Alley Spring

CULTURAL LANDSCAPE AND HISTORIC STRUCTURE REPORT

VOLUME 1

OZARK NATIONAL SCENIC RIVERWAYS
EMINENCE, MISSOURI



JANUARY 17, 2020
NPS PMIS # 204762

Cover Image:
Alley Spring, Mill and Spillway, view looking northwest.
(STRATA 2018)

Alley Spring
CULTURAL LANDSCAPE AND HISTORIC STRUCTURE REPORT
Ozark National Scenic Riverways

Eminence, Missouri

Recommended: _____ Date: 2/19/2020
Superintendent
Ozark National Scenic Riverways

Concurred: _____ Date: 3/2/2020
Associate Regional Director
Cultural Resources, Interior Regions 3,4, and 5

Approved: _____ Date: 18 March 2020
Regional Director
Interior Regions 3,4, and 5

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Alley Mill, view looking northeast, 2018. (STRATA)

1 INTRODUCTION

Chapter 1 - Introduction

Introduction

Alley Spring is one of the largest springs in Missouri, and the Alley Spring hollow has been home to a water-powered mill for more than 140 years. The first mill was constructed next to the spring sometime before 1876, and the current mill building dates to 1894 (Figure 1.1). The property was privately owned until early in 1925 when it was purchased by the state for use as Alley Spring State Park. Alley Spring State Park was one of the first state parks to be established in Missouri. On Dec. 31, 1969, the state park was deeded to the National Park Service to become part of the Ozark National Scenic Riverways. The purpose of the Ozark National Scenic Riverways is to conserve and interpret the unique scenic and other natural values and objects of historic interest, including preservation of portions of the rivers, preservation of springs, management of wildlife, and provisions for use and enjoyment of the outdoor recreation resources.[1]

Alley Spring is located just north of the Jacks Fork River, approximately five miles west of the town of Eminence in Shannon County, Missouri. The seventh largest spring in the state of Missouri, Alley Spring discharges 81 million gallons of fresh water per day. The Alley Spring Branch, which is also fed by Alley Hollow Creek, meanders south through Alley Hollow, to enter the Jacks Fork River approximately one-half mile south of the mill and spring.



Figure 1.1. Alley Mill site from the Overlook. (QEA 2018)

[1] *Final General Management Plan/Environmental Impact Statement – Ozark National Scenic Riverways, Missouri*. United States Department of the Interior, National Park Service, 2015, 1.

Project Purpose and Report Organization

This document combines two commonly used report formats; the Cultural Landscape Report (CLR) covers the 225 acres of land in Alley Hollow that have been identified as the study area. The Historic Structures Report (HSR) focuses on the Alley Roller Mill (HS-501), which is the largest building within that study area. Combining the studies into a single project has allowed for more efficient and coordinated research and ensured consistency in treatment recommendations for the subject resources in the study area. The study area is frequently referred to in this document as Alley Hollow or Alley Spring, after the powerful spring which dominates the landscape.

The purpose of this combined Cultural Landscape and Historic Structure Report (CLHSR) is to document, evaluate, and provide treatment guidance for the Alley Spring landscape and the Alley Roller Mill building to support visitor use. It is intended to serve as a guide for the long-term care of the mill building and the surrounding cultural landscape. Archival research conducted for the report is intended to provide historical context and to support future research and interpretive efforts. This is the first CLR to be conducted for the property and the second HSR. The first Historic Structure Report for the mill building was prepared in 1973 and supplemented in 1977. A report produced in 2013 by Thomas R. Fitzpatrick Structural Engineering, in conjunction with Quinn Evans Architects and Woolpert, studied the deteriorated dam components and proposed design alternatives for their repair. These actions represent a high priority preservation project needed to correct life-safety issues and avoid serious resource impacts if dam failure should occur. Those recommendations have been incorporated into this report.

This Cultural Landscape and Historic Structure Report is organized first with an inclusive introduction (Chapter 1) followed by Chapter 2, which reviews the physical development of both the site and the mill, discusses the statement of significance, and identifies major events. Chapter 3 describes existing conditions and provides analysis of the cultural landscape and site accessibility. Chapter 4 provides documentation and assessment of the mill building, through architectural and structural analysis, as well as hazardous materials testing, review of building life safety code, and review of Architectural Barriers Act Accessibility Standard (ABAAS).

A summary of the November 2018 Treatment Alternatives Workshop held at the park and discussion of the recommended treatment approach for the landscape and buildings is discussed in Chapter 5. Rehabilitation treatment recommendations are presented in Chapter 6 for the landscape and in Chapter 7 for the mill building. Appendices include technical materials to support the report.

Throughout the report, the terms ‘original’, ‘historic’, ‘contemporary,’ and ‘modern’ are utilized to reference materials. ‘Original’ refers to materials or features which are thought to have been from the initial construction of the resource being described, or early enough to be indistinguishable from original materials. ‘Historic’ is used to describe materials or alterations that took place prior to 1969, within the period of significance. ‘Contemporary’ or ‘modern’ refer to materials or alterations made within the last fifty years.

Nomination to the National Register of Historic Places

This CLHSR will also support a National Register Nomination for the Alley Spring State Park Historic District. The National Register nomination is being prepared under the same contract as this document. Currently, only the Alley Roller Mill is listed in the National Register of Historic Places; it was listed Dec. 8, 1981. The new nomination expands upon that listing to include a larger cultural landscape that corresponds to the historic core of Alley Spring State Park.

The boundaries for the National Register Historic District vary slightly from the study area for this CLHSR, to more closely match the original boundaries of the state park, per National Register guidelines (Figure 1.2). Boundaries for the study area include a portion of State Route 106 to the north and the Jacks Fork River to the south. The boundaries for the historic district correspond to the boundaries of the largest of the three parcels of land which originally comprised Alley Spring State Park, plus 19 additional acres along the north boundary. The additional land to the north contains portions of two CCC-era trails that were inadvertently constructed outside of the original park boundaries.

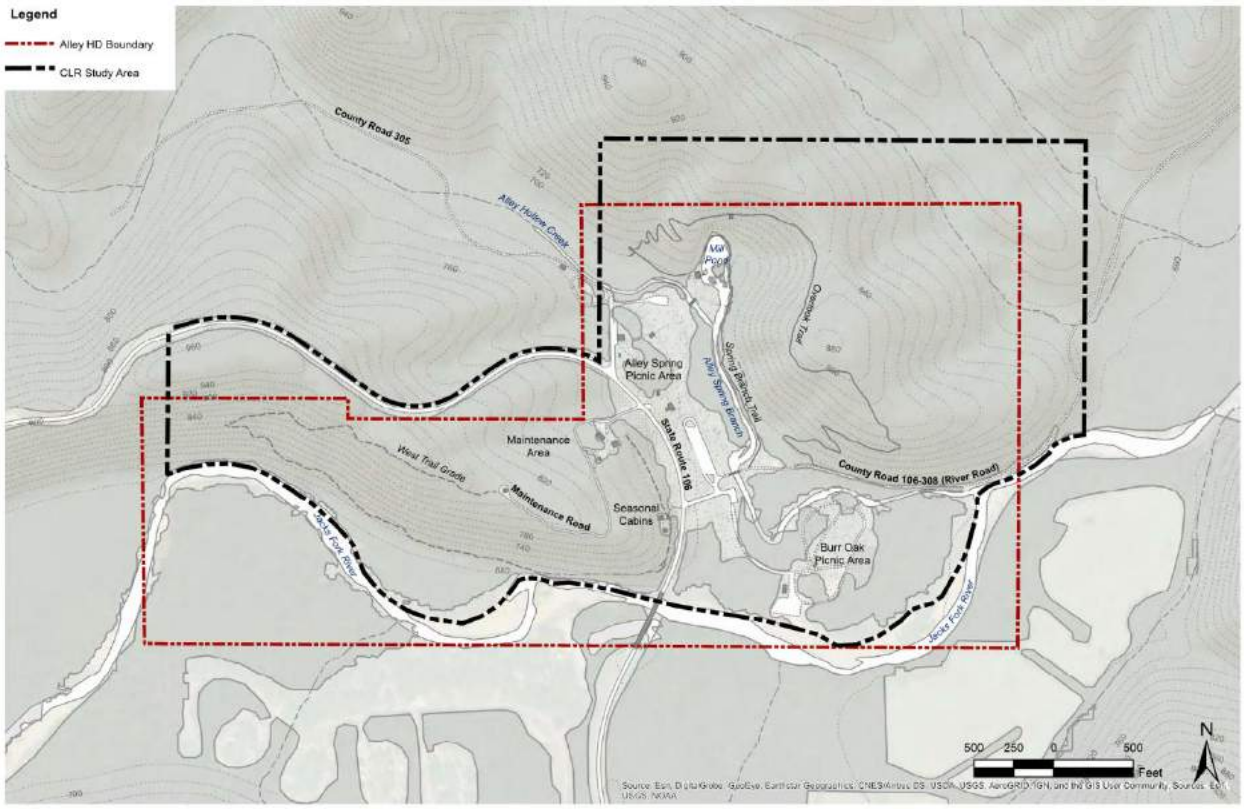


Figure 1.2. Map showing study area boundaries and National Register district boundaries. (QEA 2019)

The study area has been determined potentially eligible for the National Register in two contemporary studies. In 2004, the creation of a historic context for all of Ozark National Scenic Riverways included a study of the cultural landscape around Alley Spring.[2] That project included the preparation of a Determination of Eligibility for the National Register (DOE) for several locations throughout the Ozark National Scenic Riverways, including resources and a smaller parcel of land within the original core of Alley Spring State Park. The Missouri State Historic Preservation Office (SHPO) concurred that that smaller area was potentially eligible, with a local level of significance.[3] A more intensive study of the landscape took place in 2010 when a comprehensive Cultural Landscape Inventory (CLI) of the area was prepared by National Park Service Historian Dan Jackson.[4] That CLI established additional statewide context for the cultural landscape and identified a larger geographical area as a potential historic district. The study area for this CLHSR report corresponds to the boundaries of the 2010 CLI.

Study Area Location and Description

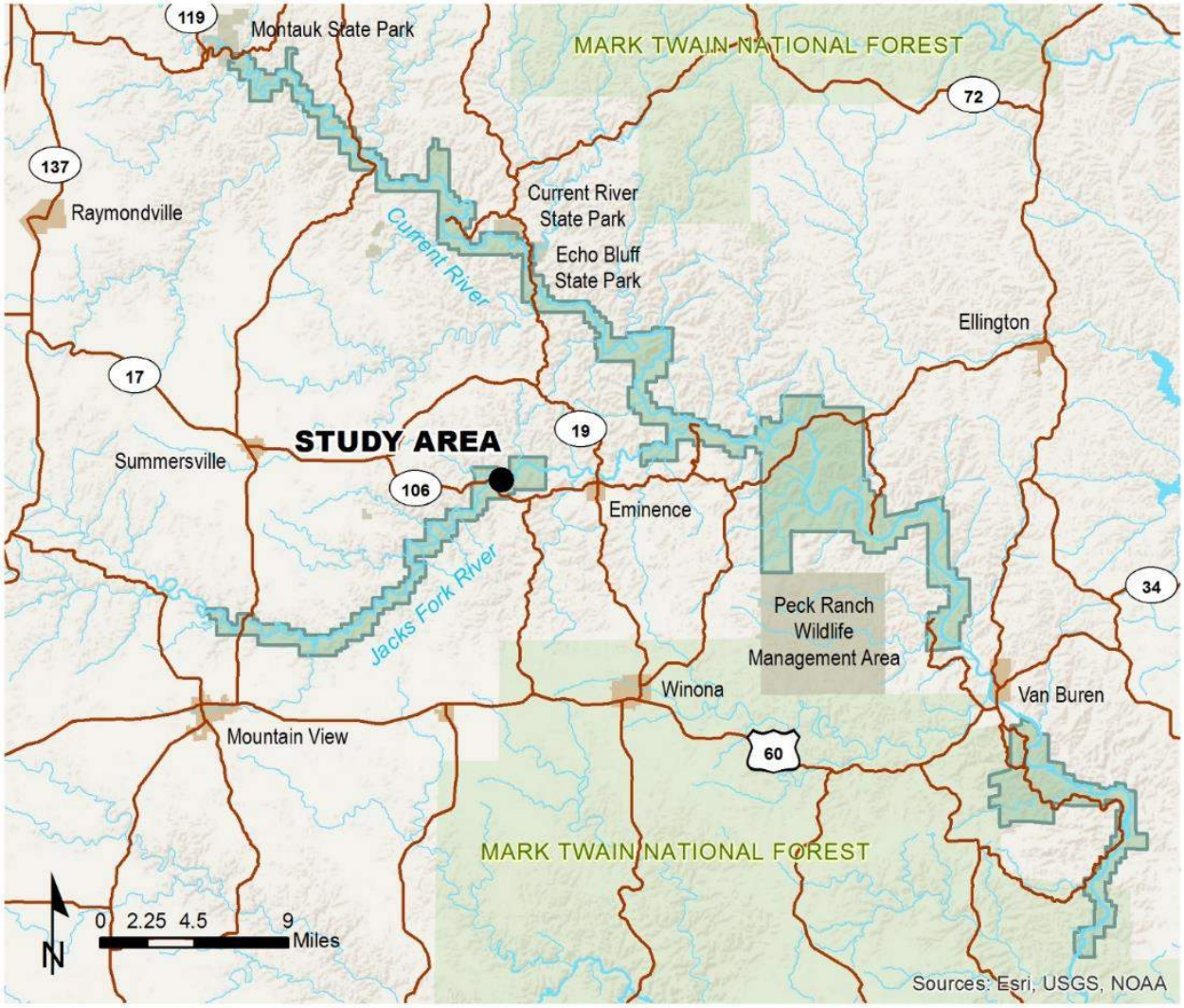
The study area for the Alley Spring Cultural Landscape and Historic Structure Report covers a large part of the original Alley Spring State Park, including the mill and spring. Southeast Missouri features a number of publicly owned parks and conservation areas. Nearby state and federal lands include Mark Twain National Forest, Peck Ranch Wildlife Management Area, Montauk State Park, Echo Bluff State Park, and Current River State Park (Figure 1.3).

The area covered by this Cultural Landscape and Historic Structure Report encompasses 225 acres located in Township 29N/Range 5W/Section 25 in Shannon County. The original Alley Spring State Park originally had 3 non-contiguous parcels which totaled 427 acres. The study area consists of the core of the state park, which encompasses the most highly developed portion of the state park landscape (Figure 1.4), as identified in a Cultural Landscape Inventory that was conducted in 2010. The study area is located on the north side of the Jacks Fork River, near its confluence with the Alley Spring Branch. In the 1920s, this portion of the park was developed from the hamlet of Alley Spring, a rural community nestled within Alley Hollow which was centered on the Alley Spring Roller Mill. Primary access to the study area is via State Route 106, which crosses the Jacks Fork River along the southern boundary of the study area and bisects the landscape into eastern and western portions. Throughout the study area, the dolomite bedrock forms dramatic grottos along the streams, and karst features such as springs and caves are common.

[2] Thomason and Associates, Theme Identification, Context Studies, and Property Evaluations: Ozark National Scenic Riverways (Nashville, TN: 2004).

[3] Determination of Eligibility, Ozark National Scenic Riverways. Alley Spring State Park Historic District, OZAR Site #s 84-93, July 2, 2004 (Copy courtesy of Dan Jackson, National Park Service).

[4] Dan Jackson*, Alley Spring State Park Historic District: Ozark National Scenic Riverways* (National Park Service Cultural Landscapes Inventory, 2010), 25. Jackson was then part of the Cultural Resources staff of the Midwest Regional Office of the National Park Service. He is currently the Cultural Resources Program manager for Lewis and Clark National Historic Trail.



Legend

- Highway
- Stream
- Waterbody
- Town or City
- Ozark National Scenic Riverways
- National Forest
- State Park or Wildlife Area



Figure 1.3. Regional location of the study area.
(QEA, source data from NPS-OZAR and USGS National Map)

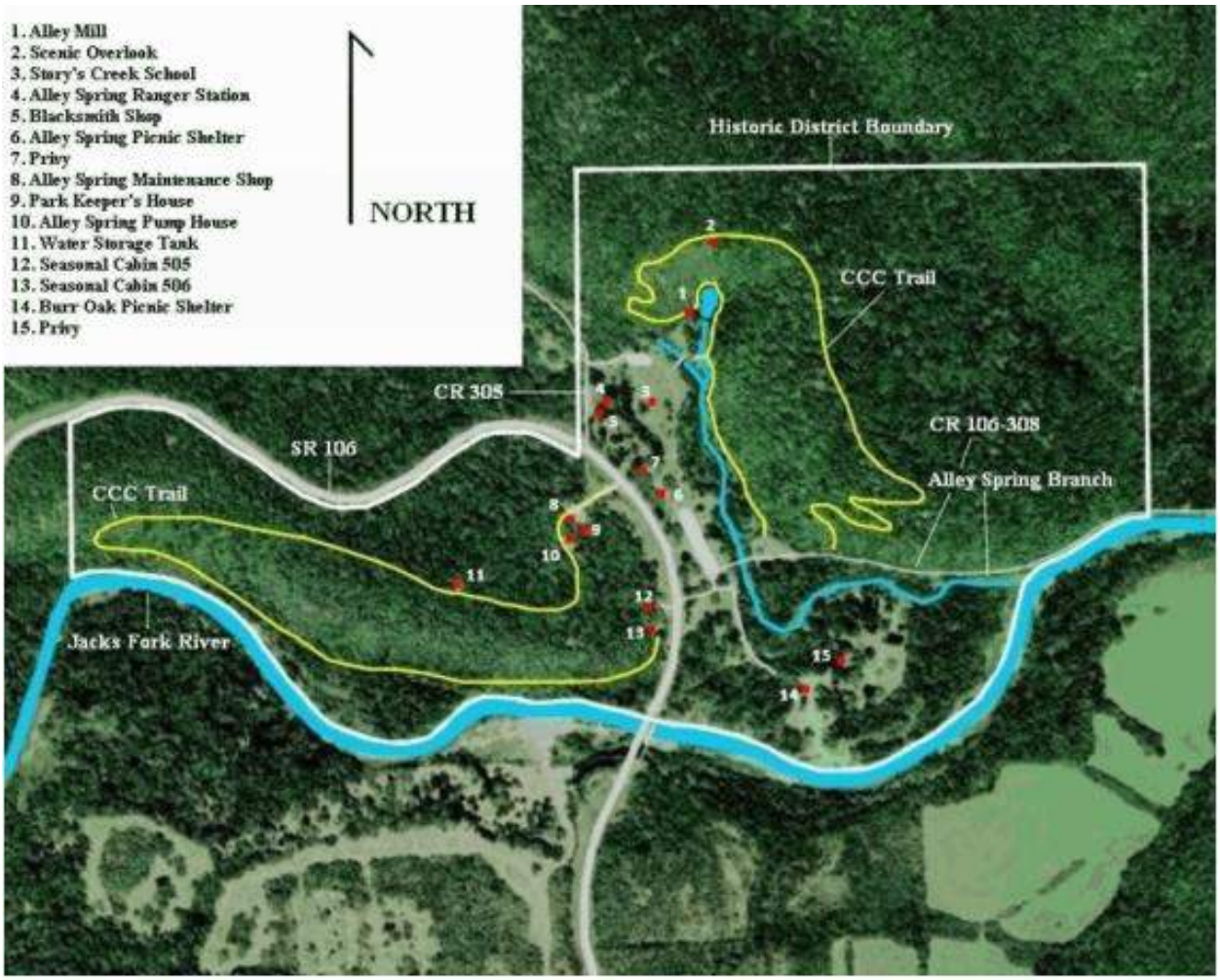


Figure 1.4. 2010 Site Plan for the proposed Alley Spring Historic District from the 2010 CLI. (Map from Dan Jackson, *Alley Spring State Park Historic District: Ozark National Scenic Riverways*, and Google Earth)

There are eight contributing buildings on the property, as well as a number of contributing structures and objects (Figure 1.5). The largest building on the property is the Alley Spring Roller Mill, which is a subject of this study. There are also a number of non-contributing buildings and structures.

HS Numbers of Major Resources Within the Study Area			
HS#	**Resource Name on CLI/LCS**	**Construction Date**	**Contributing?**
HS-501	Alley Spring Roller Mill	1894	yes
HS-501A	Alley Spring Pond, Dam, Turbine Pit & Raceway	1912	yes
HS-501B	Alley Spring Revetment Wall	1933	yes
HS-501C	Alley Spring Stone Walkway	ca. 1975-1983	no
HS-501H	Alley Spring Trail System East	1933	yes
HS-501I	Alley Spring Scenic Overlook	1934	yes
HS-501J	Alley Spring Trail System West	1934	yes
HS-502	Alley Spring District Maintenance Shop	1933	yes
HS-503	Alley Spring Picnic Shelter	1934	yes
HS-504	Alley Spring Park Keeper's House	ca. 1920	yes
HS-504B	Alley Spring Seasonal Cabin Steps and Pathway	1934	yes
HS-505	Alley Spring Seasonal Cabin 505	1934	yes
HS-506	Alley Spring Seasonal Cabin 506	1934	yes
HS-507	Alley Spring Pump House	1933	yes
HS-511	Alley Spring Ranger Station/Contact Station	1939	yes
HS-511A	Alley Spring Ranger Station Steps	1930	yes
HS-520	Storys Creek School House	1896	no

Figure 1.5. Historic Structure Numbers for Resources within the Study Area.

Landscape Character Areas

Based on the spatial organization of the Alley Spring landscape, this report separates the study area into five landscape character areas (Figure 1.6).

The *Mill Area* is comprised of the immediate area surrounding the mill. Primary features within the Mill Area are Alley Spring, Alley Roller Mill, and the Dam, as well as the adjacent sidewalks and trails, lawn, and the constructed islands within Alley Spring Branch. The Mill Area is centered on Alley Spring. The Mill, Dam, and supporting constructed water features are laid out to harness the hydrologic force of the spring, and associated circulation routes are designed to provide access to these features.

The *Alley Spring Picnic Area* is located immediately east of State Route 106 between the highway and Alley Spring Branch. It includes many of the visitor services provided at the site, including the General Store and Blacksmith Shop, the Alley Spring Picnic Shelter, picnic areas, and parking areas. Features within this landscape character area are laid out in a north-south arrangement that follows the orientation of Alley Hollow and Alley Spring Branch, which carved the valley.

The *East Trail Area* encompasses the northeastern portion of the study area from Alley Spring Branch to the historic district boundary. The southeastern portion of the character area is bounded by the Jacks Fork River. The character area contains the Overlook Trail, Spring Branch Trail, and County Road 106-308 (River Road). The primary organizing force within this character area is the ridge that rises 200 to 300 feet above the floor of Alley Hollow. The Overlook Trail traverses this ridge and is oriented to provide dramatic views of the hollow. The Spring Branch Trail and River Road are nestled into rock outcrops at the base of the ridge.

The *Burr Oak Picnic Area* is located in the southern portion of the study area east of State Route 106 and south of Alley Spring Branch. The character area is along the north bank of the Jacks Fork River. It contains picnic facilities including the Burr Oak Picnic Structure, a modern privy, and a broad area of mown grass containing picnic tables, grills, and playground equipment. The character area is located entirely within the floodplain of the Jacks Fork River. The picnic area is a flat, open space visually enclosed by the dense bottomlands forest.

The *West Trail Area* comprises the western portion of the study area. It extends along a ridge bounded by the Jacks Fork River to the south and State Route 106 to the north. Clustered along the state highway are two vacant seasonal cabins and a group of buildings constructed as a Keeper’s House/Maintenance Area and now used for storage. Remnants of an unmaintained trail are present along the ridge. There are no active visitor facilities within this area. Similar to the East Trail Area, this landscape character area is organized in relation to the ridge rising on the west side of Alley Hollow. The remnants of the West Trail system are arranged to provide views over the Jacks Fork River valley, while the seasonal cabins and Keeper’s House are oriented to the hollow.

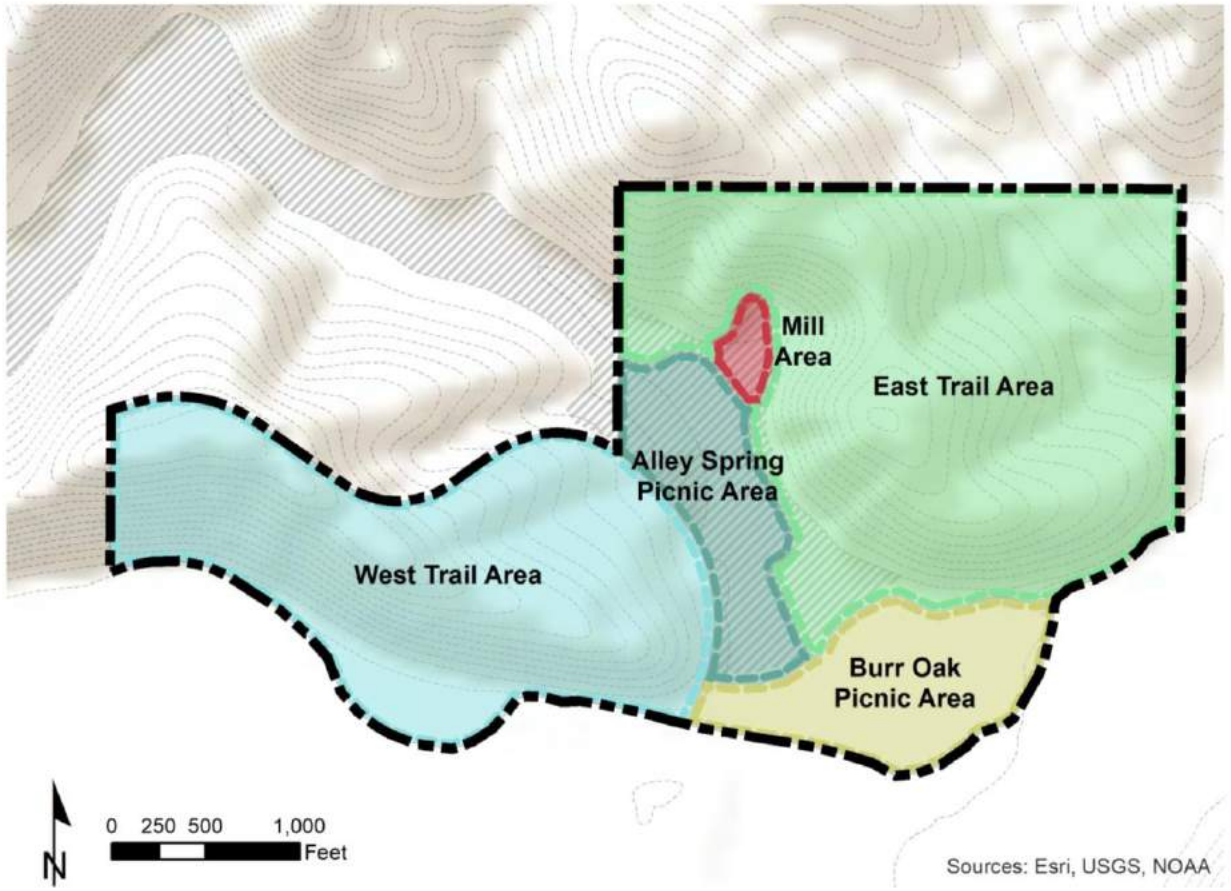


Figure 1.6. Landscape character areas. (QEA)

Statement of Significance

Alley Spring State Park was created in 1925, very early in the process of establishing a state park system in Missouri; it is one of the oldest state parks in Missouri. In the 1930s, the property benefitted from the attention of the Civilian Conservation Corps (CCC), which had a temporary camp in the park in 1933-34. The core of the park has seen little additional development since the CCC completed its work in 1934. The park is significant under National Register Criterion A in the areas of Politics/Government and Recreation, and under Criterion C, in the areas of Architecture and Landscape Architecture.

Periods of Significance

Because this study covers one building that is listed in the National Register of Historic Places and an unlisted cultural landscape that was developed several decades after the mill was constructed, there are two periods of significance.

The overall period of significance for this study begins with the construction of the Alley Roller Mill in 1894 and ends in 1969 when the property came under federal ownership as part of the Ozark National Scenic Riverways.

The period of significance for the landscape and the proposed historic district begins later, with the creation of Alley Spring State Park in 1925. That period also ends in 1969.

Historical Background

The landscape surrounding the spring has been impacted by the presence of a mill operation since the 1870s when the first commercial mill was constructed to harness the power of the spring. The spring was dammed in the late 1860s or early 1870s to power a small gristmill that was located in approximately the same location as the current mill building. The gristmill became a small commercial hub in rural Shannon County and spawned other businesses such as a blacksmith shop and a sawmill. Owners of the mill struggled to overcome frequent flood damage, however, and they lost that battle in 1890 when a major floor damaged the mill beyond repair.

In 1893, the property was sold to George W. McCaskill, who erected the large frame mill building that continues to be a centerpiece of the property. The new building was a roller mill, which used steel rollers instead of a millstone to grind wheat. The roller mill revived area commerce and served as an anchor for a small community, which at one point included several residences, a school, and a general store. Flood damage continued to be an issue, however, and as small-scale milling became less financially viable, owners of the property turned to recreational uses. By the early 1920s, the mill had closed and the owners of the property were using it primarily as a small summer resort.

Continued recreational uses were assured when the property became Alley Mill State Park in early 1925. Aside from a new coat of red paint for the mill, Alley Hollow saw minimal development until the 1930s, when the park benefitted from the efforts of the Civilian Conservation Corps, which had a camp within the park in 1933 and 1934. Alley Spring State

Park saw few additional changes until the end of 1969, when the state transferred the property to the National Park Service (NPS), for incorporation into the newly created Ozark National Scenic Riverways (OZAR). The mill works were repaired during an NPS renovation and last ran in 2006 for small demonstrations. Today, the Alley Roller Mill and Spring are among the most visited and photographed sites in the state of Missouri.

Episode Summary

The history of the property encompasses three major periods of development.

Episode 1. Alley Roller Mill: 1894-1924
This episode encompasses the time the Alley Roller Mill and surrounding land was in private ownership. Construction of Alley Roller Mill was completed in 1894, and it remained in operation off and on until the early 1920s. Late in 1924, arrangements were made to sell the land to the state for use as a state park.

Episode 2. State Park: 1925-1969
This episode corresponds to the time the property was owned by the state.

Episode 2a: Alley Spring State Park 1925-1932
When it became a state park in 1925, it was under the management of the Missouri State Game and Fish Commission, which managed the property for its natural attributes. Around 1928, the mill received the first of many coats of its iconic red paint.

Episode 2b: CCC and Continued State Ownership 1933-1969
In 1933-34, CCC Camp SP-6 performed extensive work on the mill and surrounding parkland. In 1955, access to the park was greatly enhanced via the extension of State Route 106 through the park. The property served as a state park until late in 1969, when it was transferred to the National Park Service.

Episode 3. Ozark National Scenic Riverways: 1970-2018
The transfer to the National Park Service (NPS) in December 1969 culminated after several years of planning and development of the Ozark National Scenic Riverways. With that change came a renewed interest in the history and preservation of the roller mill and the cultural landscape of the former state park.

Clarification of Key Dates

Construction Date for the Mill: 1894

Although the general consensus of an 1890s construction date for the mill is correct, a closer look at historical documents has made it possible to pin it down to a specific year: 1894. George W. McCaskill, who built the roller mill, bought the property in 1893.[5] Oral history from Johnny Ferguson, who moved to the area with his father in 1891, later put the start of construction in the fall of 1893. Ferguson noted that the old mill was torn down "in the winter of 1894-94" and specifically stated that "The new mill was finished in July 1894."[6] Ferguson's memory was supported by the fact that G. W. McCaskill was advertising the services of his new roller mill no later than Jan. 3, 1895, which indicates that the building was completed and in service by the end of 1894.[7]

Date the Mill Became Red: ca. 1928

Alley Mill was white for the first few decades it was in existence. Although many historical accounts credited the CCC with the decision to paint the mill dark red, a closer look at early records showed that the mill was painted red well before the CCC arrived at the park. One of the latest known photos of the mill with white paint was taken for a state publication ca. 1925, after the state park was established. A description of the mill that appeared in a monthly CCC report in 1933, stated that by that time, the building had "been known as 'The Old Red Mill for years."[8] Therefore, the new color was introduced by the state, probably in the mid to late 1920s, listed here as ca. 1928.

[5] Shannon County Deed Book P, p. 580, cited in Ricardo Torres-Reyes and Vance L. Kaminski, "Historic Structure Report: Alley Spring Roller Mill" (1973), 4.
[6] Johnny Ferguson, "Memories of Alley Spring When I Was a Boy," *Current Wave*, December 2, 1971, (Missouri State Parks Archives).
[7] Reyes and Kaminski, 16. McCaskill advertised the mill in the *Current Wave* January 3, 1895. No 1894 issues of that paper have survived.
[8] *Monthly Progress Report, Camp No. SP-6* (Alley Spring State Park: Department of the Interior, National Park Service State Park Emergency Conservation Work, January, 1934), 1.

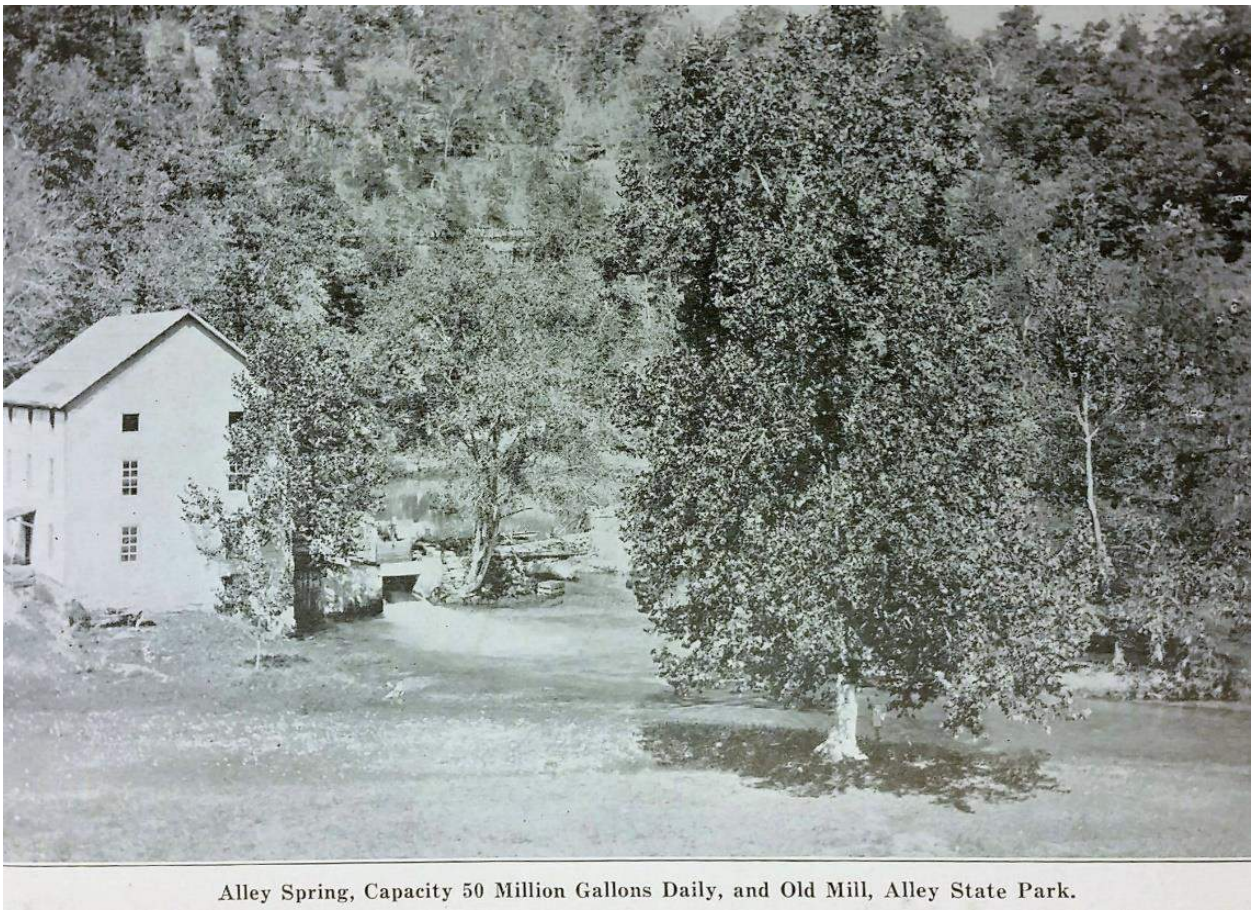


Figure 1.7. View of Alley State Park before the mill was painted red. This photo was taken between 1925 and ca. 1928. (C.M. Seaman, *Shannon County: In the Big Springs Country of the Missouri Ozarks*. Eminence, MO: C.M. Seaman, 1929; Missouri State Archives; note this is also OZAR 24034)

Research and Investigation Methodology and Review Standards

This report is based on a combination of field study, data analysis, and archival research conducted by a multi-disciplinary project team. The work was guided by *Preservation Brief #43: The Preparation and Use of Historic Structure Reports* and *Historic Structure Reports and Preservation Plans: A Preparation Guide*.[9] Landscape analysis and recommendations were guided by *A Guide to Cultural Landscape Reports: Contents, Process and Techniques*. All recommendations in the report have been developed to comply with *The Secretary of the Interior's Standards for the Treatment of Historic Properties*.

The bulk of the research for this project was conducted in government archives. The Ozark National Scenic Riverways (OZAR) Archives, near Van Buren, MO, yielded a rich store of

[9] Deborah Slaton, *Preservation Brief 43*: *The Preparation and Use of Historic Structure Reports.* (Washington, D.C.: National Park Service, 2005), and Dominique M. Hawkins and Lyssa Papzaian, *Historic Structure Reports & Preservation Plans; A Preparation Guide* (New Jersey State Historic Preservation office, n.d.).

primary and secondary information. OZAR records include maintenance and administration files, as well as primary history sources, including an extensive collection of historic photographs. The OZAR collection includes valuable information from the time the CCC was at Alley Spring, including monthly reports and detailed descriptions of the work that was done by the CCC in 1933-34.[10] The archives of the Missouri State Park Systems, Jefferson City, yielded information about the initial acquisition of the land, operation of the park under state ownership, and the process of transferring the property to the National Park Service in 1969. The collection of the Missouri State Archives, also in Jefferson City, includes information about the early years of the state park program in Missouri, including numerous reports by the State Game and Fish Commission, which originally managed the Missouri state park system.

Reports and secondary sources identify additional information about the mill and surrounding property and provided historic context. One of the best sources of information about life in Alley Hollow, when the property was privately owned, is *Alley, an Ozark Mill Hamlet*, by Robert Flanders (Springfield, MO: The Center for Ozark Studies, 1985). Later work of note includes a detailed cultural landscape inventory by Dan Jackson, "Alley Spring State Park Historic District: Cultural Landscape Inventory," (National Park Service, 2010). Local historic collections that were consulted include public libraries in Van Buren and Eminence, the Shannon County Historical Society, and the Shannon County Recorder and Assessors offices. On-site study and photography of the mill and landscape took place in May and August 2018.

Historical research and analysis included the creation of a searchable database of historic images, using Filemaker software (See Appendix C).[11] That database contains 169 different photos, dating from ca. 1896 to 2006. The database was used to organize the photo files and compile information about sources and likely dates of the images. Those photos, along with early maps and drawings, helped identify changes that have taken place in the study area over the previous 125 years. (See Appendix D for early architectural drawings.) Most of the photos were part of the OZAR museum collections and property files; OZAR Chief of Resource Management Eric Daniels also supplied a number of good early images. NPS historian Dan Jackson shared a large number of historic photos, many of which were from CCC records. Other photo sources include the State Parks Archives and the Missouri State Archives, as well as a few historical publications.

The on-site study, measuring, photography, and assessment of the mill, landscape, and relevant site features occurred during April, May, and September of 2018. During the April site investigations, QEA mapped the location of landscape features using an Eos Arrow 100 Submeter Global Navigation Satellite Systems (GNSS) receiver. Locations were recorded using the Esri Collector Application and integrated with NPS-provided Geographic Information Systems (GIS) data using ArcGIS Online.

[10] The Ellis Baker Collection (OZAR 25223) was donated to the park by the family of former CCC camp superintendent Ellis Baker in 2009.

[11] The database was compiled by the project contractors. Park staff does not currently utilize Filemaker, and therefore they do not currently have access to this version of the database.

Project Team Members

The following team members participated in the Cultural Landscape and Historic Structure Report for Alley Mill.

Project Manager and Historic Architect
STRATA Architecture Inc. (STRATA), Kansas City, Missouri
STRATA provided project management and historic architectural consulting for this study. Their work included architectural investigation and analysis for the historic mill, while also providing record measured drawings, historic research, determination of building chronology, materials testing, accessibility and life safety assessment, and identification of character defining features. Immediate, short term, and long term treatment recommendations, along with drawings and a magnitude of cost estimate, were also provided.

Historic Landscape Architect and GIS Coordination
Quinn Evans Architects (QEA), Ann Arbor, Michigan
Quinn Evans Architects provided historic landscape architectural services for this study. QEA performed existing condition documentation and analysis related to the historic landscape and provided long term treatment recommendations and schematic design for the proposed site work.

Architectural Historian
Deb Sheals, Building Preservation LLC (Sheals), Columbia, Missouri
Deb Sheals was the lead historian, closely assisted by Mason Martel. Research for this project focused on identifying and dating changes to Alley Mill and the cultural landscape of the study area, using primary and secondary sources.

Structural Engineering
Structural Engineering Associates, Inc. (SEA), Kansas City, Missouri
SEA provided structural engineering services related to the existing conditions analysis and provided recommendations for the immediate stabilization and long term repairs for the Alley Mill.

Cost Estimating
Construction Management Resources (CMR), Mission, Kansas
CMR provided independent Class C cost estimating services for the proposed immediate, short term, and long term treatment recommendations for the site and Alley Mill.

Hazardous Materials Testing was provided by Terracon Consultants, Inc., St. Louis office.

Historic Paint Analysis was provided by David Arbogast, Architectural Conservator, Davenport, Iowa.

Acknowledgments

The Cultural Landscape and Historic Structure Report team would like to acknowledge several important organizations and individuals for their contributions and insight. Allison Young, Archeologist for OZAR, served as the point of contact for this study. Together, she and Eric Daniels, Chief of Resource Management, provided insight, research opportunities, time on site, and guided the study through the analysis and treatment phases. And many thanks to Larry Johnson, Superintendent OZAR, and the entire staff who participated in the two-day Treatment Alternatives Workshop and Open House and were engaged and had valuable input and recommendations throughout the process of the report development. Jessica Fry, OZAR Museum Curator, assisted with the final project management and compliance efforts.

The team owes gratitude to Dan Jackson, Cultural Resources Program Manager for Lewis and Clark National Historic Trail, and author of the comprehensive 2010 Cultural Landscape Inventory report titled "Alley Spring State Park Historic District: Ozark National Scenic Riverways."[12] Mr. Jackson kindly shared extensive research files and photography that he gathered as part of that research.

Kim Dillion, Cultural Resource Management Section Chief, Missouri State Parks, assisted with the location of historic records of the state parks system.

[12] Dan Jackson was part of the Cultural Resources staff of the Midwest Regional Office of the National Park Service when the CLI was prepared.

Summary of Findings and Recommendations

Workshop Summary

- The project team held a two-day Treatment Alternatives Workshop at the park headquarters to review relevant historical information, current conditions of the landscape and mill building, and to develop a preferred treatment use for them for further exploration.
- The treatment approach that best fits the requirements identified by park staff and the project team is *Rehabilitation.* This approach allows for maintenance, repairs, and much-needed upgrades of the buildings and landscape for visitor use while preserving the character-defining features.

Landscape Treatment Summary

Immediate:

- Stabilize the dam by implementing Alternatives 2 and 4 of the 2013 dam assessment *Design Alternatives for Restoration of Earth-Fill Dam and Hydraulic Structures at Alley Roller Mill*.
- Stabilize the trail overlook structure.
- Work with US Federal Highways Administration to construct a new footbridge in the location of the missing Alley Spring Branch footbridge.
- Repair stone retaining walls, edges, and revetment walls around the Mill Pond and Alley Spring Branch.

Long-Term:

- Move the Storys Creek Schoolhouse to a location outside of the floodplain. The preferred option is to move the school to the area between the General Store and the Pavilion restroom.
- Add barrier-free routes into the Mill, Picnic Shelters, and General Store.
- Reopen the West Trail System.
- Relocate river concessions and the Burr Oak picnic area to long-term locations that are not as prone to frequent changes of the floodplain.

Alley Roller Mill

Immediate:

- Increase visitor and staff safety and provide interior improvements.
- Provide building stabilization, including stabilization of footing and providing drainage in the event of another flood.
- Provide building maintenance
- Provide stabilization of mill works through excavation of soil and mechanical stabilization.
- Cleaning the mill and mill works equipment, including removal of stored items.

Short-Term and Long-Term:

- Provide barrier-free access into the Mill, throughout the first floor, and onto the observation deck.
- Install updated lighting and exhibits throughout the building, including the restoration of the Miller’s Office to be viewable for interpretation.

- Provide screening to prevent infiltration of bats and birds.
- Provide ventilation in the basement.
- Provide further building stabilization, including reconstruction of sections of the stone foundation, roof framing stabilization; and replacement or sistering of deteriorated joists.
- Exterior rehabilitation work may include re-grading at perimeter of building; relocation of telephone/data utilities; foundation waterproofing; restoration of windows and removal of sapling window bars and screened coverings; siding replacement; abatement of lead paint and repainting; and the installation of gutters to prevent deterioration of new observation platform.

Future Research and Investigation Recommendations

Research and analysis conducted for the production of this report revealed opportunities to learn more about the Alley Spring landscape and buildings. The following list summarizes recommendations for areas of future research:

1. Locate early records from the Missouri State Parks Board. Those records are cited in the 1973 Historic Structure report for the mill, with a note that they were in Columbia, MO. The State Park Board is no longer based in Columbia. The State Parks Archives, the Missouri Secretary of State, and the State Historic Preservation Office had no information about where those early records might be today.
2. Identify potential impacts of proposed new lighting on museum collections as part of an overall new Interpretation and Exhibits Plan.
3. Prepare an updated Collection Management Plan and Collection Storage Plan.
4. Additional paint samples from the Mill may continue to yield additional information for the exterior paint chronology and identify more locations containing lead based paint. Recommendations for further paint testing and analysis are included in Chapter 4.
5. Engage a millwright to evaluate the current conditions of the mill works and viability to get them into working condition on a limited basis for demonstrations. Millwright should be involved in all future investigation work, including recommended upper level of flooring removal to determine locations of original equipment attachments to the existing and original wood flooring below.

Refer to Chapter 6, for more information regarding these recommendations related to the landscape below.

