recommending that the Town continue to encourage the development of trail systems that link Fountain Hills with MMRP.

As the former ASLD lands become available for development, MCPRD will work with the Town to request a formal public trailhead be incorporated into the community development plans for these two sections of land.

5.3 Trail Use

All trails are shared-use, unless otherwise designated. All trail users are encouraged to practice proper trail etiquette. Park Rule R-118 requires hikers, equestrians, and bicycle riders to remain on designated trails, and shortcutting by any type of trail user is prohibited. Trail education and law enforcement will be used to attain compliance, when necessary. Signs will be posted and barriers constructed at obliterated paths, roads, and undesignated washes if use is continued after closure.

¹ City of Scottsdale General Plan 2035 (November 2014), http://www.scottsdaleaz.gov/Assets/ScottsdaleAZ/General+Plan/_SGP2035_TFLegEdit.pdf as accessed November 21, 2018.

² Town of Fountain Hills General Plan 2010















The 2012-2013 ASU Park Visitor Study shows that Park visitors use trails for an average of 11.36 miles³. When singled out by the visitors' primary activity, other trail uses include (Table 5-3):

Primary Activity	Percent of Visitors ¹	Miles of Trail Used ²
Trail hiking	22.6	5.59
Mountain biking	56.7	19.31
Picnicking	0.5	N/A
Running/jogging	1.9	13.75
Horseback riding	7.2	6.77
Walking for pleasure	00	N/A

1. 2012-2013 ASU Park Visitor Study Final Report, Table 1.9A, page 23.
2. 2012-2013 ASU Park Visitor Study Final Report, Table 1.10, page 26.

5.4 Trail Rating

In 2012, a partnership of metro-area park agencies developed a trail rating guide to assist trail users in assessing what trails are best suited for their abilities (Table 5-4). During the hotter months when the temperatures and/or humidity are high, trails are rated at least one level higher.

Rating Symbol	Brief Definition	Surface	Grade	Obstacles/Steps
 Easiest	Paved Accessible Trail	Paved or hard and smooth		None
 Easy	Mostly smooth and wide	Dirt with occasional unevenness		2" or less, rocks and ruts
 Moderate	Mostly smooth, variable width	Dirt with occasional unevenness		<8" rocks and ruts, loose material
 Moderate difficult	Mostly uneven surfaces	Dirt and rock		<12" rocks and ruts, loose material
 Difficult	Long rocky segments with possible drops and exposure	Dirt and loose rock with continual unevenness		12" or taller, loose rocks, exposure to drops
 Extremely difficult	Long rocky segments with possible drops and exposure	Dirt and loose rock with continual unevenness		12" or taller, loose rocks, exposure to drops and excessive heat >90F

³ 2012-2013 ASU Park Visitor Study Final Report, Table 1.10, page 26.



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Chapter 6 – Management Zoning

The foundation for the Park management zones is found in the 2009 Strategic System Master Plan (SSMP), dated June 2009 (page 105-116), and is presented again here (Table 6-1). It should also be noted that the SSMP also recommends that the size of all developed areas should be limited to 10% of the overall park size; however, smaller parks that are adjacent to other protected open space areas may exceed the 10% recommendation. As of 2009, the Park had approximately 1.4% of its total acres developed; that number is expected to increase slightly as new projects or trails are constructed.

Table 6-1: Management Zone and Acreage	
Zone	Percent of Total Park Acres
Development	1.4% (292.46 acres)
Trail	2.2% (472.20 acres)
Semi-Primitive	49.4% (10,413.71 acres)
Primitive	41.2% (8,700.22 acres)
Perimeter Buffer	5.3% (1,110.73 acres)
Non-Management Zone	0.5% (104.69 acres)
<i>Source: 2009 Strategic System Master Plan, page 118.</i>	

6.1 Methodology for Determining Management Zones

The current management zoning descriptions and maps used for MMRP are taken directly from the SSMP (pages 105-116). The zones were determined based on existing use and location of developed features. The management zones are meant to provide some flexibility. If/when development occurs on the north, south, or west side of the Park, the development zone(s) impacted will need to be reviewed, and modifications to the management zone(s) may be necessary. The Park was zoned according to existing use which may or may not be its preferred future use; as such, future revisions of these zones should include descriptions of the desired visitor experience and level of intended management. For example, one zone may provide the visitor with a sense of wilderness and remoteness, challenging their outdoor skills. This zone would thus require a low level of management and a high level of resource protection and may be labeled as “primitive” and should reflect the desired future conditions of the Park rather than existing use or conditions.