6. Provide a detailed topographic survey of the entire Alley Spring Landscape Character Area.
7. Provide detailed evaluations of the condition for several existing buildings, including the Alley Spring District Maintenance Shop (HS-502), Alley Spring Picnic Shelter (HS-503), Alley Spring Park Keeper's House (HS-504), Alley Spring Seasonal Cabins (HS-505 and HS-506), Alley Spring Pump House (HC-507), General Store (HS-511), and the Blacksmith Shop. Provide a treatment approach for each historic building through the development of historic structures reports (HSRs). Building treatment approaches should be tiered from the landscape treatment approach and considered within the overall context of the historic character and use of the property.

8. Conduct a detailed vulnerability assessment for landscape characteristics and contributing features.
9. Undertake a comprehensive planning process to determine any potential impacts to the integrity of the historic landscape with regards to the development of proposed new housing near the historic area.
10. Develop an Integrated Resource Management Plan for the restoration of bottomlands forest in the Burr Oak Picnic Area.

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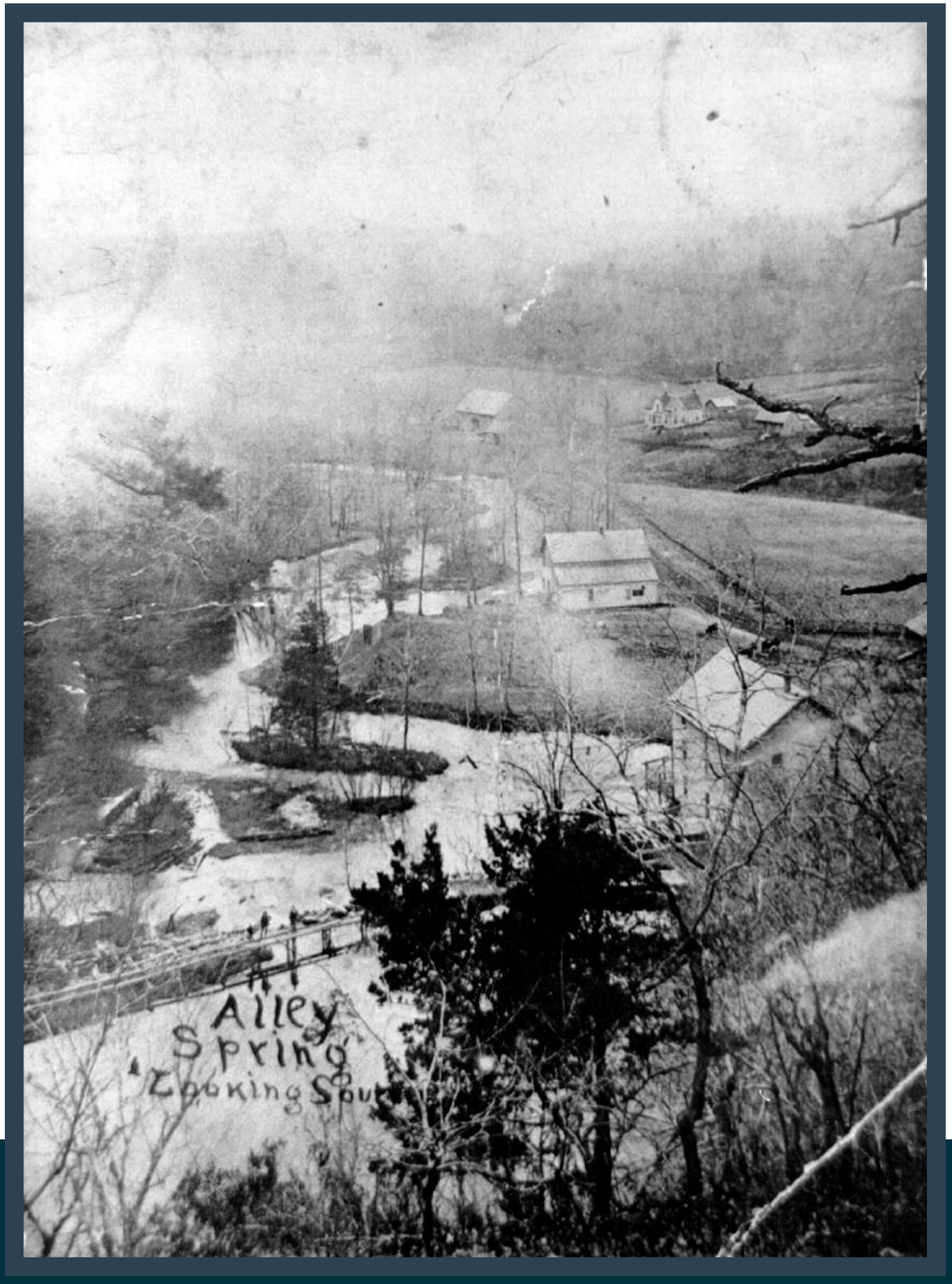


Photo of Alley Hollow with the Roller Mill in the foreground, ca. 1900. (OZAR 340)

2 HISTORICAL BACKGROUND AND CONTEXT

Chapter 2 – Historical Background and Context

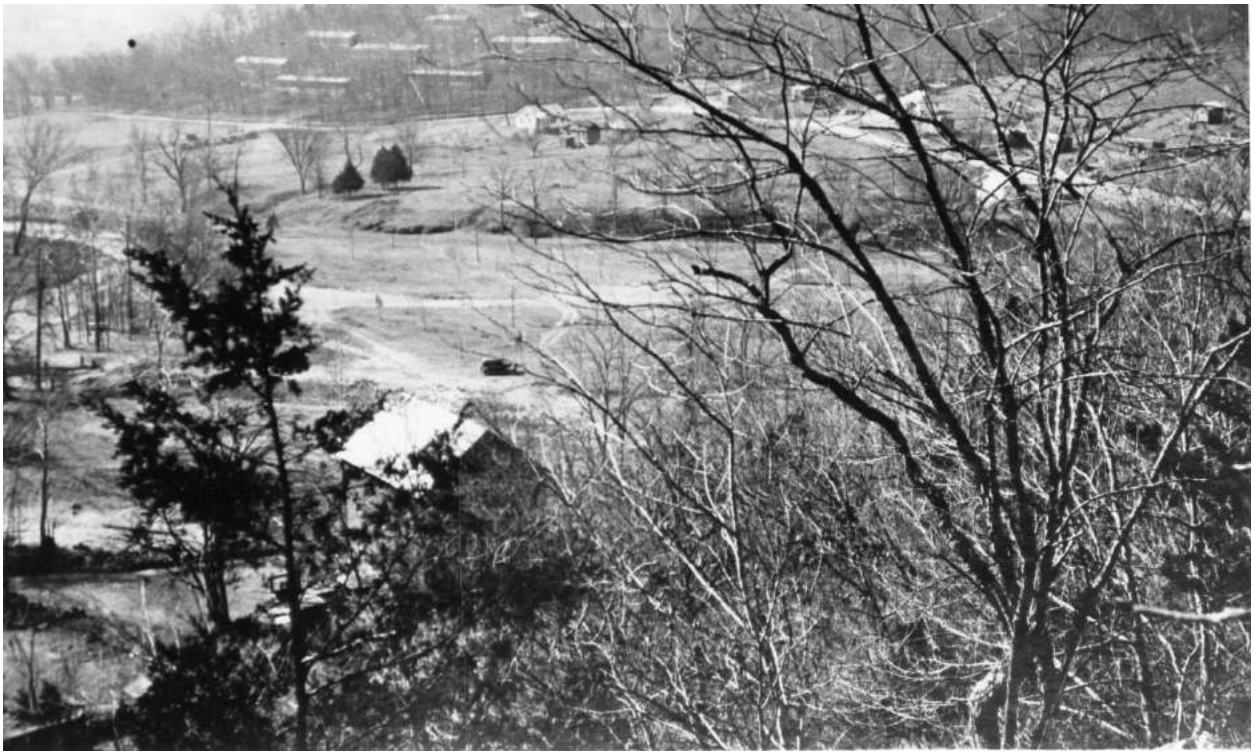


Figure 2.1. Alley Spring State Park, looking south from the overlook north of the mill, ca. 1933. Note, the CCC camp can be seen in the background. (Missouri State Park Archives, image Arc1320110008)

Introduction

Alley Spring is one of the largest springs in Missouri, and the Alley Hollow has been home to a water-powered mill for more than 140 years. The first mill was constructed next to the spring sometime before 1876, and the current mill building dates to 1894 (Figure 2.1). When new, the mill served as an economic anchor in the hollow, which also sported a general store, blacksmith shop, residences, and a school. Management of the property changed in 1912 when the Crystal Springs Townsite Company purchased the mill and approximately 400 acres. Members of the Townsite Company, which was based in Kansas City, were more interested in the recreational opportunities offered by the spring and natural setting than they were in milling flour. The mill continued to operate under their ownership as they attempted to develop the area into a private resort. By the early 1920s, changes in technology had rendered the Alley Mill outdated and inefficient, and it was closed.

Not long after the mill closed, the state of Missouri began looking for opportunities to develop their own set of recreational properties in the Ozarks. In 1924, Missouri Governor Arthur Hyde and Game and Fish Commissioner Frank Wielandy, who were heading an effort to create a state park system in Missouri, scouted and selected four potential park sites in the Ozarks.

Those parcels included Round Spring, Big Spring, Bennett Spring, and Alley Spring.[13] The Lennox Tract, which would become Montauk State Park, was also purchased in 1924.[14] The first tract to be purchased was Round Spring, which the state acquired in mid-December, 1924.[15] Contracts for the purchase of Alley Spring, Big Spring, and Bennett Spring were also made in 1924, but a legal challenge related to the appropriation of funds for park acquisition delayed those actual purchases until January 1925.[16] The Alley Spring property was the fourth parcel purchased; it encompassed the mill and spring, as well as approximately 420 acres of land. [17]

The new Alley Spring State Park was managed by the Missouri State Game and Fish Department primarily for its natural attributes, and the department immediately demolished all buildings except for the mill. The mill is conspicuously absent from early descriptions of the park that were published in the *Missouri Game and Fish News*. Most of the department's early descriptions of the park focused on the spring and river access, as well as hunting and fishing opportunities.[18]

Little attention was given to the mill over the next few years aside from new paint; in the late 1920s or very early 1930s, it received the first coat of the red paint for which it has become known. In the 1930s, the mill saw extensive repairs, and the landscape of the park was transformed by the Civilian Conservation Corps (CCC), which had a camp at Alley in 1933 and 1934. The state made few changes to the park after the CCC left, and on December 31, 1969, the state park was deeded to the National Park Service to become a part of the Ozark National Scenic Riverways. In general, the study property today retains the characteristics, physical attributes, and historic associations that it had when it served as a state park, from 1925 to 1969.

Statement of Significance

Alley Roller Mill was individually listed in the National Register of Historic Places on December 9, 1981. It is the only resource in the study area that is currently listed in the National Register. The study area for this report encompasses the proposed Alley Spring State Park Historic District, which was found eligible as a historic district in August 2004. It is eligible at the state level of significance as one of Missouri's first state parks. The district is significant under National Register Criterion A in the areas of Recreation and Politics/Government, and under

[13] Flanders, 78-80; "Three More Park Sites Purchased," *Springfield News-Leader*, January 11, 1925, 1. The State Parks Archives has extensive records about the acquisition process.
[14] "Sites for State Parks Secured at Real Bargain," *Sedalia Weekly Democrat*, February 13, 1925, 6.
[15] "State's First Park Bought," *Springfield News-Leader*, December 14, 1924, 12. Several historical sources claim that Big Spring was Missouri's first state park; it is possible that that parcel was developed and placed in service before Round Spring, but several different sources of the time period identify Round Spring as the first purchased.
[16] "Park Fund Injunction Case Dismissed," *St. Louis Post Dispatch*, January 11, 1925, 17.
[17] Missouri State Planning Board, *A State Plan for Missouri: Preliminary Report* (Jefferson City, MO: 1934.); L. T. Shelton, *A History of Missouri's State Parks: A Compilation* (Jefferson City, MO: 1975.); "Three More Park Sites Purchased," *Springfield News-Leader*, January 11, 1925, 1.
[18] *Missouri Game and Fish News*, various issues 1925-1929.

Criterion C in the areas of Architecture and Landscape Architecture. The period of significance for the proposed historic district begins with the creation of Alley Spring State Park in 1925 and ends in 1969, when the property came under federal ownership as part of the Ozark National Scenic Riverways.

Site History

Geographic Setting

Shannon County is situated in the Ozarks region of southern Missouri. The county covers approximately 960 square miles, much of it comprised of dolomite hills, valleys, and bluffs that have been carved away by rivers fed by some of the largest springs on earth. The land itself is largely covered in pine and oak trees. Given the region's rough terrain and vast forests, the early economy was focused on extracting timber from the land.[19] The two main rivers in the area are the Current River, which cuts diagonally across the county, and the Jacks Fork River, which flows into the Current River near Eminence. Alley Hollow Creek is a small creek that feeds into the Jacks Fork approximately 9 miles southwest of the Current River. The section of Alley Hollow Creek which runs between the spring and the Jacks Fork is commonly referred to as the Spring Branch.

Early Inhabitants

Evidence from archaeological investigations suggests that the earliest known inhabitants of the Current River valley were most likely the Clovis people, who arrived in the area about 12,000 years ago. While scattered artifacts suggest that the Clovis people were among the first to occupy the Current River valley, there is stronger evidence of Dalton occupation in southern Missouri and specifically at Alley Spring about 10,000 years ago. An article about the early prehistory of the Current River Valley noted that the "Dalton complex appears as the first widespread occupation in the eastern Ozarks and across most of the southeast United States."[20] Evidence of Dalton occupation has been found at numerous sites along the Current River.

The first known European contact with Indigenous groups in the Ozark area is believed to have occurred in the mid-1500s, when Hernando de Soto and his army crossed the Mississippi River and began to explore the region that is now Missouri and Arkansas.[21] After de Soto, there was a lag in European explorations until French traders began to explore the area in the 1600s.[22] It

[19] Walter Williams, *The State of Missouri: An Autobiography* (Columbia: W.E. Stevens College Press, 1904), 516.
[20] Mark J. Lynott, James E. Price, and Roger Saucier, "The Alley Mill Site & the Early Prehistory of the Current River Valley, Southeast Missouri," *The Missouri Archaeologist* 67 (2006): 39.
[21] Donald L. Stevens, Jr., *A Homeland and A Hinterland: The Current and Jack's Fork Riverways* (Van Buren, MO: National Park Service, 1991), 13.
[22] McClure, *History of Missouri* (New York: The A.S. Barnes Company, 1920), 1.

was probably during that 100-year absence that the Osage nation moved into the area, after the local population was decimated by diseases brought by the Spanish.[23]

Trade between the Osage and European traders was established as the volume of Europeans coming into the area increased.[24] Shannon County was established in 1841. Many of the first Euro-American residents of Shannon County and Alley Hollow were persons of Scottish and Irish descent who moved to Shannon County from Tennessee, Kentucky, and Virginia. Those early settlers were scattered throughout the region and made a living off of the land.[25] Most of the buildings constructed by those early settlers were simple and reflected the self-sufficient nature of life near the Current River.[26] Life in the region continued in this way until about 1887 when the Current River Railroad was built through southern Shannon County.[27] The railroad brought access to other markets and made it possible for large-scale logging operations to utilize the vast, untapped natural resources of the area.

Milling at Alley Spring

Before access to the railroad made it easier to transport goods, grain was processed by local mills. Early mills were water-powered. Mill owners would generally dam a stream or river to create a mill pond with a channel which forced moving water over or through a wheel. The wheel, in turn, powered the mill equipment. As the water passed through the race it would turn the wheel. Once in motion, the wheel would power a series of axles and gears that would be attached to upper (runner) and lower (nether) millstones. Grain would then be released between the millstones, which would crush and grind the grain.[28] The faces of the millstones, called burrs, would wear out after a few days of milling and would need to be redressed to ensure the grain was being milled properly.[29] Locating mills near springs provided operators with a constant flow of water, and made springs prized mill sites.[30] The first known gristmill in Shannon County was located on the Current River at Montauk Spring in 1835.[31]

Alley Spring, which was known as Mammoth Spring in the 1860s and 70s, was one of several Ozarks springs that served as mill sites in the nineteenth and early twentieth centuries. With an

[23] Jackson, 25. Jackson based his discussion of the Native Habitation Era (8000 BCE-1825 CE) on Donald Stevens' *A Homeland and a Hinterland: The Current and Jacks Fork Riverways,* (Van Buren, MO: National Park Service, 1991).
[24] Jackson, 26.
[25] David Benac, "Ozarkers and Industry: The Integration of Economic and Social Behaviors," *Southeast Missouri State University Press*, http://www.semopress.com/ozarkers-and-industry-the-integration-of-economic-and-social-behaviors/, [accessed September 13, 2018].
[26] Thomason and Associates, *Theme Identification, Context Studies, and Property Evaluations: Ozark National Scenic Riverways* (Nashville, TN: 2004), 13.
[27] Robert Flanders, *Alley, an Ozarks Mill Hamlet 1890-1925: Society Economy, Landscape* (Springfield, MO: The Center for Ozarks Studies, 1985), 12.
[28] Terry Brandt and Jim Baldwin, "Milling Around the Ozarks," *Bittersweet* II, no. 3 (1975): 10.
[29] Ricardo Torres-Reyes and Vance L. Kaminski, "Historic Structure Report: Alley Spring Roller Mill" (1973), 8-9.
[30] Terry Brandt and Jim Baldwin, "Milling Around the Ozarks," 6.
[31] Lenard E. Brown, "Ozark National Scenic Riverways: History, Basic Data," (U.S. Department of the Interior, Office of Archeology and Historic Preservation, 1969), 13.
1969 OSNR history, 13.

average flow of some 81 million gallons of water per day, it offered an attractive and reliable source of water power. The first mill at the site was constructed by Ike Barksdale and John Daugherty, who purchased 660 acres of land surrounding the spring in 1868. The spring was sometimes referred to as Barksdale Spring after the 1868 purchase.[32] By 1876, they had completed a dam across the spring basin and constructed a gristmill and a sawmill (Figure 2.2).[33] Their gristmill was later described as a "water wheel and a rude shed over the millstones."[34] At the time, it was common practice for gristmill buildings to be simple since they only needed to cover and protect the milling equipment.[35]

When a farmer brought grain to a mill, it would be weighed to determine the appropriate toll.[36] The toll was usually calculated as a percentage of the grain brought by a farmer to the mill and was kept by the mill operator in lieu of a cash payment for milling services. The grain kept by the mill operator was then sold for cash; this practice was often called "custom milling" and was common in subsistence-based agricultural societies, like those found in the Ozarks in the mid-nineteenth century.[37]

Milling of the nineteenth century was a time-consuming process in which farmers would transport their grain to the mill and wait for it to be processed. This positioned the mill to become a vital social center for the surrounding area.[38] People would visit mill sites to conduct business, hear the news, and gossip. Often, other businesses would locate close to mills to capitalize on the traffic brought by the mill. That was the case with the mill at Alley, where Ike Barksdale also operated a small store and blacksmith shop.[39]

Alley Post Office

The Alley Spring property remained in the hands of Barksdale until his death in 1878 when the spring and 240 acres of land were sold to Charles Klepzig. Klepzig continued operation of the grist and saw mills. Klepzig also petitioned the United States Postal Service to establish a post office at the site of the mill. At that time, there were around 25 families in the area and no regular mail service. After several unsuccessful attempts to get approval for a name for his new post office, Klepzig chose the name "Alley," after local farmer John Alley, who owned land southeast of the mill near Buzzard Hollow.[40] Although John Alley operated a small mill himself, he was not connected with the operation of the mill at the spring. Klepzig most likely chose the

[32] Ricardo Torres-Reyes and Vance L. Kaminski, 5.
[33] David Lewis, *The Current River and Its Tributaries: Part II, The Jack's Fork of the Current River*, (Columbia, MO: Ozark Custom Printing, 1980), 47; Dorothy Caldwell, *Missouri Historic Sites Catalogue* (Columbia, MO: The State Historical Society of Missouri, 1963), 184; Jackson, 21.
[34] Milton F. Perry, "Alley Spring Roller Mill" (National Register of Historic Places Inventory Nomination Form, 1976), 8.1.
[35] Ricardo Torres-Reyes and Vance L. Kaminski,13.
[36] Ricardo Torres-Reyes and Vance L. Kaminski, 8.
[37] Brandt and Baldwin, "Milling Around the Ozarks," 11.
[38] Stevens, 32.
[39] Ricardo Torres-Reyes and Vance L. Kaminski, 10; Brandt and Baldwin, "Milling Around the Ozarks," 5.
[40] Lewis, 48.

name “Alley,” because it was relatively short and easy to pronounce and spell, all of which were attributes preferred by the Postal Service.

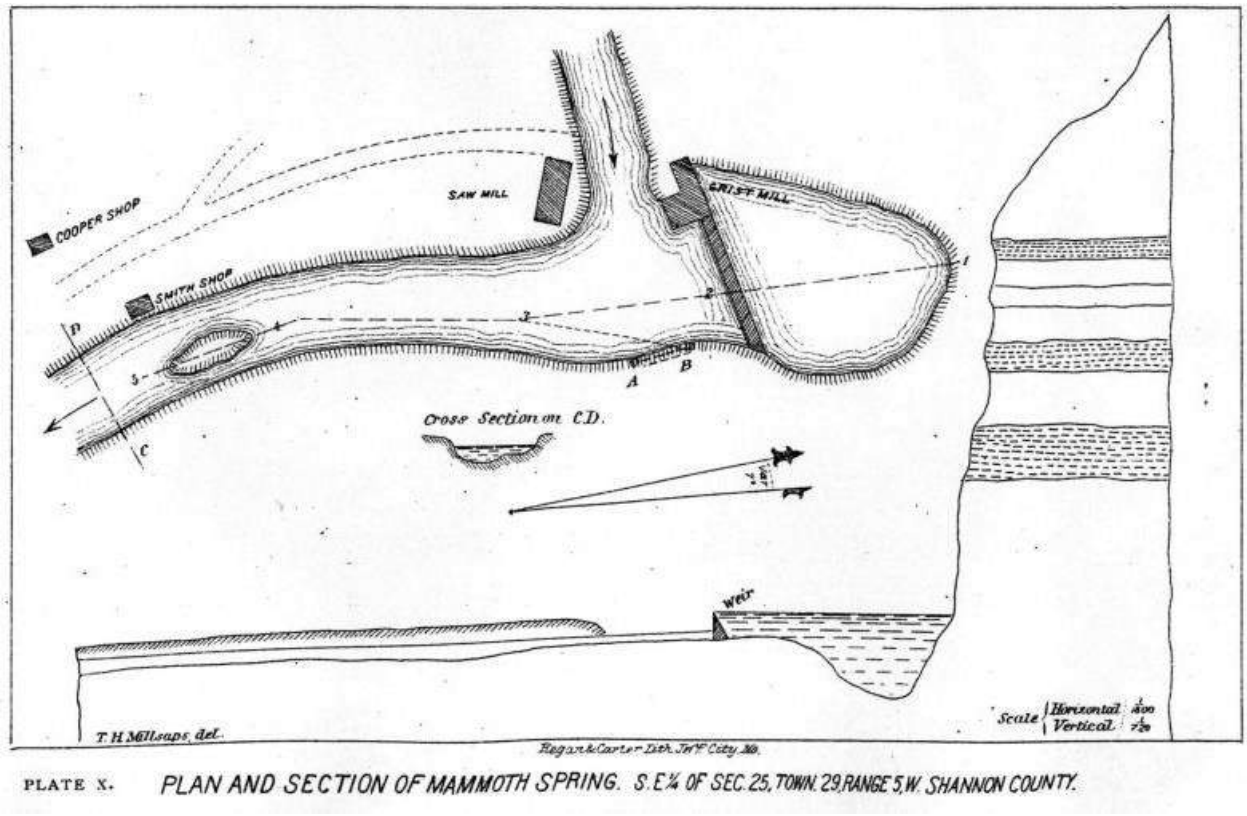


Figure 2.2. Plan and section views of Mammoth Spring, ca. 1876; north is right. (OZAR Museum Collection, reprinted from Geological Survey of Missouri, *Industrial Report, Lead Zinc and Iron,* Jefferson City, MO, ca. 1876)

Flood Damage

Klepzig operated the gristmill and the sawmill until 1890 when the property suffered heavy damage from a flood.[41] Flooding was – and still is – an inevitable downside to being located on an Ozark waterway. The 1890 flood was the first of more than a dozen significant floods that have been documented at Alley Spring; those instances likely represent but a small percentage of flood events to have taken place there in the past 128 years. Damage from the flood of 1890 proved to be too much for Klepzig. He moved the post office to his house across the river, and in 1890 he sold the Alley Hollow property at auction. It was purchased by George W. McCaskill, a Shannon county businessman who had been involved in a number of business ventures.[42]

[41] *Missouri State Gazetteer and Business Directory* (St. Louis, MO: R. L. Polk & Co, 1885-1886), 151; Perry, "Alley Spring Roller Mill," 8.1.
[42] Flanders, 6.

Episode 1. Alley Roller Mill: 1894-1924

This episode encompasses the time the Alley Roller Mill and surrounding land were in private ownership. Alley Roller Mill was completed in 1894, and it remained in operation off and on until the early 1920s. During that time period, the mill was the center of a small settlement and served as a social and economic center for the surrounding countryside. The acreage around the mill and spring was more developed during this period than it is now, with several houses and farms, as well as a school, store, and blacksmith shop.[43]

The landscape condition during Episode 1 is illustrated in the inserted Drawing HP-1.

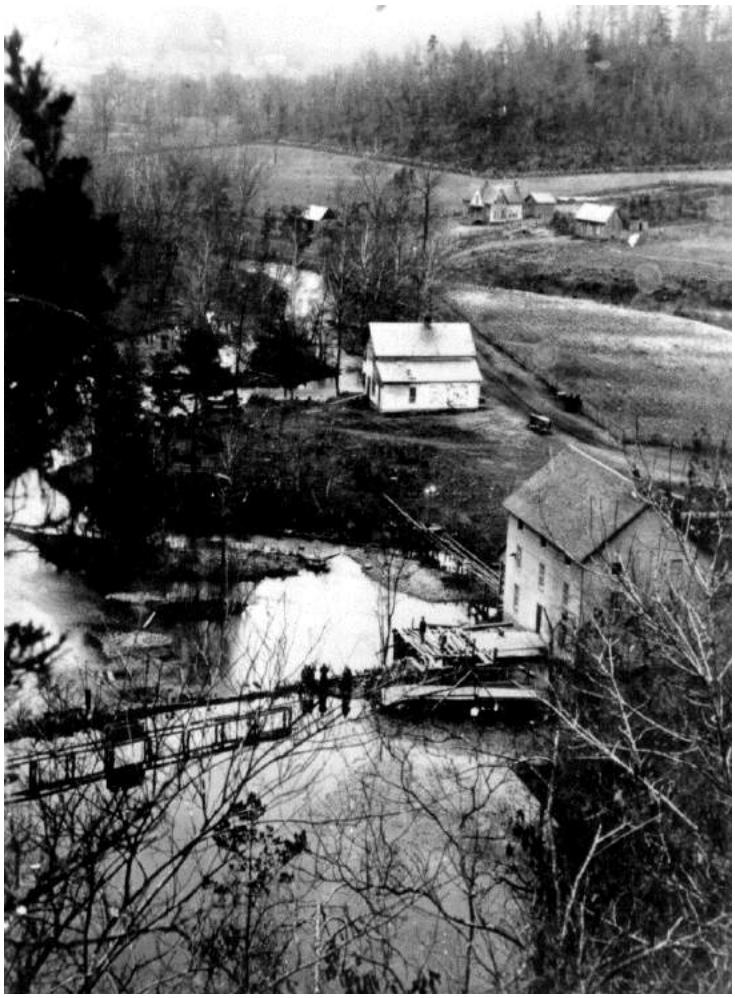


Figure 2.3. View of General Store, mill, dam, and sawmill, ca. 1896.
View of the sawmill is largely blocked by the mill in this view. Note houses in the background.
This is the oldest known photo of the mill. (OZAR 24029)

[43] Landscape condition during this period is illustrated on drawing HP-1: Landscape Historic Period Plan 1894-1924.

Mill Construction

After purchasing the land from Charles Klepzig in 1893, George W. McCaskill and his brother James replaced the damaged gristmill with a new large building that housed state-of-the-art milling equipment.[44] James no doubt contributed expertise in the field of milling; he had been operating a gristmill in nearby Summersville since around 1886.[45] The new mill building was home to a roller mill, which, as the name implies, used metal rollers instead of stones to grind the grain. The roller milling process, which was established in Europe, was first used in the United States in 1873, and by 1880 had become widely adopted.[46] Change came a bit more slowly to the Ozarks, where roller mills were not widely adopted until the 1880s or 90s.[47]

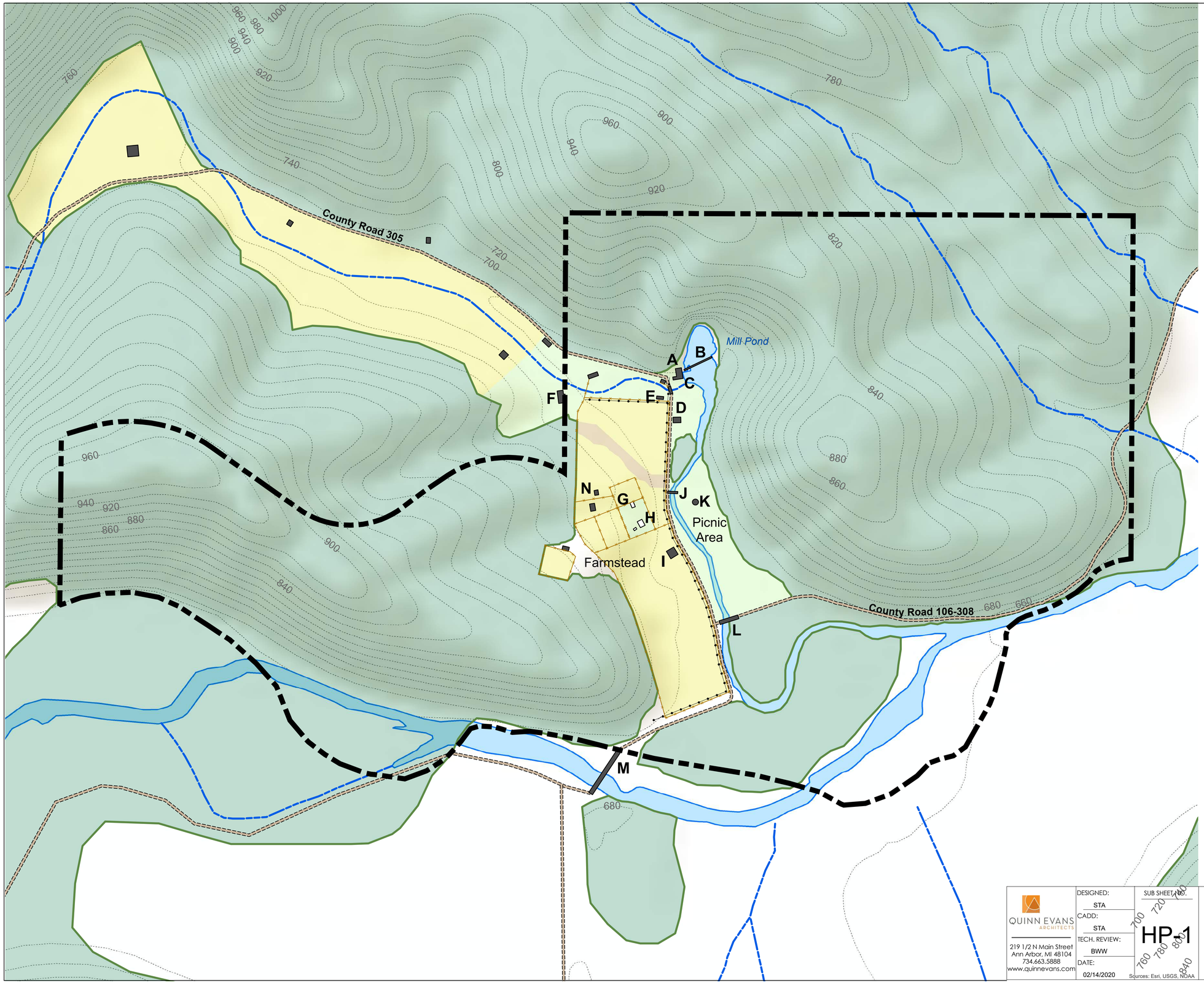
Roller mills required more energy to operate than gristmills and used a turbine to power the machinery inside the mill. The turbine was placed horizontally under the water to catch the current flowing through the millrace. Grain brought to the mill would be placed in a storage bin and transferred by chutes and elevators around the mill. The grain was cleaned and sifted before it went onto a series of metal rollers, which would grind it into a progressively finer substance, eventually turning it into flour.[48] Although this system was more efficient than a traditional wheel-driven system, it required several pieces of complex machinery and a larger building to house everything (Figure 2.3).[49]

That system was the determining factor in the design of the large new mill building at Alley. The new building had to be large enough to accommodate the milling operation process and sturdy enough to withstand the significant vibrations of the mill equipment. Assistance with the design of the building and the layout of the equipment was provided by the equipment supplier, the Richmond City Mill Works out of Indiana, which was described in one history as “a well-known supplier.”[50]

McCaskill also received technical assistance from master millwright Jerome Thurkill, who may also have been associated with the Richmond City Mill Works. Research into the history of the mill and the Alley community conducted by the Center for Ozark Studies in the 1980s included interviews with local residents who had been personally involved with the mill. That included a conversation with Johnny Ferguson, who was nine years old when the mill was constructed. His father, who was probably also named John, had operated the older mill in 1891 but left, possibly because it was in such poor condition after the flood. He came back to work on the new building, which Johnny Ferguson recalled was built under the supervision of Jerome Thurkill.[51]

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[44] Perry, “8.1.
[45] Flanders, 17.
[46] Charles B. Kuhlman, *The Development of the Flour-Milling Industry in the United States* (New York: Augustus M. Kelly Publications, 1975), 121.
[47] Brandt and Baldwin, “Milling Around the Ozarks,” 12.
[48] Brandt and Baldwin, “Milling Around the Ozarks,” 13.
[49] Brandt and Baldwin, “Milling Around the Ozarks,” 8.
[50] Flanders, 19.
[51] Flanders, 19; Johnny Ferguson, "Memories of Alley Spring When I Was a Boy," *Current Wave*, December 2, 1971, (Missouri State Parks Archives).



Legend

- CLR Study Area
- Fences
- Overhead lines, ca. 1910
- Building present during period
- Building removed during period
- Road
- Stream
- Mown grass
- Successional grassland
- Agricultural Field
- Forest
- River or Stream
- 20 foot contour (2018)

Key

- **A** Alley Spring Roller Mill (HS-501), 1894, ceased operation ca. 1922
- **B** Original earthen dam replaced by Alley Mill Dam (HS-501A), 1911-1914
- **C** Sawmill/lumbermill, demolished ca. 1922
- **D** General store, reconstructed ca. 1912
- **E** Blacksmith shop
- **F** Alley School House, 1913
- **G** Tenant House, removed early 1920s
- **H** White house, removed early 1920s
- **I** Barn
- **J** Footbridge
- **K** Alley Spring Picnic Area Casino
- **L** Vehicular Bridge
- **M** Jacks Fork Vehicular Bridge
- **N** Residence and outbuilding, early 1920s

Notes and Sources

1. OZAR Historic photo collections.
2. Flanders, "Alley, and Ozark Mill Hamlet, 1890-1925," 1985.
3. Aerial photograph, 1943
4. Topographic map, 1927.

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SUB SHEET NO. HP-1

Sources: Esri, USGS, NOAA

TITLE OF SHEET
HISTORIC PERIOD PLANS
LANDSCAPE CONDITION 1894-1924
ALLEY SPRING
OZARK NATIONAL SCENIC RIVERWAYS

DRAWING NO. 614 / 146386
PMIS/PKG NO. 204762
SHEET 01 OF 03

U.S. Postal Service records show that a John Ferguson served as the postmaster at Alley from April 1894 to April 1895; it is likely that he was Johnny Ferguson's father.[52]

Repairs—or possibly reconstruction—of the mill dam were done at the same time by Robert Brock, who was from Eminence. Brock was reportedly hired to "build" the dam, but a comparison of the new dam location with the one shown in the 1870s map of the property indicates that the location did not change, so it may have simply been a matter of repairing and enlarging what was there. The dam would have needed to be enlarged to raise the water level enough to power the new turbine.[53]

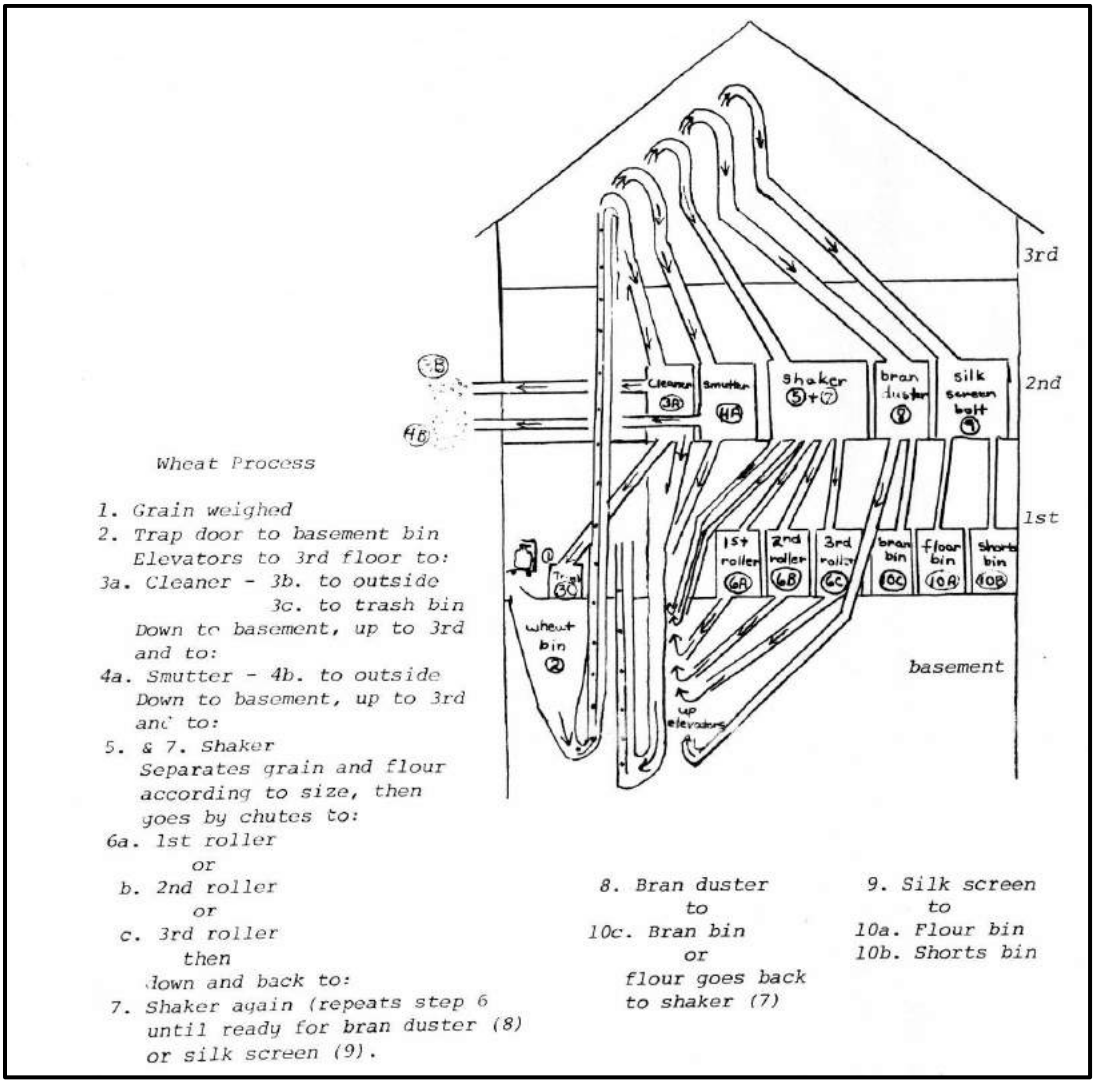


Figure 2.4. Diagram of the roller milling process. This is the same general process that was used in the new Alley Mill. (From "Milling Around the Ozarks," 15)

[52] Ancestry.com. *U.S., Appointments of U. S. Postmasters, 1832-1971* [database on-line]. Provo, UT: Ancestry.com Operations, Inc., 2010.
[53] Ricardo Torres-Reyes and Vance L. Kaminski, 21.

The new mill was completed in July of 1894. It opened under the direction of a master miller, known only as “Mr. Sprague,” who was assisted by Johnny Ferguson’s father for a short time.[54] The new two-and-a-half-story roller mill building had a capacity of 50 barrels per day and could produce flour, cornmeal, or chopped feed.[55] In April 1895, after just one season in operation, George W. McCaskill sold his land, including the mill, to A. B. and Ellen Boyd for $6,000.[56] Boyd kept the mill in operation and added a general store to the property. In August 1895, the *Eminence Wave* announced, “A. B. Boyd has opened a general merchandise store.”[57] It was also around that time that a simple sawmill was added to the south side of the mill, powered by a drive shaft which extended into the mill basement via a large hole cut through the south foundation wall. Alley was also expanding as a community, with a new schoolhouse, blacksmith shop, and other residential properties (Figure 2.3).[58]

Alley Hollow at the Turn of the Century

The growing village of Alley Spring was situated along the bottom of Alley Hollow, surrounded by forested hills to the east and the west. The hollow was bisected by County Road 305, which entered the study area on its north side, running parallel to Alley Hollow Creek, and then turned to the south to follow alongside the Spring Branch. The road passed over two bridges within the study area, at Alley Hollow Creek to the west of the mill and at the Jacks Fork River on the south side of the study area. The River Road, which connects east to Eminence, was also present during this early period, crossing the Spring Branch a short distance south of the current bridge. Photographs taken along the Jacks Fork River indicate that the banks of the river were characterized by dense bottomlands forest (Figure 2.5).[59]

The open space along the hollow was comprised of agricultural fields dotted with farm buildings and houses. Immediately west of the Spring Branch was a farmstead typically occupied by the owners of the mill (Figure 2.6). The farm included two residential buildings surrounded by wood fences, the larger of which was painted white and is referred to as “the white house.” A barn was located to the south of the residential buildings. Those buildings remained in place until around 1927 when the property was being managed by the Game and Fish Commission.[60] Farm fields were delineated with wood fences that ran parallel to the road on the east side and along the bottom of the ridge to the west.[61] A 1903 historic photograph shows the fields recently hayed. It is unknown what other crops were grown in Alley Hollow.[62] Steep slopes near the two residences appear to have been allowed to grow in with successional vegetation.[63]

[54] Johnny Ferguson, "Memories of Alley Spring When I Was a Boy.”
[55] Flanders, 21.
[56] Flanders, 24.
[57] *Current Wave*, August 1, 1895, quoted in Flanders, 25.
[58] Jackson, 27; and Flanders, 25.
[59] Historic photograph, OZAR 24286, ca. 1915.
[60] Historic photograph, State Parks Archives Arc #1320180001, ca. 1925.
[61] Historic photograph, OZAR 24030, ca. 1900.
[62] Historic photograph OZAR 24028.
[63] Historic photograph OZAR 24070.



Figure 2.5. Conrad Hug fishing at the mouth of Alley Branch, ca. 1915. (OZAR 24286)



Figure 2.6. View of farmstead, looking south from the mill, ca. 1910s. (OZAR 24070)

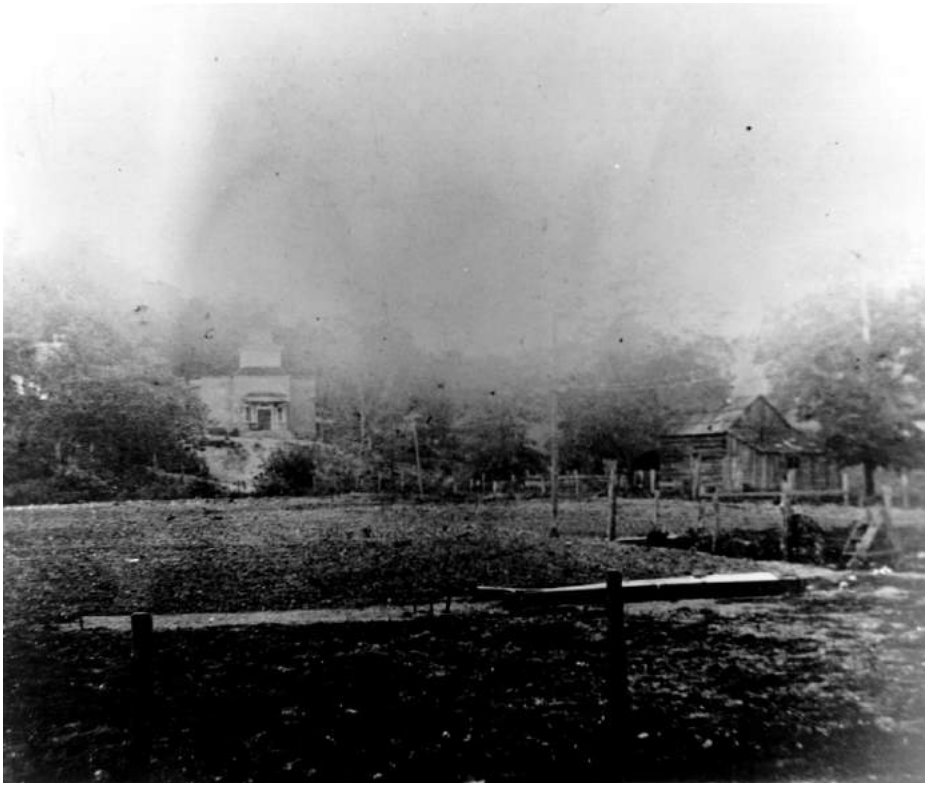


Figure 2.7. School, looking west from the general vicinity of the mill. (OZAR 24075)

The general store and blacksmith shop were located to the south of the mill. Due to the open nature of the vegetation in the hollow, there were strong north-south visual connections between the mill and associated structures, and the farmstead to the south (Figure 2.6). Following its construction on a rise to the west of the mill in 1913, Alley Schoolhouse was also prominently visible within Alley Hollow (Figure 2.7).

Additional Changes of Ownership

Continued flooding spurred additional changes of ownership in the late 1890s and early 1900s. On November 30, 1899, the Current Wave reported that a flood caused the dam to give out, thus halting the milling operation.[64] That same year, despite his large investment in the property, A. B. Boyd traded the property to J. August Lahmeyer for land in Gasconade County.[65] Like Boyd and McCaskill before him, J. August Lahmeyer owned the property for just a short time. Lahmeyer sold the mill and surrounding acreage to A. M. Philips in 1901, and he, in turn, sold it to John M. Knots in July 1902.[66]

Knots made substantial improvements to the mill, blacksmith shop, and some of the other buildings. However, the flood of 1903 caused significant damage to the mill. The *Current Wave*

[64] Current Wave, April 13, 1899. In “Old Paper Clippings from the Current Wave,” 1.
[65] Current Wave, April 13, 1899. In “Old Paper Clippings from the Current Wave,” 1.
[66] Flanders, 31.

reported that “the recent rains caused a part of the Alley mill dam to wash out, and the mill will be stopped for repairs.”[67] Another flood in 1904 added to the damage.[68] This forced Knots to borrow $1,000 in order to repair the damage to the mill, dam, and to make improvements to the blacksmith shop.[69] Knots borrowed money several times between 1904 and 1911, and eventually sold out to the Crystal Spring Townsite Company in 1912, for around $15,000.[70] One of the most active members of the Townsite Company was Conrad Hug, an art dealer from Kansas City.

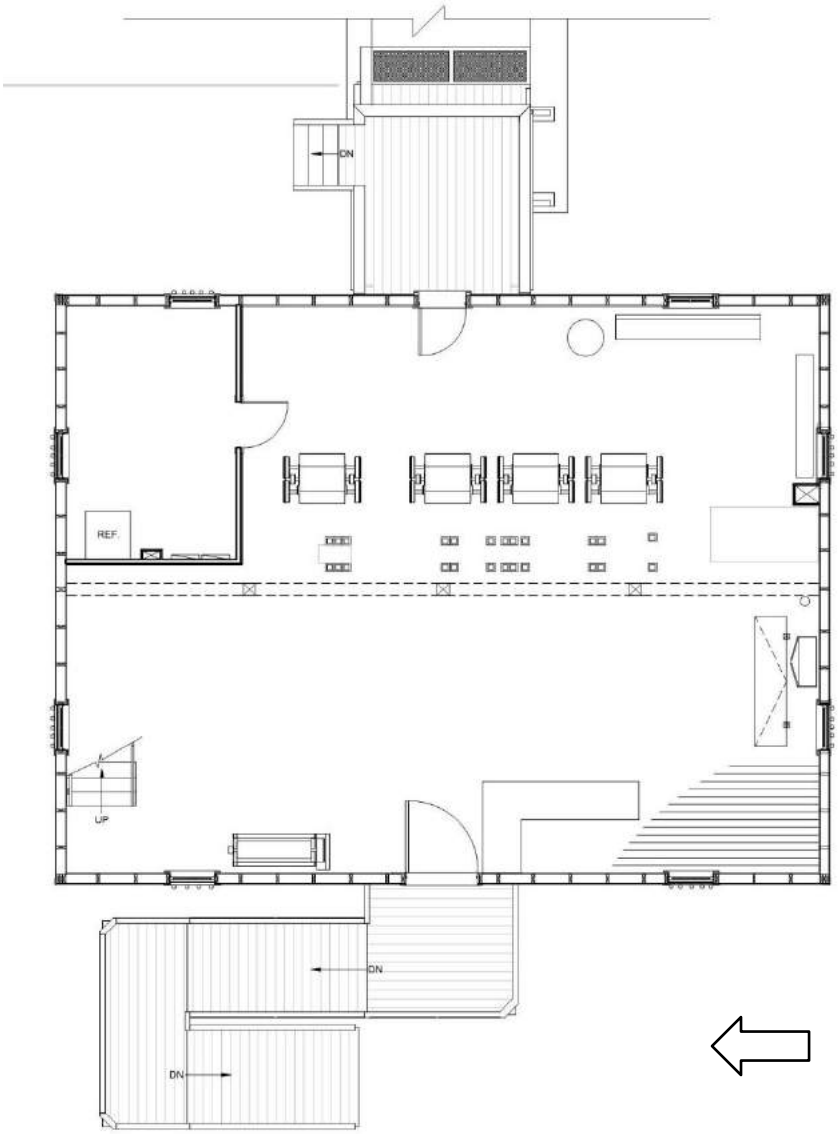


Figure 2.8. Existing first floorplan of the Alley Roller Mill (North is to the left). (STRATA 2018)

[67] *Current Wave*, June 4, 1903. In “Old Paper Clippings from the *Current Wave*,” 7.
[68] Flanders, 32.
[69] Flanders, 50.
[70] Flanders, 50.

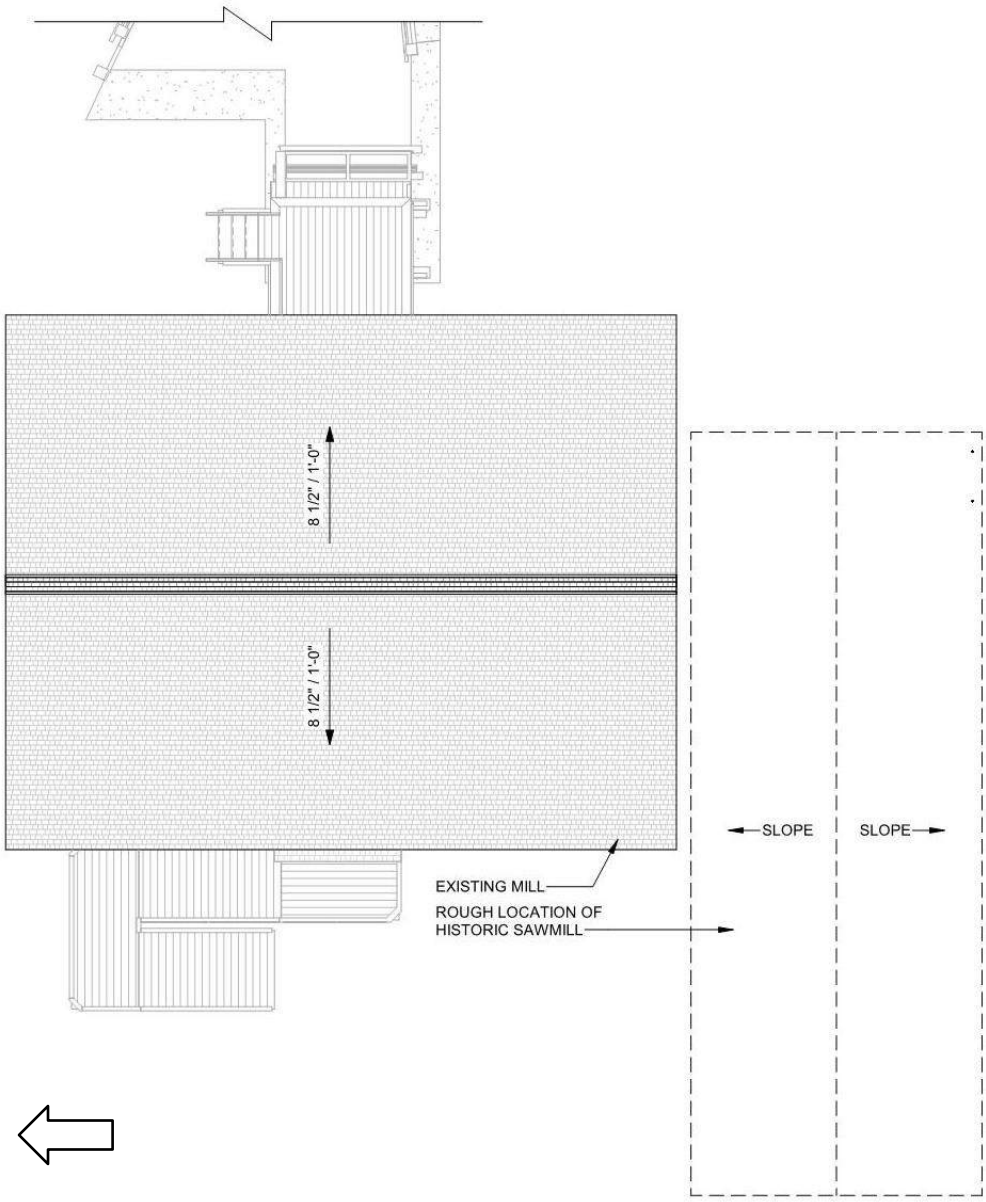


Figure 2.9. Plan of the Alley Roller Mill, with the general outline of the adjacent sawmill (North is to the left). (STRATA 2018)

Dam Maintenance

Flooding at Alley Spring was such a regular occurrence that one history of the area declared that “the dam washed out and was rebuilt so often that it is impossible to know what changes” took place over time.[71] In an effort to combat that problem, early owners of the mill constructed a “dirt tram” to transport dirt which was needed to combat the continual erosion of the dam (Figure 2.10, and Figure 2.8). Historic photos show that the tram was in place by the turn of the century, which means it was constructed by McCaskill, the Boyds, or Lahmeyer.[72] The dirt tram ran along the top of the dam to the hillside east of the spring, where dirt was mined for use in repairs.[73]

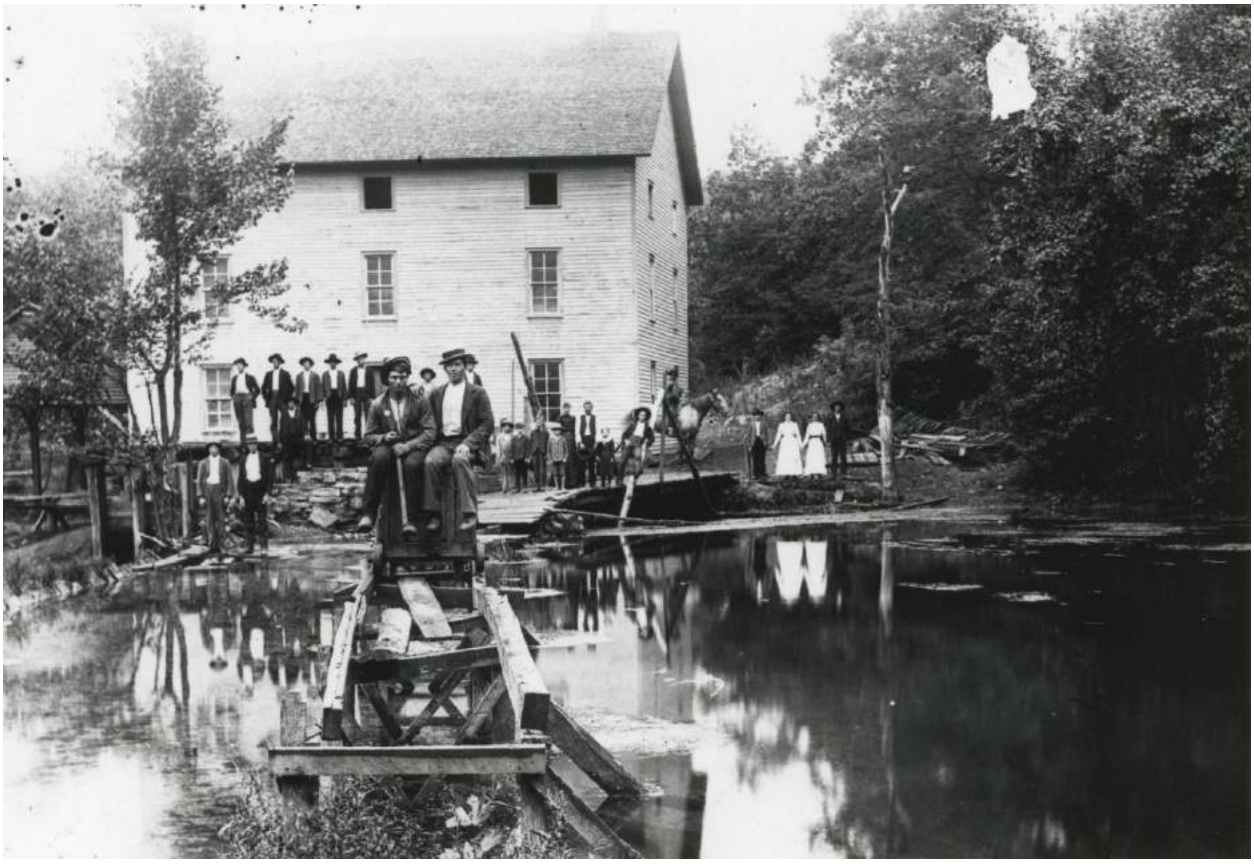


Figure 2.10. View of construction of a new dam, ca. 1912. Note the two men in the foreground who are sitting on what is left of the “dirt tram.” The dirt tram is located on the original dam; to the left in this view is a new dam that was added around 1911. (OZAR 1391)

The dam had to be in good repair for the milling equipment to operate. The water level had to be kept high enough to provide power for the turbine. The water level in the millpond was controlled by the tail gate, and the head gate and raceway moderated the amount of water flowing across

[71] Flanders, 61.
[72] The oldest photos of the mill, dated ca. 1900, show the tram. Historic photos OZAR 340, OZAR 2430 and OZAR 00045.
[73] Flanders, 61.

the turbine (Figure 2.17 below). Initially, the dam at Alley Spring was composed of dirt, stone, and rubble, which was particularly prone to flood damage. The problem was exacerbated by the lack of an operable spillway to help control water levels. In high water the millrace gates could be opened all the way, allowing water to pass through the dam, but it was still often breached.[74]

The first spillway was probably constructed around 1904, possibly during repairs made from a 1903 flood that historian Robert Flanders described as a "calamitous flood of Biblical proportions."[75] That first spillway, which had masonry walls and timber framing, appears to have been located next to the millrace (Figure 2.11). Damage continued to be an issue, however, and in 1911, concrete was used for the first time, when the forebay was reinforced with concrete.[76] A year later, more concrete was added to the dam and millrace, probably to form the concrete tailgate opening that is still in use.[77] It appears that at least one of those projects also involved moving the dam a few feet to the south. The two dams can be seen in Figure 2.10.



Figure 2.11. Photo taken ca 1905, showing the spillway that was used before concrete was added in the 1910s. (OZAR 1397)

[74] Flanders, 60-61.
[75] Flanders, 32.
[76] Flanders, interview with Oscar Barton (b. 1895), who worked on that project, 61.
[77] Flanders, 62.

"A Summer Resort of Extraordinary Merit"

Unlike previous owners, the Crystal Spring Townsite Company utilized the Alley Spring property for recreation purposes, marketing it as a resort for families who were looking for a getaway from the cities.[78] A picnic ground with swings and a shelter house (called a casino on early maps) was developed along the Spring Branch to expand recreational opportunities. The picnic area was situated on the east side of the Spring Branch (Figures 2.12 and 2.13). This area contained the casino building, as well as other recreational structures such as playground equipment, and was maintained as open lawn or bare earth, sheltered beneath canopy trees. The picnic area was accessed by one or more footbridges crossing the Spring Branch.[79]

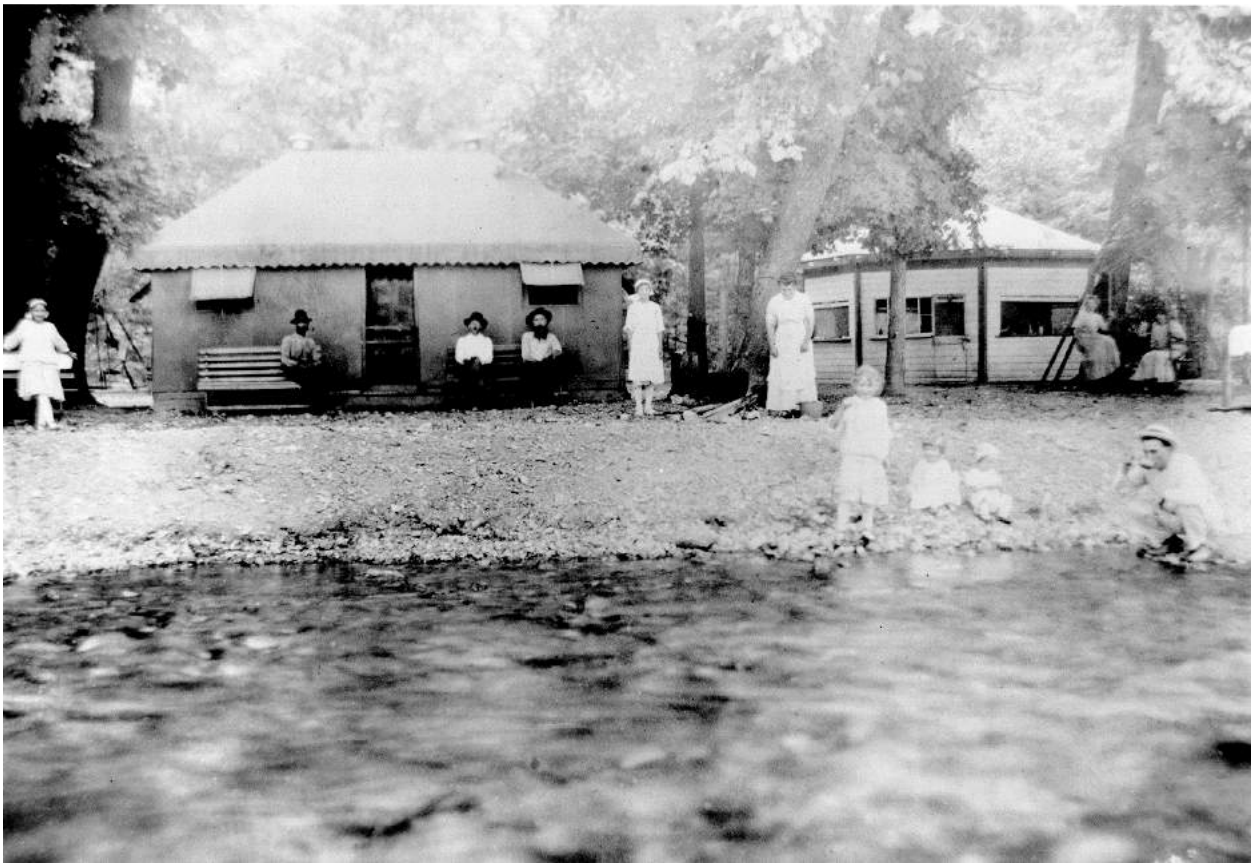


Figure 2.12. Cottages along the Jacks Fork River, ca. 1910s. This was probably taken when the property was owned by the Crystal Townsite Company. (OZAR 24094)

[78] Flanders, 51.
[79] Historic photographs OZAR 24084, OZAR 24090.



Figure 2.13. Cottages along the Jacks Fork River, ca. 1910s. This was probably taken when the property was owned by the Crystal Townsite Company. (OZAR 24090)

In a 1922 promotional brochure, the company advertised the spring as "a summer resort of extraordinary merit."[80] The brochure targeted nature lovers and touted the many natural features and benefits of Alley Spring. One photo in the brochure showed several people sitting on the dam spillway, with the caption, "showing the flow of our spring – 48 million gallons of purest 50-degree water per day" (Figure 2.14).[81] Another photo showed the Spring Branch and highlighted the opportunities for anglers seeking to catch rainbow trout. In addition to the advantages of vacationing at Alley, the brochure detailed some of the Crystal Spring Townsite Company's plans to develop the property into a world-class resort and noted that the property had electricity supplied by a generator at the mill.

[80] Crystal Springs Pamphlet enclosed in a letter from Ralph E. Carr to Governor A.M. Hyde, December 17, 1922, (Missouri State Parks Archives).
[81] Ralph E. Carr, "Ralph E. Carr to Arthur M. Hyde," December 17, 1922, (Missouri State Parks Archives, Collection 3257).

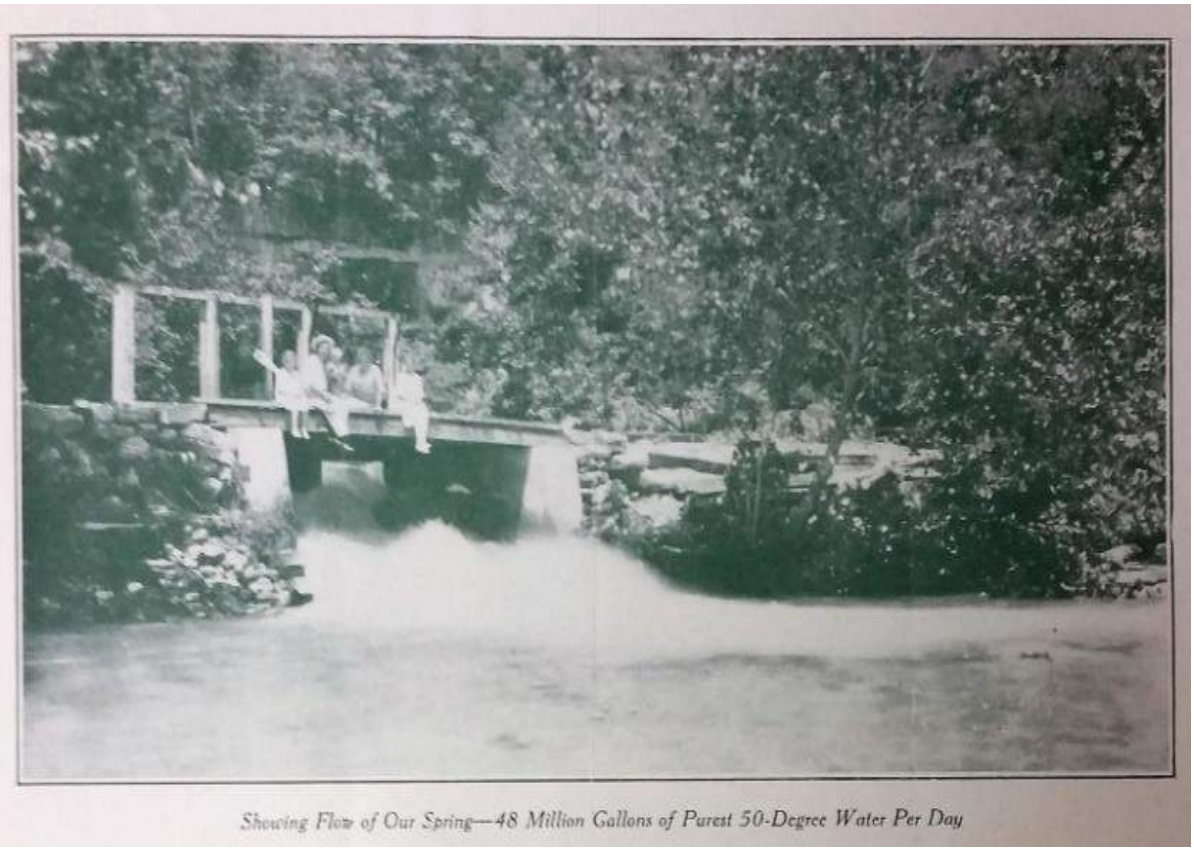


Figure 2.14. 1922 promotional brochure for the Crystal Spring Townsite Company. The people on the spillway are members of the Hug family. (Missouri State Parks Archives; this is also OZAR 24047)

In 1913, the old store was torn down, and a new one was rebuilt on the same foundation.[82] The new store was larger and intended to serve the anticipated influx of visitors to the resort. It was also around this time that Conrad Hug hired a man named John Liebinger to repaint the mill. It was white with green trim, to match the rebuilt store.[83] Many of those improvements were impacted just a year later. In 1914, a massive flood damaged the mill and store and washed out significant portions of the dam.

Additional Dam Repairs

After the 1914 flood, much if not all of the dam had to be rebuilt. The rebuilt structure included more concrete and a large new secondary spillway (Figures 2.15 - 2.17).[84] The concrete spillway was fitted with three gates to offer more flood control, and also covered with a wood footbridge to improve access to it and the dam. The new spillway and the tailgate of the millrace became favorite vantage points. Numerous photos of the mill from this time period show visitors perched above those openings and enjoying views of the Spring Branch (Figure 2.14 above).

[82] Flanders, 53-54.
[83] Flanders, 57.
[84] Flanders, 62.



Figure 2.15. A view of the concrete dam and spillway, probably taken just after the repairs of 1914, looking south with Spring Branch in the background. (OZAR 24041)



Figure 2.16. A view of the footbridge over the spillway, probably taken during or just after the repairs of 1914, looking south with Spring Branch in the background. (OZAR 24040)

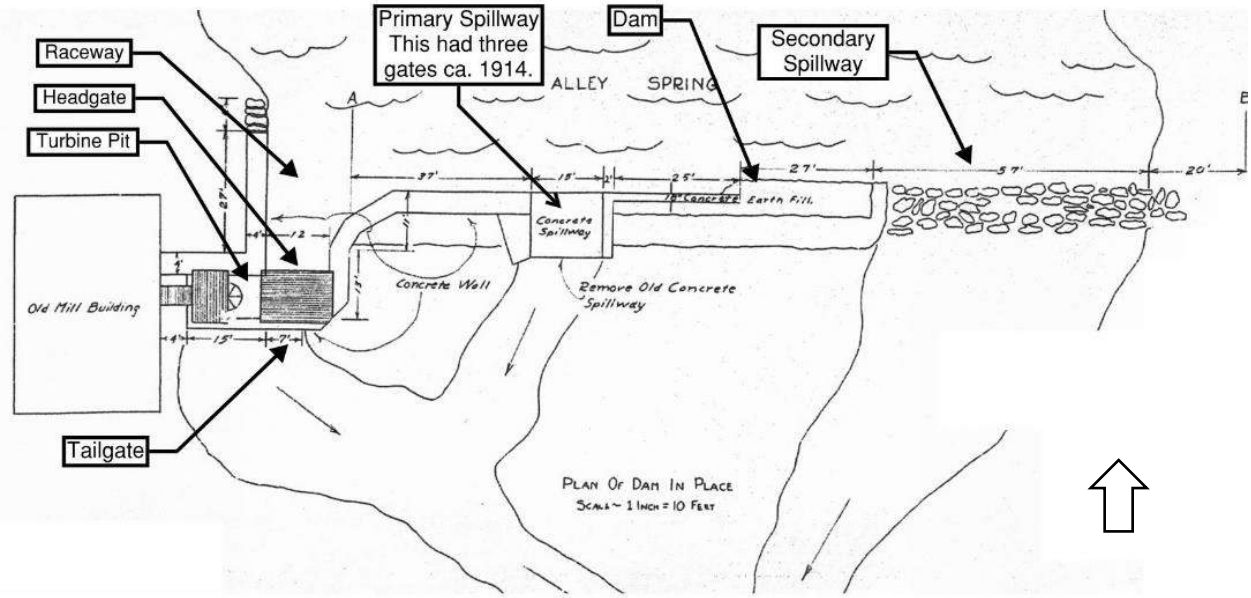


Figure 2.17. Diagram of the dam, showing dam components and the three-gate spillway that was added ca. 1914. (OZAR 614-41974. Base drawing by CCC, 1934; notes added by Deb Sheals 2018)

The plans to develop Alley Spring into a major private resort never really took off. It appears that it served more like a private getaway for the company owners than an ongoing real estate development. Bill Gates, who lived in Alley Hollow in the 1910s and 20s, recalled that his mother took in boarders in those years and noted that there were no hotels. He remembered Conrad Hug's family: "a bunch every year, the Hugs, they'd bring down a bunch of friends and stay the summer."[85]

Conrad Hug and other members of the Townsite Company appear to have been more interested in recreation than commercial milling, and the mill was becoming increasingly expensive to operate. The trouble and expense of repeated flooding—combined with the mounting repairing costs and general advancements in milling technology—ultimately led to the demise of Alley Mill as a commercial enterprise. Finally, around 1922, the Alley Spring Mill closed for good. The sawmill on the south side of the mill closed and was demolished about the same time or a little earlier.[86] Around that same time period, the state of Missouri began to talk about developing a series of new state parks, and the members of the Crystal Townsite Company turned their attention to ensuring that Alley Spring would be one of those new parks.

[85] Quoted in Flanders, 68.
[86] Wagner, 1977, n.p.

Major Events of Episode 1.

1894 The roller mill was constructed. The mill may have been unpainted when first constructed, but it was painted white not long after and remained that color into the 1920s. The trim was described in early sources as being dark green.

The roller mill was built on the site of the earlier mill and was served by an existing dam.

Other development in the hollow about the same time included a general store, a few houses, including the "white house," which was frequently occupied by mill owners, a blacksmith shop, and assorted small agricultural buildings and structures.

1895, ca. An open sawmill on the south side of the roller mill was added soon after the mill was finished.

The earthen dam washed out so often that mill operators built a dirt tram to haul dirt from nearby hillsides to be used for repairs.

Alley Branch was closer to the mill in this time period, directly south of the sawmill.

1912, ca. An electrical generator was added to the mill, spurring the addition of power poles and wires.[87]

County Route 106-308 was the primary circulation route into the site.

[87] Wagner, 59 dates the generator at ca. 1910. It is possible that it was installed by the Crystal Springs Townsite Company when they took over the property, ca. 1912.

Episode 2. Alley Spring State Park: 1925-1932

This episode encompasses the time the Alley Roller Mill and surrounding land served as a state park. During this time period, the park was transformed through the efforts of the CCC, which had a camp at the park in 1933 and 1934. The landscape condition during this period is illustrated in drawing HP-2: Landscape Historic Period Plan 1924-1932.

Episode 2a. A New State Park 1925-1932

> Alley Spring State Park was one of the first state parks in Missouri. When it became a state park in 1925, it was under the management of the state Game and Fish Commission, which managed the property for its natural attributes. The commission immediately demolished most buildings on the property but left the mill in place. The large mill building is conspicuously absent from early official descriptions and photos of the park, but it received more attention as the years went by. Around 1930, it received the first of many coats of the red paint that has made it iconic.

The landscape condition during Episode 2a is illustrated in the inserted Drawing HP-2.

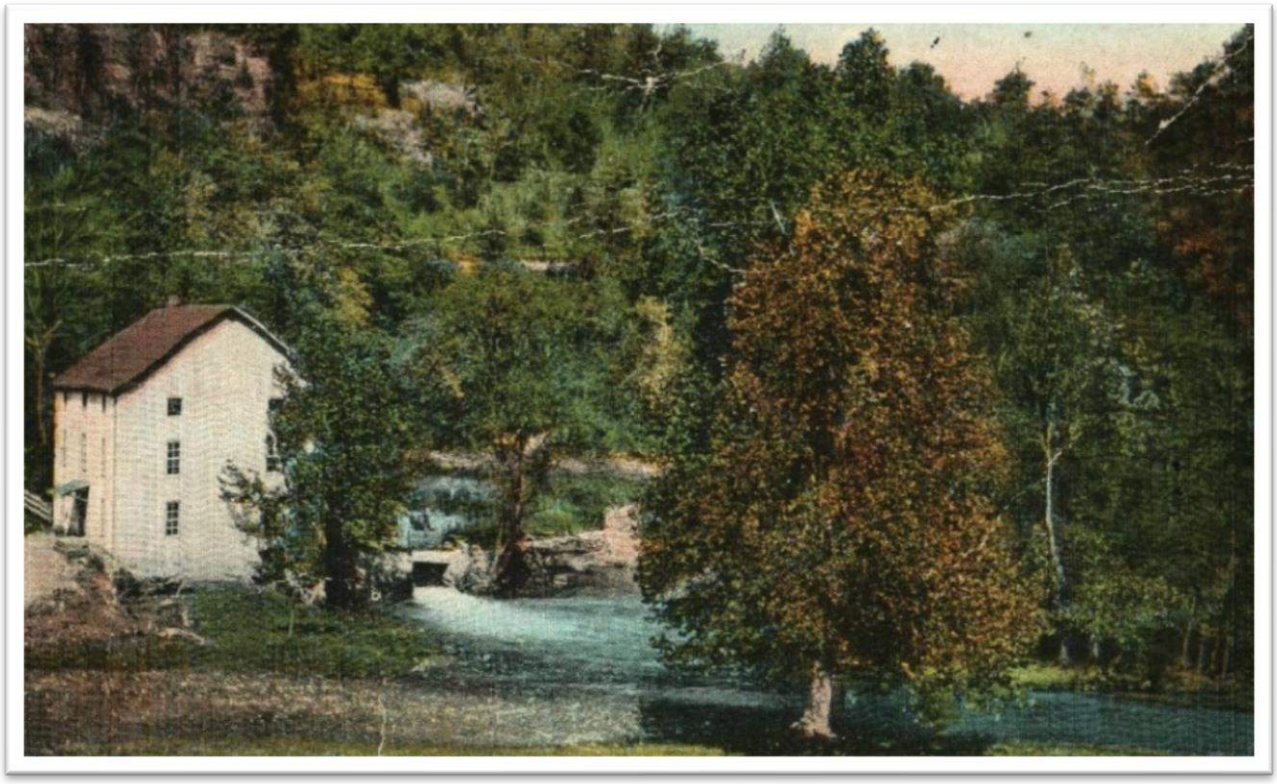


Figure 2.18. Postcard of the mill, probably made soon after the property became a state park, ca. 1926. (OZAR Admin Files)

State Parks in Missouri

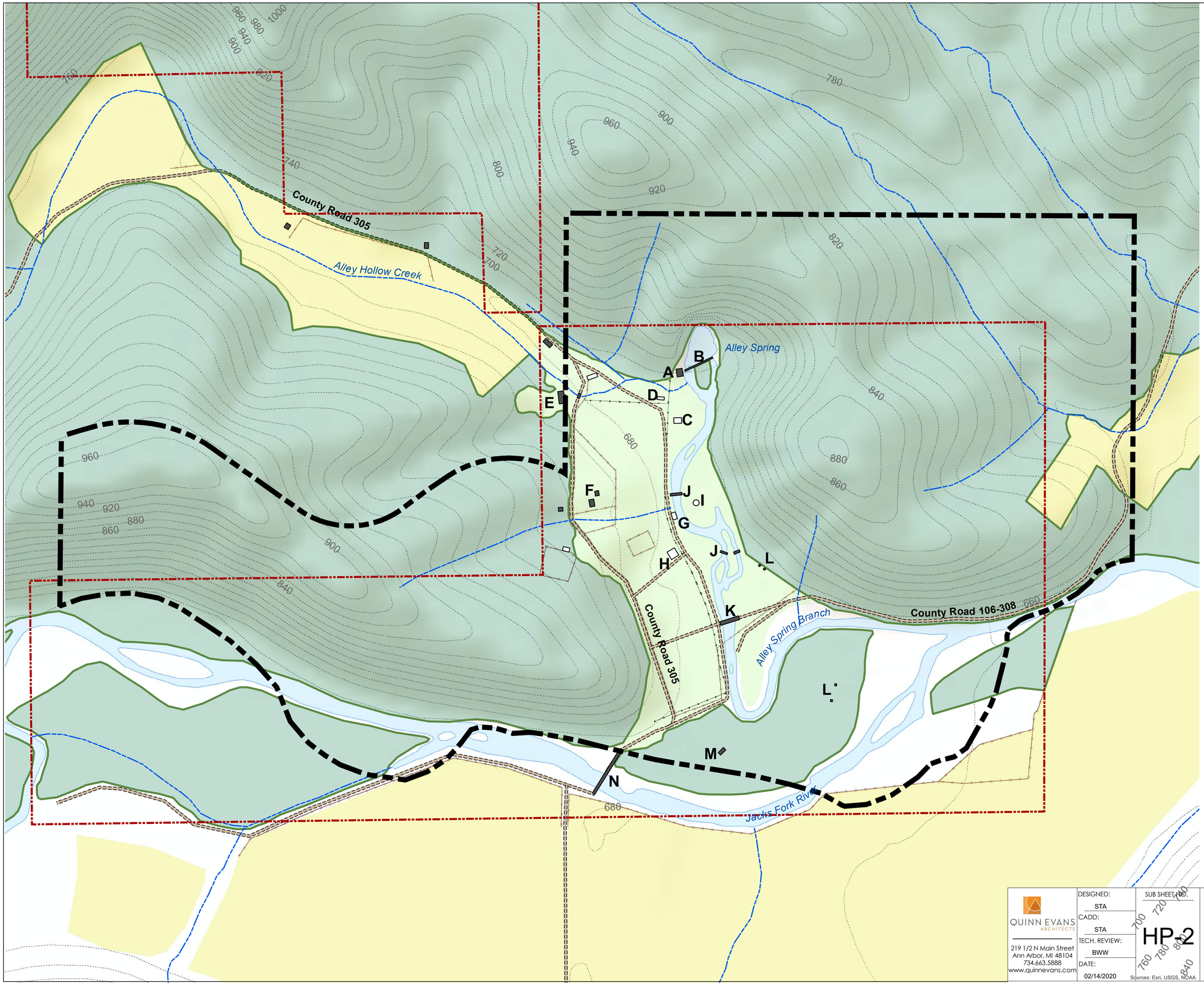
In 1917, the Missouri General Assembly passed a law placing 5% of the revenue from hunting and fishing licenses into a fund for the purchase of land for state parks.[88] That number was later increased to 25% in 1925 when the state of Missouri recognized that recent trends such as the growth of automobile ownership, urban population increases, and a general interest in nature had fueled demand for recreational opportunities within the state.[89] The rugged terrain, spring-fed rivers and large expanses of undeveloped land found in the Missouri Ozarks made that area particularly attractive to park planners.

Unfortunately, some of those same attributes also made the region hard to get to. One of the largest challenges to creating state parks in the Ozarks was public access. It was early in the age of the automobile, and there were few improved roads in rural parts of the state. Given the difficult terrain and lack of quality roads in the area, proponents of adding a state park at Alley Spring needed to find a compelling reason for purchasing land there. They decided to market the area as an outdoor enthusiast's paradise and emphasized the abundant natural resources of the region. The lack of access was addressed in part in 1922, when State Road 19, which runs north-south through Eminence, was completed. The new state highway provided a more direct and comfortable route from large cities to the Alley Spring area.[90]

As the fourth of five initial land purchases by the state of Missouri, the acquisition process for Alley Spring attracted the attention of many different parties and garnered strong public support. The local newspaper even got in on the push by printing suggestions on how to treat visitors and how to improve the overall image of the town. Appeals for the state to consider the potential for Alley as a state park began around 1921.

Dr. H. Kirkendall, a dentist and civic leader from Birch Tree, was an early advocate for a state park in Shannon County. Interestingly enough, he suggested as early as 1923 that the state should acquire a large amount of land immediately adjacent to rivers of the area to create a linear park.[91] Although that radical idea did not take shape in 1923, it did come to fruition in the late 1960s, with the creation of the Ozark National Scenic Riverways. Kirkendall appears to have been on good terms with many high-ranking elected officials, and he often wrote to Governor Arthur Hyde and Game and Fish Commissioner Frank Weilandy to encourage them to create a new state park in the area. In a 1924 letter to Governor Hyde, Kirkendall highlighted the many fishing opportunities in the area, suggesting that if Hyde came for a visit, Kirkendall and others would "furnish boats and all to make a short float for you men…all you would have to do is look and fish."[92]

[88] James Denny, "The New Deal, the CCC, and Missouri State Parks," *Ozarks Watch* VII, no. 3 (1994), 11.
[89] Denny, 11; Flanders, 72.
[90] Flanders, 73.
[91] H. Kirkendall, letter to Governor Arthur M. Hyde, August 1923, (Missouri State Parks Archives, Collection 3257).
[92] Flanders, 76.



Legend

- CLR Study Area
- State Park Boundary, 1924
- Building present during period
- Building removed during period
- Streams
- Roads
- Agricultural Field
- Forest
- Mown lawn
- River or Stream
- Overhead lines removed during period
- Fences removed during period
- 20 foot contour (2018)

Key

- **A** Alley Spring Roller Mill (HS-501)
- **B** Alley Mill Dam (HS-501A)
- **C** General store, removed ca. 1926-1927
- **D** Blacksmith shop, removed ca. 1926-1927
- **E** Alley School House
- **F** Early 1920s house and outbuilding
- **G** Spring House, removed ca. 1926-1927
- **H** Barn, removed ca. 1926-1927
- **I** Alley Spring Picnic Area Casino, removed ca. 1926-1927
- **J** Footbridge
- **K** County Road 106-308 Vehicular Bridge
- **L** Privy
- **M** Wash house
- **N** Jacks Fork Vehicular Bridge

Notes and Sources

1. Missouri State Archives historic photo collections.
2. Aerial photograph, 1943
3. Topographic map, 1927.

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SUB SHEET NO.
HP-2

Sources: Esri, USGS, NOAA

TITLE OF SHEET
HISTORIC PERIOD PLANS
LANDSCAPE CONDITION 1925-1932
ALLEY SPRING
OZARK NATIONAL SCENIC RIVERWAYS

DRAWING NO. 614 / 146386
PMIS/PKG NO. 204762
SHEET 02 OF 03

Alley Spring State Park

Kirkendall was not the only one campaigning for a state park in the region. The Crystal Springs Townsite Company was eager to sell their land to the state. Townsite members Conrad Hug and Ralph E. Carr contacted the governor numerous times to let him know their Alley Spring property was available for purchase. Carr wrote Governor Hyde in December of 1922, proposing a state purchase of around six thousand acres of land, including the area around Alley Spring. Although neither Carr nor the Townsite Company owned the surrounding land that was included in the proposal, Carr suggested in his letter that he could easily acquire the additional land for a reasonable price. That letter may have spurred a visit from state officials; around 1922, Missouri Secretary of State Charles Becker and State Treasurer Hedrick visited Alley Spring as part of a scouting trip to identify possible future state parks. They were photographed near the spillway at Alley Spring with Elizabeth Hug and Helen Guminger (both of Kansas City).[93] The additional land Carr mentioned belonged to the father of L.W. Lyons, a real estate broker from Des Moines, Iowa. Lyons had previously written to Governor Hyde to apprise him of the accessibility of his father's land, which he said had two railroads bordering the property as well as several good streams.[94]

Kirkendall also thought Alley Spring would be a good location for a park. In one of his letters to the Governor, he mentioned that the land around the spring might be available for sale, noting that the property "was in the hands of heirs" because Conrad Hug had recently died.[95] As it would turn out, Mr. Hug was very much alive, but he was interested in selling, albeit at a premium price. In a letter to T. J. Humphry, a friend of Kirkendall's, Hug declared that the land surrounding Alley Spring was available for purchase and added that he had three parties interested in buying it for $35,000.[96]

Although that price per acre was higher than many potential park sites that had been identified by the state, officials agreed that it was a desirable site for a state park.[97] In 1924, the state made an offer to buy the Alley Spring holdings of the Crystal Townsite Company, totaling approximately 427 acres.[98] The process stalled for a few months, due to a lawsuit that challenged the legality of how funds were being spent from the State Park Fund, but the suit was dismissed on January 10, 1925. The next day, it was announced that the state would purchase land for three new state parks in the Ozarks. (Two parks were purchased before the lawsuit.) Alley Spring was on that list; it was the fourth state park land purchase to be finalized,

[93] Wagner, Appendix, Historic Photograph Index, Photo 'Q'.
[94] L.W. Lyons, letter to Arthur M. Hyde, November 10, 1922, (Missouri State Parks Archives, Collection 3257).
[95] Flanders, 77.
[96] Flanders, 78.
[97] Missouri State Planning Board, *A State Plan for Missouri: Preliminary Report*, 54. According to the report, the state paid $73.77/acre for Alley Spring State Park.
[98] Perry, 8.2. Accounts of the exact acreage varies; Flanders says the purchase was 407 acres, newspaper accounts of the day put it at 472.

making Alley Spring State Park the fourth state park in Missouri.[99] The final $31,500 price tag for the property at Alley was the highest price per acre paid for any of the early state parks.[100]

Road Construction

In order to improve access to the new state park, further improvements were made to the roads and bridges in the area. Missouri Department of Transportation records show that State Route 106, a gravel road at the time, was constructed from Eminence to Alley Spring between 1930 and 1935. It is likely that notation refers more to the improvement of an existing road than to an all-new path since a 1915 topo map of the area shows a road in that general location. Those road improvements were no doubt spurred by the creation of the new state park.[101] Early state highway maps reflect a clear focus on creating connections to state parks, which were often the only feature besides highways that were marked on the maps. Alley Spring State Park first appears on state highway maps in 1928 (Figure 2.19).[102] That trend continued within Alley Spring State Park; the state Game and Fish Department, which was tasked with the management of the new state parks, added or improved at least two roads through the park in the mid-1920s.[103] Small footbridges were also added across the spring branch.[104]

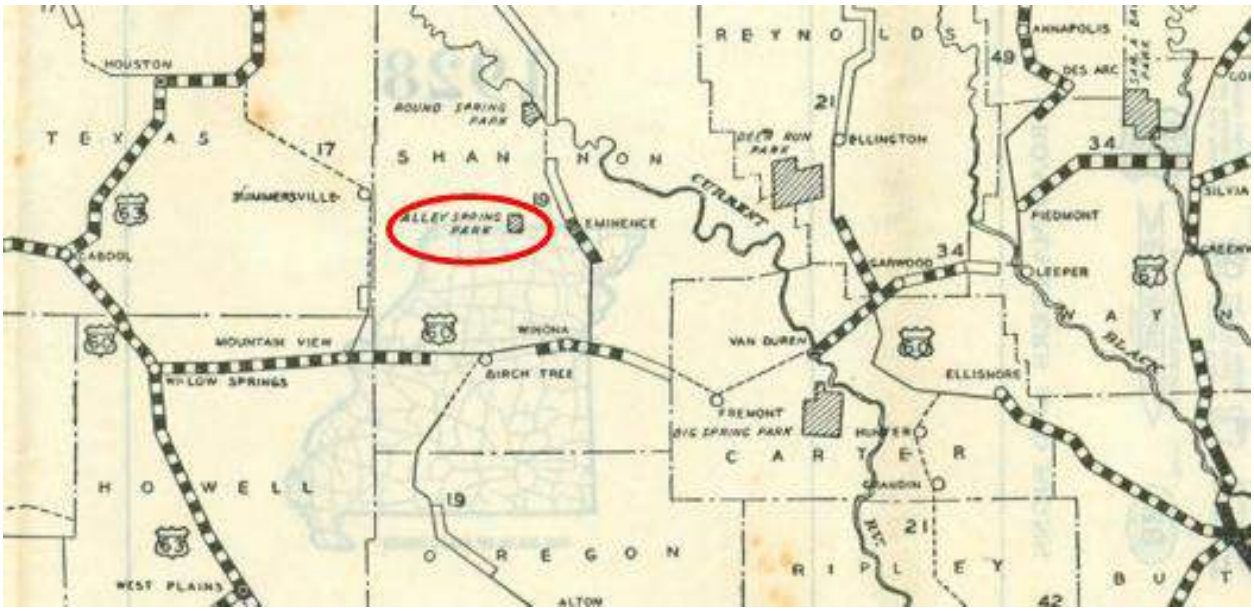


Figure 2.19. Detail of a Missouri state highway map of the Alley Spring area, 1928.