6.2 Description of Management Zones

The following chart (Table 6-2) describes the zones that are areas of land-based management only and are designed to be a working document so that some flexibility of the classification of each is allowed.

Table 6-2: Park Management Zones		
Zone (Management Level)	Description	Includes, but not limited to:
Development (Highest)	Includes areas which require the highest level of management. These areas contain the largest level of park activity by visitors. When possible, this zone should not exceed 10% of overall park size. Smaller parks that are contiguous to other protected open space may exceed 10%.	roads, golf courses, archery/shooting range, model airplane, sports fields, aquatic complex, restroom facilities, picnic areas and ramadas, camp sites, equestrian facilities, entrance stations, visitor centers, trailheads parking lots, boat launch areas, amphitheaters, group areas, staging areas, park offices
Trail (High)	This zone requires a level of management second only to development zones. These areas are limited to passive recreation and park maintenance only. In most cases, public vehicular access is restricted. Hiking trails and their connectivity to adjacent land uses makes up the majority of this zone.	park access gates, shared-use trails, barrier-free trails, hiker-only trails, regional system trails, competitive tracks, service roads, public roads, (with no connectivity to developed management zones), unpaved roads
Perimeter buffer (Fairly high)	This area includes areas along the park boundary and adjacent to varying land uses. Park security and limiting external connectivity are the goals of this zone. Due to encroaching development at several parks, the management required for this zone can be fairly high.	fencing and access gates
Semi-primitive (Low)	This zone includes areas adjacent to and between other management zones which contain few amenities. These areas should act as a transition between zones of high and low management. Typically contain minimal impact activities and provide a “back country experience”. The management required for this zone is very low.	back country areas
Primitive (Lowest)	Encompasses the areas which are considered remote and inaccessible. Included, are areas which the terrain is too rugged for vehicular or pedestrian traffic as well as areas that are a	wildlife areas



	<p>great distance from any other “developed” zone without a point of access.</p> <p>The key element of this zone should be wildlife conservation and preservation. Access to this zone is available only by special permit (i.e. wildlife study) and therefore requires the least amount of management.</p>	
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6.3 Area Descriptions that Influence Park Zoning

Topography or natural and cultural resources may determine the areas that are considered semi-primitive and primitive. Many areas are too rugged for any type of development and therefore semi-primitive or primitive are inherently appropriate in a large portion of the park.

The SSMP (page 112) notes that current management zones reflect existing land uses within the Park (Figure 6-1). As future connectivity and access needs change, these zones will require an update.