[99] "Three More Park Sites Purchased," *Springfield News-Leader*, January 11, 1925.
[100] Flanders, 80.
[101] *Map of Missouri Showing State Road System,* (Jefferson City, MO: Missouri State Highway Commission, January 1, 1930); MODOT Shannon County Route 106 Improvements Map.
[102] *Map of Missouri Showing State Road System,* (Jefferson City, MO: Missouri State Highway Commission, 1927).
[103] The new, or improved roads were likely County Roads 306 and106-308. See HP-2 Historic Period Plan.
[104] *Game and Fish News,* 1927, 57.

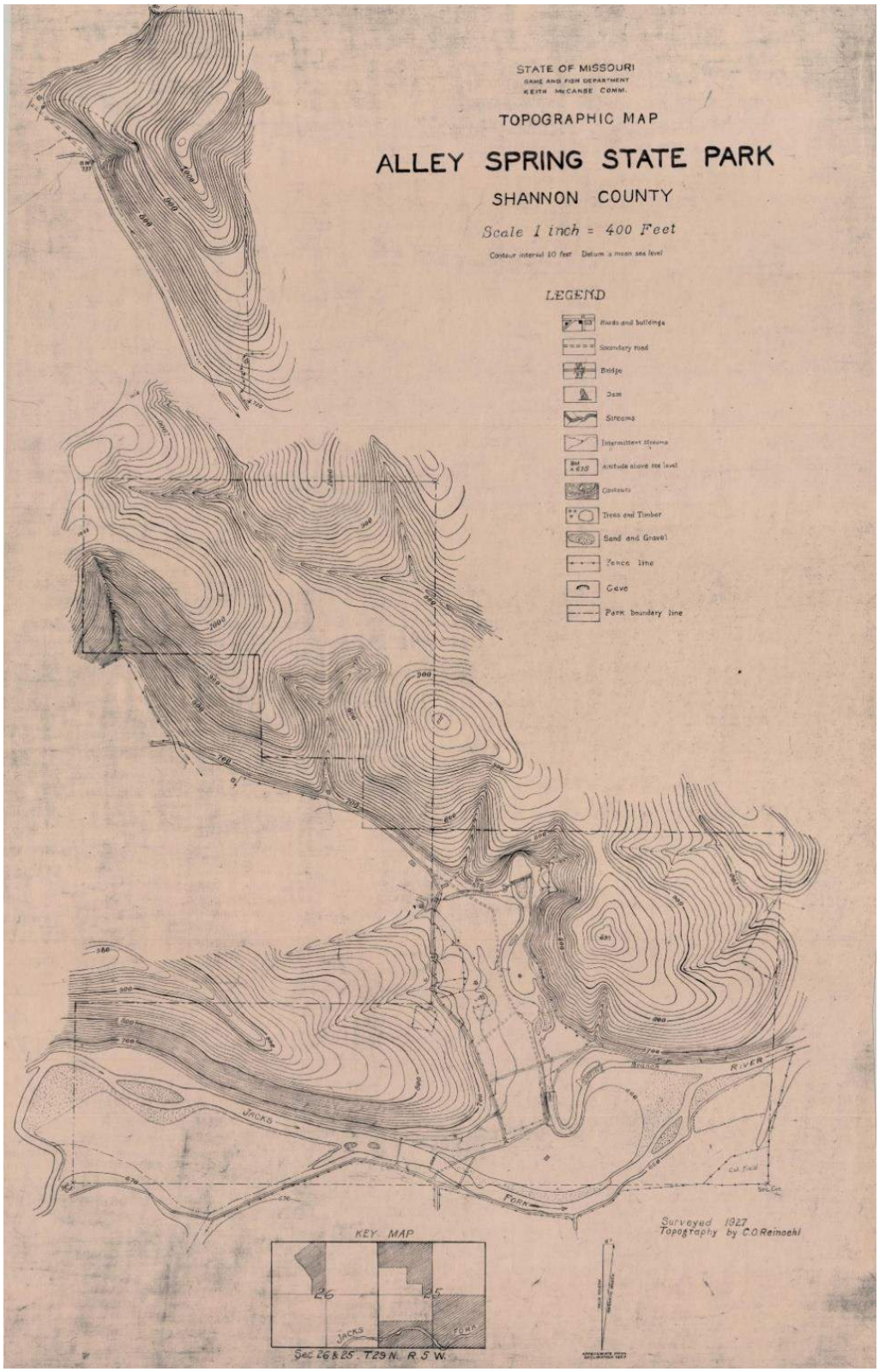


Figure 2.20. Topographic Map of Alley Spring State Park, prepared by C. O. Reinoehl, 1927. (OZAR Museum Collections, Flat Files)

Management of Natural Resources

Not all of the improvements carried out at Alley Spring involved construction. The Game and Fish Department almost immediately demolished the store, blacksmith shop, and some houses in Alley Hollow, citing the belief that the buildings "greatly marred the splendor of the spring, and spring branch."[105] The mill was spared, possibly because of its size and sturdy construction. The tendency for the Game and Fish Department to place an emphasis on the natural setting was understandable, given that one of the stated functions of the newly-established state parks was "the protection and propagation of both game, and fish."[106]

That emphasis on natural features over buildings continued for the first half-decade of the park's existence. While the new Alley Spring State Park was frequently described in annual Game and Fish Commission reports and other state publications, the mill was not even mentioned before 1930. Photos of the park, when used in those reports, showed the Spring Branch and other natural features, but even photos of the spring were taken to exclude any view of the mill building. The May 1928 issue of *Missouri Game and Fish News* featured a photo of Alley Spring State Park on the cover, but the image they used depicted the picnic grounds and spring branch rather than the mill (Figure 2.21).[107]

The "Red Mill"

The mill was not entirely ignored during that time period, however. Sometime after 1925, and probably well before 1930, the mill received its first coat of red paint. The mill building is just visible in the background of the 1925 photo of the campground, which shows that it remained white for at least a short time after the state purchased the property. A description of the mill that was written in 1933, however, stated that by that time, it had "been known as 'The Old Red Mill for years."[108] It has therefore been assumed that the color change happened in the late 1920s.

No mention has been found for the reasoning behind the decision to change the color of the mill building. It may have been simple economics. The mill was painted the same dark red frequently used for barns, possibly for the same reason; red paint at the time was durable and inexpensive. Red paint was commonly made from red lead and linseed oil. The red lead came in a paste, which was simply mixed with linseed oil until it was of the correct hue and consistency.[109] The result was a long-wearing paint that was less expensive than white paint, which also required more ingredients. As noted in *Barns of Missouri*, "Though red paint was the

[105] Keith McCanse, "Annual Report of the State Game and Fish Commissioner," (Jefferson City, Missouri: State of Missouri Game and Fish Department, 1926), 54.
[106] Keith McCanse, "Annual Report of the State Game and Fish Commissioner," (Jefferson City, Missouri: State of Missouri Game and Fish Department, 1925),49-51.
[107] *Missouri Game and Fish News* 4. no. 5, May, 1928.
[108] *Monthly Progress Report, Camp No. SP-6* (Alley Spring State Park: Department of the Interior, National Park Service State Park Emergency Conservation Work, January, 1934), 1.
[109] Howard Marshall, *Barns of Missouri: Storehouses of History,* (Virginia Beach, VA:, Donning Publishing, 2003), 22.

cheapest, it lasted the longest." [110] Whatever the reasoning behind the color change, it was to be a permanent change, and the mill has been known as the "Red Mill" ever since.[111]

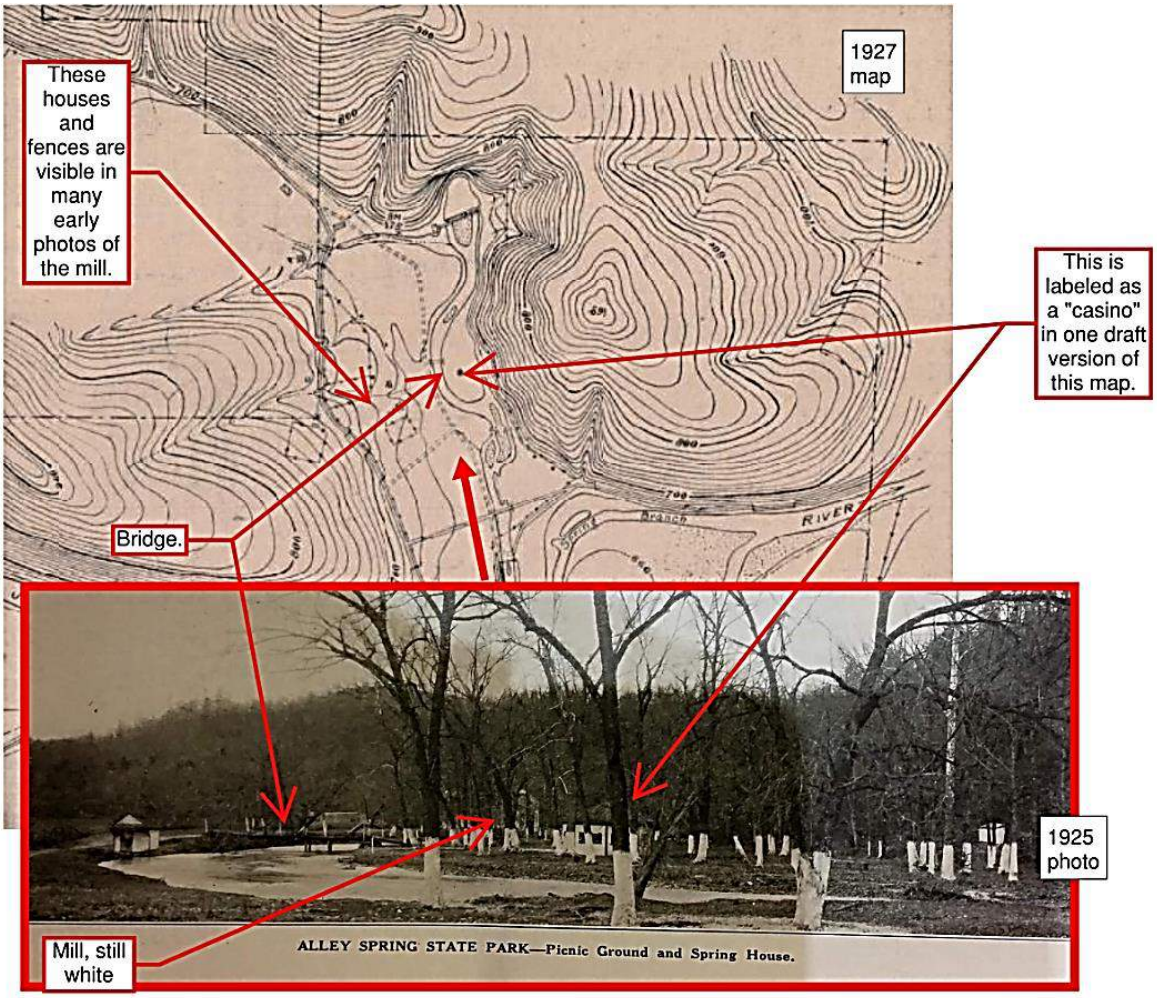


Figure 2.21. Image of Alley Spring State Park, from page 52 of the 1925 Annual Report of the State Game and Fish Commissioner, with a detail of the 1927 map of the park.
The photo was also used on the cover of the May 1928 issue of *Missouri Game and Fish News*.
(OZAR 24035, notes added by Deb Sheals 2018)

Alley Spring State Park saw little additional development in the late 1920s and early 1930s. The Game and Fish Department cleared a few more houses and agricultural outbuildings which were on the property when it became a park, and at some point, a small frame caretaker's house was built near the west edge of the hollow. The spring continued to be a major attraction, and the spring branch was touted as a good site for trout fishing.

[110] Marshall, 22.
[111] Perry, 8.3.

Landscape Changes 1925-1932

The landscape during this episode was in transition between the village of Alley and a developed park landscape. As was the case in the previous episode, the site was characterized as a narrow open valley situated between two forested hills. Over the course of this decade, the agricultural and domestic features of the town of Alley such as residences, farm buildings, the spring house, fences, and powerlines were removed. These features had been prominently visible in mid-1920s photographs (Figure 2.22). The landscape was converted to open lawn, scattered with individual trees.

County Road 305 was constructed on the west side of the hollow along a topographic bench at the base of the ridge. The new alignment necessitated a new bridge crossing at Alley Hollow Creek, and by 1927, a bridge had been constructed to cross Alley Hollow Creek near Alley Schoolhouse. The road continued to use the existing bridge to cross the Jacks Fork River to the south.

The picnic area on the east side of the spring branch continued its recreational use, although the casino was removed. Several footbridges traversed the branch during this period to provide access to the shady lawn in this area. New recreational facilities, including wash buildings and outhouses, were added to the landscape. Based on the presence of park buildings south of the Spring Branch, it is likely that this location (now the Burr Oak picnic area) was also used for picnicking, camping, and river access.

As was the case for all previous owners of the property, the state also had to deal with flood damage. A major flood in 1927 damaged the mill building and washed away four of the recently constructed bridges.[112] The red paint on the mill may have originated during repairs related to that flood.

[112] Perry, 8.2.



Figure 2.22. Buildings demolished by Game and Fish Commission, photo ca. 1925. (State Parks Archives # Arc1320180001)

Major Events of Episode 2a.

1924	The mill, along with roughly 427 acres, was sold to the State of Missouri for use as a state park.
1925, ca.	Several roads were added or improved within the park.
1925-1930, ca.	Sometime between 1925 and ca. 1930, the roller mill was painted red, and it became known as the “Red Mill.”
1926	The state demolished the store, blacksmith shop, and spring house to create a more scenic environment.
1930-1935, ca.	State Route 106 improved by the Missouri Department of Transportation.

Episode 2b. CCC and Continued State Ownership: 1933-1969

In 1933 and 1934 efforts to develop Alley Spring State Park for outdoor recreation received a major boost from the federal government. In December 1933, the Civilian Conservation Corps (CCC) established Camp SP-6, which performed extensive work on the mill and surrounding landscape. That work transformed the landscape of the park and established patterns of use that have continued to the present. The original 427-acre parcel served as a state park until late in 1969, when it became part of the Ozark National Scenic Riverways.



Figure 2.23. View of Alley Spring area from the bluff overlooking the Mill, ca. 1934. Civilian Conservation Camp SP-6 can be seen near the top of the image, ca. 1934. (OZAR 24031)

The landscape condition during Episode 2b is illustrated in inserted Drawing HP-3.

The Civilian Conservation Corps

The Civilian Conservation Corps was established under President Franklin Delano Roosevelt's "New Deal" program, which was designed to alleviate the effects of the Great Depression. The New Deal created a series of federally-funded relief programs, each of which served a different public need. The CCC was established in April 1933, under the Emergency Conservation Work Act, which was meant to "ease the critical unemployment situation for America's young men, and to provide for the conservation of the nation's devastated forest and soil resources."[113] By October 1936, around 2,000 CCC camps had been established nationwide.[114]

[113] James M. Denny, and Bonita Marie Wright, "Emergency Conservation Work (E.C.W.) Architecture in Missouri State Parks, 1932-1942" (National Register of Historic Places Thematic Resources, 1982-1984), 8.4.
[114] Jackson, 17.

Notes and Sources

1. OZAR CCC Historic Photos, 1933-1934
2. Baker, Alley Spring CCC Camp SP-6 Completed Projects, 9-30-1934
3. 1943 aerial photograph
4. 1955 aerial photograph

Legend

- CLR Study Area
- State Park Boundary
- Stone walls and revetments, 1934
- Building present throughout period
- Building removed during period
- Road removed during period
- Asphalt Road
- Gravel Road
- Pedestrian trail or walkway
- Approximate location of CCC Camp
- Streams_1934_1969
- Agricultural Field
- Forest
- Lawn
- Waterbody_1934_1955
- 20 foot contour (2018)

Key

- **A** Overlook (HS-501I), 1934
- **B** Mill (HS-501), renovated May 1934, restored 1958
- **C** Alley Mill Dam (HS-501A), reconstructed 1934
- **D** Alley School House (HS-508), 1913
- **E** Alley Hollow Creek Bridge, by 1927
- **F** Alley Spring Ranger Station (HS-511), 1939
- **G** Alley Picnic Shelter (HS-503), 1934
- **H** Alley Spring Maintenance Shop (HS-502), 1934
- **J** Park Keeper's House (HS-504), moved to new location 1934
- **K** Pump House (HS-507), 1934
- **L** Seasonal Cabin (HS-505), 1934
- **M** Seasonal Cabin (HS-506), 1934
- **N** Water Reservoir
- **O** Water Storage Tank
- **P** Concession Building, ca. 1941-1970
- **Q** Alley Spring Branch Vehicular Bridge, by 1927
- **R** Privy
- **S** Wash House
- **T** Jacks Fork Vehicular Bridge, 1934

County Road 305
Alley Hollow Creek
Alley Spring
Spring Branch Trail
Overlook Trail (Bridle Trail)
Trails constructed Feb-Mar 1934
Footpath
State Route 106 (1955)
State Route 106 (1941)
West Trail System
Trails constructed Feb-Mar 1934
Camp SP-6 1932-1934
Camping until 1962
Alley Spring Branch
County Road 106-308 (River Road)
Camping until 1962
Jacks Fork River

250 125 0 250 500 750 Feet

N

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DESIGNED: STA
CADD: STA
TECH. REVIEW: BWW
DATE: 02/14/2020

SUB SHEET NO.
HP-3

Sources: Esri, USGS, NOAA

TITLE OF SHEET
HISTORIC PERIOD PLANS
LANDSCAPE CONDITION 1933-1969
ALLEY SPRING
OZARK NATIONAL SCENIC RIVERWAYS

DRAWING NO. 614 / 146386
PMIS/PKG NO. 204762
SHEET 03 OF 03

CCC Project List—Extracted from Monthly Reports				
Project No.	Job Title	HS or bldg. #	Year	Months (Notes)
1	Telephone Line	n/a	1933-34	December, April-project suspended in March, poss. not finished
3	Reduction of Fire Hazard	n/a	1934	September
5	Trailside Cleaning	n/a	1934	September
6	Trail Shelters		1934	September
6a	Shelter House A		1934	June—this became overlook north of mill
6b	Shelter House B		1934	June—not built
8	Fighting Forest Fires	n/a	1934	September
11	General Cleanup	n/a	1933-34	December, April, September, October--include removal of logs and brush along Spring Branch
12	Forest Improvement	n/a	1934	June, September—thinning
13a	Truck Trail		1934	March, April, May, June, August, September
14a	Horse Trails		1934	March, April
14b	Foot Trails		1933-34	December, March, May, June, August, September
18	Service Building	HS-502	1933-34	December, March, April, May, September
22	Public Camp Ground Cleanup	n/a	1933	December
24	Latrines	n/a	1934	June, July, August, September
27	Cattle Guards	n/a	1934	March, June, July, September
28	Repair Old Mill	HS-501	1934	March, April, May, September
28a	Pump House	HS-507	1934	March, June, July, August, September
28c	Shelter House/Concession Stand	HS-503	1934	July, August, September
28e	Custodian's House		1934	May, June, July, August, September
31a	Water Storage Tank		1934	May, June, July, September
31b	Pipe Line	n/a	1934	August, September
31c	Water Supply	n/a	1933	December
33	Cabins (2)	HS-505 HS-506	1934	March, April, June, July, September
44a	Surveys Lineal	n/a	1933	December
46b	Bank Protection (revetment wall)	HS-501b	1934	May, June, July, September
47a	Foot Bridges		1934	March, April, June, September
47c	Entrance Bridge		1934	March, April, September
48b	Water Improvement	n/a	1934	September
50	Recreational Dam (Alley Spring pond, dam, turbine pit and raceway)	HS-501a	1934	May, June, July, September
52	Erosion Control	n/a	1933	December
52c	Dam Site		1933-34	December, March, April—dam to reroute Alley Branch and prevent floods of "upper picnic area."
52d	River Bank	n/a	1933-34	December, April
52e	Channel	n/a	1933-34	December, March, April—rerouting of stream, removing trees from stream bed, carry water away from mill
53	Landscaping	n/a	1934	Jan. March, April, September —Jan 34, included tree planting, sodding etc. on and near the dam site.
53c	Dike	n/a	1934	March
--	Roller Mill stone walkway	was called 501c		NOT a CCC project, added after mid 1960s.

Figure 2.24. Chart: Alley Spring State Park projects completed by CCC workers in 1933 and 1934. Based on monthly progress reports of Camp Sp-6, OZAR collections. (OZAR 25223, notes added by Deb Sheals, 2018)

In Missouri, the CCC operated an average of 41 camps annually, nine of which were located within state parks.[115] In total, the CCC operated in 15 state parks between 1932 and 1942.[116] Construction within Missouri state parks followed larger national trends of CCC-era design. Buildings were designed to be simple and work within their natural surroundings, and the use of natural, local materials was strongly encouraged.[117] The CCC worked closely with the National Park Service to ensure uniform design and quality standards for CCC projects across the country.

Alley Spring State Park - CCC Camp SP-6

In November 1933, Civilian Conservation Corps Camp SP-6 was established at Alley Spring State Park. It was occupied by Company 1771, which was manned entirely by veterans of WWI.[118] Those workers were in their 30s and 40s, which made them somewhat older than many CCC workers of the time, who were generally between 18 and 25 years old.[119] The camp, which was located on a steep hillside at the west edge of the hollow, housed up to 244 enrollees at a time. Early photos show that the camp was composed primarily of long rectangular barracks arranged in even rows along the east-facing slope of the hillside (Figure 2.23 above.) Eight supervisors provided oversight and direction, and local men were sometimes recruited to contribute labor and expertise.

The camp benefitted from a consistent source of leadership. Missouri native Ellis Baker was the superintendent of the camp from January to October 1934. Baker went to work for the CCC in the early years of the depression and served as a foreman at Big Spring State Park before being transferred to Alley Spring.[120] In 2009, Baker's family donated a footlocker full of files related to his tenure at Alley Spring to the Ozark National Scenic Riverways. Those files proved to be a valuable source of new information about CCC activities at the park.[121]

Over the 11 months that the CCC camp was at Alley Spring, crews performed a wide variety of tasks, ranging from landscaping to reroofing the mill. Baker's files include information on the progress of more than three dozen projects that were completed by the CCC workers (Figure 2.24). Work began as soon as the camp was established. The first projects included general clean-up, installation of a water supply, and conducting a survey to confirm the boundaries for the park.[122]

[115] Denny and Wright, 8.5.
[116] Denny and Wright, 7.2.
[117] Denny and Wright, 7.1.
[118] Jackson, 17.
[119] Denny and Wright, 8.4.
[120] "Walter Vesper Baker," Undated bio of Ellis Baker's son, supplied by Dan Jackson.
[121] The Ellis Baker Collection is accessioned in the OZAR museum collection as accession number OZAR 00492. The catalog record for the archival materials is OZAR 25223.
[122] "Monthly Progress Report," Dec. 11, 1933.

General Site Work and Infrastructure

The water supply project included digging ditches for underground water pipes and installing a 10,000-gallon water tank on a hillside west of the hollow (Project 31a). The water tank was below grade and constructed of concrete. It was the centerpiece of a gravity-fed water system; a pump house near the base of the hill (HS-507) sheltered the pump used to fill the tank. The pump house survives; the water tank does not.

Site work included clearing an area for a new service building (Project 18, HS-502), and hauling rock to improve the public campground (Project 22). Underbrush was removed in several locations for fire control as well as aesthetics, as were “undesirable trees” and “poisonous plants.”

Circulation

By December 1933, workers had begun to establish new trails along the east side of the spring branch, clearing a path and placing stones along “the more precipitous places of the rocky hillside.”[123] All told, CCC crews added more than 3 miles of trails (Figure 2.26). Those trails included a horse trail, several foot trails, and a truck trail. The horse trail, which was built east of the spring and mill, is now used only as a foot trail. A map created in 1934 showed 5,000 linear feet of new horse trail and 11,500 linear feet of foot trails (Figure 2.25). The horse trail was located east of the spring and branch, winding up the steep hillsides to a new overlook north of the mill. That trail is still in use. New foot trails included a footpath near the mill which circled the spring basin and meandered along the spring branch, plus a longer trail on the east side of the park. That trail is also still in use; it has seen minor modifications since the 1930s. The west trail, which runs along the Jacks Fork River before turning inland, has not been used for many years, but it is largely intact, complete with stone retaining walls. The vast majority of the new trails were within the present study area, but it should be noted that crews also improved access to a cave in one of the other two original sections of the park, located northwest of Alley Hollow, as shown in Figure 2.25.

The trail system included new structures as well. Three new “rustic” footbridges were built across the spring branch, and one vehicular bridge was built across the Jacks Fork River (Figure 2.27). The May 1934 report also shows that original plans had also called for two new “trail shelters,” semi-enclosed buildings located on the new trails. Funding restrictions caused those plans to be modified later, and the unfinished foundation for one shelter was modified to serve as an open overlook on the bluff trail instead. That overlook is still in place (HS-501I).

[123] Alley Spring State Park Camp SP-6, “Monthly Report,” December 1934, n.p.

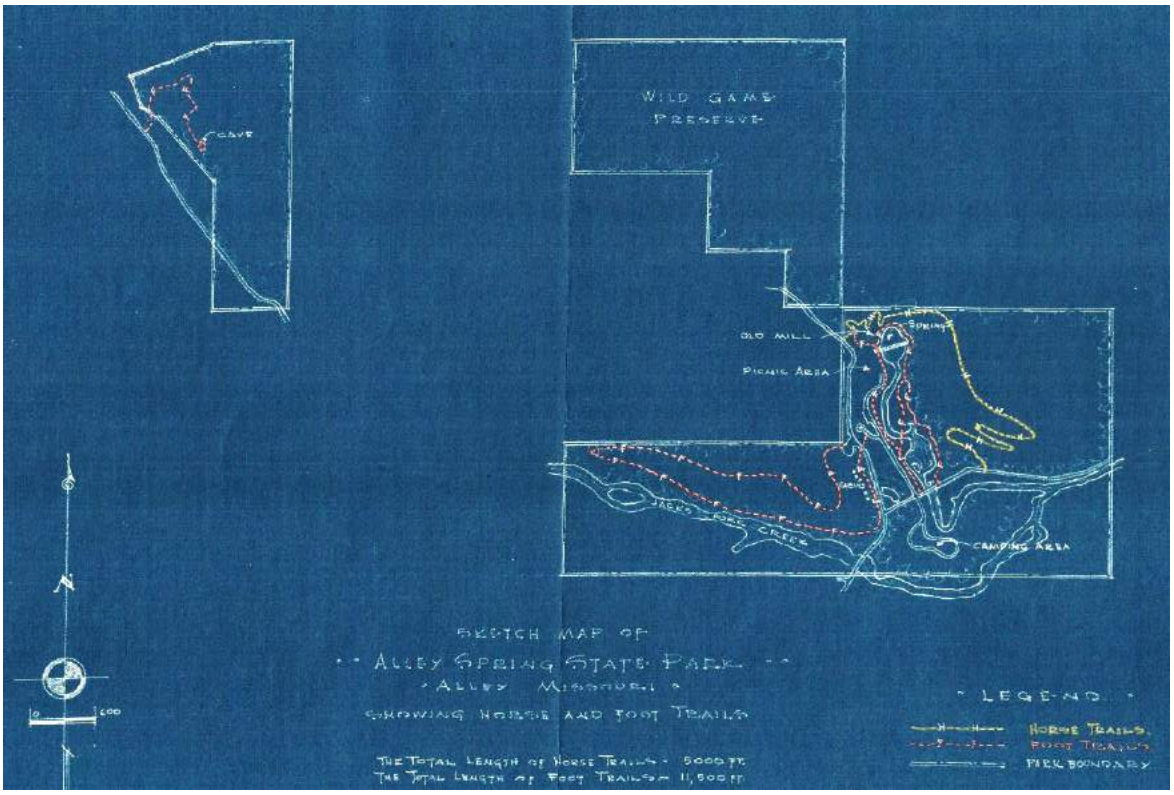


Figure 2.25. Boundary map of Alley Spring State Park, showing trails that were added or improved by the CCC, 1934. (OZAR Files)



Figure 2.26. Left. Unidentified CCC workers inspecting a trail at Alley Spring, February 1934. The dam and mill are in the background to the left. (OZAR 24607) Right. That same section of trail in 2018, from the opposite direction. (DS 2018)

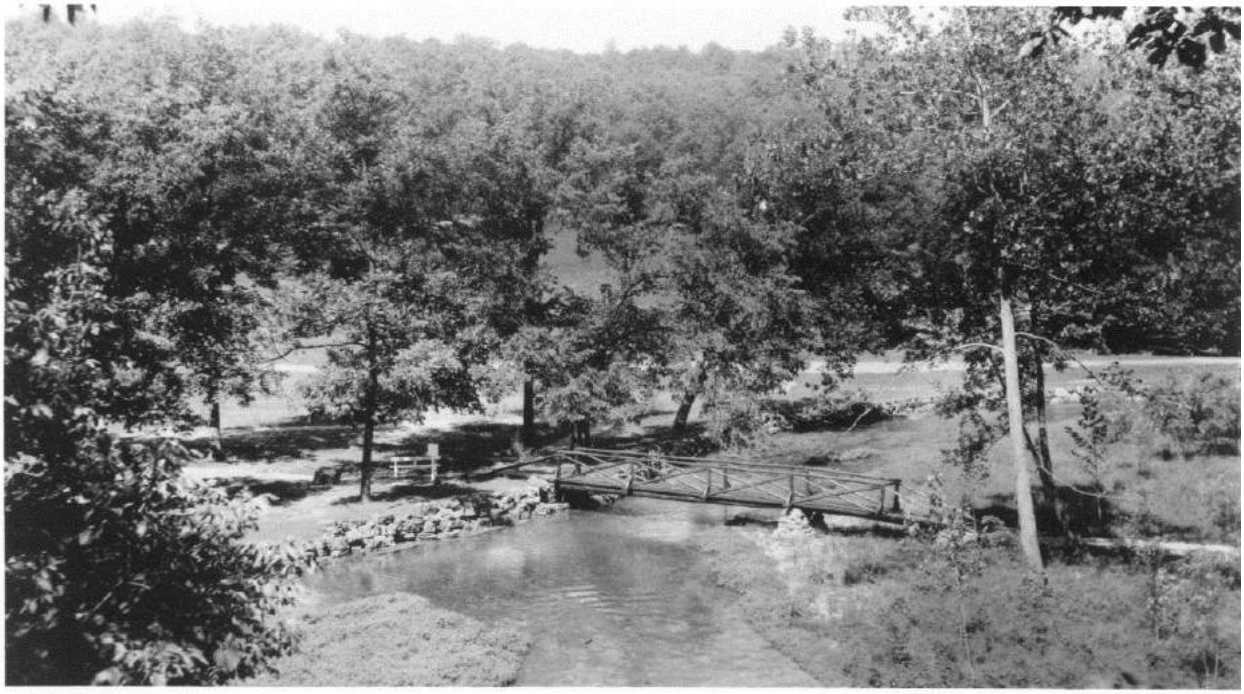


Figure 2.27. Footbridge over Alley Spring Branch, September 1934. (OZAR 24624)

Waterway Improvements

One of the largest projects carried out by the CCC workers involved rerouting the path of Alley Branch, which originally flowed into the Spring Branch just a few feet from the south wall of the mill. CCC crews constructed what reports called a flood control dam to move the path of that creek more than 200 feet south, away from the mill. That project required a significant amount of work, including moving tons of earth, adding large boulders to stabilize the banks, and adding trees and landscaping once the earthwork was completed (Figures 2.28 and 2.29).

CCC workers also made improvements to the mill dam, called the “recreational dam” in CCC documents, as well as the Spring Branch. The dam was reinforced and partially rebuilt. The three-gate spillway added ca. 1914 was removed, and that spillway opening was widened. A secondary spillway at the east end was repaired and raised. Although drawings prepared for that project proposed rebuilding much of the dam, that part of the work does not appear to have been done, as the current concrete millrace appears to be the same structure seen in earlier photos (Figure 2.12). Work on the Spring Branch included clearing obstructions in the stream bed to improve the current and adding rock retaining walls along the edge of the stream to combat erosion (Figure 2.30). The retaining walls were composed of rough stones, laid to look as natural as possible (Project 52a).[124]

[124] Alley Spring State Park Camp SP-6, “Monthly Report,” March 1934.

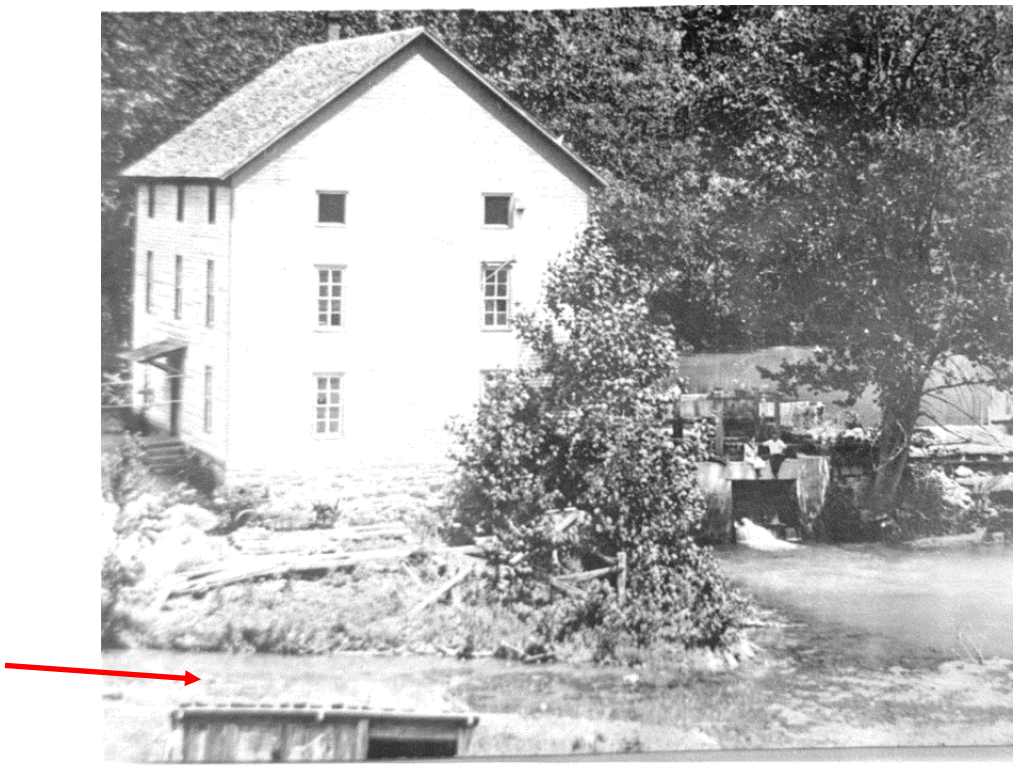


Figure 2.28. View of the mill before Alley Branch was relocated, ca. 1922. The object in the foreground is the top edge of a shed. The red arrow shows Alley Hollow Creek, which runs between that shed and the south wall of the mill in this photo. (OZAR 24044)



Figure 2.29. Men working on the flood control channel, which involved changing the course of Alley Branch. The mill and dam can be seen in the background, February 1934. (OZAR 24060)



Figure 2.30. The island south of the dam, with new stone walls for bank protection. September 1934. (OZAR 24623)

Buildings

CCC crews also worked on a number of buildings in the park. New buildings included a large new picnic shelter and concession building (HS-503, Figure 2.31), the pump house, two cabins (HS-505 and HS-506), and a maintenance building (HS- 502), all of which have survived. Another large project included relocating a large frame caretaker's house that had probably been added by the state in the 1920s. CCC crews moved the house across the roadway and placed it on a stone basement that was also CCC constructed (Figure 2.32).



Figure 2.31. Picnic Shelter (Project 28c) under construction.
(CCC Monthly Project Report, Sept 1934, OZAR 25223)



Figure 2.32. Left: CCC workers building a stone foundation for the custodian's house, 1934, August. (OZAR 24613.) Right: The house, in transit. (OZAR 24612)

The Alley Roller Mill also received attention (Project 28, HS-501). The mill was first mentioned in a report in January 1934, which noted "this structure has been known as the 'Old Red Mill' for years. Work has not been started on this project as we are using it to house our tools."[125] The

[125] Alley Spring State Park Camp SP-6, "Monthly Report," January 1934, 1.

author reported that once the service building (HS-502) was completed, the tools would be moved and repairs to the mill would begin. Work on the mill was completed by May 1934. The report for that month listed the work that had been completed and explained that the "work was undertaken to preserve this structure which is considered a landmark and a relic of the olden days in this community."[126] Work on the mill included a new roof, flooring, and windows, as well as general cleaning of the building and the mill equipment. That work was accomplished with $336.14 worth of materials and "207 man-days of CCC labor."[127]



Figure 2.33. Photo of the mill. This was included in the monthly progress report for May 1934, with a note that the work on the mill was complete. (OZAR 24624)

End of the CCC Era

Camp SP-6 remained active until October 1934. When the camp closed, all buildings and related structures were removed, and the hillside was returned to its natural state. None of those buildings or structures have survived; little trace of the camp can be detected today, but evidence of the work performed by the residents of the camp continues to define the cultural landscape of the area.

The CCC left behind a transformed landscape that required few additional changes over the following decades. Over the next 20 years, very little changed within the park. Around 1939, the state replaced an older park general store located northwest of the picnic shelter with a new

[126] Alley Spring State Park Camp SP-6, "Monthly Report," May, 1934, n.p.
[127] Alley Spring State Park Camp SP-6, "Monthly Report," May, 1934, n.p.

frame store building (HS-511) That building is now the Alley Spring Ranger Station; it is the only post-CCC building in the study area.[128]

In 1941, Hare and Hare, a city planning and landscape architecture firm, prepared a master plan for Alley Spring State Park as part of a larger survey of Missouri State Parks. The plan included an assessment of existing conditions and proposals for further development. Hare and Hare observed that the park did not have "a great variety of recreational activities," at the time and noted that the "old grist mill…is of historical interest…If practical, it would be desirable for the mill to be put in working order so that visitors of the park could see the actual process of making flour by this primitive method."[129] They also commented on the natural beauty of Alley Spring State Park, remarking that it should not be destroyed, "as the region would at once lose its popularity among fishermen, nature lovers, and tourists who visit the parks."[130] The influence of the State Game and Fish Department could still be felt.

Developments 1933-1969

Hare and Hare had also commented on the need to improve circulation patterns within the park and particularly to gain western access to the property. In 1955, a long-awaited highway construction project provided access to the park form the west, via the completion of State Route 106 (Maps HP-2 and HP-3).[131] After that project was completed, State Route 106 became the primary route to and from the park, and most of the earlier roads in the hollow were retained to serve as park circulation routes. The road parallel to the Spring Branch, for example, became an internal park road, with vehicle parking allowed along the roadside.

Vehicular access to and across the Spring Branch continued to be provided by a bridge across the branch, which linked County Road 106-308 to State Route 106. Access to camping and recreation areas in the south part of the park was provided by improved and rerouted internal park roads. The new roadways reflected a general relocation of the camping and recreation area to the southwest corner of the study area, which is now Burr Oak Campground. Historic maps show that in the 1930s the main campground was located closer to the route of State Highway 106 and that the road was gradually extended to the south and west, to access land between the Spring Branch and the Jack's Fork. (Figure 2.-34) The area south of the Spring Branch continued to be used for picnicking, camping, and river access. Historic photographs show that this area was also popular for swimming (Figure 2.35).

[128] Jackson, 39.
[129] Hare and Hare, *A Report to Accompany Master Plan Prepared for the Missouri State Park Board,* (Kansas City: 1941), 5, 8. Missouri State Archives, Collection 3938.
[130] Hare and Hare, 10.
[131] *Shannon County Project History Map*, Jefferson City, MO: Missouri Department of Transportation, accessed October 3, 2018, https://www.modot.org/sites/default/files/documents/maintenance_/project_history_maps/shannon.pdf.

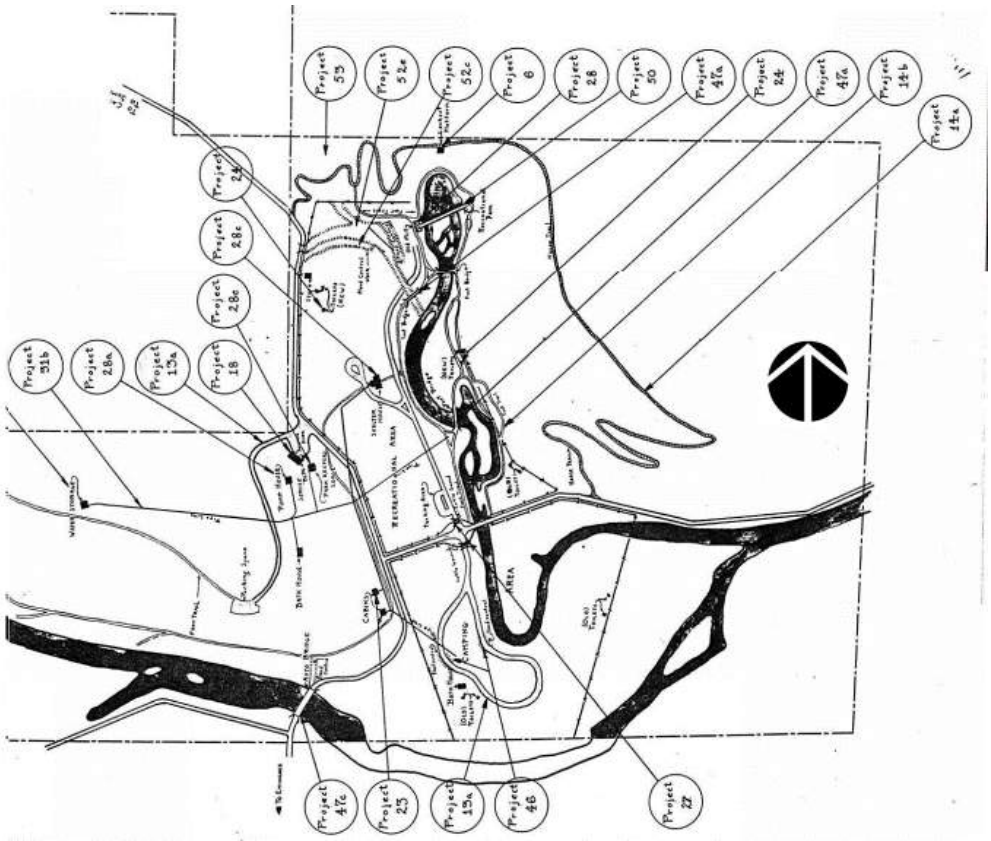


Figure 2.34. Excerpt of a Map of the Alley Hollow, Showing CCC Projects as of September 1934. This map shows internal circulation patterns, including the camping area on the west bank of the Spring Branch. (Ellis Baker Collection, OZAR 25223)



Figure 2.35. Swimming at Alley Spring State Park. (State Parks Archives image #1320140003)

The level area at the center of Alley Hollow was filled with open lawns and scattered canopy trees during this episode, and this area is shown in a 1943 aerial photograph of the site (Figure 2.36). That aerial view clearly shows the open recreational lawn, surrounded by upland forest cloaking the ridges and newly established trails to the east and west, and bottomland forest along the Jacks Fork River. Scattered individual trees provided shade in the open lawn; historic photos indicate that some of those trees predated state ownership of the property (Figure 2.22). Along the Spring Branch, trees were small and widely spaced, particularly near the mill and the mill pond. That relative lack of trees within the hollow afforded open views between the mill, the picnic shelter, and the Spring Branch through the broad recreational open space.

The next major event to impact Alley Spring State Park came on August 27, 1964, when President Lyndon B. Johnson signed Public Law 88-492, establishing the Ozark National Scenic Riverways. That legislation laid the foundation for the creation of a major new national park in Missouri. It also kicked off a series of discussions between the National Park Service and officials with Missouri State Parks about the possibility of adding existing state parks to the new national park. In late 1969, it was agreed that ownership of three Missouri state parks, Big Spring State Park, Alley Spring State Park, and Round Spring State Park would be transferred to the federal government. The transfer process for Alley Spring State Park was finalized on December 30, 1969, ending the property's tenure as a Missouri State Park.[132]

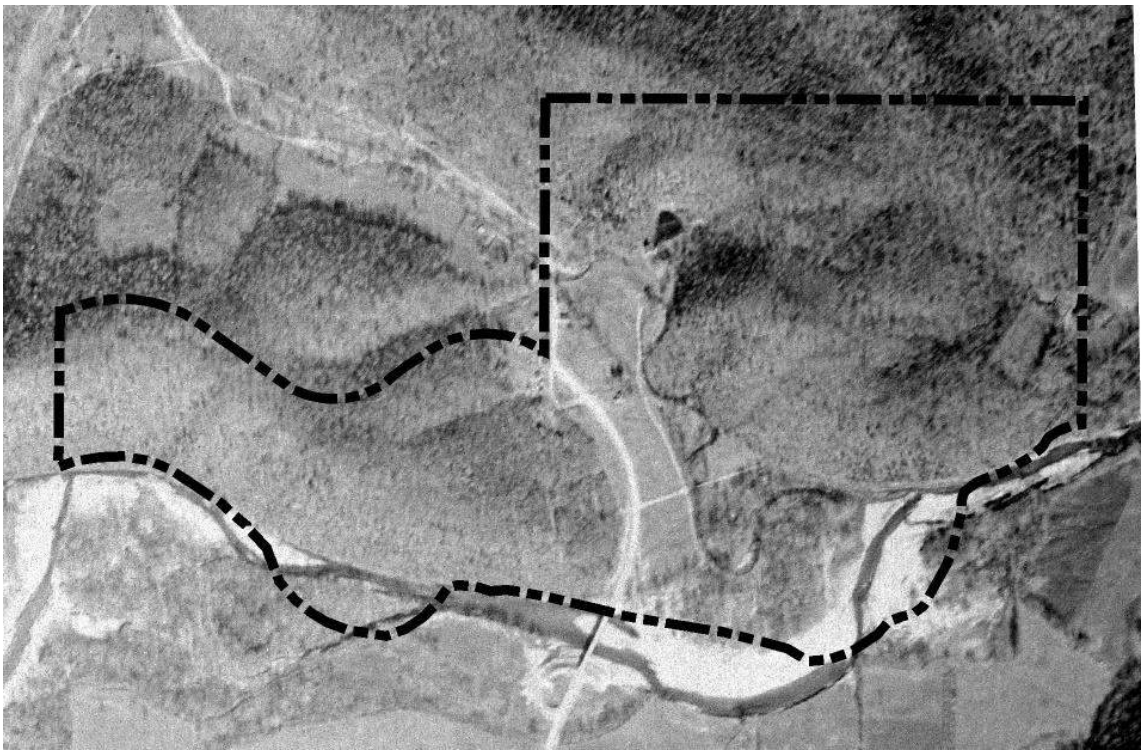


Figure 2.36. 1943 Aerial map of the study area, Boundary added by Quinn Evans. (historicaerials.com)

[132] Quit Claim Deed Missouri State Parks to the National Park Service, made 12-6-1969, filed 12-16-1969, Carter County Deed Book 70, pp. 486-482, (Missouri State Park Archives Collection 5814).

Major Events of Episode 2b.

1933-1934 Civilian Conservation Camp SP-6 (CCC) was at the property. CCC Workers did extensive work on infrastructure, landscape features, and the mill.

1941 Planners Hare and Hare of Kansas City prepared a Master Plan for the park; the report noted the mill was of “historical interest.”

1958 Rehabilitation work done on the mill building.

1965 A study of the mill dam and spillways was made.

1969 Late in the year, just over 400 acres of Alley Spring State Park were transferred to the National Park Service to become part of the newly-formed Ozark National Scenic Riverways.

Episode 3. Ozark National Scenic Riverways: 1970-2018

Ownership of Alley Spring State Park was transferred to the National Park Service (NPS) late in 1969, culminating several years of planning and development of the Ozark National Scenic Riverways. With that change came a renewed interest in the history and preservation of the roller mill and the cultural landscape of the former state park. The mill building, milling equipment, and mill dam saw extensive restoration and rehabilitation in the late 1970s and early 1980s. NPS ownership also brought added parking and expanded development of day use areas, while camping was relocated to new landholdings south of the river. Issues with the erosion of the banks of the Spring Branch were addressed in part by allowing trees and shrubs to grow up along the stream banks.

Ozark National Scenic Riverways

In the early 1960s, the National Park Service and the State of Missouri began planning for the creation of the Ozark National Scenic Riverways, the first national park created to protect a river system. Responding to concerns about two proposed hydroelectric dams in the area, the National Park Service and the United States Forest Service both sponsored legislation to acquire the land.[133] Many argued that the Forest Service had already established good relations with residents in the Ozark region and would be in a better position to manage the land by working with landowners to create scenic easements, rather than change patterns of use.[134]

The National Park Service's proposal was not universally celebrated. Opponents of the plan did not want further outside intervention in the Ozarks area and argued that local residents would be forced off of their land as part of the process.[135] It was clear that the bill to establish the Ozark National Scenic Riverways would have to include some compromises if it was to become law. The largest change involved cutting the size of the park by around 19,000 acres. As a result, 30 miles of river along the lower Current River was removed from the bill, along with a section along the Eleven Point River.[136]

Eventually, the concerns were settled, and the plan came to fruition on August 27, 1964, when President Lyndon B. Johnson signed Public Law 88-492. The enabling legislation included an appropriation of $7 million for the purchase of private land within the 300-foot public boundaries along the Current and the Jacks Fork Rivers.[137] Additional federal action came in 1968, with the Wild and Scenic Rivers Act (Public Law 90-542). That law made it federal policy to "protect and enhance designated rivers." It also established a three-level designation system. "Wild" rivers

[133] Gary Garth, "America's Natural Treasures: Ozark National Scenic Riverways," *USA Today*, August 6, 2018.
[134] Susan Flader, "A Legacy of Neglect: The Ozark National Scenic Riverways," *The George Wright Forum* 26, no. 2 (2011): 116.
[135] "Heated Arguments at Hearing on Ozark Park Proposal," *St. Louis Post-Dispatch*, June 24, 1962. N.P., (Missouri State Parks Archives, Collection 3938).
[136] "Heated Arguments at Hearing on Ozark Park Proposal," 1962.
[137] Flader, 116.

are generally undammed, with little to no access by roads or development in the adjacent watersheds. “Recreational,” refers to rivers that are readily accessible by road, with some shoreline development and even some areas that had been dammed or otherwise altered.[138]

The “Scenic” designation, which applies to the rivers in the Ozark National Scenic Riverways, lies between those two categories. Scenic rivers are classified as being “free from impoundments and in generally undeveloped areas, but are accessible in places by roads.”[139] The federal purchase and designation of land around the Jacks Fork and Current Rivers in 1964 created the first official scenic riverways in the United States and laid the groundwork for the subsequent passage of the Wild and Scenic Rivers Act.

The land within the newly created Ozark Scenic Riverways included property purchased from private landowners, as well as land that was already publicly held, including three Missouri state parks. In December of 1969, the State of Missouri deeded Alley Spring State Park to the federal government. The deed for that transfer was dated December 5, 1969, and finalized December 30, 1969.[140] By January of 1970, Big Spring State Park and Round Spring State Park had also become part of the Ozark National Scenic Riverways.

National Park Service Management

Early management of the former state parks was guided by a National Park Service report, titled, “Proposed Role of Missouri Parks in Ozark National Scenic Riverways.” The report highlighted the unique features of each former state park, proposed future development, and discussed how these parks would benefit the Ozark National Scenic Riverways.[141] For Alley Spring State Park, the report highlighted the mill and spring, calling them “a major interpretive focal point,” and the main reason visitors came to the area. To capitalize on the historic value of the mill, the report argued that the equipment should be returned to working condition. This would allow visitors to experience the milling process and further explore the lives of early Alley Hollow residents.

In 1971, Storys Schoolhouse was moved from its original location - about four miles northwest of Eminence - to land near the mill. The schoolhouse was built in 1896 and operated until 1957.[142] The mill reopened on June 25, 1971, and began grinding corn using the water-powered wheel. This was part of a daily demonstration designed to educate the public on the milling process as it would have taken place at Alley. There was also an exhibit on the Alley community and Ozarks history located on the second floor of the mill, which remains today.[143]

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[138] Sandra Johnson and Laura Comay, “The National Wild and Scenic Rivers System: A Brief Overview,” (Washington, D.C.: Congressional Research Service, 2015), 1.
[139] Johnson and Comay, 1.
[140] Box 5814, Missouri State Parks Archives, Jefferson City, MO.
[141] *Proposed Role of Missouri State Parks in Ozark National Scenic Riverways*, (National Park Service Midwest Region, 1965-1967), 2, (Missouri State Parks Archives, Collection 5843.)
[142] “Story’s Creek School at Alley Spring Preserved and Open to the Public,” *The Historic School Quarterly* 3, no. 4 (2012): 16. Note that Storys Creek is often spelled without the apostrophe in early maps of the area.
[143] William E. Seibel, “Wheels Turn Again at Alley’s Old Red Mill,” *Eminence Current Wave*, July 1, 1971.

Additionally, the report suggested reconstructing the "village…along the walk to the mill," to recreate the appearance of the area.[144] Although the plan referenced several historic photographs, it did not offer any specific advice on the look of the reconstruction. It is not likely that the reconstruction was seriously considered as an interpretive option for the mill, as the report also offered an alternative interpretive plan for the walkway.

Looking at recreation in the park, the report suggested that camping facilities at Alley Spring would be improved by adding new camping facilities south of the Jacks Fork River, west of the study area, in their current location.[145] The proposed campground differed slightly from the one that was built, mainly in the layout of the access road within the camping area. The layout that was proposed in the 1960s consisted of a circular road that encompassed the whole camping area, whereas the current road is linear and extends several branches out to camping areas. To improve visitor comfort, a concession area with a swimming pool, boat launch, and snack shop was proposed upstream from the 106 bridge but was never implemented.[146]

The report also suggested removing the campground between the Jacks Fork River and the spring branch and replacing it with a picnic area. In addition to the removal of that campsite, another campsite north of the spring branch was also removed. The present-day Burr Oak Picnic area was established after the campground between the Jacks Fork River and the Spring Branch was removed; it appears that the current playground equipment was added after the property came under National Park Service control. In 1988, plans were made to add two new group picnic shelters in the Burr Oak Picnic Area. Ultimately, just one of those structures was installed, the Burr Oak Picnic Shelter (Building 562) was completed between 1990 and 1995.

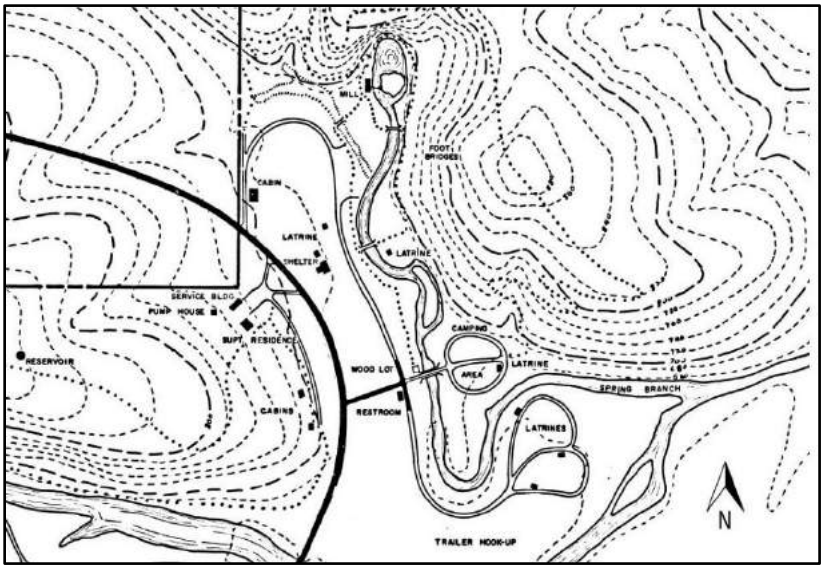


Figure 2.37. 1968 Map of Alley Hollow. (Excerpt from Alley Spring State Park base map, 10-18-1968)

[144] *Proposed Role of Missouri State Parks.*
[145] *Proposed Role of Missouri State Parks,* 9.
[146] *Proposed Role of Missouri State Parks,* 10.

In June 1973, the NPS announced plans to enlarge the campground at Alley Spring as part of an effort to preserve and protect the area around the spring branch.[147] In July, a massive construction project was announced for Alley Spring, Big Spring, and Round Spring. The project was designed to update the infrastructure for the three areas and, "primarily centered on pollution abatement, and…the replacement of most of the existing facilities."[148] These projects were conceived in a 1970 report titled, "Development Concepts. Ozark National Scenic Riverways." The report proposed many additions to the area, including the construction of a 500 seat amphitheater near the mill, in addition to two baseball fields.[149]

While the construction of the amphitheater and ballfields were not implemented, the report mentions some projects that were carried out, such as the pedestrian bridge across the Jacks Fork River. Additionally, the report determined that the park's current system of roads would not be able to handle an increase in traffic, and therefore should be widened. In addition to improving circulation within and to the park, additional facilities were needed to accommodate an increasing number of vehicles. A gravel parking lot near the mill and the larger parking lot near the horse bridge were added around 1973.[150] Replacement bridges over the spring branch were completed in 1975.[151]

Trails were another area of concern in the report. The trails around the spring branch were in a state of neglect and needed to be reconstructed. Additional circulation and interpretive trails were recommended, but not discussed any further.[152] One trail that was not mentioned in this report was the West Trail. At some point between when the property was managed as a state park and the completion of this report, the West Trail fell out of use. Constructed by the CCC, the trail was mentioned in the monthly progress reports and is clearly shown on a 1941 map of the park.[153] It was still appearing on park maps in the late 1960s, and it is unclear when the trail fell out of use (Figure 2.37). The trail may have been taken out of service about the same time the hilltop water tank was replaced, ca. 1973.[154]

Flood damage continued to be a management issue, along the smaller waterways as well as the river. After a flood damaged 150 feet of the Alley Hollow Creek banks near the pedestrian bridge in 1977, large gabions and boulders were installed there in an attempt to stabilize the banks and prevent additional damage. The project held for close to twenty years, but another flood in 1993 undercut the gabions and washed them into the stream bed. Two years later, staff

[147] "3 Ozark Campgrounds will Get New Look." *St. Louis Globe-Democrat*, June 15, 1973.
[148] "Construction at Alley, Round, and Big Springs," *Current Wave*, July 26, 1973. (Clipping in OZAR Archives).
[149] *Development Concepts: Ozark National Scenic Riverways,* (National Park Service, 1970), 11.
[150] "Construction at Alley, Round and Big Springs." 1970 USGS Topographic Map, "Alley Spring."
[151] "Bridges Going Up at Alley Park," *Eminence Current Wave*, July 31, 1975. (Clipping in OZAR Archives).
[152] *Development Concepts: Ozark National Scenic Riverways,* 13.
[153] Missouri State Park Board, *Alley Spring State Park Master Plan*, 1941.
[154] Alley Spring S Utilities" Map. Midwest Regions National Park Service, Feb. 1973. (ETIC Files) The map shows two water tanks on the hill: "EXIST WATER TANK" and just few yard to the east is the NEW WATER STORAGE TANK".

outlined a plan to remove the gabions from the stream bed and to plant tree seedlings and "willow stakes" along the northeast bank of the stream bank to control erosion. The proposal for that project stated that the root system created by the trees would help stabilize the bank, and reduce erosion and that the willow stakes would "not interfere with any view of the mill as they would only grow about 3-4' above the bank edge and if necessary could be trimmed periodically to ensure an unobstructed view.[155]

Preservation of the Mill and Dam

In the years since the Ozark National Scenic Riverways was established, the National Park Service has commissioned numerous studies and reports on the mill and its equipment. While many of these reports included detailed analyses of the condition of the mill and dam structures and provide options for restoring the mill to working order, project funding has proven to be a challenge. Like many of the mill's previous owners, the NPS has contended with the ongoing challenge of maintaining the mill, despite regular flooding, and erosion of the dam by the spring.

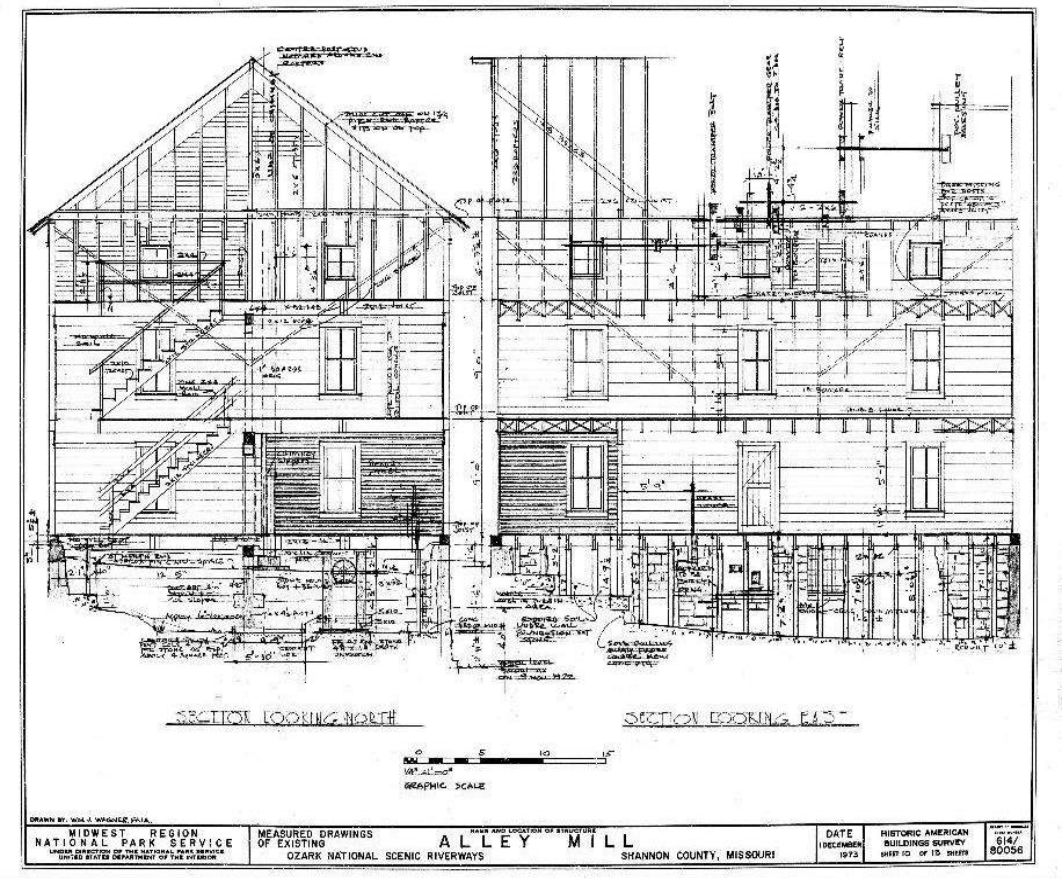


Figure 2.38. Page 10 of the 1973 Historic American Buildings Survey showing the mill's north and east elevations. (OZAR 614-80056)

[155] "Alley Hollow Stabilization," Project Initiation Request, February 15, 1995, Project No 95 08, attached to Memorandum, Director Midwest Archeological Center from Superintendent, Ozark National Scenic Riverways. (Compliance Files, Ozark National Scenic Riverways, Van Buren, MO.)

The NPS commissioned a historic structure report in 1973, which documented the history of the mill and its condition at the time.[156] The mill and dam were also recorded for the Historic American Building Survey that same year. In 1977, a proposal was created, and plans were drawn for extensive restoration work on both the mill and dam. In the summer of 1978, workers widened the spillway and reinforced part of the dam with concrete and steel rods, as seen in Figure 2.39. The new concrete section included the remains of the three-gate spillway that was built ca. 1914. In the mill, workers replaced the roof due to inadequate work done in 1972, cleaned the roller assembly, and replaced rotting timbers throughout the mill.[157] Other work that was recommended in the proposal, but was not carried out, included the removal of flooring installed by the CCC, removal of the sapling bars over the first-floor windows, and a new porch and steps.[158]



Figure 2.39. Workers reinforcing the dam with concrete, 1978, May. (OZAR Admin Files)

By 1990, the mill and equipment were again in need of attention. The National Park Service developed an ambitious four-phase plan to restore Alley Mill. The four phases involved stabilizing the building (Phase I), hydraulics repair (Phase II), machinery restoration (Phase III),

[156] Torres-Reyes and Kaminski.
[157] "Documentation of Repairs to Alley Mill and dam." December 21, 1978. In OZAR Archives, "Building Files, #501.
[158] *Preliminary Drawings for Restoration of Alley Mill*, U. S. Department of the Interior, National Park Service, 1977. OZAR Archives.

and future projects (Phase IV).[159] This plan was developed based on observations of the mill that were made in a 1985 report by millwright Derek Ogden. Ogden worked on the mill's turbine, belts, rollers, and sifters off and on from 1993 until at least 1999. Information on Ogden's invoicing suggests that significant effort went into the turbine system and the rollers.[160]

In addition to machinery repairs of the mid-1990s, work was done to stabilize the foundation of the mill. Shoring was placed inside the mill along the north and west walls to return them to their correct heights. To complete the project, the west porch, some siding, and foundation rocks had to be removed. Notes made about the bracing efforts include measures to thoroughly document each piece of siding and rock that would have to be removed.[161] Any rocks that had to be moved during this process were individually numbered and photographed so that they could be placed back in their exact location.[162]

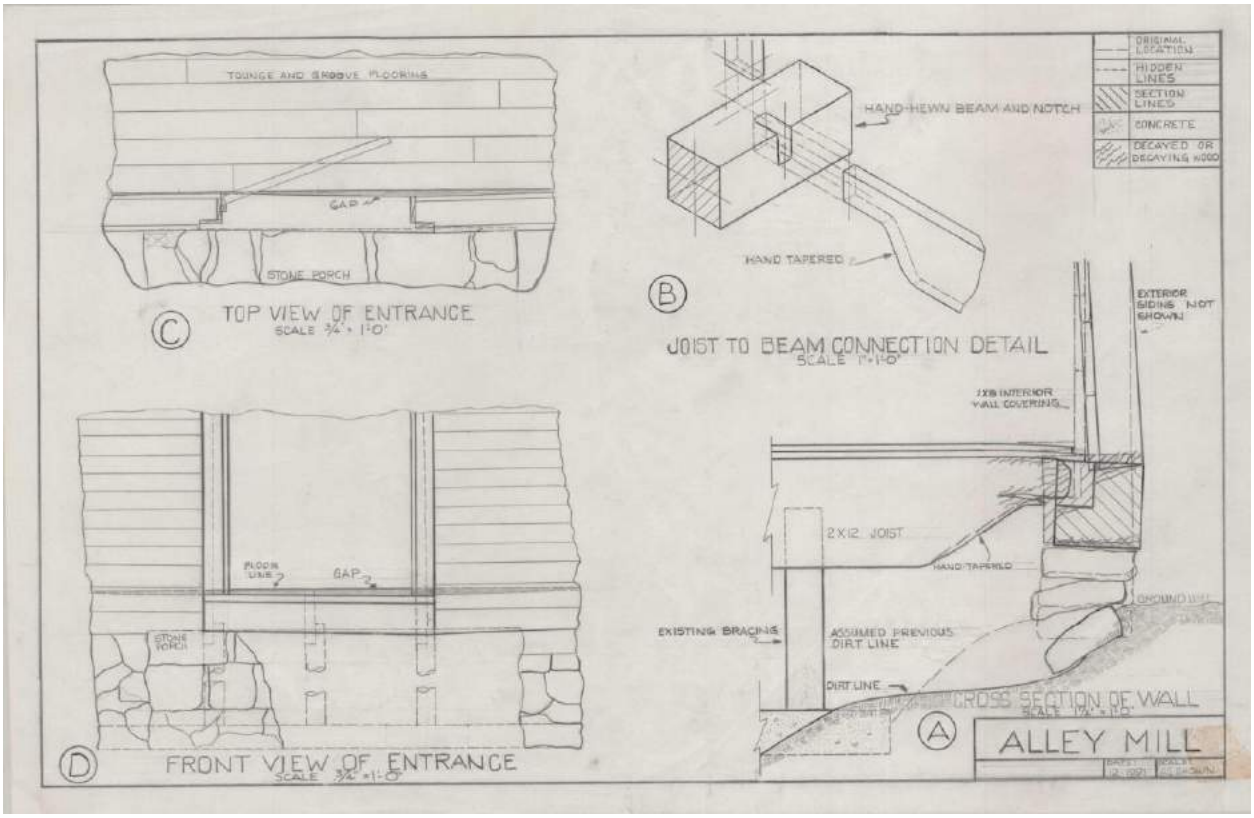


Figure 2.40. 1991 Drawing prepared to document existing conditions at Alley Mill. (OZAR Admin Files)

[159] Al O'Bright, "Trip Report, Ozark, January 6-8," January 29, 1992, n.p. In OZAR Archives, "Building Files #501."
[160] Ogden invoice, December 4, 1995. In OZAR Archives, "Building Files #501;" October 1997 progress report. In OZAR Archives, "Building Files #501."
[161] Handwritten note in OZAR Archives, Building Files #501.
[162] Interview with Doug Conway by Angie Gaebler and Deb Sheals, May 16, 2018.

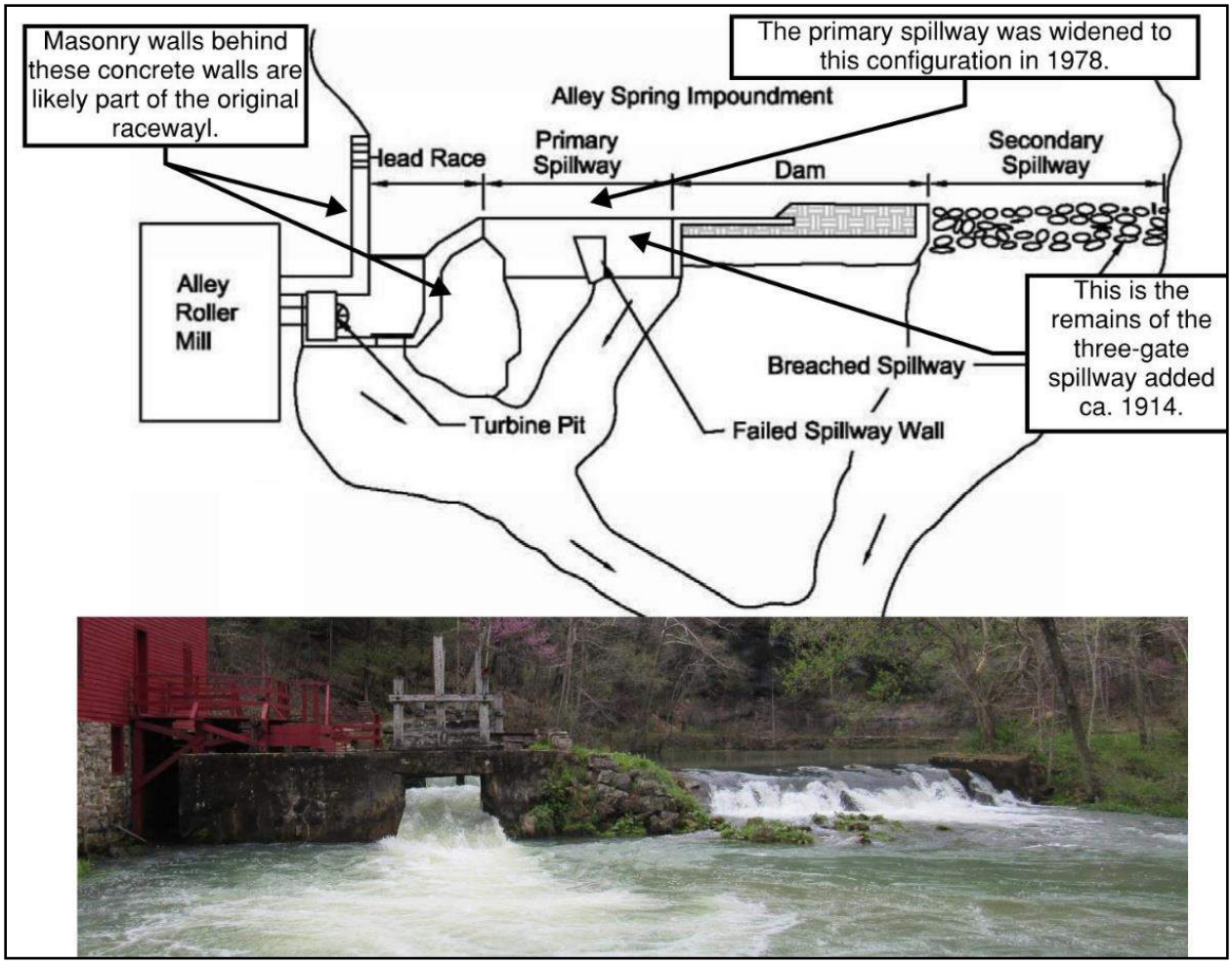


Figure 2.41. Diagram of dam and hydraulics from *Design Alternatives for Restoration of Earth-Fill Dam and Hydraulic Structures at Alley Spring Roller Mill* (2013), 5. Photograph of dam and hydraulics from SEA, 2018.

In 2013, an investigation of the millrace gates, dam, and spillway was conducted to evaluate the mill's headrace, gate, and turbine pit, as well as the dam's strength to hold up against a flood (Figure 2.41). The introduction to the report also states that the NPS wanted to use the turbine and roller mill for limited demonstrations.[163] The report concluded that the overall condition of those elements was poor and that significant repairs would need to be done in order to prevent further deterioration. The report concluded that the millrace, "has reached the end of its functional life," and should be replaced.[164] Repairs suggested in the report could extend the life of the dam life by 10-100 years, although it was noted that the NPS desired a 500-year "life of service" for the dam, which was not seen as feasible at that time.[165]

[163] Thomas R. Fitzpatrick, *Design Alternatives for Restoration of Earth-Fill Dam and Hydraulic Structures at Alley Spring Roller Mill* (Ann Arbor, MI: Fitzpatrick Structural Engineering, P.C., May, 2013), 3.
[164] Fitzpatrick, 27.
[165] Fitzpatrick, 28.

"The Old Red Mill"

One of the recommendations of the 1977 Historic Structure Report was to return the mill to its original white color. In 1978, the National Park Service conducted a Section 106 review, to determine the effect of returning the mill to its earlier paint scheme of white walls and green trim. It was eventually concluded that either repainting the mill white with green trim, or leaving it red, would have no adverse effect on the mill, and the project was approved.

News of the plan resulted in such a strong public outcry, however, that those plans were halted for more discussion. Among those voicing their disapproval to the proposal was Richard H. Ichord, the representative for Missouri's 8th Congressional District. Rep. Ichord suggested that the National Park Service should follow the wishes of the public and keep the mill red.[166] In a letter to Mr. Ichord, superintendent of the Ozark National Scenic Riverways, Arthur L. Sullivan, acknowledged the local attachment to the mill's iconic red color and noted that the NPS would not change the mill color for the time being. Sullivan was not convinced though, noting that, "at some future time in the restoration process, the exterior should be returned to its historic color."[167]

That discussion of color happened just about the time that lead was being phased out as a paint additive, an event that brought a whole new set of headaches for park staff. New red paint formulas of the time were not nearly as stable as the traditional mix of red lead and linseed oil had been, and for a number of years, the mill exhibited a troublesome tendency to fade to pale pink within a few years of being painted red (Figure 2.42). Efforts to find a more satisfactory solution to keep the mill painted inevitably resurrected the discussion on the mill's color. In a 1993 letter to the superintendent, park historian Jeff Kroke argued that since the mill was red during the CCC era, going back to white would raise the question of what other changes of that time should be reversed.[168] That argument, supported by continued local support for red, prevailed, and the option of a white mill was finally eliminated. The mill would remain red if the NPS could find appropriate paint to use.

After several years of experimentation, and improvements in paint technology, park staff were able to develop more durable painting options. That included the use of a darker primer, as well as changes in the paint formula to include more of the color brown. The new color formula was used in October-November 2001.[169] The mill was repainted a slightly different shade of red in 2008 (Figure 2.43).[170] It has been a dark red color ever since.

[166] Arthur L. Sullivan to Donald F. Dosch, July 19, 1978.
[167] Arthur L. Sullivan to Richard H. Ichord, August 1, 1978.
[168] "Jeff Kroke to Superintendent Arthur Sullivan." July 23, 1993. OZAR Archives, Building Files #501.
[169] "Repaint Alley Mill," Ozark NSR Compliance Form, May 8, 2001; Dated images of mill being painted are in Doug Conway files.
[170] Doug Conway notes; 2008 paint formula.



Figure 2.42. View of faded paint on mill before it was repainted, 1987. (OZAR Admin Photo Collection)

Sherwin-Williams				07/01/08
Exterior				Architectural
A-100				Latex
Gloss				IFC 6112
MILL ALLEY SPRINGS RED				
CUSTOM MANUAL MATCH				
BAC COLORANT	0Z	32	64	128
W1-White	-	38	1	1
L1-Blue	-	15	1	1
R2-Maroon	2	31	-	-
R3-Magenta	4	38	-	-
G2-New Green	-	20	-	-
Y3-Deep Gold	-	50	-	-
ONE GALLON				ULTRADEEP
A08T00054				640333761

Figure 2.43. Formula for red paint that was used on the mill in 2008.
(Table reproduced from a receipt in Doug Conway Files)

Landscape Developments 1970-2018

Changes to the physical condition of the landscape during this episode are most visible in the hollow. Those changes include the hardening of historic circulation routes, and the addition of modern routes, structures, and site furnishings to serve increased visitation. By the late 1970s, the mill alone saw some 30,000 visitors per year.[171] Other efforts to improve visitor services included an increased emphasis on accessibility; related changes included adding an ABA-compliant ramp to the mill in 2000, and additional improvements in 2014.[172]

One widely noticed change to the setting of the mill came in 2014 when it became necessary to remove a large sycamore that had been growing close to the south wall of the mill since the 1920s.[173] Known to some locals as "Seymour the sycamore," the large tree was a prominent part of countless photos of the mill, but it had grown so large that it was causing damage to the foundation of the mill.[174] Also during this episode, woody successional vegetation along steep slopes and streams increased, reducing the quantity of open lawn and eliminating the long north-south views that were present when the property was a state park. The trail systems remain enclosed in the upland forest.

In recent years the NPS has replaced and added site furnishings, including new benches in 2011 and 2016. Flooding has continued to be a regular occurrence, necessitating repair and replacement of bridges and other structures located near waterways. The Jacks Fork River has moved across its floodplain throughout the river's history; this episode saw a particularly notable shift in the course of the river, bringing management issues to control erosion and mitigate flood damage.

Historic Flooding

Between Friday, April 28 and Sunday, April 30, 2017, a powerful storm system delivered 8-12 inches of rain to Alley Spring and the surrounding area. Runoff rainwater from the storm caused widespread flooding throughout the area's rivers. According to the National Weather Service, "several rivers reached major and historic [flood] levels." Flooded rivers in the area wiped out major roads and countless buildings. The Jacks Fork River was among the rivers impacted, cresting at 20.17 feet at Alley Spring, approximately 11 feet above its normal flood stage, and one foot shy of its record.[175]

In response to the historic flooding, the National Park Service closed the entire Ozark National Scenic Riverways in order to assess the damage done to the park, and they brought in the National Park Service Midwest Region Incident Management Team. In a statement on the park's website, it was reported that "park water systems, electrical systems, and most roads

[171] 1983 development study package. OZAR Files.
[172] OZAR Superintendent's Report, 2000, 5, and PEPC records.
[173] August 12th, "Alley Mill- remove sycamore tree," PEPC 52746, August 2014.
[174] Richard Crabtree, "Shannon County, Missouri History, Landmarks & Vintage photography," https://www.facebook.com/groups/586429048476992
[175] National Weather Service, "Historic Flooding Event – 28-30 April 2017," https://www.weather.gov/sgf/28-30AprilHistoricFloodingEvent (accessed April 2019).

ha[d] been compromised." In addition to the damaged infrastructure, floodwaters also left behind large deposits of debris.[176]

At Alley Spring, floodwater had entered the mill and reached as high as one foot above the first floor.[177] Although floodwaters caused the mill's floorboards to warp, they eventually settled back after dehumidifiers were installed. Other recommendations included opening windows during the day for ventilation, inspection of the electrical systems in the basement, monitoring the interior for mold, application of Boracare to basement framing to control powder post beetles and installing crack monitors at the foundation cracks. It appears many of these recommendations were done, however, documentation of the work has not been located. Overall, there has been little apparent long term damage to the building from the flood.

Storys Creek Schoolhouse had more damage, after filling with some four feet of water. The flood also destroyed the footbridge over the Alley Spring Branch and severely damaged restroom facilities, utilities, and the campground. Utility damage was so extensive that portable toilets had to be used in public areas north of the river for months after the flood. By June 2018, crews had replaced damaged utilities at the Route 106 Bridge and completed repairs to restrooms and the campground south of the river.[178] However, the pedestrian bridge across the Jacks Fork River was still unpassable at the time this report was written, and the pedestrian bridge at Alley Spring had not yet been replaced. The sanitary service north of the river was also still disrupted.

Modifications to the Alley Spring landscape that have occurred since the end of the period of significance are reflected in the existing condition plan EC-1 in Chapter 3.

Major Events of Episode 3.

1969	In late 1969, Alley Spring State Park, encompassing 419.2 acres, was transferred to the National Park Service to become part of the newly-formed Ozark National Scenic Riverways.
1971	Equipment in the mill was returned to working order.
1973	Historic Structure Report prepared for the mill.

[176] "National Park Service Sends Incident Management Team to Assist Ozark National Scenic Riverways Respond to Epic Flood Event," May 7, 2017, (National Park Service, Ozark National Scenic Riverways), https://www.nps.gov/ozar/learn/news/2017-flood-imt.htm (accessed April 2019).
[177] "National Park Service Sends Incident Management Team to Assist Ozark National Scenic Riverways Respond to Epic Flood Event."
[178] "Re-Establish Flood Damaged Utilities at MoDOT Hwy 106 Bridge," Ozark National Scenic Riverways, Planning, Environment & Public Comment (PEPC) #79191, June 4, 2018; "Urgent Repairs to Alley Restrooms and Campgrounds Damaged by the April 2017 Flood," Ozark National Scenic Riverways, Planning, Environment & Public Comment (PEPC) #79192, June 4, 2018.

1977	Restoration plans were prepared for the mill, and a historic data section was added to the HSR. The plans were used to direct restoration and structural stabilization of the mill building.
1978	National Park Service crews completed extensive work on the mill dam.
1985	Mill equipment evaluated and restored.
2013	A structural evaluation of the dam and hydraulic structures at the mill was conducted.
2017	An image of Alley Mill was minted on the back of United States quarter coins.
	Heavy rainfall brought one of the area's largest floods in modern history in late April-early May.

Conclusion

Over the years, the mill at Alley Spring has become a Missouri icon. It is said to be the most photographed landmark in the Ozark National Scenic Riverways. Images of the mill and dam have appeared in many government publications, going all the way back to its time as a state park, and has become known for its bright red color. In 2017, Alley Mill was chosen to represent the Ozark Scenic National Riverways in the U. S. Mint's "America the Beautiful Quarters" program. The quarter design, which features an image of the mill and spring branch, was the 38th to be minted in the series, and one of five commemorative quarters released by the U. S. Mint in 2017.

The process of choosing a winning design highlighted the role historic resources play in creating a unique identity. The design with the historic mill was chosen over several other images of the Ozark National Scenic Riverways, including one of a turtle and paddler. It was accurately argued that turtles and canoeists can be found in many places, but there is just one Alley Mill.[179]

The study area has been a center for commerce and recreation since before the Alley Roller Mill was constructed in 1894. The picturesque mill, spring and surrounding acreage made the property a favored recreational destination throughout its tenure as a state park. Management by the National Park Service, which has increased attention to historic preservation, ensures that the cultural landscape of the hollow will survive well into the future.

[179] Wess Johnson, "It's Official: Alley Mill Quarter Picked to Represent Missouri Waterways," *Springfield News-Leader,* April 24, 2017.

Alley Spring Timeline

Site History

1868	Ike Barksdale and John Daugherty purchased 600 acres of land including the spring basin.[180]
1869, ca.	Alley Spring dammed and a water-powered mill established at this location by William Barksdale and Jack Daughtery. It was described as “a water wheel and a rude shed over the millstones.” The spring was known as Mammoth Spring at the time.[181]
1876, ca.	Spring and mill site mapped by the Missouri Geological Survey, which labeled it as Mammoth Spring.[182]
1881, ca.	Charles Klepzig purchased the mill and 240 acres of land.[183]
1884, ca.	Klepzig applied for a Post Office at the site, he was approved for it, and the name Alley was selected, probably for local farmer, John Alley. Afterward, the spring became known as Alley Spring.[184]
1890	The mill was closed due to damage from a severe flood.[185]
1893, Feb.	Unable to repair damage brought on by the flood, Klepzig sold his land and mill to George W. McCaskill for $1,500.[186]

[180] Dan Jackson, *Alley Spring State Park Historic District: Ozark National Scenic Riverways* (National Park Service Cultural Landscapes Inventory, 2010), 21.
[181] Dorothy J. Caldwell, *Missouri’s Historic Sites Catalogue* (Columbia: The State Historical Society of Missouri, 1963), 184; Jackson, 21.
[182] Charles P. Williams, Industrial Report on Lead, Zinc and Iron, Together with Notes on Shannon County and Its Copper Deposits (Jefferson City, MO: Geological Survey of Missouri, 1876).
[183] Perry, Milton F. “Alley Spring Roller Mill,” National Register of Historic Places, 1976. United States Department of the Interior, National Park Service, 8.1; Jackson, 21.
[184] Perry, 8.1; Jackson, 21.
[185] Perry, 8.1.
[186] Perry 8.1; See Robert Flanders, *Alley, an Ozarks Mill Hamlet 1890-1925: Society, Economy, Landscape* (Springfield, MO: The Center for Ozarks Studies, 1985), for background on McCaskills.

Episode I. Alley Roller Mill: 1894-1924

Summary of Episode I.

This episode encompasses the time the Alley Roller Mill and surrounding land was in private ownership. Alley Roller Mill was completed in 1894, and it remained in operation off and on until the early 1920s. Late in 1924, arrangements were made to sell the land to the state for use as a state park.

1894	George Washington McCaskill and his brother, James replaced Klepzig's damaged mill with the present roller mill. (HS-501) The new building was completed in 1894.
1895, ca.	McCaskill sold a majority of the land, including the mill, to A. B. Boyd and/or Ellen J. Boyd for $6,000.
1895-1900	A. B. Boyd built a blacksmith shop, sawmill, and general store on the property. The area around the mill property began to develop with the addition of a schoolhouse and residential properties.
1899	Dam washed out in flood and rebuilt.[187]
1899	Boyd traded the mill to J. August Lameyer.
1901, Dec.	The mill is sold to A.M. Philips.[188]
1902, Jul.	John Knotts purchased the Alley Mill land.
1903, Jun. 4.	Part of Alley Mill Dam washed away.[189]
1904, Mar.	"Calamitous flood of Biblical proportions," again damaged the mill and dam. A spillway was added to the dam afterward.[190]
1910 ca.	County map with railroads and springs indicated. Alley P.O. is marked, but the spring is called Mammoth Spring.[191]

[187] OZAR Archives Building Form #501a.
[188] Jackson, 21.
[189] William J. Wagner, *Alley Spring Roller Mill: Historic Structure Report* (National Park Service, April, 1977), Appendix, Historic Photograph Index, Photo 'C'; CLI form 501a., Clipping from *The Current Wave* June 4, 1903.
[190] Robert Flanders, *Alley, an Ozark Mill Hamlet* (Springfield, MO: The Center for Ozark Studies, 1985): 32.
[191] Undated map in OZAR flat file; the Southern and Winona RR was organized in 1908, and the last train to Eminence ran in 1923, per Flanders, 71.

1911-12	Dam (HS-501a) replaced with a new poured concrete one that had at least two spillways and a concrete forebay.
1912	Knotts sold the property to the Crystal Spring Townsite Company. Conrad Hug served as both President and Treasurer of the company.[192] Extensive work was undertaken across the site by Crystal Spring Company in 1912.[193]
1914	Major flood and dam washout. The dam had to be partially rebuilt, and more concrete may have been added at that time. A three-gate spillway was added.[194]
1912-1924	Crystal Spring Town-site Company built picnic grounds along the spring branch and rebuilt the general store over the original foundation. The mill was painted to match the new store.[195]
1915	Earliest known topo map of the area published.[196]
1917	Missouri passes legislation to set aside funds from hunting and fishing licenses to be used for state parks.[197]
1919, ca.	After the end of WWI, processed flour became much more readily available and the market for locally-processed flour dropped sharply.[198]
1922, ca.	Mill ceased to operate. Mill was white with dark window trim and sashes.[199]
1922	Conrad Hug and other members of the Crystal Townsite try to get the state to buy the “Alley Springs Property” owned by Crystal Springs.
1922	Missouri Secretary of State Charles Becker and “Mr. Hedrick” State Treasurer visited the site and were photographed with Elizabeth Hug and Helen Guminger (both of Kansas City) during a tour to identify potential state parks.[200]

[192] Flanders, 51.
[193] Flanders, 61-62.
[194] Flanders, 2, 62; OZAR 24037.
[195] Jackson, 22.
[196] On file at the State Historical Society of MO.
[197] “Bought at Bargain Price”, *Rolla Herald*, Feb. 12, 1925, 3.
[198] Flanders 71.
[199] Wagner, Appendix, Historic Photograph Index, Photo ‘O’.
[200] Wagner, Appendix, Historic Photograph Index, Photo ‘Q’.

1924 Missouri Governor Arthur Hyde and Game and Fish Commissioner Frank Wielandy scouted and selected several parcels of land in the Ozarks to be used as state parks. They included Round Spring, Big Spring, Bennett Spring, the Lennox Tract near Salem (now Montauk State Park) and Alley Spring. Alley Spring was the fourth one purchased and therefore the fourth state park in Missouri.[201] Contracts for the purchase of Alley and Bennett Springs were made in 1924, but a legal challenge related to the appropriation of funds for park acquisition delayed the actual purchases until 1925. [202]

[201] Susan Flader, ed., *Exploring Missouri's Legacy: State Parks and Historic Sites* (Columbia, MO: University of Missouri Press, 1992), 5; Flanders, 78-80: Jackson, 22; The Associated Press. 1925. "Three More Park Sites Purchased." Springfield, MO: *Springfield News-Leader*, January 11, 1925, 1. The State Parks Archives has extensive records about the acquisition process.
[202] "Park Fund Injunction Case Dismissed," *St. Louis Post Dispatch*, January 11, 1925, 17.

Episode II: Alley Spring State Park: 1925-1969

Summary of Episode II.
This episode corresponds to the time the property was owned by the state.

Episode 2a: Alley Spring State Park
When it became a state park in 1925, it was under the management of the state Game and Fish Commission, which managed the property for its natural attributes. Around 1928, the mill received the first of many coats of the red paint that has made it iconic.

1925	In 1925 the state purchased the spring, mill, and approximately 427 acres of surrounding land.[203]
1925, ca.	Postcard of the mill shows it with white paint; the postcard may have been made shortly after the state park was established.[204]
1925	Game and Fish Commission Report includes a short note about Alley Spring State Park, which is one of nine state parks by that time. No mention was made of the mill. The report includes a photo of the campground with white-painted trees.[205]
1926-1927	The state demolished the store, blacksmith shop, and spring house, which Game and Fish magazine said had "greatly marred the splendor of the spring and spring branch." No mention was made of the mill building.[206] A new rustic style store was constructed. A swimming hole with a beach and beach house were added, possibly at the Jacks Fork River near what is now the Burr Oak picnic ground. A gravel road was added through the park that led to a rustic bridge over the spring branch.[207] The bridge appears in photos from this period.
1927	Detailed topo map of the park completed for the Missouri Game and Fish Department. Topography by C. O. Reinoehl.
1928, Jun.	Alley Spring State Park is the cover photo for the May issue of *Fish and Game News*. (The photo used was first published in 1925.)

[203] Perry, 8.2. Accounts of the exact acreage varies; Flanders says the purchase was 407 acres, newspaper accounts of the day put it at 472. "Three More Park Sites Purchased." Springfield, MO: *Springfield News-Leader*, January 11, 1925; "Park Fund Injunction Case Dismissed," *St. Louis Post Dispatch*, January 11, 1925, 17.
[204] OZAR admin photos.
[205] Keith McCanse, *Annual Report of the State Game and Fish Commissioner* (Jefferson City, MO: Game and Fish Department): 1925.
[206] Keith McCanse, *Annual Report of the State Game and Fish Commissioner.* 1926-1928.
[207] Jackson, 22.

1927 Floods damage the Alley Spring property, and the mill may have closed for a time.[208]

1925-30 Sometime between 1925 and 1933, the state painted the mill building red, and it became known as the "Red Mill."[209] This was done after the campground (with mill) was photographed in 1925, and before CCC arrived in 1933, see January 1934 entry, which states it had been known as the "old red mill for years" at that time.

Episode 2b: CCC 1933-1969

In 1933-34, CCC Camp SP-6 performed extensive work on the mill and surrounding parkland. In 1955, access to the park was greatly enhanced via the extension of State Route 106 through the park. The property served as a state park until late in 1969, when it was transferred to the National Park Service.