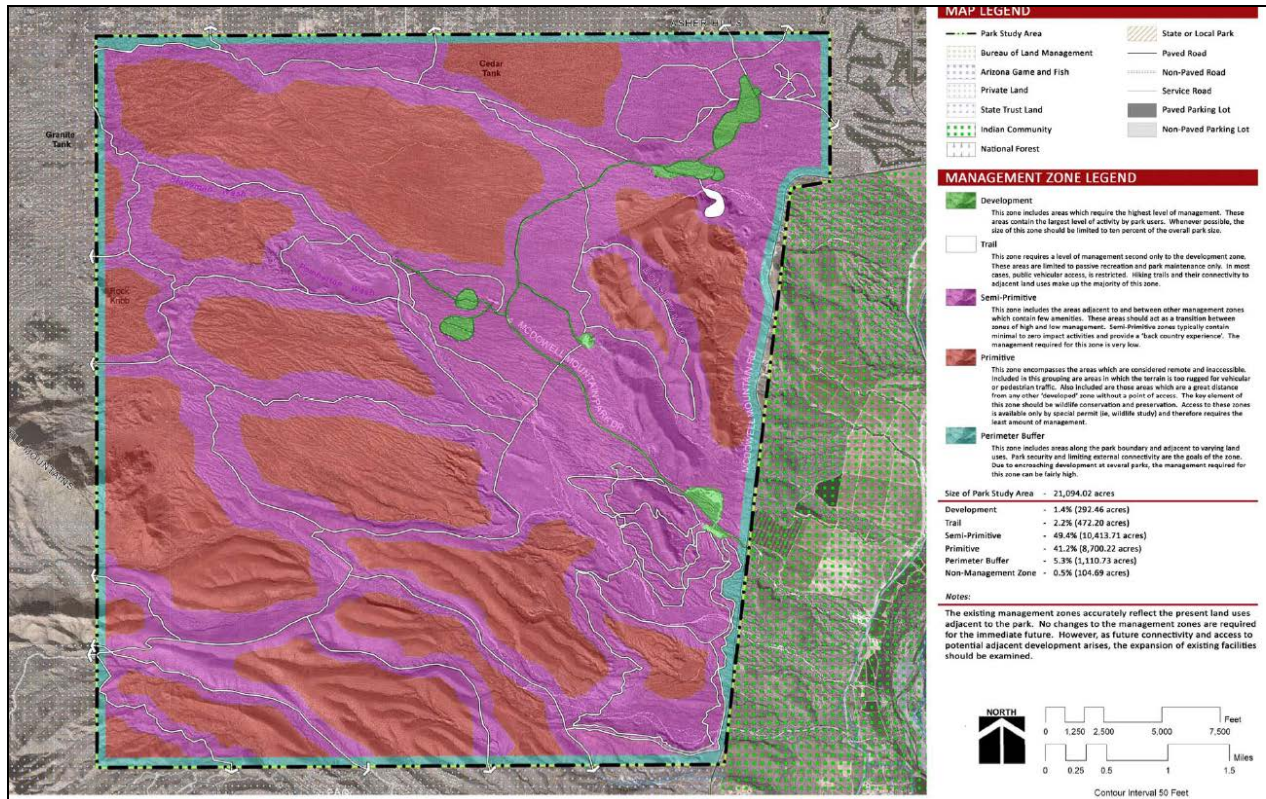
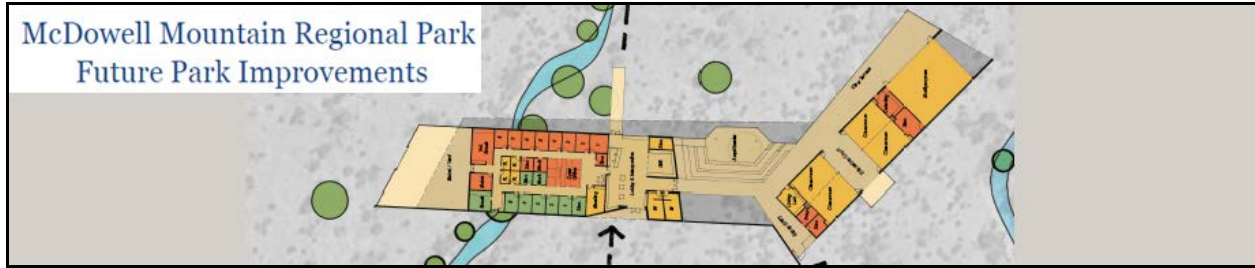


Figure 6-1: Development Zones (Source: MCPRD 2009 Strategic System Master Plan, Figure 43, p 112)



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Chapter 7 – Park Improvement Projects

This chapter identifies new Park improvement projects that have been determined through the planning process. This process includes the analysis of existing conditions, trends, public input, and consultation with neighboring agencies, Commission and Department staff expertise as described in previous chapters. Staff, stakeholders, and the public were asked to review the project maps, submit their requests for future Park improvements, and comment on department proposed Park improvements.

The MP update incorporates some of the original 1967 MP concepts; however, most of the old plan had been revised to reflect current Park use and needs. Objectives that are outlined by the current plan update include:

Supporting existing features and amenities:

This update recommends supporting the addition of amenities to existing areas, and promotes educational components of the Park, such as:

- Upgrades and repairs to existing facilities (e.g. trails, campground infrastructure, expansion of the event staging areas, and restrooms);
- Expansion of active recreation areas such as a bike skills park, new multi-use trails, and additional amenities in high use areas of the Park, i.e. campground and event staging areas;
- Improved signage and maps; and
- Inclusion of the Southwest Wildlife Conservation Center into the new Nature Center Development.

Limiting other features:

The update streamlines the quantity of built facilities to protect the Parks natural and cultural resources. Other developed features outlined in the original 1967 MP that are not currently in place or recommended within this update are no longer applicable facilities for the Park.

7.1 Issues and Constraint Analysis

The planning team met early in the planning process to discuss issues that may place constraints on the park. The MP update addresses those items discussed within its Issues, Constraints, and Analysis Section (Table 7-1):



Table 7-1: Issues Constraints and Analysis	
Issue/Constraint	Analysis
Management Zones	Management Zones represent existing land use. Additional development actions must complement its zone or modify the zone. The Management Zone should reflect the desired use and visitor expectation for that zone. Some proposed projects may require a zone change.
Access	Adjacent private land owners north and south of the Park are creating private access points into the Park. Protection of the Park boundaries needs to be established and new entry points considered as growth occurs in adjacent areas.
Wildlife corridors/linkages	Future development will be sited in locations that will accommodate linkages between the Preserve to the west, the Tonto National Forest to the north, and the Fort McDowell Yavapai Nation lands to the east.
Hunting	Designated areas of the park can fill this niche other areas cannot; as regulated through AZGFD. Currently, there are two designated hunting areas within the Park however, these areas may need to undergo review once the additional Park amenities are developed.
Compliment established themes	All efforts have been made to compliment Park's theme of <i>Adventure and outdoor recreation</i> .
Neighboring city/town development patterns	The Park Supervisor and/or Park Planner routinely participate with neighboring agencies regarding development patterns.
Maintain development to under 10% of land acres	Currently, 1.4% of land acres are considered developed; Park is well within the 10% limit. Future development actions will need to take this guideline into account and repurpose previously disturbed ground to the extent feasible.
Operations	The Park has had a steady visitor increase as well as revenue increases over the past several years. Facility improvements are needed to continue to provide a positive user experience, increase Park revenue, and diversify what amenities the Park offers. Facilities renovation and development planning should also include an analysis of operating impacts and opportunities for efficiency.

7.2 Recommended Park Improvements

Park Improvements and enhancements recommended in the MP adhere to the Departments vision and mission. These enhancements also address the Park's priority mandates outlined in the 2009 SSMP and promote the Park's theme. The Park



improvements and features detailed in this section were based on public input, stakeholder advisory group suggestions, park staff recommendations, and guidance from other planning documents (Figures 7-1 through 7-2, and Table 7-2).

A timeline for completion was not assigned to any one project as projects may be completed as funding and opportunities become available. Projects will be scheduled through the Department's Capital Improvement Plan (CIP) and potential costs and funding sources will be identified through the Implementation Plan (IP). However, a priority level was assigned to show which project(s) may be of greater need:

- High Priority: projects that are in progress; public health or safety issues; resource protection.
- Medium Priority: important, but not a matter of public health or safety; to indicate a desired level of service across a range of recreation opportunities.
- Low Priority: desired features; or dependent on long-term partnerships or other considerations.

A majority of these projects will be phased in individually over multiple years to maximize budgetary resources, build partnerships with other agencies, and to minimize impacts to Park operations and resources. Site specific plans (including any applicable natural or cultural resource inventories and clearances), and engineering plans may be required for new construction. The IP and an annual Business Plan will help identify which projects will be funded. Improvement projects are contingent upon having adequate funding and staffing resources to implement.