1933, Nov. The National Park Service established a Civilian Conservation Corps Camp SP-6 (CCC) at the property, occupied by Company 1771. The CCC added new trails, fences, and campgrounds, and undertook an extensive restoration of the mill.[210]

1933, Dec. CCC started landscaping projects, constructed walking trails, a dam project, improved water supply, and excavation work for park keeper's service building.[211]

1934, Jan. – Jul. National Park Service prepares drawings for a Park Service Building, Foot Bridge, Park Keepers House, Shelter, and Concession Building.[212]

1934, Jan. CCC developed foot trails, horse trails, and roads. The picnic grounds and dam project were completed, and they began work on a Jacks Fork entrance bridge.[213]

January 1934 report for CCC notes that the Alley mill "has been known as 'The Old Red Mill' for years. Work has not started on this project as we are using it to house our tools." [214]

[208] Jackson, 22; *Missouri Game and Fish News,* May 1928; Perry, 8.2.
[209] Perry, 8.3.
[210] Jackson, 22.
[211] Jackson, 22.
[212] OZAR Archives, Collection 3257.
[213] Jackson, 23.
[214] *Monthly Progress Report, Camp No. SP-6* (Alley Spring State Park: Department of the Interior, National Park Service State Park Emergency Conservation Work, January, 1934,) 1.

1934, Feb. – Mar. Construction started on two cabins (HS-505 and HS-506). Construction continued on foot trails, horse trails, roads, footbridges, and the service building.[215]

1934, Mar. NPS drawing "Profile of Dam in Place."[216]

1934, Apr. – May Construction completed on the footbridges, entrance bridge, and service building (HS-502). Development work began in several areas including on the scenic overlook above the spring (HS-501I), on the relocation of the park keeper's house, repair work on the mill dam, and excavation for an underground water tank. The mill was renovated (HS-501).[217]

1934, May Monthly CCC Reports states "Project 28. Old Mill." Noted the project was complete. And listed work done as, "New roof, new floors, windows, etc. General cleanup of the building and machinery was included in the project."[218]

1934, Aug. Construction of the picnic shelter (HS-503) at Alley Spring was completed.[219]

1934, Oct. Civilian Conservation Corps Camp SP-6 Closed.[220]

1938 Annual attendance at the park is 15,793.[221]

1939 The Alley Spring Ranger Station (HS-511) was built.[222]

1941 Master Plan prepared for Alley Spring State Park by Hare and Hare, City Planners, Kansas City, MO.[223]

The Master plan included descriptions of existing conditions:

- The camping area in the park was located "in the wooded section adjacent to the road along the south end of the Spring Branch." There was room for camping on both sides of the road, but no marked sites or other organization to the site. The report also noted there was a small spot for camping on the east side of the branch.

[215] Jackson, 23.
[216] "Profile of Dam in Place." Drawing. OZAR Files.
[217] Jackson, 23.
[218] *Monthly Progress Report, Camp No. SP-6* (Alley Spring State Park: Department of the Interior, National Park Service State Park Emergency Conservation Work, May, 1934).
[219] Jackson, 23.
[220] Jackson, 34.
[221] Hare and Hare, *Report to Accompany Master Plan: Alley Spring State Park* (Jefferson City, MO: The Missouri State Park Board, 1941).
[222] Jackson, 23.
[223] Hare and Hare, Report to Accompany Master Plan: Alley Spring State Park, 8.

- The CCC picnic shelter (HS-503) was the only one in place.
- The "old grist mill…is of historical interest…If practical, it would be desirable for the mill to be put in working order…"[224]

1941-1970 — A concession building sat in the area south of where the main parking area is currently located, near CR 308-106. The building is indicated on the 1941 site plan labeled "C.S." but may not have been built at that time. It is shown to still be extant on a 1970 NPS topographic map of Alley Spring.[225]

1945 — Alley Spring State Park is one of twenty state parks in MO.[226]

1955, May — Plans drawn for "change clothes house". (Presumably, a place for visitors to change into or out of swimwear.)[227]

1955 — State Route 106, which runs through the center of the park, was completed to provide connections to the west of the park.[228]

1956 — Footbridges at Alley Spring State Park wash out in flood.[229]

1958 — The State of Missouri restored the Alley Spring Mill.[230]

1962, Jun. — Plans were drawn for Harvey's campground tract. (South of Jacks Fork River, outside of study area).[231]

1964 — The mill's west entrance porch was replaced.[232] [Likely a typo.]

1964 — Sapling bars in place on windows of the mill; log windlass for the concrete spillway.[233]

1964, Aug. — Ozark National Scenic Riverways was established when President Lyndon B. Johnson signed Public Law 88-492.[234]

[224] Hare and Hare, Report to Accompany Master Plan: Alley Spring State Park, 8.
[225] Jackson, 23.
[226] 1944-45 Blue Book.
[227] OZAR Files.
[228] Jackson 19; quit claim deeds to transfer ownership are dated 1969, per state park files.
[229] State Parks Archives, photo image arc1320040009.
[230] Jackson, 23.
[231] "Harvey's Campground Tract," Map. OZAR Files.
[232] Perry, 8.3. [CLHSR team believes this is a typo, as the east porch over the turbine deck was replaced at this time. Engineering drawings were found for this proposed work. Unfortunately, the records Perry references in the National Register Nomination are no longer available at State Parks.]
[233] OZAR Admin File.
[234] Jackson, 24; Flanders, 85.

1964, Oct.	Department of the Interior Develops a Master Plan for Entire Ozark Scenic Riverways, including Alley Mill State Park.[235]
1965	USGS Topo Map for Alley Spring 7.5 min quad shows state park boundaries as well as buildings and roads. The campground is at the south end of the park where Burr Oak is now.[236]
1965, May	Plans drawn and specifications prepared for spillway drive and turbine repairs by Coombs and Elgin, engineers. It is not clear how much of this work was undertaken.[237]
1964-68	It appears that the 4/4 windows are still in place on the mill.[238]
1968, Feb.- Oct.	Alley Spring State Park Base Map drawn, along with plans for Brewer House and existing utilities. All done for Missouri State Park Board.[239]
1969, Dec. 5th	State Parks executes a Quit Claim Deed to transfer Alley Spring, Big Spring, and Round Spring State Parks to the National Park Service as a donation.[240]
1969, Dec. 30	State of Missouri and NPS create a Memorandum of Agreement to make Alley Spring, Round Spring, and Big Spring State Parks part of the Ozark National Scenic Riverways. The state signed it on December 5, 1969, and the NPS signed off on December 30, 1969. The transfer had been authorized by the state legislature via Senate Bill 218, 75th General Assembly.[241]

[235] *Proposed Role of Missouri State Parks in Ozark National Scenic Riverways*. National Park Service Midwest Region. 1965-1967. (Missouri State Parks Archives, Collection 5843.)
[236] Misc. maps folder.
[237] OZAR Files.
[238] Jackson 64-68.
[239] OZAR Files.
[240] Missouri State Parks Archives, Collection 5814.
[241] Missouri State Parks Archives, Collection 5814.

Episode III. Ozark National Scenic Riverways: 1969-2018

Summary of Episode III.

The transfer to the National Park Service (NPS) in December 1969 culminated several years of planning and development of the Ozark National Scenic Riverways. With that change came a renewed interest in the history and preservation of the roller mill and the cultural landscape of the former state park.

1970, Jul. Development concepts of Ozark National Scenic Riverways prepared. Alley Spring proposal is pp 9-14, no map of Alley is included in the scan, but it is referenced in the text.[242]

1970 Description of plans for the park included:

- Circulation—nearly all roads for internal circulation, as well as trails around spring and branch, need to be reconstructed.
- Camping—all appears to be on the north side of the river, proposal to move to the south.
- Picnicking to be developed north of the river, in former camping area.
- Concession and comfort station north of the river to be used for picnicking only with camping concessions to the south.
- Mill to become “a major interpretive focal point for the Riverways.” Report described a large new interpretive center, which was to include an amphitheater for 250 to 500 people, to be located near the existing picnic shelter (probably HS-503). This was never built.

1971 Storys Creek School House was moved to its current location at Alley Spring.[243]

1971 Jul. 1. Grand “reopening” for the equipment at Alley Mill.[244]

1971-1973 National Park Service prepares numerous architectural drawings of the mill.[245]

1972 National Park Service contracted for a new roof for the mill, included replacing rafters and reinforcing, new sheathing and shingles. There were major issues with this installation and the roof leaked. The 1x4 sheathing was not long enough and did not provide support for shingles.[246]

[242] Development Concepts: Ozark National Scenic Riverways. National Park Service, 1970.
[243] Jackson, 24.
[244] William E. Seibel, "Wheels Turn Again at Alley's Old Red Mill," *Eminence Current Wave*, July 1, 1971.
[245] Ricardo Torres-Reyes and Vance L. Kaminski.
[246] Historic American Buildings Survey, “Alley Mill,” December 1973. OZAR Files.

1973, Feb. National Park Service, Denver Service Center, publishes the first Historic Structure Report for Alley Spring Roller Mill, focusing on the restoration of the structures associated with the operation of the historical mill. The report was authored by Ricardo Torres-Reyes and Vance L. Kaminski.

1973, Feb. – Dec. Alley Spring Roller Mill TIC Document; NPS prepares plans for lagoon maintenance building, preliminary utility & paving plans for Alley Spring Park, campground ranger station, module floor plans (2,4,5), duplex residences (3), planting plan, measured drawings of existing Alley Mill.[247]

1973, summer Camping along Spring Branch eliminated to preserve the site.[248]

1973, Feb. Proposed redevelopment plan drawn. The CCC picnic shelter (HS-503) is labeled as a visitor contact station, and the current visitor station is not shown. The mill is labeled “Red Mill.”[249]

1973, Dec. NPS prepared 13 sheets of Historical American Buildings Survey (HABS) drawings.[250] [These may never have been filed with the Historic American Buildings Survey, as they are not on file.]

1973, ca. Doug Conway begins 32-year career in the park maintenance division.[251]

1973 Plans drawn to plant trees in flood plains along Alley Spring Branch.[252]

1974, Nov. Plans drawn for planting plan.[253]

1974 Flood damage.[254]

1975, ca. A moonshine-making demonstration area was built near the edge of the open area east of the vehicular bridge which crosses the spring branch.[255]

1975, Feb. Plans drawn for duplex residences (3).[256]

1975 New bridges constructed over the spring branch.[257]

[247] OZAR Files.
[248] “Construction at Alley, Round, and Big Springs.” *Current Wave*, July 31, 1975. (Clipping in OZAR file.)
[249] OZAR Files.
[250] Historic American Buildings Survey, “Alley Mill,” December 1973. OZAR Files.
[251] Doug Conway Interview, 2018.
[252] eTic Files, OZAR_614_41066.
[253] OZAR Files.
[254] OZAR Photo Files.
[255] Jackson, 24.
[256] OZAR Files.
[257] "Bridges Going Up at Alley Park." *Eminence Current Wave*, July 3, 1975. (OZAR Clipping file.

1977 — Historic Structure Report (HSR) prepared by William Wagner, supplement to the 1973 HSR.[258]

1977, Feb. — Plans drawn for the preliminary restoration of Alley Mill, with equipment and flow diagram. Drawn by Michael L. Barns, checked by William Wagner.[259]

Restoration work called for in plans included:

- New stone porch and steps on west side. (completed)
- Excavation and concrete work in basement. (completed)
- Removal of some CCC installed flooring and reversal of some other CCC work. (not done)
- Removal of A/C from 2nd floor. (not done)
- Replacement of all windows on 1st and 2nd floor with 4/4 sashes. (not done)
- Roof repairs from poorly done repairs made in 1972. (completed)
- New basement stairs. (probably done)
- New stairs from 1st to 2nd on south wall. (not done)
- Paint exterior mill white with dark green trim. (not done)
- Replacement of original brick chimney. (not done)
- Work on the mill equipment. (completed)

1978, May — Spillway and dam repairs by NPS crews. The project included the installation of a log windlass with x-shaped end reels. The dam and spillway were reinforced with concrete.[260]

1978 — Plans to paint mill white as proposed in the 1977 plans draws local opposition and much discussion. Red had become the preferred color.

1979 — NPS begins the first phase of foundation stabilization.

1978 — Approximately 30,000 annual visitors to mill.[261]

1978, Aug. — Plans drawn for sewage lagoon improvements and utility bridge (Jacks Fork).[262]

[258] Wagner, William J. *Alley Spring Roller Mill: Historic Structure Report.* National Park Service, April, 1977. Architectural Data section followed in 1977, see below.
[259] "Preliminary Drawings for Restoration of Alley Mill," National Parks Service, Ozark National Scenic Riverways, February 1977. OZAR Files.
[260] OZAR Admin photo file, Doug Conway interview.
[261] 1983 development study package. OZAR Files.
[262] OZAR Files.

1981, Jun., Sept. Plans drawn for Alley Spring development concept and utility development.[263]

Plan called for:

- Removal of concessions from roller mill
- Mill restoration
- Convert CCC picnic shelter to visitor contact station.

1981, Dec. 8 Alley Roller Mill listed in the National Register of Historic Places.[264]

1982-83 Development Study to restore the mill and create enough power to grind corn.[265]

1982 Mill treated for termites. Taking bids for lightning protection.[266]

1982 Flood damage.

1983 The Alley Hollow Creek Footbridge and Alley Spring CR 308-106 Bridge were reconstructed.[267]

1983 Bid packet prepared for new sprinkler system.[268] This included construction of the equipment room in the central, west portion of the basement.

1983 Foundation repairs to the mill were proposed to complete the foundation stabilization that was begun in 1979. Concrete footing not attached to the building constructed on the inside of the south foundation wall at the mill. This was installed to take load off the existing foundation while work proceeded. Mentions previously approved project for three foundations on 10/18/79.[269]

1985 Millwright Derek Ogden prepared a study of mill equipment at Alley Mill.[270]

1986 Mill painted. It had faded to a pale pink color, due to ultraviolet light disintegration of the resin in the paint.[271]

[263] OZAR Files.
[264] Milton F. Perry, "Alley Spring Roller Mill." National Register of Historic Places, 1976. United States Department of the Interior, National Park Service.
[265] OZAR Building File #501.
[266] OZAR Building File #501.
[267] Jackson, 24.
[268] OZAR Building File #501.
[269] OZAR Compliance Files, May 1983.
[270] Ogden Report referenced in: Thomas R. Fitzpatrick, *Design Alternatives for Restoration of Earth-Fill Dam and Hydraulic Structures at Alley Spring Roller Mill*. Ann Arbor, MI: Fitzpatrick Structural Engineering, P.C., 2013. (O'Bright File, OZAR.)
[271] OZAR Building File #501.

1987, Oct. Plans drawn for proposed new picnic shelter.[272]

1987 Alley Development Proposal for work on dam and spillway.[273]

Proposed work:

- Foundation work (completed)
- Interior Renovations (completed)
- Make equipment operational again (not completed)
- Work on east and west spillways (not completed)

1988 Two picnic shelters were constructed with associated utilities and parking at the south end of the site, between the Spring Branch and the Jacks Fork River.[274]

1988 Asphalt sidewalk from the mill bridge to the south parking lot was removed and replaced with tinted concrete.[275]

1991, Oct. Plans drawn for roller mill foundation repairs.[276]

1991, ca. Sections of the mill foundation, sills, and first floor joists were repaired.[277]

1992, Nov. Structural investigation of Alley Mill Dam conducted, stabilization work performed. Photos in that report show log-x windlass at millrace gates.[278]

1992 Krishna Engineering Consultants, Inc. hired to produce structural investigations of the Alley Roller Mill Raceway & Turbine Pit.[279]

[272] OZAR Files.
[273] OZAR Building File #501.
[274] "Construct Two Group Picnic Shelters," Project Initiation Request, December 2, 1987. Attached to Memorandum, Regional Director, Midwest Region to Superintendent, Ozark National Scenic Riverways. (Compliance Files, Ozark National Scenic Riverways, Van Buren, MO.)
[275] "Replace Asphalt Trail with Concrete," Project Initiation Request, April 19, 1988. Attached to Memorandum, Regional Director, Midwest Region, to Superintendent, Ozark National Scenic Riverways. (Compliance Files, Ozark National Scenic Riverways, Van Buren, MO.)
[276] OZAR File #501.
[277] Doug Conway 2018 interview.
[278] "Alley Spring Roller Mill 1992 Structural Investigation," OZAR Files.
[279] Krishna Engineering Consultants, Inc., *Title 1 Report: 1992 Structural Investigation Alley Spring Roller Mill Raceway & Turbine Pit*, Eminence, MO, 1992.

1992-1993	Work completed on the Alley Spring Roller Mill included stabilizing the southwest foundation corner, replacing roofing material, and repair/replacement of wood components throughout the structure, including sections of the sill plate, were repaired or replaced.[280] Initial archeological test pits and follow-up archeological investigations by J. Price and M. Lynott coincided with the work.[281]
1993	Discussion about work on mill and restoration of equipment ongoing, lead abatement conducted (extent unknown). Core samples for structural work on the dam conducted.[282]
1993, Aug.	Site visit by Pratt and Lambert representative to observe chalking paint.[283]
1993, ca.	Mill painted. Brief discussion was again made of going back to white, as recommended in 1977 HSR, but the SHPO had no objection to red, and it was preferred by others as well.[284]
1994	Derek Ogden – Millwright proposes repairs to the headgate, tailgate, turbine pit, and mill works. Ogden also proposed drilling holes into the concrete spillway and turbine pit (it is unknown if the holes were drilled).[285]
1994	Gristmill removed from mill to curatorial storage. Mentions gristmill was added to the mill in the 1960s by the State of Missouri as an interpretive demonstration. The gristmill was removed because it was not appropriate in Alley Roller Mill.[286] This was located in the southeast corner of the first floor, at the end of the row of mawhood rollers.
1994	Project proposed that air conditioner was to be removed from Alley Mill second floor that had not been used in at least 3 years. The project was supposed to remove all pipes and pump from the basement, as well as the piping and screen over the pipes on the first floor. Resultant holes were to be infilled. The plywood where the air conditioner sat was to be removed.[287] It does not appear this project moved forward, as Al O'Bright discusses the air conditioning unit on the second floor in a site visit in 2002.

[280] Jackson, 24.
[281] OZAR Doug Conway Files, Drawings of Excavations, March 2-13, 1992.
[282] Fitzpatrick, *Design Alternatives* (O'Bright File, OZAR.)
[283] OZAR Building File #501.
[284] OZAR Building File #501.
[285] OZAR Doug Conway Files, ARM 10 - 15, Nov. 1994, Contract No. 1443CX664094023.
[286] OZAR Building File #501.
[287] OZAR Building File #501.

1995	A project was approved to replace the control gates. It is unclear if this took place.[288]
2001	Paint on mill siding tested for lead.[289]
2001	Paint on mill had faded to light pink. Mill was repainted.[290]
2002	Trip Report by Al O'Bright, Historical Architect, MWR, to inspect several park buildings, including Alley Spring Roller Mill, Alley Spring Quarters (HS-504), and Ranger Station (HS-511). Regarding the mill, he notes that machine parts were found in the basement after a recent flood, and Al suggested they be moved to a safer location and debris cleaned. A second floor air conditioner was dripping condensate. Siding at the ramp on the east side is deteriorated. The staff mentions they want to update exhibit lighting to reduce summer heat gain and improve quality.
2004	Thomason and Associates prepare the historic context for all of Ozark National Scenic Riverways.[291] Part of that project included a Determination of Eligibility for the National Register (DOE) of several locations throughout Ozark National Scenic Riverways, including the core of Alley Spring State Park. SHPO found it to be potentially eligible with a local level of significance.
2005, ca.	Millrace gates replaced.
2006, ca.	Doug Conway recalls that after 2005 sometime the main drive belt broke, and it was replaced by park staff. They never got it quite right, things got moved out of whack, idler pulleys were off – ended up just going with an electric motor.
2008	Mill painted, color formula in Doug Conway file.[292]
2009	Family of Ellis Baker discover footlocker of files from CCC work at the park. The footlocker and files were donated to the Ozark National Scenic Riverways in 2012.[293]

[288] OZAR Building File #501.
[289] OZAR Building File #501.
[290] OZAR Files.
[291] Thomason and Associates, Theme Identification, Context Studies, and Property Evaluations: Ozark National Scenic Riverways (Nashville, TN: 2004).
[292] OZAR Building File #501.
[293] Jackson, 94.

2010, ca.	National Park Service Cultural Landscape Inventory conducted by Dan Jackson.[294]
2013, May	Design alterations for restoration of earth-fill dam and hydraulic structures at Alley Roller Mill final report conducted by Fitzpatrick Structural Engineering.[295]
2013, May	Project 46272 Alley Mill back deck to be repaired.[296]
2014, Apr.	Alley Mill painted, reroofed, and temporary steel turbine pit plate installation completed.[297]
2014	The exterior of the mill was painted. This work was done in concert with the roof replacement so that the crews could utilize the same scaffolding. During this process, the existing, deteriorated wood accessible ramp on the east side of the mill was removed. A temporary ABA accessible wood ramp was constructed to the west entry. Sub-surface drainage was installed at the north and west sides of the foundation. A new phone line was run along with the drain line.[298]
2014, Aug.	Sycamore tree south of Alley Mill removed.[299]
2016	Alley Mill treated for Anobiid Powder Beetles.
2017, ca.	An image of Alley Mill is minted on the back of U.S. quarter coins.[300]
2017, May	A flood causes Alley Mill to be temporarily closed due to extensive flood damage; cleanup and recovery efforts have lasted through mid-2018.[301]
2017	Fire suppression system updated, including replacing the fire alarm panel from the basement to the first floor.[302]

[294] Dan Jackson, *Alley Spring State Park Historic District: Cultural Landscape Inventory.* National Park Service, Ozark National Scenic Riverways: 2010.
[295] Fitzpatrick, *Design Alternatives* (O'Bright File, OZAR.)
[296] PEPC List.
[297] PEPC List (Project PMIS 175832).
[298] OZAR Building File, PEPC.
[299] PEPC List (Project PMIS 175832).
[300] Wes Johnson, "It's Official: Alley Mill Quarter Picked to Represent Missouri Waterway," (Springfield, MO: *Springfield New-Leader*, April 24, 2017.
[301] Dena Matteson, Update on Flood Recovery Progress at Ozark National Scenic Riverways. National Park Service, Ozark National Scenic Riverways, February 23, 2018.https://www.nps.gov/ozar/learn/news/update-on-flood-recovery-progress-at-ozark-national-scenic-riverways.htm.
[302] PEPC Files, 70483.

2017 Jacks Fork District Trail Repairs, Phase 1A.[303]

2018 Cultural Landscape and Historic Structure Report study begins.

[303] PEPC Files, 67466.



Alley Spring and Mill, view looking west, 2018. (STRATA)

3 CULTURAL LANDSCAPE CONDITION AND ANALYSIS

Chapter 3 - Existing Condition and Landscape Analysis

Introduction

This chapter describes the existing condition and provides an analysis of integrity of the cultural landscape at the Alley Spring study area. It identifies and documents those qualities and features that reflect the historic character, retain integrity, and contribute to the significance of the landscape. Field investigations were conducted in April and September 2018.[304]

The chapter presents the existing condition and evaluation of the entire study area first, followed by a description and analysis of each of the five landscape character areas (LCA) (Figure 1.4 in Chapter 1). Within each section, information is organized according to landscape characteristics. Landscape characteristics are the tangible and intangible aspects and features of landscapes associated with both physical and cultural conditions. Individually and collectively they give aid in understanding the place as a whole.[305] Landscape characteristics associated with the Alley Spring cultural landscape are:

> *Natural Systems and Topography:* Natural systems and features are those natural aspects that have influenced the development and physical form of the study area including geology, streams, and soils. Topography is the three-dimensional configuration of the landscape surface, characterized by slope and orientation. For this report, these characteristics are evaluated together as they are closely related at Alley Spring.
>
> *Land Use:* Land uses are the major human activities or forces that influence organization, form, and shape of the landscape.
>
> *Spatial Organization:* Spatial organization is the arrangement of elements that define and create space through the ground, vertical, and overhead planes, including topography, vegetation, natural systems, and buildings and structures.
>
> *Circulation:* Circulation consists of the features and materials that constitute systems of movement on the landscape, including vehicular routes such and roads and parking areas and pedestrian routes such as walks and trails.
>
> *Buildings and Structures:* Buildings and structures are three-dimensional built features such as the Mill, ranger station, schoolhouse, houses, barns, picnic shelters, and retaining walls. In the landscape, these features create mass, scale, and contribute to character by their style and appearance. This chapter presents an overview of the

[304] Fieldwork for this study was conducted after a major park wide flood, which impacted Alley Spring and many other sites in the park. The chapter notes which conditions are the direct result of the flood or exasperated by the flood.
[305] Page, Gilbert, and Dolan, *A Guide to Cultural Landscape Reports*, 139.

buildings and structures within the study area as they relate to the overall landscape. The Mill condition is presented in detail in Chapter 4.
Constructed Water Features: Constructed Water Features are the built features and elements that utilize water for aesthetic or utilitarian functions.

Views: Views present a natural or man-made range of vision.

Vegetation: Vegetation consists of indigenous or introduced trees, shrubs, vines, ground covers, herbaceous plants, and lawns.

Small-Scale Features: Small-Scale Features are human-scaled elements that provide specific functions at the site. These include both historic features related to park activities, such as the flagpole, as well as contemporary features placed by NPS such as signs, picnic tables, and grills.

Archeological Sites: Archeological sites are locations containing surface and subsurface remnants related to historic or Indigenous land use.

Summary of Landscape Integrity

Integrity is the ability of a property to convey its historical significance. To have integrity, the landscape must retain the tangible and intangible aspects that make up the identity for which it is significant. The U.S. Secretary of the Interior identifies seven aspects or qualities that make up integrity: location, design, setting, materials, workmanship, feeling, and association.

Overall, the study area landscape retains integrity in location, design, setting, materials, workmanship, feeling, and association. Although there have been some changes since the historic period, overall the landscape retains the characteristics, physical attributes, and historic associations it had during the period of significance from 1894 to 1969. An assessment of integrity for the Alley Mill building is provided in Chapter 4.

Location

Location is the place where the landscape was constructed or where a historic event occurred.[306] The location of the Alley Spring cultural landscape remains unchanged.

Design

Design is the combination of elements that create the form, plan, space, structure, and style of a property.[307] The Alley Spring cultural landscape retains integrity of design. Park buildings, structures, trails, constructed water features, and recreational areas were laid out by Donal A. Blake and John Warren Teasdale and were constructed by the CCC in 1934. The overall

[306] National Register of Historic Places, *National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation* (Washington, DC: Department of the Interior, 1990 (1997 ed.)), 44).
[307] National Register of Historic Places, *National Register Bulletin 15*, 44.

arrangement of recreation areas within Alley Hollow is retained, although the layout has been somewhat altered by the addition of noncontributing buildings, circulation routes, and successional vegetation. The Rustic style buildings, including Alley Spring Scenic Overlook (HS-501I), Alley Spring District Maintenance Shop (HS-502), Alley Spring Picnic Shelter (HS-503), Alley Spring Park Keeper's Residence (HS-504), Alley Spring Seasonal Cabins (HS-505 and HS-506), and Alley Spring Pump House (HS-507), constructed as part of this project are retained in their historic settings. The design of the naturalistic trails and associated structures are also retained. The East Trail system and associated structures are maintained and used as intentionally designed. Minor alterations made to address erosion are compatible with the original design intent. The West Trail System is no longer maintained; however, the alignment and extensive constructed features remain intact and identifiable.

Setting

Setting is the physical environment of the landscape.[308] The existing setting of the overall study area closely resembles the picturesque landscape of the site during the period of significance. The setting is strongly defined by its proximity to, and views of, the Jacks Fork River and Alley Spring Branch within the opening of Alley Hollow defined by the steep surrounding forested hills. The remote character of the landscape has been protected as a valued aspect of the park. Adjacent recreational and conservation areas buffer the historic landscape from adjacent development. The addition of the school building, parking, sawmill, vegetation, and utilities within the northern portion of the Alley Spring Picnic Area has altered the setting of this zone. In particular, the addition of the school and changes to vegetation impose on the historically significant visual relationship between the Alley Mill, the Spring Branch, and the historic picnic pavilion. The setting of the Burr Oak picnic area is affected by dramatic flooding events that deposit massive quantities of gravel. Although the NPS removes gravel and repairs the landscape after flood events, changes to vegetation, topography, and views are gradually altering the setting of this location. These changes are partially due to the natural evolution of the landscape as affected by the river, however upstream alterations to the hydrologic system are causing more dramatic effects in the Burr Oak Picnic Area. While the overall study area retains integrity of setting, alterations to the Alley Spring Picnic Area and the Burr Oak Picnic Area have impacted integrity of setting in those locations. Within the Alley Spring Picnic Area impacts are reversible. Impacts to the Burr Oak Picnic Area are being caused by environmental forces that will continue to affect the site.

Materials and Workmanship

Materials are the physical elements combined or deposited during a particular period of time and in configurations that form a historic property.[309] Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history.[310]

[308] National Register of Historic Places, *National Register Bulletin 15*, 45.
[309] National Register of Historic Places, *National Register Bulletin 15*, 45.
[310] National Register of Historic Places, *National Register Bulletin 15*, 45.

The landscape at Alley Spring retains integrity of materials and workmanship, displaying stylistic appearance consistent with the historic character of the property. The rustic-style structures within the landscape, including the Alley Spring Picnic Shelter, Alley Spring Pump House, Seasonal Cabins, and other contributing structures, are characteristic of the style of buildings that gained prominence in public lands during the CCC era of construction. The buildings feature natural materials, such as native stone and timber, and retain a significant amount of their original materials. Although Alley Mill dates to 1894, its current appearance reflects alterations and refurbishments that occurred over the span of the state park era of historic significance.

The naturalistic design of the trails and open areas remains strongly prevalent. This style integrates with the natural environment through the enhancement and maintenance of the natural features within a pastoral and woodland setting. Stonework deliberately imitates natural rocky outcroppings and buildings are placed so as to reside within the topographic flow of the landscape. The trail systems are excellent examples of CCC workmanship, featuring extensive stonework and deliberate points of pause along scenic overlooks. Plantings and views that date to the period of significance remain largely intact, although somewhat impacted by encroaching successional vegetation along streams that obscures the historic spatial organization of the hollow.

Feeling

Feeling is a property's expression of the aesthetic or historic sense of a particular period of time.[311] While the study area retains many aspects of its historic appearance, the feel of the historic park has been slightly diminished as the NPS has modernized facilities within the area to accommodate visitors. Although noncontributing structures have intruded upon the landscape incrementally, the impact upon the overall naturalistic landscape design has been determined to be minimal to date.

Association

Association is the direct link between an important historic event or person and a historic property.[312] The study area retains its association with the historic state park through continuing use of the site for recreational activities. Outdoor recreation continues to be the primary function of the landscape. Visiting the "Old Red Mill," picnicking, floating, and hiking the historic trails remain popular activities. However, the addition of certain noncontributing features that emulate an archetypal Ozark village is potentially confusing. The Blacksmith Shop is of modern NPS construction and the schoolhouse is a historic building that has been moved from a different location. Both are informally interpreted as belonging to an Alley Spring "hamlet." The close proximity of the Blacksmith Shop to the Ranger Station/General Store is confusing and detracts from the historic setting of this building. The school is located in a position where it distracts from the historic visual association between the Alley Mill and the Alley Picnic Shelter.

[311] National Register of Historic Places, *National Register Bulletin 15*, 45.
[312] National Register of Historic Places, *National Register Bulletin 15*, 45.

Contributing and Non-Contributing Features

Contributing features are individual elements and aspects that remain from the period of significance and contribute to the integrity of the property. These features are categorized according to landscape characteristics and listed below.

Non-contributing features are those that have been added to the study area since the end of the period of significance and do not embody the historic character of the cultural landscape. Examples include modern roads, parking areas, site furnishings, and signs that support the current use of the site. Non-contributing features may be considered “compatible” when they fit within the physical context of the historic period and do not impact the historic integrity of the property. Incompatible features are those that are not harmonious with the quality of the cultural landscape, and, by virtue of their existence, can impact the historic character.

Contributing Natural Systems and Topography

1. Geologic composition
    - Dolomite bedrock
    - Rock outcrops
    - Karst features including caves and springs
2. Hydrology
    - The Jacks Fork River
    - Alley Spring
    - Alley Spring Branch
    - Alley Hollow Creek
    - Intermittent streams and drainages
3. Topographic features
    - Steep terrain including Alley Hollow and the ridges to the east and west
    - Floodplain

Contributing Land Use

1. Recreational
2. Administrative
3. Maintenance

Contributing Spatial Organization

1. Open roughly linear north/south hollow space between two forested hills
2. Arrangement of trails, roads, buildings, structures, and constructed water features aligned to springs and streams

Contributing Circulation

1. State Route 106*
2. County Road 106-308*
3. County Road 305*
4. Overlook Trail
5. Spring Branch Trail
6. Maintenance Road

7. West Trail System
8. Route of walkway extending between north parking area and south parking area
9. Route of walkway extending between Alley Hollow Creek Pedestrian Bridge and the Mill
10. Route of road connecting from County Road 305 and Burr Oak Picnic Area
11. Stairs and stone paving at Seasonal Cabins

*Not owned by NPS

Contributing Buildings and Structures

1. Alley Spring Roller Mill (HS-501)
2. Alley Mill Spring Scenic Overlook (HS-501I)
3. Alley Spring District Maintenance Shop (HS-502)
4. Alley Spring Picnic Shelter (HS-503)
5. Alley Spring Park Keeper's Residence (HS-504)
6. Alley Spring Seasonal Cabin (HS-505)
7. Alley Spring Seasonal Cabin (HS-506)
8. Alley Spring Pump House (HS-507)
9. Alley Spring Ranger Station (HS-511) – now General Store
10. Stone trail structures and channel revetments
11. Jacks Fork Vehicular Bridge*

*Not owned by NPS

Contributing Constructed Water Features

1. Alley Spring Roller Mill Dam (HS-501A), including spillways and raceway

Contributing Views

1. View from overlook above Mill
2. View of Mill from across Mill Pond
3. View of Mill from south
4. View from stone wall on West Trail System (partially obscured)
5. View from Alley Spring picnic area up the hollow (partially obscured)

Contributing Vegetation

1. Upland forest on hills
2. Pattern of mown lawn with canopy trees
3. Bottomland forest along river and stream banks (despite movement of waterbodies)
4. Individual oak, maple and cedar trees at Alley Spring Picnic Shelter
5. Iris beds at Keeper's Residence (*potential*)

Contributing Small-Scale Features

1. Flagpole (HS-501G) outside of the Alley Spring Ranger Station
2. Concrete marker along West Trail System

Contributing Archeological Sites

1. Dalton site at Mill (23SH83/159)
2. CCC Camp SP-6 site
3. Alley Hollow Creek Bridge Abutment

Landscape Existing Condition and Analysis

This section describes the existing condition of the overall Alley Spring study area. The study area existing condition is illustrated on drawing EC-1.

Natural Systems and Topography

Existing Condition

The study area is located on the Jacks Fork River in the Salem Plateau (or Central Plateau) Subdivision of the Ozark Plateau Physiographic Region. In this highly dissected plateau, rivers and streams have eroded narrow hollows and valleys between steep, forested ridges. The primary natural systems and topographic features within the study area include the terrain of ridges and valleys, the Jacks Fork River and its tributary streams, and Alley Spring.

Geology and Soils

Bedrock in the study area is primarily Gasconade Dolomite overlain at high elevations along the western ridge by a mantle of erosion-resistant sandstone of the Roubidoux formation. The bedrock formed during the Lower Ordovician period almost 500 million years ago. Karst features such as springs, sinkholes, and caves, formed as soluble rock is dissolved by groundwater, are common in this area.[313]

Several caves are located in close proximity to the study area. Swiss Cheese Cave is located near River Road east of the study area, and Branson Cave is located near County Road 305 north of the study area. Branson Cave is one of the most biologically diverse caves in Missouri and is home to five species of conservation concern dependent on spring and cave natural communities.[314] All caves near the study area are closed to public visitation due to the detection of White Nose Syndrome in bats in Shannon County.[315]

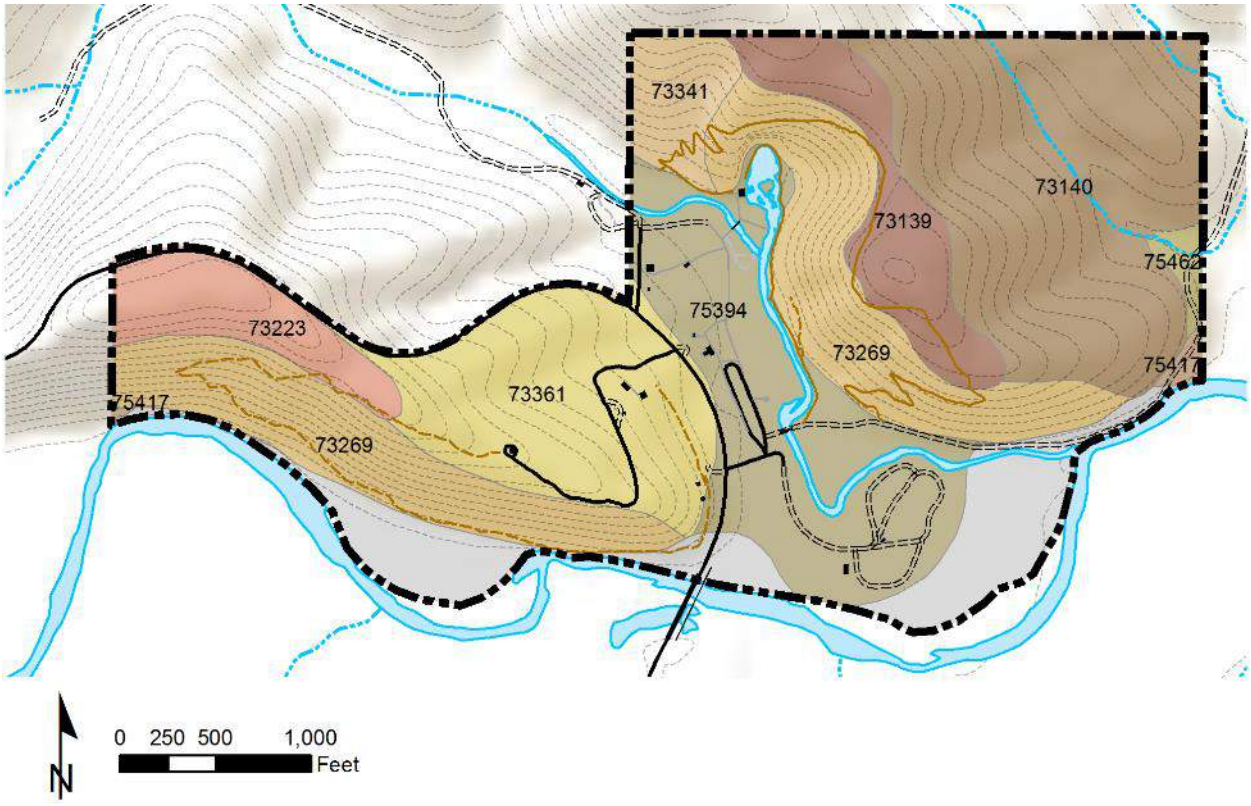
On slopes within the study area, the primary soil associations are the Clarksville-Scholten complex, Coulstone-Bender complex and the Brussels-Gasconade-Rock outcrop complex. These soils are typically very stony, well drained to excessively well drained, and pose a moderate to severe erosion hazard. The soils within the hollow are primarily Relfe gravelly

[313] D.N. Mugel, Richards, J.M., Schumacher, J.G., *Geohydrologic investigations and landscape characteristics of areas contributing water to springs, the Current River, and Jacks Fork, Ozark National Scenic Riverways, Missouri* (U.S. Geological Survey Scientific Investigations Report 2009–5138, 2009), 2; and Missouri Department of Natural Resources, "Karst, Springs, Losing Streams, and Caves in Missouri," accessed August 2018, https://dnr.mo.gov/geology/wrc/springsandcaves.htm?/env/wrc/springsandcaves.htm; and Thomas F. Wilkerson Jr., "Jacks Fork Watershed Inventory and Assessment," Missouri Department of Conservation, 2001, accessed August 2018, https://mdc.mo.gov/sites/default/files/watersheds/JacksForkWatershed160.pdf.

[314] Missouri Department of Conservation, "Alley Spring Natural Area," accessed October 2018, https://nature.mdc.mo.gov/discover-nature/places/alley-spring.

[315] Ozark National Scenic Riverways, "Cave/Karst Systems," last updated January 5, 2018, accessed October 2018, https://www.nps.gov/ozar/learn/nature/cave.htm#dw.

sandy loam. These soils are formed from excessively drained sandy and gravelly alluvium. Soils throughout the study area are poorly adapted for agriculture.[316] Soils are illustrated on Figure 3.1.



Legend

- CLR Study Area
- 73269 Brussels-Gasconade-Rock outcrop complex, 35 to 90 percent slopes, very bouldery
- 73140 Clarksville-Scholten complex, 15 to 45 percent slopes, very stony
- 73361 Coulstone-Alred complex, 15 to 50 percent slopes, very stony
- 73223 Coulstone-Bender complex, 15 to 50 percent slopes, very stony
- 73341 Gepp-Arkana complex, 15 to 55 percent slopes, rocky
- 75462 Huzzah sandy loam, 0 to 3 percent slopes, occasionally flooded
- 73139 Poynor-Clarksville-Scholten complex, 8 to 15 percent slopes, stony
- 75394 Relfe gravelly sandy loam, 0 to 3 percent slopes, rarely flooded
- 75417 Relfe-Sandbur complex, 0 to 3 percent slopes, frequently flooded
- Riverwash, frequently flooded

Figure 3.1. Study area soil associations.

[316] Natural Resources Conservation Service, "Web Soil Survey," accessed August 2018, https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.

Waterbodies

The Jacks Fork River is the largest tributary of the Current River and forms the southern boundary of the study area (Figure 3.2). Originating at the confluence of the North and South prongs of Jacks Fork River, the stream's watershed is mostly forested. Small population centers and limited agricultural land use have minor effects on runoff that flows to the river. The entire Jacks Fork River is designated an "Outstanding Natural Resource Water" by the US Environmental Protection Agency. The greatest risks to water quality in the river are gravel dredging, land clearing, high levels of recreational river use, municipal and private waste water discharges, and the presence of livestock in riparian zones.[317]

Alley Spring is the seventh largest spring in Missouri (Figure 3.3). The spring discharges 81 million gallons of water per day from a conduit that extends at least 3000 feet underground and reaches at least 155 feet below the ground surface. The spring draws from rainfall and runoff entering sinkholes from as far away as the town of Summersville, 15 miles to the northwest.[318] The spring drains to the Jacks Fork River through Alley Spring Branch (Figure 3.4).

Alley Hollow Creek, a tributary of the Jacks Fork River, enters the study area west of the Alley Mill and joins Alley Spring Branch south of the millrace. Both waterways have been modified for the function of the Mill and are further discussed in the Constructed Water Features section of this chapter.



Figure 3.2. Jacks Fork River, looking east from river access point south of Burr Oak Picnic Area parking area. (QEA 2018, DSC09196)

[317] Wilkerson, "Jacks Fork Watershed Inventory and Assessment."
[318] Missouri Department of Conservation, "Alley Spring Natural Area."



Figure 3.3. Alley Spring. (QEA 2018, IMG_4376)



Figure 3.4. Alley Spring Branch south of Mill Dam. (QEA 2018, IMG_8516)

Topography

The study area is centered along a narrow valley called Alley Hollow, which was carved by Alley Hollow Creek and Alley Spring Branch and is nestled between two ridges to the east and west. The valley floor has an elevation of approximately 680 feet above sea level, while the ridges rise to elevations of approximately 960 feet on the west and 880 feet on the east. Numerous other intermittent streams and drainages within the study area form deeply dissected valleys draining to the Jacks Fork River.

Grades within the floodplains of Alley Hollow Creek, Alley Spring Branch, and the Jacks Fork River are typically flat, with slopes in the range of 0% to 3%. On the ridges, slopes range from 15% to sheer bluffs and rocky outcrops. Trails require numerous switchbacks to traverse the terrain. Slope gradients are illustrated in Figure 3.5.

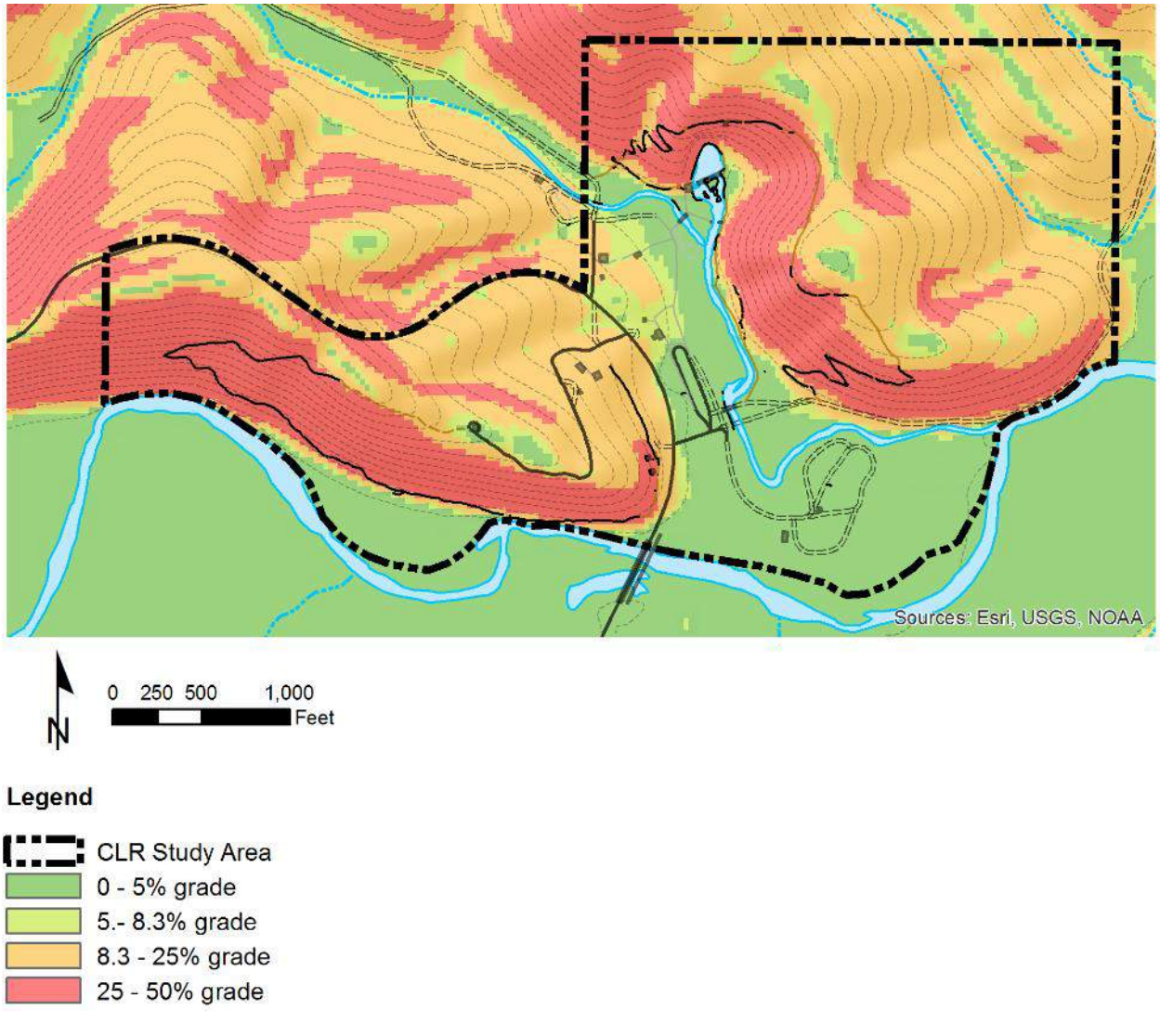


Figure 3.5. Study area slopes.