For the purposes of this MP update, the mapped location of any new facilities herein is conceptual only; the precise location may change due to engineering feasibility and resource management issues. Additional public meetings regarding individual projects may be required and the results of which may shape the final outcome of the project and subsequent future projects.

Additionally, any new trail or road alignments shown as Park improvements are also considered **conceptual** only. The locations are general corridors and are not intended to be precise. New trails or roads will be located according to the Department's trail standards outlined in the 2018 Trails Management Manual (TMM), MCDOT standards and guidelines, and appropriate project design and engineering. Alignments are not open to travel until they have been properly constructed, posted, and designated by the Department. Traveling on undesignated routes causes damage to the land, may be hazardous, and is in violation of Park Rules.

As a result of public input, agency partner input, and staff expertise, the MP update recommends the following Park improvement projects:

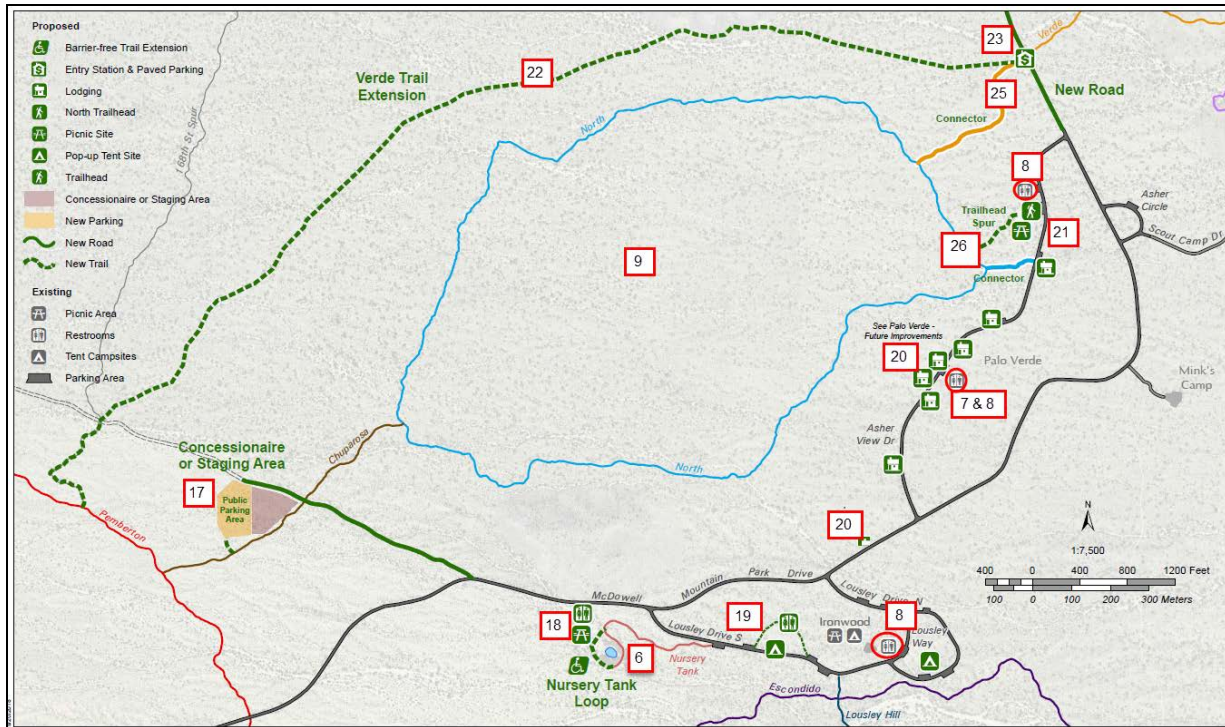


Figure 7-1: Recommended Park Improvements (north area up)

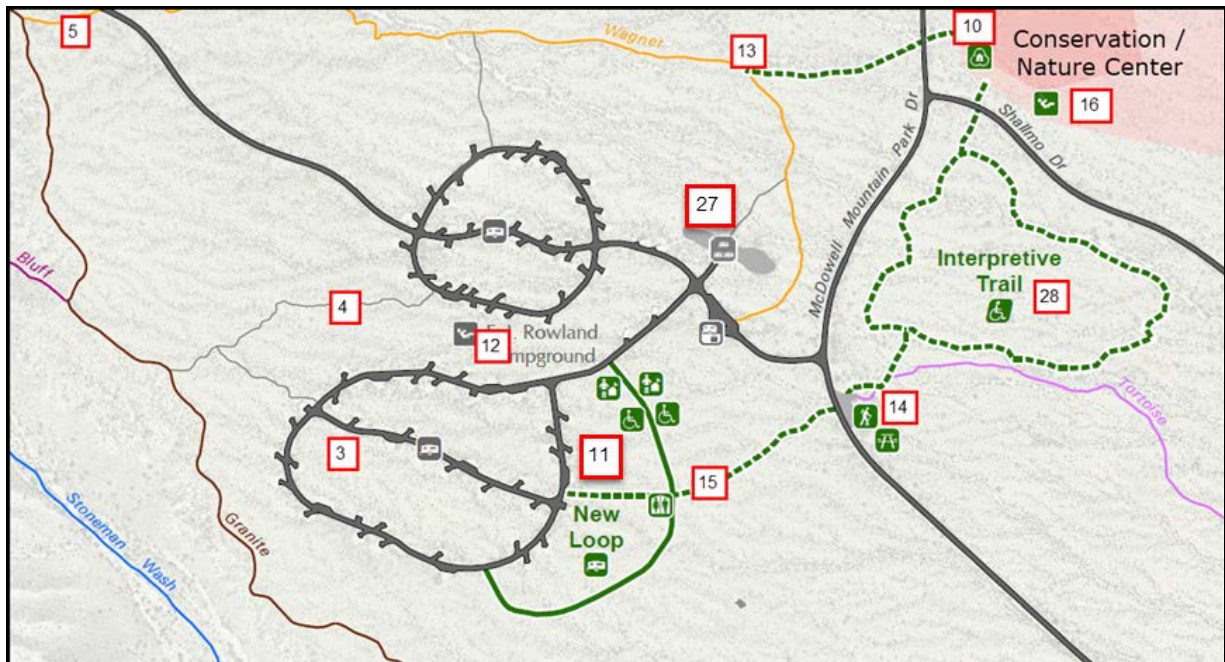


Figure 7-2: Recommended Park Improvements (Campground and Nature Center)