Average annual precipitation within the Jacks Fork Watershed is 43.21 inches, which categorizes this area as one of the wetter regions of Missouri. The heaviest precipitation occurs as rain during the spring and early summer. Due to the high levels of precipitation, steep topography, and karst geological features, the region is prone to major flooding events, including high velocity flash floods. In 2017, a major flood event destroyed the Alley Spring Branch pedestrian bridge and destabilized the Jacks Fork pedestrian bridge neither of which had been repaired as of 2018. This flood event also deposited several feet of gravel within the floodplain at the Burr Oak Picnic Area. Significant areas of stream bank erosion are occurring on both Alley Hollow Creek and Alley Spring Branch (Figure 3.6 and Figure 3.7). Average annual precipitation in the watershed has increased over the time period that it has been recorded in the region and remains on an upward trend, which will continue to lead to major flood events that may impact the study area.[319]



Figure 3.6. Rapid erosion along Alley Spring Branch is occurring east of Alley Spring Branch Vehicular Bridge. (CR 106-308) (QEA 2018, IMG_7742)

[319] Wilkerson, “Jacks Fork Watershed Inventory and Assessment.”



Figure 3.7. Gabions stabilize streambank erosion along Alley Hollow Creek to the west of the Mill. (QEA 2018, IMG_8575)

Natural Systems and Topography Analysis

The natural systems and topography of the study area historically presented opportunities and constraints for human use and development and continue to influence maintenance and use today. The water flowing through the Jacks Fork River, Alley Hollow Creek, and Alley Spring Branch carved the distinct topography and provided necessary components to support small-scale habitation, settlement, and development, beginning with the first human habitation of the Current and Jacks Fork river valleys 10,000 to 12,000 years ago. During the nineteenth century, the community that grew up around the site established and ran the Alley Mill. The beauty of the natural landscape, as well as its limited capacity to support agriculture or large-scale development, led to its selection and reservation as a recreational site.

Flooding events have occurred regularly throughout the history of the site affecting conditions, use, and development. Over time portions of the floodplain landscape have been altered substantially by dramatic floods that shift the ground and courses of waterways, in particular in the southeastern portion of the study area (Figure 3.8). Recent modifications to the floodplain are a continuation of these variable environmental conditions.

Significant natural systems and topographic features retained today are tangible aspects of the cultural landscape important to understanding the development of the Mill and the town of Alley,

and later conversion of the landscape to recreational use. Related features that contribute to the historic character of the study area include:

- Geologic composition
  - Dolomite bedrock
  - Rock outcrops
  - Karst features including caves and springs
- Hydrology
  - Jacks Fork River
  - Alley Spring
  - Alley Spring Branch
  - Alley Hollow Creek
  - Intermittent streams and drainages
- Topographic features
  - Steep terrain including Alley Hollow and the ridges to the east and west
  - Floodplain

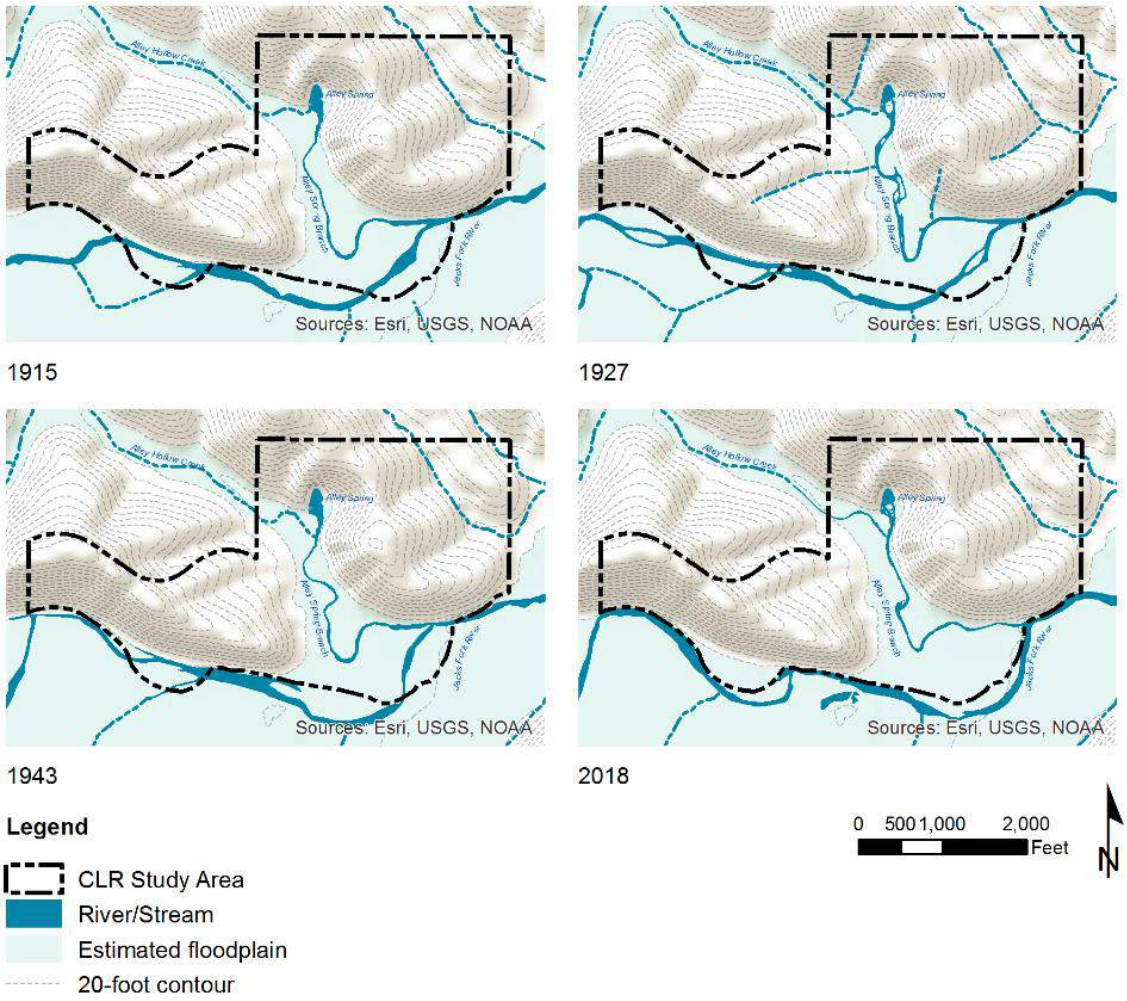


Figure 3.8. Analysis of changes to the study area hydrology, 1915-2018.

Land Use

Existing Condition

Alley Spring is a component of Ozark National Scenic Riverways. The primary land uses within the study area are recreation and interpretation, which are available through developed visitor facilities as well as resource-based recreation associated with trails and waterways. The park also has limited administrative and maintenance facilities within the study area. Land uses are guided by the park's General Management Plan and the Alley Spring Natural Area Guidelines.

General Management Plan

The *Ozark National Scenic Riverways General Management Plan* directs management of the landscape within the study area. Two management zones apply to the character area: developed and natural. The segment of the Jacks Fork River that flows south of the study area is designated as a seasonal mixed-use river.

The developed zone consists of areas that support moderate to high levels of development and visitor services to accommodate concentrated visitor use and diverse recreational, educational, and interpretive opportunities. Administrative facilities for operations and maintenance are also in this zone.[320] Within the study area, the developed zone includes the Alley Mill, Alley Spring Picnic Area, Burr Oak Picnic Area, and the maintenance area.[321]

The natural zone consists of areas that support the broader ecological integrity of the National Riverways. Natural processes dominate, and only low-impact recreational activities are allowed.[322] Within the study area, the natural zone is located on the east ridge and the west ridge outside of the maintenance area and includes the Overlook Trail and remnants of the West Trail System.[323]

The seasonal mixed-use zone consists of sections of the rivers that support a mix of nonmotorized and lower horsepower motorized boating opportunities during the off-peak season. The rest of the year, only nonmotorized boating is allowed. The natural setting predominates, but the social setting varies seasonally with the types of allowable activities and levels of use.[324]

[320] National Park Service, *Ozark National Scenic Riverways Final General Management Plan / Wilderness Study / Environmental Impact Statement* (US Department of the Interior, National Park Service, 2008), 45.
[321] National Park Service, *Ozark National Scenic Riverways Final General Management Plan,* 79. Management zones indicated are under Alternative B: Preferred Alternative.
[322] National Park Service, *Ozark National Scenic Riverways Final General Management Plan,* 45.
[323] National Park Service, *Ozark National Scenic Riverways Final General Management Plan,* 79. Management zones indicated are under Alternative B: Preferred Alternative.
[324] National Park Service, *Ozark National Scenic Riverways Final General Management Plan,* 45.

Alley Spring Natural Area

A portion of the study area is included within the Alley Spring Natural Area (Figure 3.9). Missouri Natural Areas are designated by the Missouri Department of Conservation and are open for low-impact, appropriate use by the public. Alley Spring Natural Area was established in 2007 to protect 795 acres of unique and biologically diverse landscape in the vicinity of Alley Spring. Within the study area, the Natural Area includes the spring and spring branch, as well as high quality old-growth stands of white oak and shortleaf pine woodland located on the dry, rocky ridges to the east. These stands are representative of the expansive shortleaf pine woodlands that cloaked the Ozarks prior to timbering during the late 19th and early 20th centuries.[325]

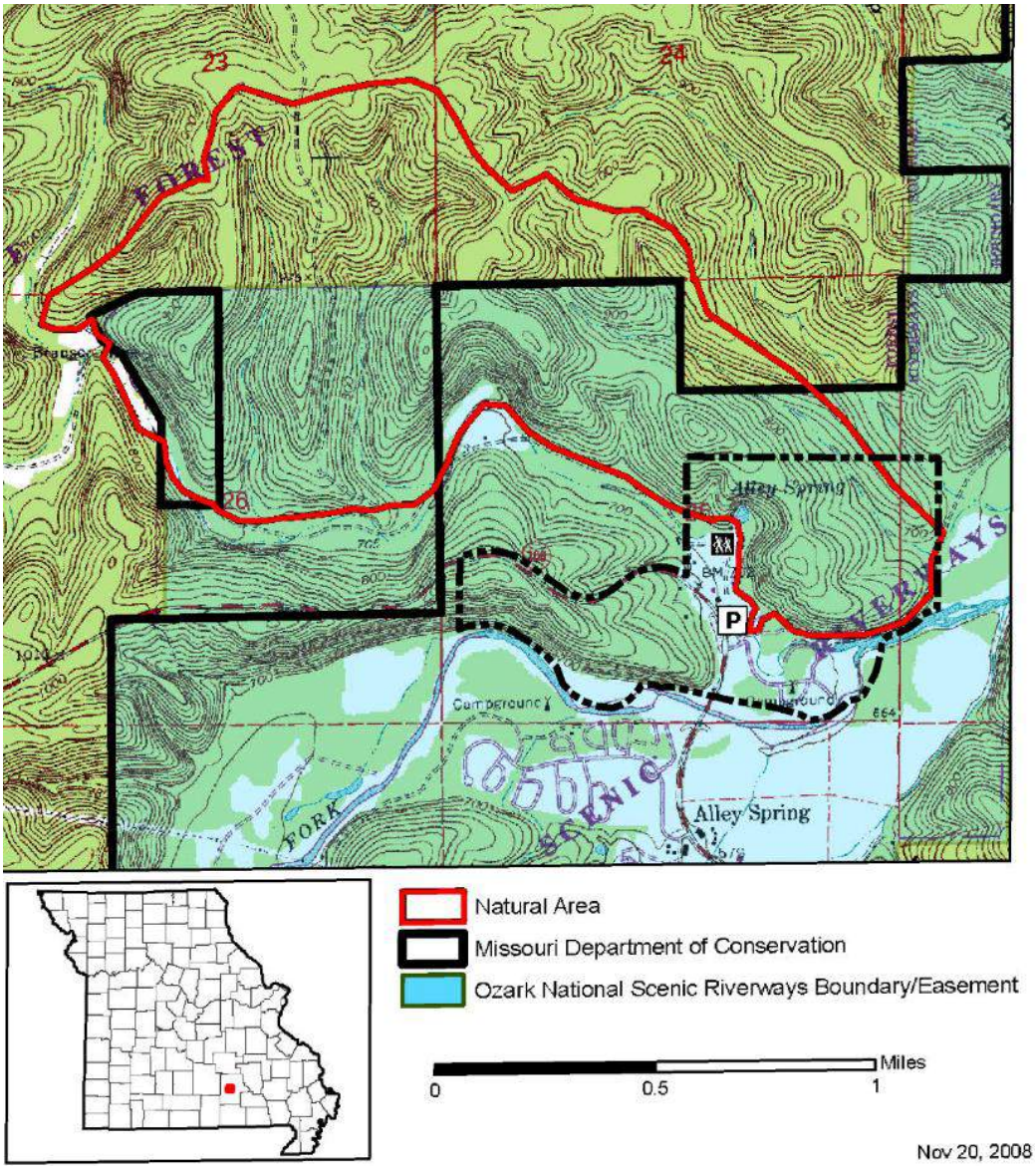


Figure 3.9. Boundary of Alley Spring Natural Area (Missouri Department of Conservation).

[325] Missouri Department of Conservation, "Alley Spring Natural Area."

Recreational Use

Popular recreational uses within the study area include hiking, paddling and floating, picnicking, and group gatherings such as family reunions and weddings. Fishing is permitted in the Jacks Fork River but not in springs or spring branches. Horseback riding is limited to county roads within the study area. The study area is closed to hunting.

The Alley Mill building, Storys Creek School, and General Store are open seasonally from Memorial Day through mid-October. During this time, the Alley Picnic Shelter and Burr Oak Picnic Shelters can be reserved for group use. The Alley Picnic Shelter is promoted as a handicap accessible picnic shelter and has more frequent use than the Burr Oak Picnic Shelter.

Regular seasonal events within the study area include:

- Junior Ranger Day (May)
- Alley Independence Day Celebration (July)
- Labor Day pioneer exhibit (September)
- Haunting in the Hills (October)
- Ozark Christmas Celebration (December)

Campsites are not provided within the study area but are available at Alley Spring Campground on the south side of the Jacks Fork River immediately across from the study area. The campground is visible from the study area.

Maintenance and Administrative Use

Park maintenance facilities are located on the west side of State Route 106 off the Maintenance Road. Maintenance storage is located within the Maintenance Shop building and in open areas near the Keeper's Dwelling. Additional informal storage is located along the Maintenance Road at the top of the ridge. Administrative offices are housed in the General Store building. The three dwellings on the west side of State Route 106 are no longer used as housing and stand vacant.

Adjacent Land Uses

The study area is embedded within the larger Ozark National Scenic Riverways and located near other recreational and conservation areas such as the Mark Twain National Forest and Peck Ranch Wildlife Management Area. A CCC-constructed trail connects between the study area and Branson Cave, which historically was part of a discontiguous parcel within Alley Spring State Park. The remote, rugged character of the landscape is protected by adjacent public land ownership, which limits development outside of the study area (Figure 3.10).

The Alley School House was formerly located outside of the historic state park boundary on the terrace north of the General Store and was removed in 2015. Structural alterations predating NPS ownership had adversely impacted the building's historic integrity, and it had been determined to be ineligible for the National Register. The structure is illustrated on drawings HP-1 through HP-3 in Chapter 2. At the time of writing, NPS is considering adding new staff housing at this location. Although it is outside of the study area, the new structure will be visible from nearby areas within the study area.



Figure 3.10. Adjacent conservation lands visible in Jacks Fork River Valley from State Route 106. (QEA 2018, IMG_8456)

Land Use Analysis

During the period of significance from 1925-1969, the study area was established as one of Missouri's first state parks, and the landscape was used for recreation supported by park administrative areas, maintenance, and lodging. Continued use of this site for recreational purposes under the National Park Service is consistent with land use during the period of significance. The General Store and Maintenance area continue to serve administrative and maintenance purposes to support the park, although the seasonal cabins and keeper's residence in the study area are no longer used for lodging.

Recreational, administrative, and maintenance land uses contribute to the historic character of the landscape.

Spatial Organization

Existing Condition

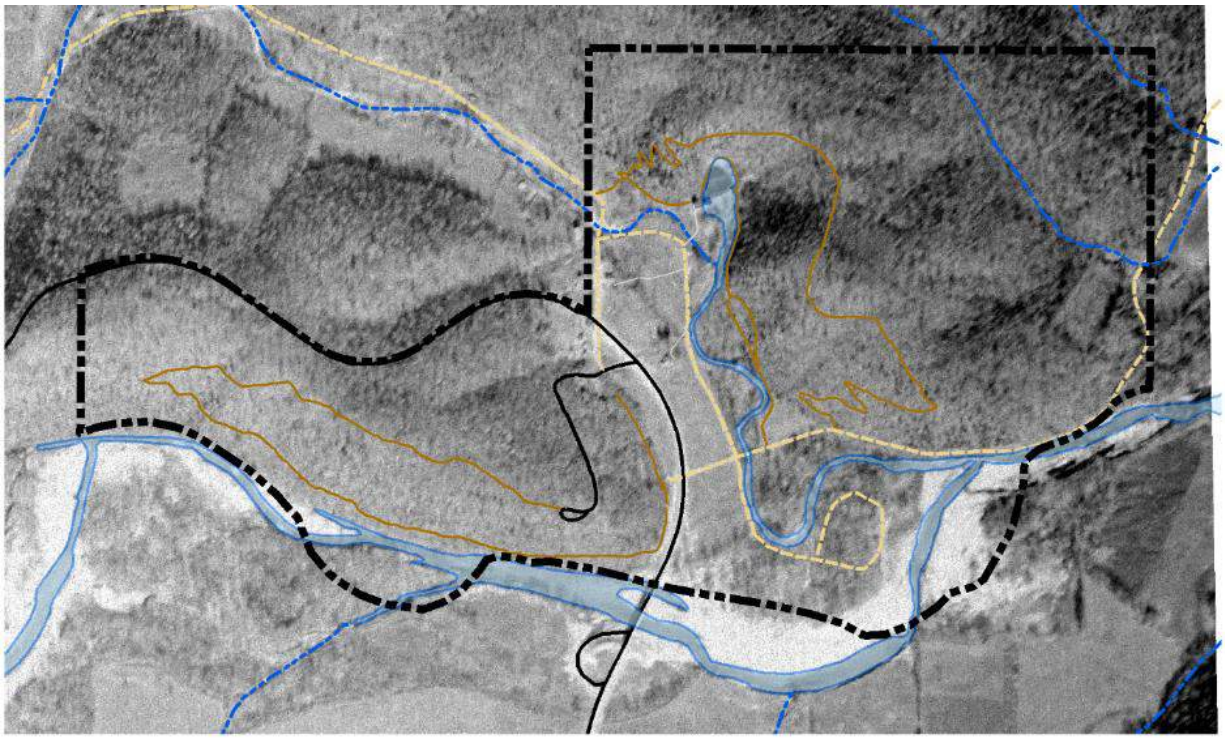
The spatial organization of the Alley Spring landscape consists of an open, roughly linear north-south Alley Hollow nestled between two forested hills. The streams and the Jacks Fork River are the primary organizing elements within the landscape; the circulation patterns, buildings, and other features are aligned in relationship to these waterbodies. Park development is centered on Alley Hollow, and in particular Alley Spring. The roads pass through the low point in the topography carved by the waterbodies and run roughly parallel to Alley Hollow Creek and Alley Spring Branch. Trails on the hills to the east and the west are arranged to provide views over the hollow and streams.

Spatial Organization Analysis

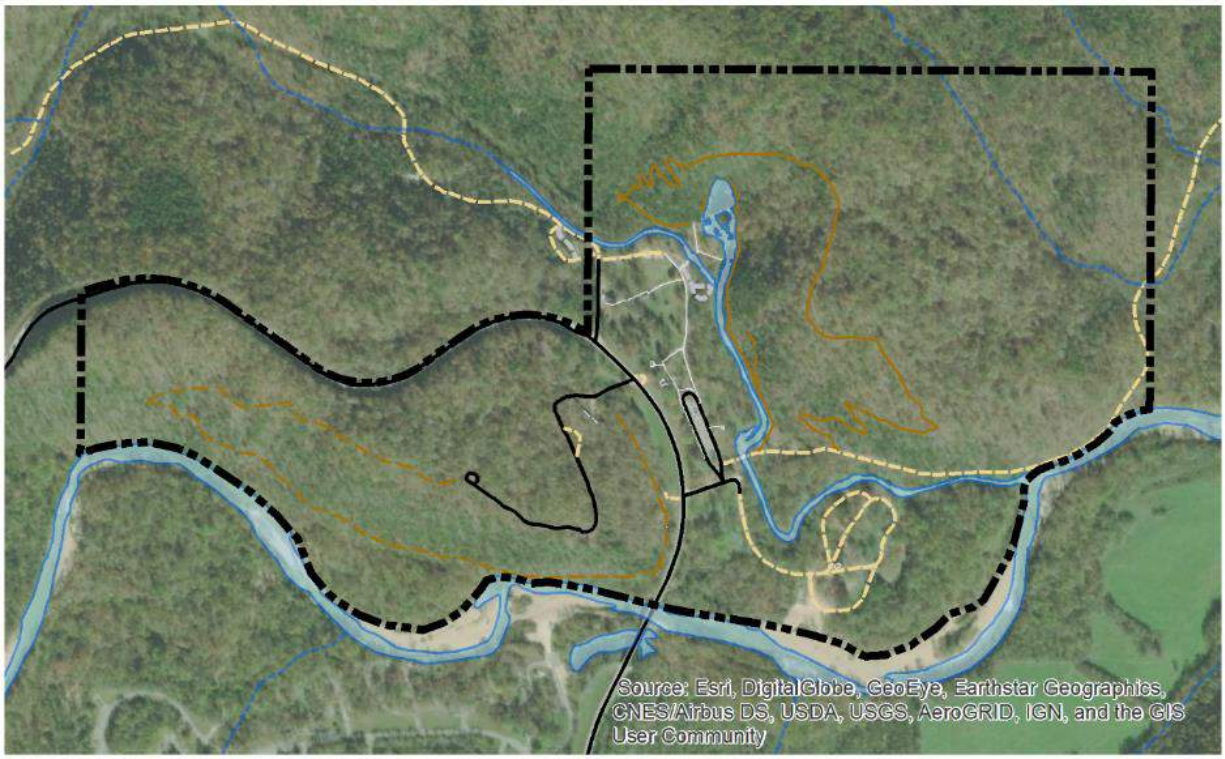
Overall, the spatial organization present within the study area is consistent with the layout of the State Park during the period of significance. Trails, buildings, structures, and constructed water features—designed in relation to the spring and streams—are retained from the design of the state park constructed by the CCC during 1933-1934 (Figure 3.11). The few changes that have occurred since the end of the period of significance are primarily modifications to the circulation system and encroachment of woody vegetation within Alley Hollow. As visitation has increased since the end of the period of significance, large parking areas have been added to the study area, and earlier roads have had surfaces replaced or been converted to sidewalks. The extent of mown grass within Alley Hollow has decreased, which has led to an expansion of woody vegetation that forms visual buffers between portions of the site that were historically connected, obscuring historic views and spatial relationships.

Contributing spatial organization patterns retained within the study area include:

1. Open roughly linear north/south hollow space between two forested hills
2. Arrangement of trails, roads, buildings, structures, and constructed water features aligned to springs and streams



1943



2018

Figure 3.11. Comparison of spatial organization, period of significance (1943 aerial) and existing (2018 aerial).

Circulation

Existing Condition

Circulation at Alley Mill is composed of vehicular, pedestrian, bridle, and water routes. Vehicular routes within the study area include three public roads that pass through the study area, as well as interior park roads and parking areas that provide access to specific locations and features. Pedestrian circulation includes concrete sidewalks, asphalt sidewalks, gravel trails, and stone and concrete steps. This section addresses the overall alignment of circulation, as well as public routes that connect through the study area (illustrated on drawing EC-1). The remaining individual circulation features are described in each of the landscape character area sections.

Vehicular routes

Primary access to the study area is by vehicle via State Route 106 (SR 106), a two-lane asphalt-paved highway that connects Ellington, Missouri to the east of the study area to Summersville, Missouri to the west. The road is not owned or managed by NPS. It enters the historic district from the south as it crosses over the Jacks Fork River, curves to the west—rising in elevation from 700 feet to 1,000 feet above sea level—and exits the western boundary of the study area at the top of the ridge (Figure 3.12).

County Road 106-308 (also referred to as CR 106-308 or the River Road) is a roughly east-west route running between State Route 106 and the town of Eminence. It connects to SR 106 approximately 600 feet north of the Jacks Fork River and provides access to the main visitor parking area and the Burr Oak Picnic Area. Between SR-106 and the Alley Spring Branch Vehicular Bridge, CR 106-308 is a two-lane asphalt-paved road. The road crosses Alley Spring Branch over a single-lane wooden bridge. On the opposite side of the bridge, the road transitions to gravel. As the road proceeds east along the river valley, it narrows to single lane width and becomes increasingly rutted and rocky as it navigates the narrow space between the Jacks Fork River and the bluff face of the valley wall (Figure 3.13). At the time of the April 2018 survey, portions of the road along the Jacks Fork River had become flooded and impassable. According to the 2010 CLI, at the point the road exits the historic district, it is suitable only for hiking or horseback riding.

County Road 305 extends north from SR 106 just north of the Alley Spring Picnic Shelter. It provides access to the General Store (Alley Spring Ranger Station) and the north parking area servicing the Alley Mill and the Storys Creek Schoolhouse. Between SR 106 and the gravel parking area turnoff, County Road 305 is a two-lane asphalt route. Twelve parking spaces are located on the east side of the road at the General Store. North of the turnoff for the north parking area, CR 305 becomes a single-lane gravel road that continues in a northwesterly direction through Alley Hollow.

Internal park vehicular routes are typically short segments of road and parking areas that connect to specific features. Visitors typically access the study area by entering at County Road 106-308, which connects to the asphalt-paved main parking area south of the Alley Mill Picnic Shelter and the Burr Oak Picnic Area. Another access point is at County Road 305, which

connects to parking at the General Store and the gravel parking area near the Mill. The gravel parking area near the Mill is intended to be limited to handicap accessible parking; however, the gravel does not provide a compliant barrier-free surface. Due to its proximity to the Mill, it frequently fills up with other vehicles. The parking lots at Alley Spring typically reach full capacity on weekends and during special events.



Figure 3.12. State Route 106. (QEA 2018, DSC09166)



Figure 3.13. County Road 106-308 is a single-lane gravel road east of Alley Spring Branch. The road becomes increasingly rutted and experiences periodic flooding as it approaches the eastern edge of the study area. (QEA 2018, IMG_8465)

Pedestrian Routes

Pedestrian routes within the study area include the Overlook Trail, the Spring Branch Trail, and sidewalks accessing individual buildings and features including the Alley Mill, Alley Mill Picnic Shelter, Storys Creek Schoolhouse, General Store, and modern comfort stations (drawing EC-1).

Both the Overlook Trail and the Spring Branch Trail are gravel paved. There are no hiking trails that provide barrier-free routes.

Sidewalks within the study area are paved with asphalt, concrete, or stone. The walkways range from five to eight feet wide. Although barrier-free access to major features including the Alley Mill, Picnic Shelter, Storys Creek Schoolhouse, and General Store is desired, it is currently limited based on the slope of the route or the trail surface condition. An accessibility assessment is provided in the following section.

Bridle Trails

Horseback riding is only allowed on the county roads, County Road 106-308 and County Road 305. These roads are not part of designated bridle trails maintained by the park, and horses are not allowed within developed areas of the park. Hitching posts are located along County Road 106-308 east of the Alley Spring Branch Vehicular Bridge.

Water Routes

The Jacks Fork River is a popular waterbody for canoeing, kayaking, and floating. Prior to the 2018 season, the access location for canoes, kayaks, rafts, tubes, and paddleboards was on the south side of the Jacks Fork River across from the study area. This location is no longer viable due to a shift in the river bed. Temporary concessions for floaters are provided at the Burr Oak Picnic Area.

Accessibility Assessment

The following assessment identifies barriers to universal access to primary resources within the study area, including Alley Roller Mill, the Mill Pond, Alley Spring Picnic Shelter, and Burr Oak Picnic Shelter. The assessment compares existing conditions to the standards required by the Architectural Barriers Act Accessibility Standards (ABAAS). Supplemental guidance from the Forest Service Trail Accessibility Guidelines (FSTAG) is also discussed.

General Site Program

The study area contains a total of 97 parking spaces and 4 identified accessible spaces. This complies with ABAAS F208.2, which requires a minimum of 4 accessible parking spaces within a total of 76 to 100 parking spaces. However, the accessible parking spaces are only located in the north parking lot. According to F208.2, the number of accessible spaces provided on the site must be calculated according to the number of spaces required for each parking area.

The study area contains picnic facilities at the Alley Spring Picnic Shelter, the Burr Oak Picnic Shelter, and approximately 30 picnic tables in the mown grass areas of the study area. According to ABAAS F245.2.2, where picnic facilities contain more than two picnic units, at least 20% of picnic units shall provide mobility features. Currently, there is one picnic table located on an accessible route within the study area, and it does not provide mobility features.

Routes to Individual Features

Accessibility assessments are provided for routes from parking areas to individual features within the landscape character area sections in this chapter.

Circulation Analysis

Many circulation routes within the study area are retained from the period of significance and contribute to the overall character of the landscape. Contributing and non-contributing circulation routes are illustrated in Figure 3.14.

Throughout the study area, historic trails and trail grades are extant, and portions of these routes continue to be used as hiking trails or service roads. Major roads continue to follow historic routes, although the surfaces have been modified over time. Most of the change has taken place between State Route 106 and the Spring Branch, where historic routes have been replaced with sidewalks, and new pedestrian sidewalks have been added to serve visitor access. Some of the sidewalks follow historic routes, although the historic organization is less clear due to the addition of large parking areas.

Contributing Features

1. State Route 106*
2. County Road 106-308*
3. County Road 305*
4. Overlook Trail
5. Spring Branch Trail
6. Maintenance Road
7. West Trail System
8. Route of walkway extending between north parking area and south parking area
9. Route of walkway extending between Alley Hollow Creek Pedestrian Bridge and Alley Mill
10. Route of road connecting from County Road 305 and Burr Oak Picnic Area
11. Stairs and stone paving at Seasonal Cabins

Missing Routes and Features

1. Footpath above Spring Branch trail
2. Southern portion of County Road 305
3. Former route of County Road 106-308

Non-Contributing Features

1. Alley Spring Picnic Area parking lot
2. Modern walkways to Storys Creek Schoolhouse, General Store, Alley Picnic Shelter
3. Loop roads at Burr Oak Picnic Area
4. Burr Oak Picnic Area parking

*Not owned by NPS

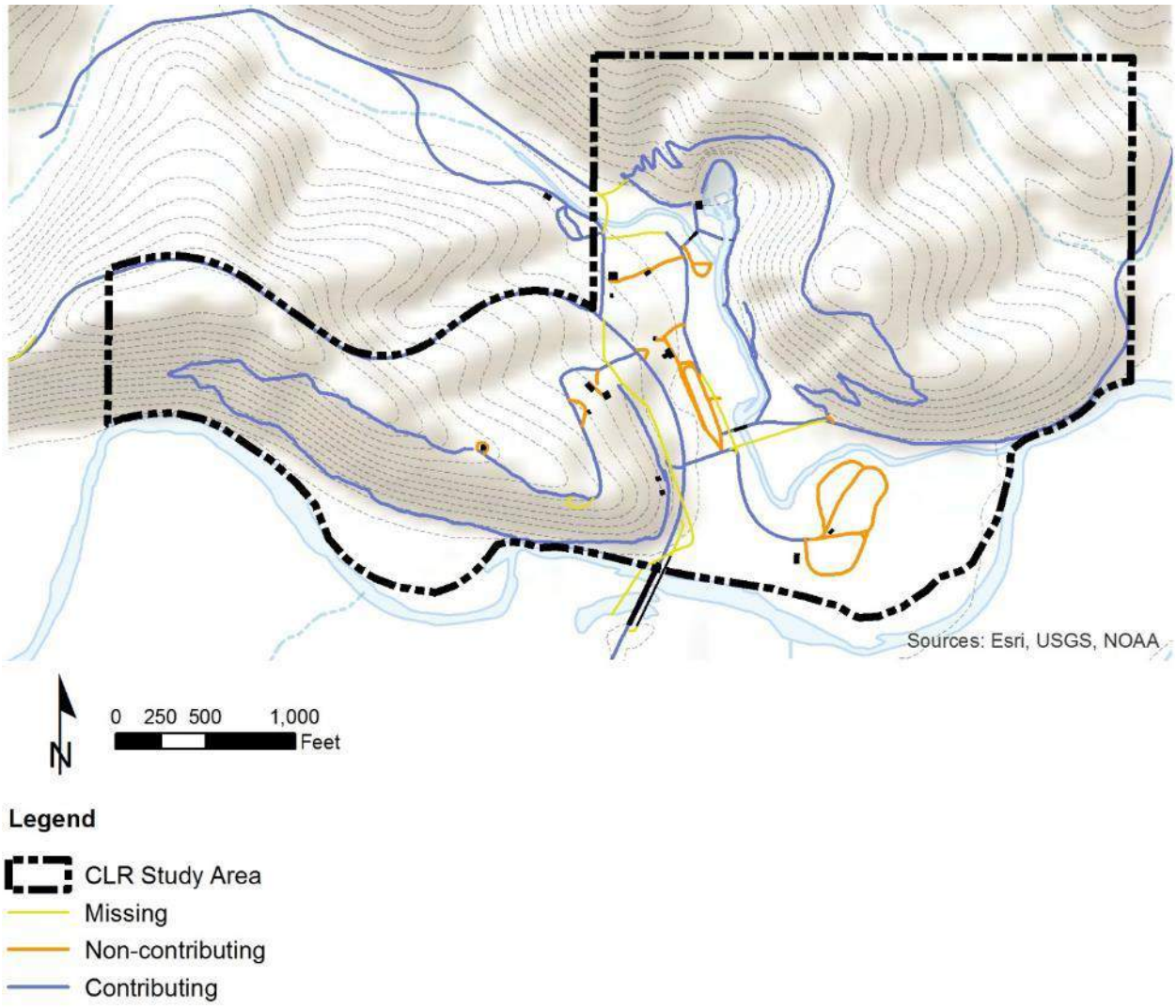


Figure 3.14. Contributing and non-contributing circulation routes.

Buildings and Structures

Existing Condition

Buildings

The study area includes 15 buildings and structures used for visitor, administrative, and maintenance purposes. Nine of the buildings and structures date to the period of significance, including Alley Roller Mill, Alley Spring Ranger Station (General Store), Alley Spring Overlook, Alley Spring Maintenance Shop, Park Keeper's Residence, Pump House, Alley Spring Picnic Shelter, and two Seasonal Cabins. The locations of buildings and structures are illustrated on drawings EC-1.

Buildings and structures utilized by visitors are all located on the east side of State Route 106. The Alley Mill, General Store, Storys Creek Schoolhouse, and comfort stations are available for seasonal use from Memorial Day Weekend through mid-October. Open air picnic shelters at Alley Spring and Burr Oak Picnic Areas are available for visitor use year round but may only be reserved from mid-April through mid-October. The Alley Spring picnic shelter is designated as an accessible facility. Due to recent flooding damage, the comfort stations are currently closed.

Three maintenance buildings, a Water Tower, and two seasonal cabins are located west of State Route 106. The Maintenance Shop is used for storage. The Keeper's Dwelling is vacant and not habitable due to chlordane contamination.[326] The Pump House is operational, and the Water Tower is actively used for water storage. The seasonal cabins are vacant and not habitable due to mold and structural deficiencies.[327]

Alley Mill is described in detail in Chapter 4. The condition and location of other buildings are described in detail within the individual landscape character area sections.

Bridges

Four bridges are located within the study area and illustrated on drawing EC-1.

The Jacks Fork Vehicular Bridge supports State Route 106 as it crosses the Jacks Fork River to the south of the study area. The bridge consists of steel beams and rails resting on reinforced concrete piers and surfaced with an asphalt roadbed (Figure 3.15). Constructed in 1939-40 as part of the State Route 106 corridor, it is in poor condition and slated to be removed and replaced.

[326] George A. Carson, PhD., Ruth Rondinelli, MD, Walter E. Ruch, PhD, Ellen Jenkins, and Patricia Griffith, *Health Hazard Evaluation Report HETA 84-168-1823, Ozark National Scenic Riverways, National Park Service, Van Buren, Missouri,* prepared by National Institute for Occupational Health and Safety, August 1987.

[327] Paul G. Swanson and Gary Duvall, Summary Report, *Ozark National Scenic Riverways, Solicitation No. OT140403*, prepared by Facility Engineering Associates, February 27, 2015.

The Jacks Fork Pedestrian Bridge is located on the downstream (east) side of the Jacks Fork Vehicular Bridge. The bridge is supported by reinforced concrete piers and steel beams, with timber planking and railings (Figure 3.16). There has been a bridge in this location since at least 1927. The current bridge is a 1983 reconstruction of an earlier NPS 1975 bridge. Although the current bridge is a replacement, the presence of the bridge in the location is historically important for setting, feeling, and association and separate from the actual age of materials. The Jacks Fork Pedestrian Bridge was severely damaged by flooding in 2017 and is closed. It will be removed and replaced as part of a future Federal Highway Administration project.

The Alley Spring Branch Vehicular Bridge (CR 106-308) is a modern, non-contributing structure that crosses Alley Spring Branch along the route of County Road 106-308. The bridge is constructed of reinforced concrete piers, steel beams, and timber planking and rails (Figure 3.17). A bridge has been located at that crossing since at least 1927. Although noncontributing, the bridge is located along a contributing circulation route, and it does not detract from the cultural landscape due to its rustic appearance. The bridge will be removed and replaced as part of a future Federal Highway Administration project.

Alley Hollow Creek Footbridge is a modern, non-contributing structure located across Alley Hollow Creek to the west of the Mill. The bridge is a steel structure resting on concrete piers and topped with a timber deck and railing (Figure 3.18). The wood deck has deteriorated, but the bridge is otherwise in good condition. A bridge was first constructed in this location by the CCC in 1934, following CCC projects to reroute and deepen the channel of the creek. The current structure was first constructed by the NPS in 1975 and reconstructed in 1983.[328] Although it is noncontributing, the rustic appearance of the bridge is compatible with the cultural landscape and does not impact integrity.

Concrete and mortared stone bridge abutments are all that remain of the Alley Spring Branch Footbridge. The bridge was a noncontributing structure that functioned as part of the Alley Spring trail system prior to damage and subsequent removal following flooding in 2017. The bridge abutments are located in three positions on either side of the stream as well as on a small island in the center of the stream. The remnants are in poor condition (Figure 3.19). The modern footbridge was in the location of an earlier footbridge constructed by the CCC, which had been part of the historic pattern of circulation. The footbridge is slated for reconstruction in 2020 by the Federal Highways Administration.

[328] CLI 48; cites Thiel (2002).



Figure 3.15. The Jacks Fork Vehicular Bridge. (QEA 2018, IMG_8398)



Figure 3.16. The Jacks Fork Pedestrian Bridge. (QEA 2018, IMG_8399)



Figure 3.17. Alley Spring Branch Vehicular Bridge. (CR 106-308) (QEA 2018, IMG_7889)



Figure 3.18. Alley Hollow Creek Footbridge. (QEA 2018, IMG_6839)



Figure 3.19. Concrete and mortared stone abutments mark location of missing Alley Spring Branch. Footbridge. (QEA 2018, IMG_7255)

Stone edges, retaining walls, and channel revetments

Retaining walls are located throughout the study area to stabilize slopes and provide grades for trails. The walls are typically constructed of dry-stacked local stone and have been integrated into existing rock outcrops where practicable. Retaining walls are most commonly used along trail edges. In areas of low topographic slope, trail edges are defined by short rows of native stone laid along the length of the grade. In areas of steep slopes or switchbacks, the walls extend to a height of two to six feet to support the trail grade.

Stone constructed channel revetments define the perimeter of the Mill Pond as well as the edges of the channel and interior islands of Mill Spring Branch. Similar to other retaining walls throughout the site, the revetment walls are typically constructed of dry-stacked local stone and may integrate into existing rock.

The physical condition of stone edges, retaining walls and channel revetments varies throughout the study area. Retaining walls in developed areas in the eastern portion of the study area are regularly maintained and typically in fair to good condition, with limited areas where stones are loose, damaged, or missing. In areas where trails are abandoned or not regularly used, retaining walls are typically in fair to poor condition. Many of these walls exhibit extensive deterioration, including missing and displaced stones and areas of collapse. The condition and location of retaining walls are described in detail in the individual landscape character area sections.

Buildings and Structures Analysis
Figure 3.20 identifies contributing and non-contributing buildings within the study area.

Almost all buildings constructed as part of the 1933-1934 CCC projects are retained in the study area. Few modifications have been made to the buildings since the period of significance, resulting in a building stock that is largely stylistically cohesive, reflecting the rustic style prominent on public lands during this period. The buildings that are missing from this era, including the Water Tower that served the CCC camp and Alley Schoolhouse (HS-508, located just outside the study) were located in areas away from primary visitor use. The only building dating to the Alley Hollow hamlet is the Alley Roller Mill. The retaining walls constructed in 1933-34 throughout the study area retain integrity and continue to support the associated trail grades and stream channels.

Noncontributing buildings are primarily located within the floodplain. These buildings are also the most impacted by flood damage and could be considered for removal or relocation.

Contributing Features

1. Alley Spring Roller Mill (HS-501)
2. Alley Mill Spring Scenic Overlook (HS-501I)
3. Alley Spring District Maintenance Shop (HS-502)
4. Alley Spring Picnic Shelter (HS-503)
5. Alley Spring Park Keeper's Residence (HS-504)
6. Alley Spring Seasonal Cabin (HS-505)
7. Alley Spring Seasonal Cabin (HS-506)
8. Alley Spring Pump House (HS-507)
9. Alley Spring Ranger Station (HS-511) – now General Store
10. Jacks Fork Vehicular Bridge*
11. Stone edges, retaining walls, and channel revetments

Non-contributing Features

1. Storys Creek Schoolhouse (HS-520)
2. Blacksmith shop
3. Modern comfort stations (2)
4. Burr Oak Picnic Shelter
5. Water Storage Tank
6. Jacks Fork Pedestrian Bridge*
7. Spring Branch Vehicular Bridge*
8. Alley Mill Footbridge

*Not owned or maintained by NPS.

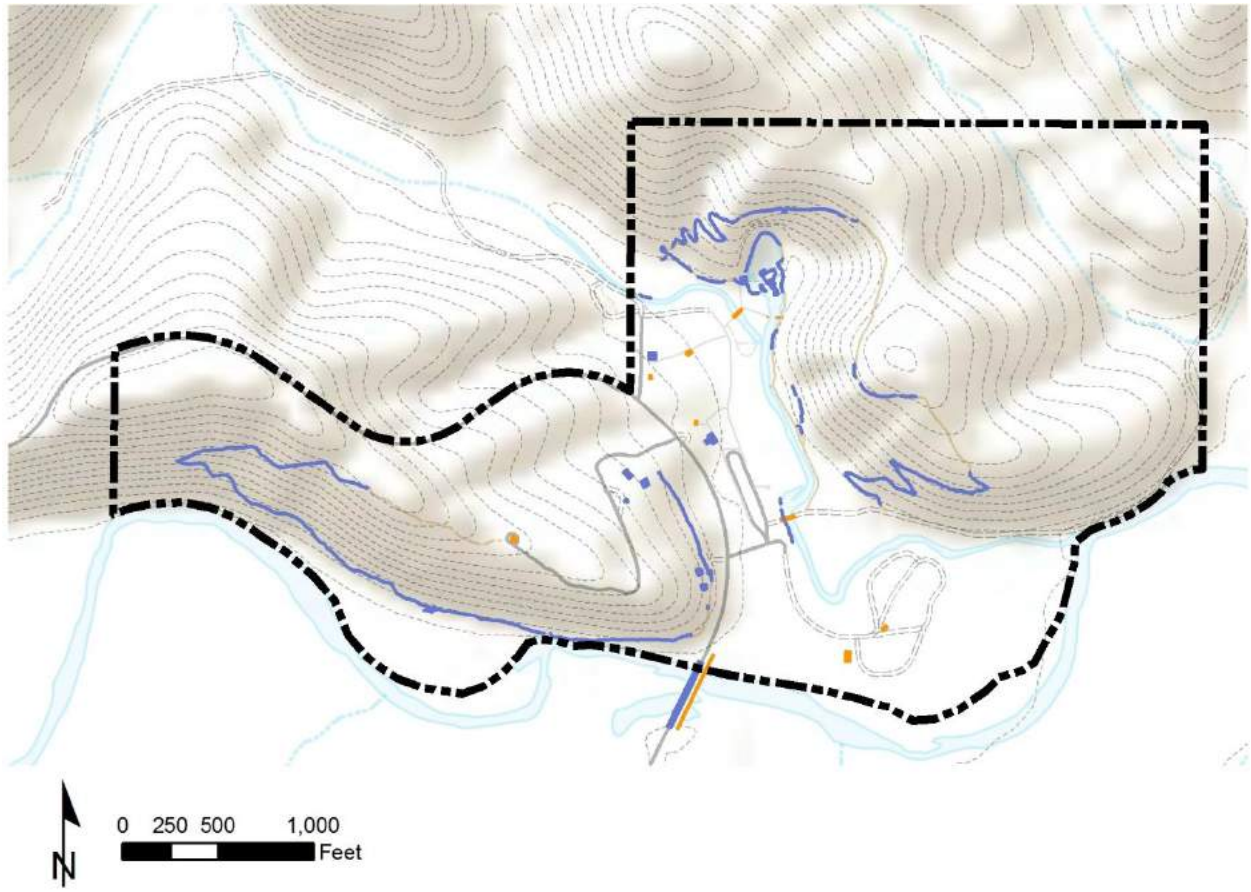


Figure 3.20. Contributing and non-contributing buildings and structures.