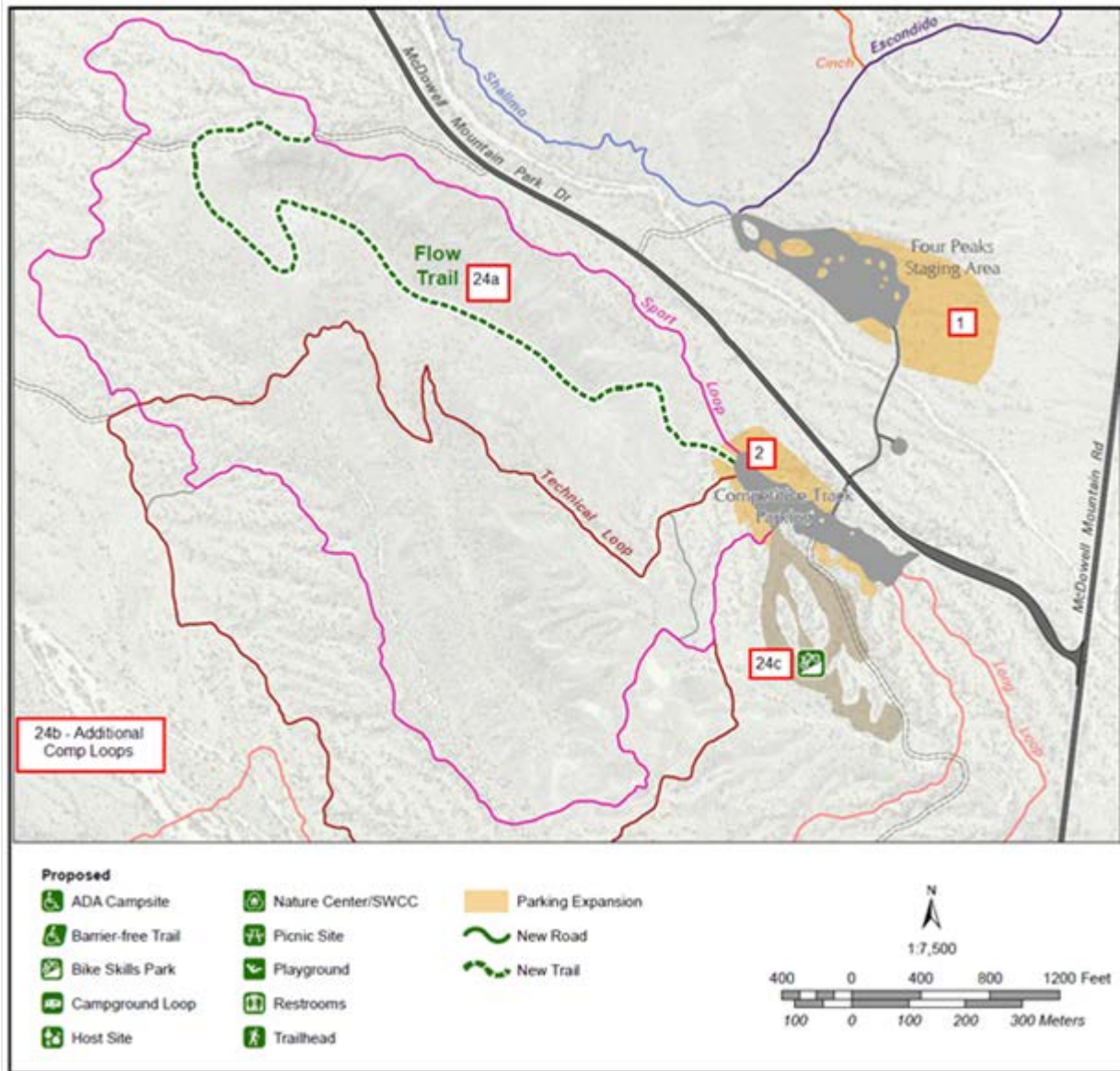


Figure 7-3: Recommended Park Improvements (Competitive Track and Four Peaks Staging Area)



Table 7-2: Existing Features and Recommended Improvements			
Existing park features including:			
<ul style="list-style-type: none"> - Nature Center - Maintenance Compound - Host Sites - RV camping sites - Tent sites - Playground 		<ul style="list-style-type: none"> - Ramadas and picnic tables - Restrooms - Trails / Trailheads - Competitive Track - Event Staging areas 	
Recommended Improvements			
ID#	Location	Description	Priority Level
Renovation of Existing Facilities			
1	Four Peaks	This area may be expanded upon in order to meet the Parks needs for event staging.	High
2	Competitive Track	An addition of approximately 4.5 acres of unpaved parking area is needed in order to continue to serve events held in the Park.	High
3	Campground	Additional RV camp sites are needed. The existing south loop can accommodate up to 15 additional RV sites.	Medium
4	Campground	Electrical upgrades associated with the Service Entrance Section (SES) cabinets and RV site pedestals.	High
5	Maintenance Campground	Telecommunications infrastructure needed.	Medium
6	Nursery Tank	Trail improvements include; an extension of the trail to create a full barrier free loop, rehabilitate the wildlife water tank, safety rail and interpretive panel improvements.	Medium
7	Asher View	Renovate Restroom (RR) #2 to incorporate shower facilities for the camping cabins. Add a host site to this area.	Medium
8	North park	Restrooms - Update fixtures in RR #1, 2, and 3 (north).	High
Park-wide		Update trail signage.	Park-wide
Park-wide		Roadway widening and maintenance. Pave north entrance road and 176 th Street alignment.	Low
9	North Trail	North Trail is designated as an interpretive trail for single use by hikers. Improvements include additional signage as well as updated interpretive signs.	Medium
Develop New Facilities			
10	Shallmo and McDowell -New Nature Center	Location of proposed new nature and wildlife conservation center with interpretive displays, classrooms, gift shop, and Park admin offices. Additional facilities associated with wildlife conservation to be phased in. New center location may be dependent on a successful partnership with Southwest Wildlife Conservation or a similar organization.	High



11	Campground loop	Constructed an additional loop to connect with Pemberton Loop Drive and N. Palisades Way to accommodate up to 25 additional RV sites. The new loop will include at least two (2) ADA RV sites and two (2) host sites.	Medium
12	Campground loop	Amphitheater – refurbish the existing playground area as an amphitheater for interpretive programs for campers. Existing playground equipment to be reused at the new nature center location.	Low
13	Wagner Trail	Connection from Wagner to the new nature center.	Low
14	Existing Nature Center pending SWCC	Refurbish existing nature center area as a trailhead with parking, picnic tables and shade (natural or structures).	Low
15	Trail	New connection trail from RV campground to the proposed new trailhead located at the current Nature Center location.	Low
16	Shallmo and McDowell	Larger nature based playground to be located near the new nature center. This will also include a sound garden with nature themed instruments.	High
17	Concessionaire and Staging area	A new unpaved public parking area and concessionaire staging area located west of Chuparosa Trail. Improve the existing unpaved service road to allow safe access to the approximate 3.5 acre area. A County approved concession operation that will include the development, operation and maintenance of facility(s) to provide recreation opportunities not otherwise provided by the Department, i.e. equestrian operations providing guided tours.	Medium
18	Nursery Tank	Development of a new restroom facility and associated parking south of McDowell Mountain Park Road. The trail will be extended to create a full barrier-free loop which will connect with the parking area and restroom northwest of Nursery Tank. A larger shade structure outfitted with an ADA accessible picnic table should also be included.	Low
19	Lousley Loop	Add a restroom/shower house, additional tent and pop-up tent sites.	Medium
20	Asher View	Two areas listed as potential site locations for cabins. Additional cabins may be built as demand increases.	Medium
21	North Trailhead	Upgrade picnic tables, add individual shade structures.	Low
22	Verde Trail	Verde Trail extension to extend west and connect directly with Pemberton in order to keep North Trail compliant with County Park Trail Standards.	High
23	North Entry	Park Access - Develop a north entry station which will include a paved road connection to Rio Verde Road (north of the Park).	Low
24a	Competitive Track	Addition of a flow trail (a). See maps on the previous page. Final location may change depending of landscape topography.	Low



24b	Competitive Track	Three (3) new competitive track loops (b). See maps on the previous page.	Medium
24c	Competitive Track	Up to 20 acre bike park(c). See maps on the previous page.	High
25	Trail	Trail spur from recommended north entry station to North Trail.	Medium
26	Trail	New trail spur from North Trail to the existing trailhead located on Asher View Drive.	High
27	Group Camp	This area may be converted in the future in a way that best serves the park's RV camping needs, i.e. additional overflow parking, additional RV loop, etc.	Low
Resource Protection			
North and South park boundaries		Boundary protection where possible and necessary; may include pipe rail fencing, wire or range fencing, gates, and signage.	High
Education/Interpretation			
28	Trail	New one (1) mile barrier free interpretive loop trail between proposed and existing nature center location.	Medium
Nature Center		Create new/additional interpretive displays to highlight the historical backdrop of the area.	Medium
Park-wide		Encourage educational components related to water resources, habitat or other natural systems, and cultural and historic resources into Park programs, interpretive signage, or other displays.	Park-wide
Park-wide		Update all interpretive panels.	Park-wide



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