Constructed Water Features

Constructed water features at Alley Spring State Park Historic District include the hydraulic structures that make up the mill system, constructed channel revetments along the banks of streams, and erosion control features that direct runoff away from use areas.

Existing Condition

The primary exterior hydraulic structures that make up the Alley Spring Roller Mill include the millrace, turbine pit, dam, and spillways. These elements are described in detail in the Mill Area LCA. Modern stormwater utilities have been added to address runoff from roadways within the study area. These features are described in detail in the Alley Spring Picnic Area LCA.

Analysis

Control of water to power the Mill was critically important to the development of the site. The dam, Alley Hollow Creek, and Alley Spring Branch have been reconfigured throughout the period of significance to address changing site needs.

The dam and associated hydraulic structures are extant in their original locations on the landscape. The constructed water features within the study area retain integrity of location, setting, design, materials, workmanship, feeling, and association, and contribute to the period of significance.

Views

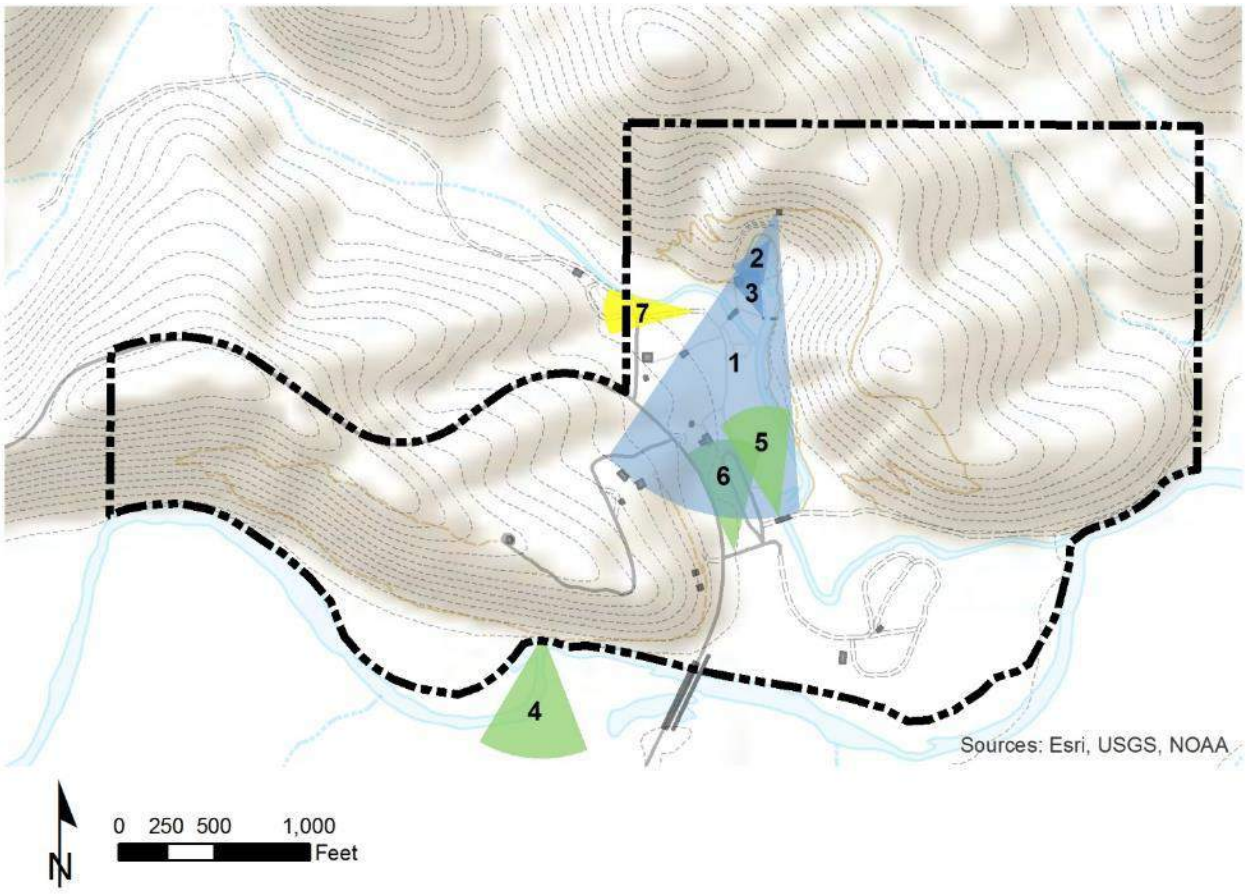
Existing Condition

Significant views within the study area are primarily defined by topography and vegetation. From high points along the ridges, visitors are afforded expansive views of Alley Hollow and the Jacks Fork River valley. Within Alley Hollow and the floodplain, views are typically enclosed by the dense bottomland forest vegetation, which defines narrow viewsheds along the long, linear valley. Due to the fast-growing vegetation, views of the Alley Spring Branch and the Jacks Fork River are limited to locations where circulation routes pass over or alongside the water bodies. Descriptions and analysis of specific views are provided in the next section.

Views Analysis

This analysis identifies seven historically significant views associated with the development of the study area (Figure 3.21). The scenic landscape was a major factor in the selection of this site as one of Missouri's first state parks. During the period of significance, the central portion of the study area occupied by Alley Hollow was a broad, open lawn with long north-south views up and down the hollow. The naturalistic design of the park by the CCC in 1933-1934 created both formal and informal viewpoints within this landscape. The trails, buildings, and other recreation areas were laid out to present views of the waterbodies, Mill, and Alley Hollow.

Modifications to views have occurred since the end of the period of significance due to the addition and removal of buildings and structures in Alley Hollow. These activities, and the encroachment of woody vegetation along the Spring Branch and the Jacks Fork River, have obscured historically important visual relationships.



Legend

- CLR Study Area
- Missing Significant View
- Partial Significant View
- Extant Significant View

Key

1 View from Overlook above Mill
2 View of Mill from across Mill Pond
3 View of Mill from south
4 View from stone wall on West Trail System
5 View from County Road up the hollow
6 View from Alley Spring picnic area up the hollow
7 View of schoolhouse site

Figure 3.21. View analysis.

View 1: View from Overlook above Mill

The Alley Mill Spring Scenic Overlook was constructed in 1934 to provide a structured view southwest toward Alley Hollow and presents a view of the Alley Mill and Mill Pond from its location atop the limestone bluff. Early photographs from the approximate location of the overlook indicate that this was a prominent viewpoint prior to the development of the area as a park. The view is largely intact from the historic period. Minor changes to the view including encroaching vegetation and modifications to buildings and circulation have occurred since the period of significance. Refer to Figure 3.22.

View 2: View of Mill from across Mill Pond

This iconic view from the Spring Branch Trail presents the Mill and its reflection in the Mill Pond, surrounded by naturalized stream bank vegetation. The viewpoint was present by 1934 when the trail was constructed around the Mill Pond by the CCC and is frequently captured in photographs by visitors both during the period of significance and today. Only minor modifications to the vegetation surrounding the Mill have occurred since the period of significance. Refer to Figure 3.23.

View 3: View of Mill from south

This iconic view of the Mill from the south captures the Alley Mill building, raceway, primary spillway, and a portion of the constructed islands within the Spring Branch. It is frequently featured on post cards and promotional materials from the period of significance and is presented on the 2017 Missouri National Parks quarter. There have been few alterations to the building, structures, constructed water features, or vegetation within this view since the period of significance. The most significant impact to the view is the loss of the footbridge, from which earlier photographs were taken. Refer to Figure 3.24.

View 4: View from stone wall on West Trail system

A small enclave was constructed along the West Trail by the CCC in 1934, formed by a dry-stacked stone wall and a rock outcrop. Although there is no documentation of a formal overlook at this point, the grotto forms a resting point that overlooks the Jacks Fork River valley. The view is partially obscured by woody vegetation. Refer to Figure 3.25.

View 5: View from County Road up the hollow

A picnic area was present south of the Alley Mill by the early twentieth century when visitors and residents of Alley Hollow would use this area for recreation and events such as the annual Fourth of July celebration. The use of this area for picnicking continued following the transfer of the property to the State of Missouri for use as a state park. The picnic area was located in an oxbow of the Spring Branch in an area of open lawn and limbed-up canopy trees and was accessed by several small footbridges that crossed the Spring Branch. View 5 looks north from the approximate location of the County Road 106-308 bridge. During the period of significance, the picnic area, casino, and Alley Mill were visible from this location. Over the course of the period of significance, the location of the primary channel of the stream branch shifted to the east, and this area became overgrown with woody vegetation. The view from this location today no longer represents the historic condition of the viewshed. Refer to Figure 3.26.

View 6: View from Alley Picnic Area up the hollow

During the period of significance, Alley Hollow was characterized as a broad, open valley between two forested ridges. Views to the north and south along the hollow were typically open, and visitors would have been able to see between key site features. View 6 compares the view up the hollow in 1955, when the Alley Mill, General Store, and Picnic Shelter, and Spring Branch were prominently visible, with the view in 2018. Woody vegetation along the stream branch and within the lawn now obscures the historic view. Refer to Figure 3.27. Although not documented in historic photographs, the condition of vegetation during the period of significance would have allowed for a direct view between the Alley Picnic Shelter and the Mill, which is now partially obscured.

View 7: View of schoolhouse site

The schoolhouse was visually prominent in the Alley Spring landscape until its removal in 2015. In 2013, the Alley School House was determined ineligible for the National Register. Structural alterations predating NPS ownership adversely impacted the building's historic integrity. Although the site of the schoolhouse is outside of the study area boundary, proposed new housing in this location would be highly visible from the open lawn and parking area near the Mill. Refer to Figure 3.28.

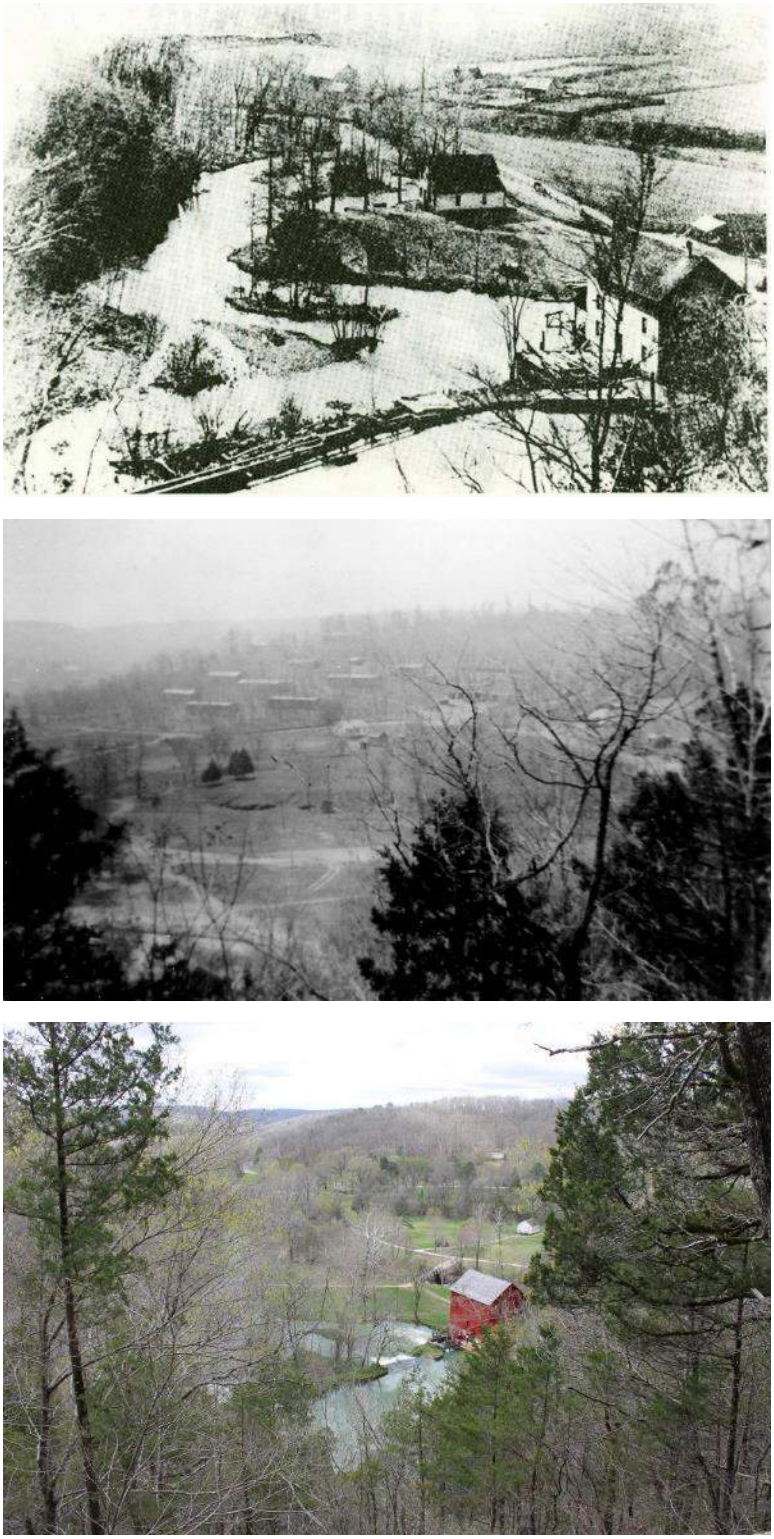


Figure 3.22. View 1. View from Alley Mill Spring Scenic Overlook.
Top: View from approximate location of overlook, ca. 1900. (OZAR 24030)
Center: View from Alley Spring Scenic Overlook, ca. 1934. (OZAR 24031)
Bottom: View from Alley Mill Spring Scenic Overlook, 2018. (QEA 2018, IMG_6980)



Figure 3.23. View 2. View of Mill Building across Mill Pond.
Top: View from across pond, ca. 1964-1968. (Dan Jackson)
Bottom: View from across pond, 2018. (QEA 2018, IMG_8541)

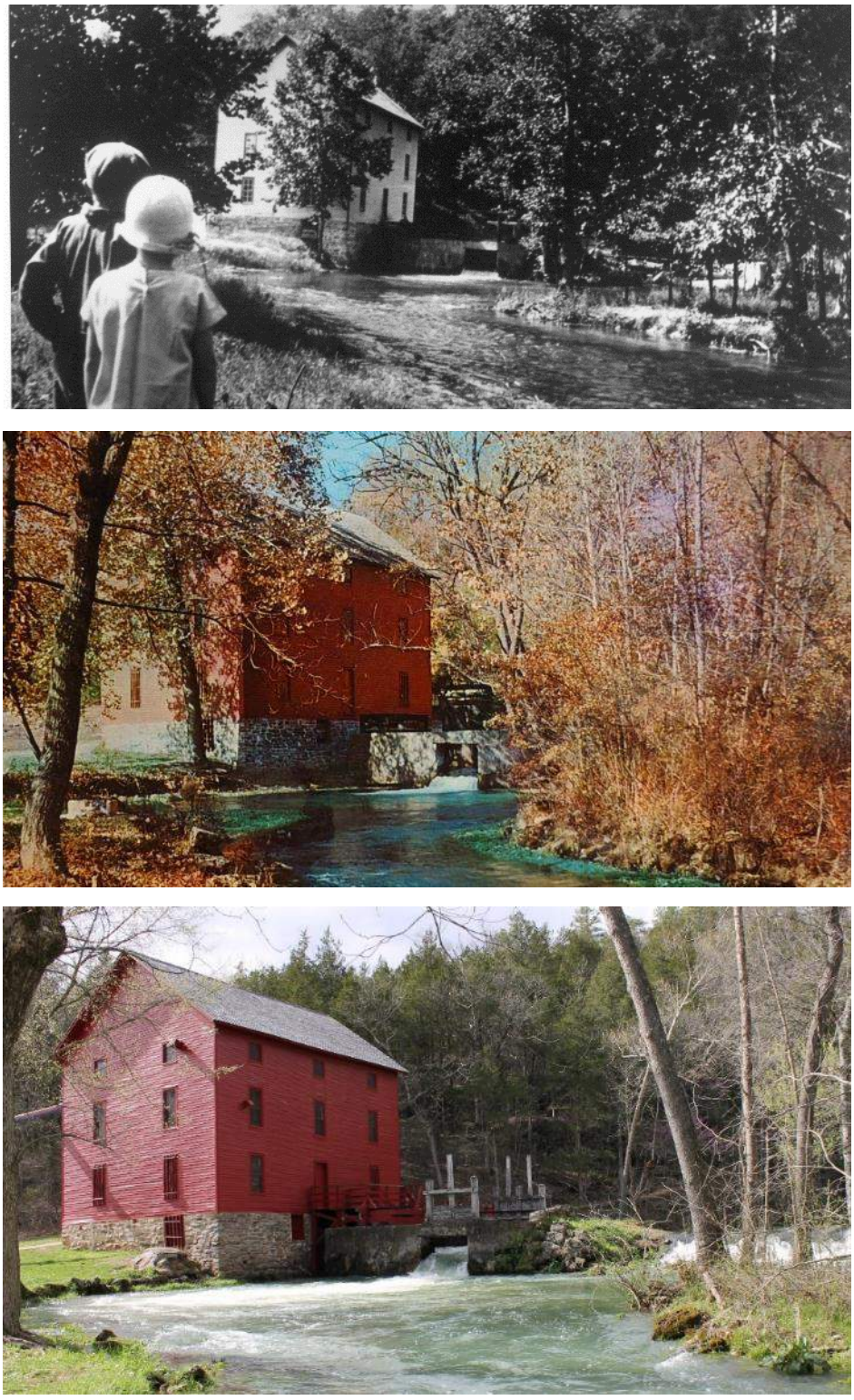


Figure 3.24. View 3. View of Alley Mill from south.
Top: Ca. 1925 view of Alley Mill from lawn. (OZAR 2878)
Middle: Postcard view from footbridge, ca. 1964. (Dan Jackson)
Bottom: View from approximate location of footbridge, 2018. (QEA)



Figure 3.25. View 4. View from stone wall on West Trail System. (QEA 2018)



Figure 3.26. View 5. View from Alley Spring Picnic Area up the hollow.
Top: 1925 view from approximate location of County Road 106-308 bridge. (OZAR 24035)
Bottom: View from County Road 106-308 bridge. (QEA 2018)

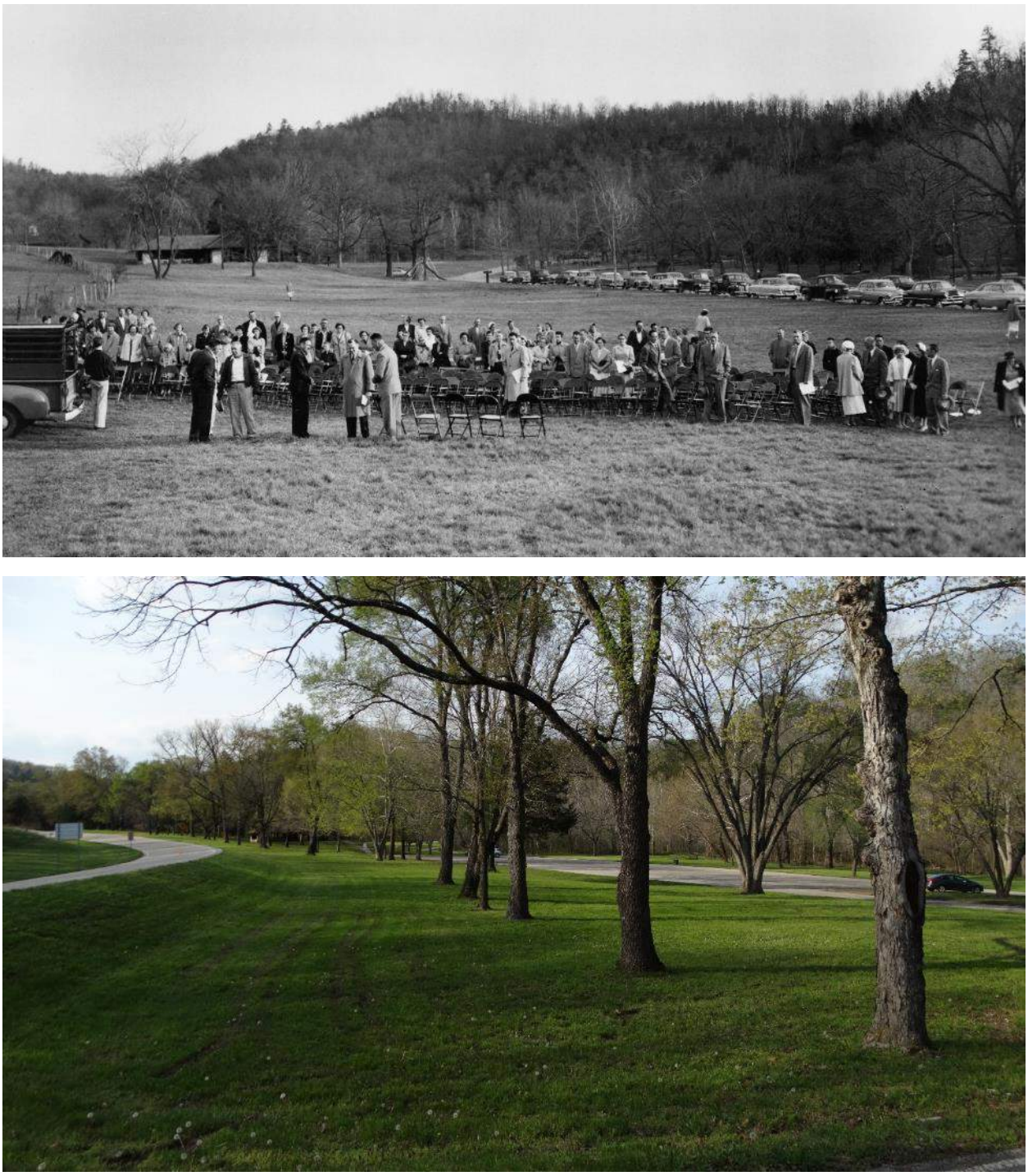


Figure 3.27. View 6. View from Alley Spring Picnic Area up the hollow.
Top: View of the Picnic Shelter, Spring Branch, and open recreational space, 1955 (State Park Archives)
Bottom: View from similar location, 2018. (QEA)

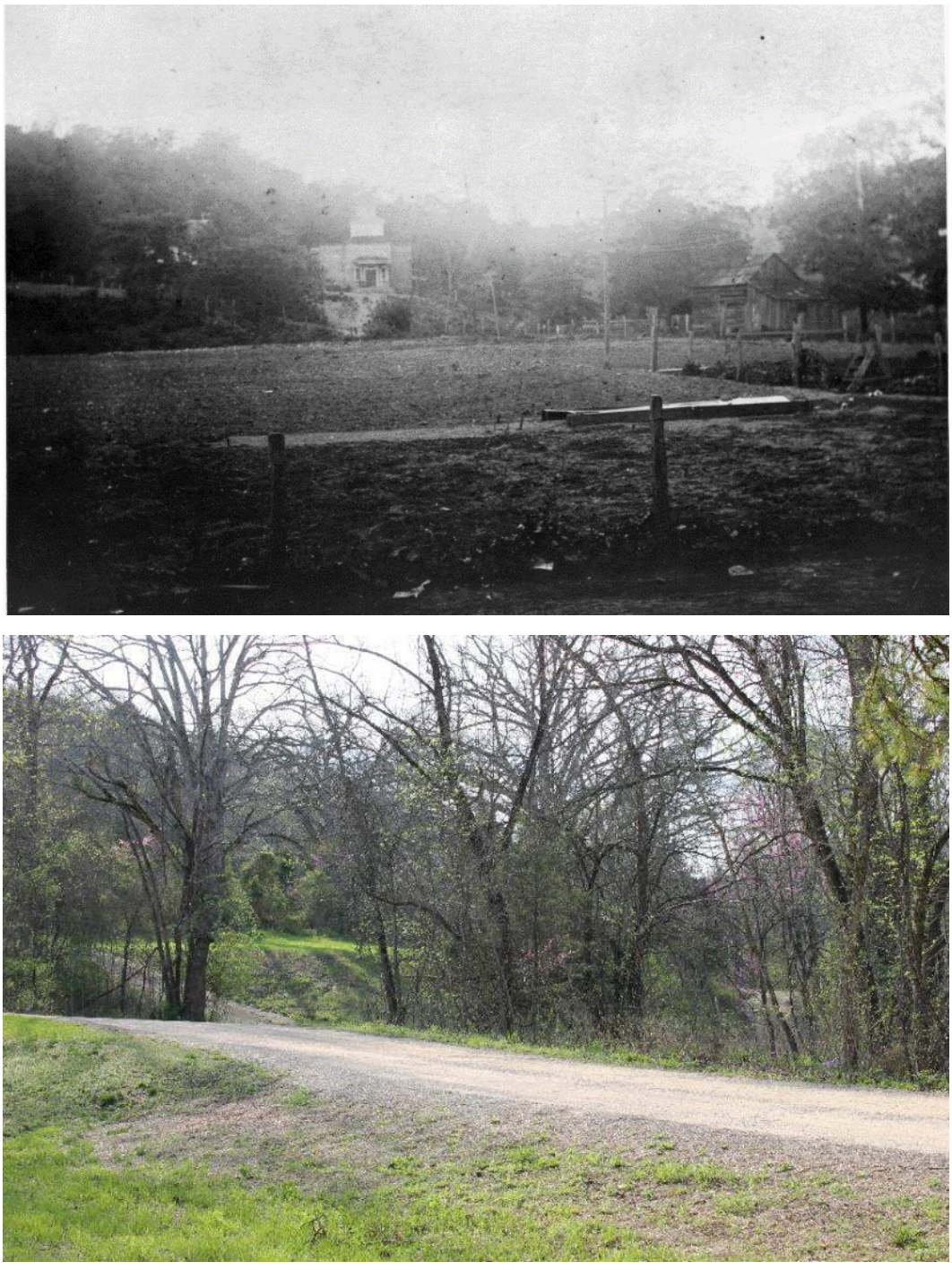


Figure 3.28. View 7. View of schoolhouse site.
Top: View from road toward Alley Schoolhouse, after 1914. (OZAR 24075)
Bottom: Similar view from parking area, 2018. (QEA)

Vegetation

Existing Condition

Ozark National Scenic Riverways is within the range of the oak-hickory forest association of the eastern deciduous forest biome, which covers most of the eastern United States. Within the study area, the dominant vegetation type is upland forest, which cloaks the ridges and valleys surrounding Alley Hollow. Historical disturbance of native forest vegetation due to fire, clearing for agriculture, or logging has been extensive, and most wooded areas within the study area are second growth forests. These forests are typically three layered with distinctive canopy, understory, and herbaceous strata.[329]

Existing vegetation at Alley Mill consists of a mix of riverfront shrubland and gravel bar vegetation, bottomland forests, upland forests, successional grassland, mown grass and individual trees, domestic plantings, and invasive species. Vegetation analysis is based on field survey as well as a detailed vegetation survey completed for Ozark National Scenic Riverways in 2006. The vegetation communities described below have been consolidated for the purposes of this report.

Riverfront shrubland and gravel bar vegetation

Riverfront shrubland and gravel bar vegetation consists of narrow swaths of shrubs and small trees within the upper scour zones of rivers. This vegetation typically grows within the loose cobble or alluvial silt along the river bank. Nearest to the shoreline, species are dominated by witch hazel (*Hamamelis virginiana*), silky dogwood (*Cornus amomum*), and shrubby St. John's wort (*Hypericum prolificum*). As the substrate becomes more stable, the vegetation develops into short, dense stands of Carolina willow (*Salix caroliniana*) and American sycamore (*Platanus occidentalis*). The community is adapted to frequent flooding.

Forests

Forest composition within the study area varies primarily based on slope and proximity to streams.

Bottomlands forests occur within the floodplain along the Jacks Fork River, Alley Hollow Creek, and Alley Stream Branch. The community is annually flooded. In active portions of the floodplain and on sandbars, early successional communities are dominated by colonizer species such as box elder (*Acer negundo*), American sycamore, hackberry (*Celtis occidentalis*), red maple (*Acer rubrum),* sweetgum (*Liquidambar stryactiflua*), silver maple (*Acer saccharinum*), winged elm (*Ulmus alata*), slippery elm (*Ulmus rubra*), American hornbeam (*Carpinus caroliniana*), red mulberry (*Morus rubra*), and eastern cottonwood (*Populus deltoides*). The dense understory is composed of shrubs including pawpaw (*Asimina triloba*) and spicebush (*Lindera benzoin*). In floodplain locations that are more well-established or less prone to inundation, the vegetation community shifts to dominant species including American sycamore, maples, elms (*Ulmus* spp.), ash (*Fraxinus* spp.), white oak (*Quercus alba*), and bitternut hickory (*Carya ovata*).

[329] Ozark National Scenic Riverways Development Concepts (1970), 11.

Upland Forests

Upland oak and pine-oak forests are the dominant vegetation type within the study area, cloaking the ridges on the east and west sides of Alley Hollow. These forests are commonly found on the upper Gasconade Dolomite and Roubidoux Formation that characterize that bedrock within the study area. Upland forests are typical of dry to dry-mesic slopes and terraces. Typical species include black oak (*Quercus velutina*), scarlet oak (*Quercus coccinea*), and white oak (*Quercus alba*), with shortleaf pine (*Pinus echinata*), post oak (*Quercus stellata*), chinkapin oak (*Quercus muehlenbergii*) and black hickory (*Carya texana*) also occurring frequently. The understory includes flowering dogwood (*Cornus florida*), sassafras (*Sassafras albidum*), winged elm, shining sumac (*Rhus copallina*), smooth sumac (*Rhus glabra*), and farkleberry (*Vaccinum arboretum*).

The *Fire Management Plan for Ozark National Scenic Riverways* indicates that a 223-acre area known as 'Alley Glade' is to be burned every five years. The Alley Spring Glade includes the ridge on the east side of the Alley Spring Branch. The western ridge is not included in a burn unit in the Fire Management Plan.[330]

Successional Grassland

This community occurs in areas where former mown grass areas have been abandoned to successional vegetation. Within the study area, successional grassland occurs near the Burr Oak Picnic Area, Alley Spring Picnic Area, and along the State Route 106 right-of-way. Native grasses and herbaceous species, as well as woody colonizer species such as eastern redcedar (Juniperus virginiana), boxelder, multiflora, rose (*Rosa multiflora*), fragrant sumac (*Rhus aromatica*), and eastern cottonwood, are common in this vegetation community.

Mown grass with individual canopy trees

The park maintains approximately 20 acres of land within the study area as mown grass. This includes picnic areas, open lawn, and mown buffers along the right of way of State Route 106.

Individual trees are maintained in a park-like setting within large areas of mown grass. Tree species in these areas are similar to those present in the adjacent forests, including American sycamore, silver maple, red oak, white oak, black cherry, black walnut, and boxelder. Individual trees are identified on the drawings where dead or poor condition trees are within close proximity of a structure.

Domestic plantings

Two iris beds are located in the yard immediately north the Keeper's Residence (HS-503). The plantings are described in detail in the West Trail LCA section.

[330] National Park Service, *Fire Management Plan for Ozark National Scenic Riverways* (US Department of the Interior, National Park Service), 94-96.

Invasive species

The park has identified sensitive plant (*Mimosa pudica*) and honeysuckle (*Lonicera japonica*) as invasive species of concern. Honeysuckle is particularly prevalent in riparian areas within the study area.

Analysis

Two primary types of vegetation were present within the study area during the period of significance: forests and mown lawn with individual canopy trees. Alley Hollow was maintained as an open valley characterized by mown lawn in the general location of the area cleared for agriculture during the earlier period. The ridges to the east and west were forested, as well as the floodplain along the Jacks Fork River. It is not possible to differentiate between bottomlands forests and uplands forests based on historic documentation, but it is likely that these forest types had a similar distribution to current forests based on topography and proximity to streams.

While the vegetation types present in the study area today are similar to those present during the period of significance, there has been a shift in the overall location and spatial qualities of the vegetation with the encroachment of masses of successional woody vegetation, primarily along Alley Spring Branch and in areas of steep slopes (Figure 3.29). This encroachment has occurred in part due to intentional reduction in the extent of mown lawn. The areas of upland and bottomlands forest on the ridges and floodplain are relatively consistent with vegetation patterns present during the period of significance.

There are several individual trees and planting beds within the study area that date from Alley Spring State Park, including two cedar trees, one oak tree, and one maple tree adjacent to the Alley Picnic Shelter. The trees are visible in 1934 CCC photographs of the site and the 1943 aerial photograph. These trees or their predecessors were present at the agricultural landscape in this location prior to the State Park. The iris beds at the Keeper's Residence (HS-503) are potentially contributing but have not been verified through historic documentation.

Selected vegetation contributes to the historic character of the study area, including:

1. Upland forest on hills
2. Pattern of mown lawn with canopy trees
3. Bottomland forest along river and stream banks (despite movement of waterbodies)
4. Individual oak, maple and cedar trees at Alley Spring Picnic Shelter
5. Iris beds at Keeper's Residence (*potential*)

Volunteer growth in areas that were open during the historic period obscures views and spatial relationships that were present historically and is non-contributing.

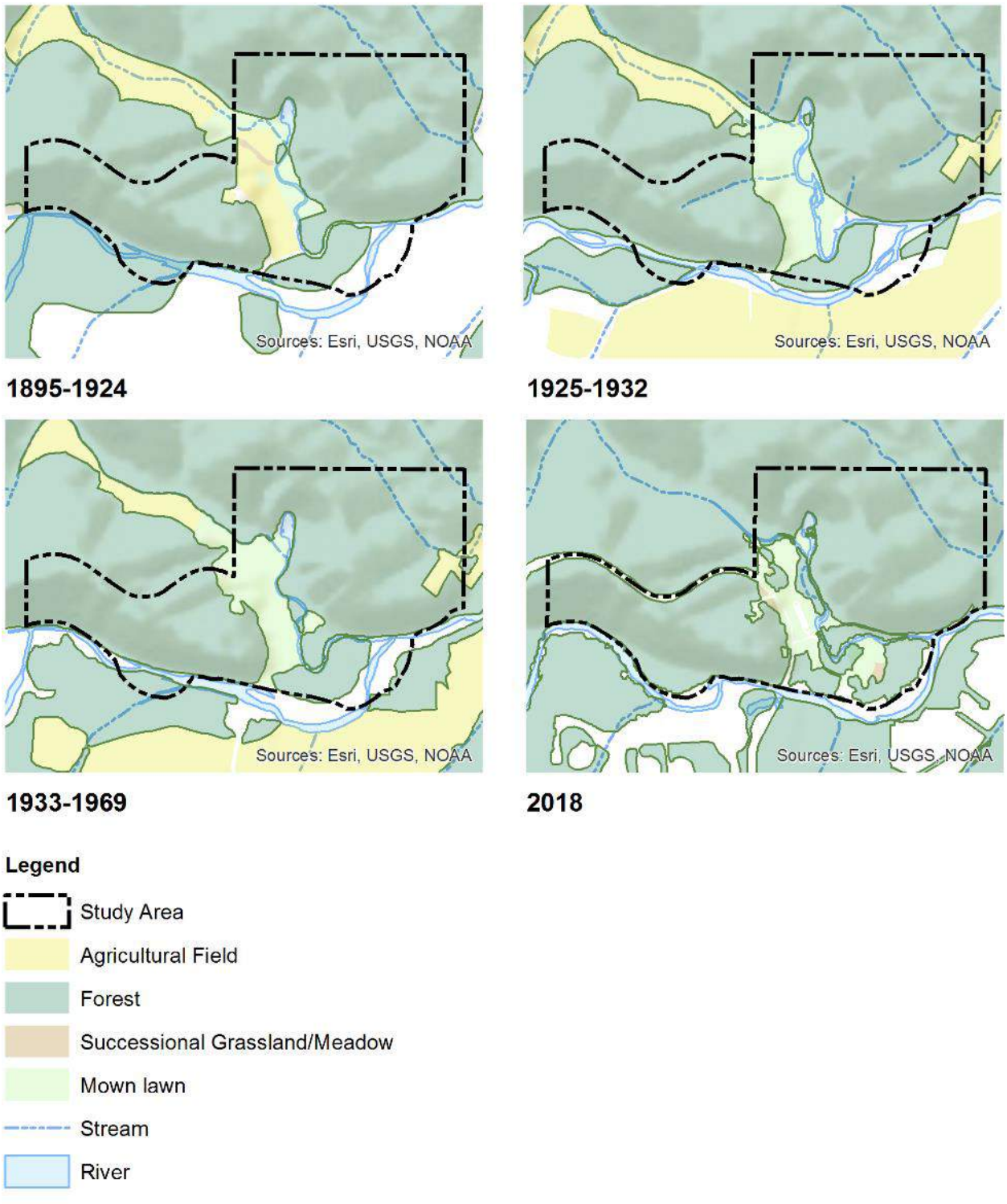


Figure 3.29. Study area vegetation analysis.

Small-scale Features

Existing Condition

Alley Mill contains numerous small-scale features, most of which are modern additions that provide for the interpretive and recreational functions of the site. Prominent features include picnic tables, grills, trash cans, road signs, waysides, interpretive markers, playground equipment, hitching posts, and benches. Fences and guardrails are at key locations near the Mill Pond and stormwater culverts. A flagpole and school bell are located adjacent to the entrance of the Storys Creek Schoolhouse. Another flagpole (HS-501G) is located outside of the Alley Spring Ranger Station.

Site furnishings are typically utilitarian in style. Picnic tables are typically constructed of a tubular steel base supporting wood plank benches and table surfaces. Grills are box-style steel charcoal grills supported on steel posts. Painted post-and-board fences are typical in limited locations within the study area.

Utility features such as fire hydrants, manholes, well caps, propane tanks with fenced enclosures, and electric boxes associated with heating, underground water, electrical, and sewer systems are visible throughout the study area but are relatively unobtrusive.

Specific small-scale features are described in detail in the following landscape character area sections.

Small-Scale Features Analysis

Contributing small-scale features within the study area include:

1. Flagpole (HS-501G) outside of the Alley Spring Ranger Station
2. Concrete marker along West Trail System

Archeological Features

Existing Condition

Archeological sites include Indigenous occupation sites, remnants of the town of Alley and the previous Mill structure, remnants of CCC-era developments, and ruins associated with early road developments.

Archeological Features Analysis

Known archeological features that contribute to the Alley Spring landscape include:

1. Dalton site at Mill Building
2. CCC Camp SP-6 site
3. Alley Hollow Creek Bridge Abutment

A full discussion of archeological resources within the study area is presented in detailed archeological surveys conducted by the Missouri Archaeological Society and the NPS Midwest Archeological Center and is beyond the scope of this report. Site-specific archeological information is protected by the Archeological Resources Protection Act. Given the variety of land uses present at this location over the past 10,000 years, further contributing resources likely exist. Additional archeological investigations may reveal information relevant to Indigenous occupation, habitation at the town of Alley, and Alley Spring State Park.

The Mill itself sits on a Dalton-era habitation site (23SH83/159). This site, which consists of lithic debris dating to approximately 10,000 years ago, was discovered in 1992 during the investigation of the Mill foundation. This site is one of several discoveries in the Current and Jacks Fork River valleys since the 1980s that provides evidence that people were hunting and gathering in these river valleys during the transition from the last ice age to the beginning of the Holocene (recent) age.[331]

CCC Camp SP-6 was constructed on the western slope of the Alley Hollow hillside sometime prior to November 1933. A circa 1934 photograph of the camp shows that there were at least 10 barracks-style buildings distributed along the ridge of the hillside. The camp was razed sometime following the completion of fieldwork on September 9, 1934. Although no buildings remain, road traces and foundation depressions are still present on the hillside. Scattered debris including bottles and cans are also located along portions of the West Trail, particularly along the southeastern portion of the trail nearest to the former CCC Camp site (Figure 3.30).

Site investigations in 2018 identified four concrete piers on the hillside just north of the Maintenance Road (Figure 3.31). The piers measure 18 inches square and are topped with metal straps. They are arranged in a 15 by 20-foot rectangle. It is unknown what structure was supported by the piers.

[331] Mark J. Lynott, James E. Price, and Roger Saucier, “The Alley Mill Site & Early Prehistory of the Current River Valley, Southeast Missouri,” *The Missouri Archaeologist: Journal of the Missouri Archaeological Society*, Vol. 67, December 2006.

The CCC water storage tank was located somewhere above the camp on the western hillside of Alley Hollow. CCC monthly progress reports indicated that this was a 10,000-gallon capacity, reinforced concrete underground tank.[332] The 2010 Cultural Landscape Inventory identified a filled trash pit in the general area of the water tank and indicated that the tank may have been similarly infilled.[333] Site investigations in 2018 identified debris in this area.

The Alley Hollow Creek Bridge Abutment (HS-501D) is located immediately to the north of the existing route of County Road 305. It is a remnant feature of the earlier County Road 305 roadbed, which extended north across Alley Hollow Creek and ran along the north side of the stream during the state park era. The bridge abutments are constructed of mortared stone and concrete and are present on both sides of the stream (Figure 3.32). The initial date of construction of the bridge is unknown. The route is visible on the 1915 topographic quadrangle, and on the 1927, 1934, and 1941 site plans. The road was re-routed to the south side of the stream after the period of significance, eliminating the need for the stream crossing. The remaining bridge abutments contribute to the historic character of the landscape.



Figure 3.30. Debris scatter including metal cans and bottles along lower portion of West Trail route. (QEA 2018, IMG_7335)

[332] CCC Monthly Reports.
[333] *Alley Spring Cultural Landscape Inventory*. 46.



Figure 3.31. Concrete piers located to the north of the maintenance road. (QEA 2018, IMG_7503)



Figure 3.32. Alley Hollow Creek Bridge abutment. (QEA 2018, IMG_8381)

Landscape Character Areas

Mill Area

The primary features within the Mill Area are the Alley Mill Building, Alley Spring, Mill Pond, and Dam. This area also includes the immediate vicinity surrounding the Mill and Pond including sidewalks and trails, lawn, and the constructed islands within Alley Spring Branch. The existing condition of the Mill Area is illustrated on drawing EC-2. Table 3.1 identifies contributing and non-contributing features.

Existing Condition

Circulation

This section describes the existing condition of circulation features in the Mill Landscape Character Area. It is followed by an accessibility assessment of routes to primary features within the character area.

The Mill building is accessed via a 5-foot wide stone sidewalk connecting from the Alley Hollow Creek Footbridge to the wood ramp on the west side of the building (Figure 3.33). A gravel area extends around the north side of the Mill and connects to the Overlook Trail, Spring Branch Trail and wooden deck on the east side, which serves as the rear entrance to the Mill (Figure 3.34). Along the north side of the building, gravel fill has built up to 12 inches above the original surface in attempts to remedy drainage issues.

The Spring Branch Trail extends around the edge of Mill Pond. The trail surface is gravel along its entire length, with the water-side stone retaining wall defined by a dry-laid stone edge or retaining wall (Figure 3.35). In some locations, tree roots and small rocks puncture the trail surface and present trip hazards ranging in height from approximately 1 to 8 inches. The trail surface is regularly supplemented with gravel fill as recurring maintenance. Trail width averages 4 feet. The narrowest segment of the trail is three feet wide, and the widest segments are 5.5 feet wide. The slope of the trail is typically 1.9% to 3.4%, with three areas of short steep segments between 10% and 15% at the east and west sides of the Mill Pond and immediately to the north of the stone steps. On the east side, a set of 3 steps with stone treads is located near the missing footbridge. They traverse a vertical elevation change of 3 feet. The portion of the trail south of the bridge abutment is documented in the East Trail landscape character area.

A gravel walkway extends south from Alley Spring Footbridge toward Alley Spring Branch. The walkway previously accessed the now-missing Alley Branch Footbridge, which was damaged and removed following a flood in 2017 (Figure 3.36). The trail is now a dead end. The gravel paved walkway is 4.5 feet wide with a 4x4 wood edge. The trail is in fair condition. Patches of gravel along the route are missing and interspersed with grasses.



Figure 3.33. Mortared stone walkway and wood ramp access west side of Mill building. (QEA 2018, IMG_7127)



Figure 3.34. Gravel walkway on the north side of the Alley Mill accesses the Spring Branch Trail, Overlook Trail, and east entrance to the building. (QEA 2018, IMG_8206)



Figure 3.35. Spring Branch Trail around Mill Pond and interpretive sign. The portion of trail pictured averages 8% slope. (QEA 2018, IMG_4369)



Figure 3.36. Gravel trail with wood edge extending south from Alley Spring Branch Footbridge. (QEA 2018, IMG_6838)

Accessibility Assessment: Route from North Parking Area to Mill

There is no fully accessible route connecting the north parking area and the Alley Mill. The current route connects the north parking area, the concrete sidewalk extending from the parking area to the Alley Hollow Creek footbridge, the surface of the footbridge, and the stone sidewalk connecting from the footbridge to the ramp at the west side of the Mill building. Primary accessibility limitations along this route include the surfaces of the parking area and walkways and the slope of the walkway between the footbridge and the Mill (Figure 3.37). Accessibility assessments for the ramp and the Mill building are provided in Chapter 4.

- There are four marked accessible parking spaces in the north parking area. The surface of the north parking area is gravel, which does not comply with the requirement for a firm, stable surface in ABAAS 302.1.[334] Following ABAAS standards 502.1, 502.2, and 502.3, accessible car parking spaces must be minimum 96 inches in width, shall be marked to define the width, and shall have an adjacent marked access aisle with a minimum width of 60 inches extending the full length of the parking space. These four parking spaces do not comply with ABAAS requirements for width, markings, and access aisles due to the gravel surface of the parking area.
- The accessible parking spaces in the north parking lot are designated using parking space identification signs that include the International Symbol of Accessibility Signs and are located 60 inches minimum above the finished floor or ground surface measured to the bottom of the sign, which complies with ABAAS 502.6.
- The parking spaces designated accessible within the north parking lot do not connect to an accessible route, failing to comply with ABAAS 502.3.
- The sidewalk connecting the north parking area to the Alley Hollow Creek Pedestrian Bridge meets the requirements for an accessible route. The concrete sidewalk provides a firm, stable surface complying with ABAAS 302.1. It is 8 feet wide, meeting the minimum requirements for width and passing space required by ABAAS 403.5.1. It has a slope between 1.9 and 3.3%, below the 1:20 (5%) required by ABAAS 403.3.
- The walking surface of the Alley Hollow Creek Footbridge does not meet requirements for an accessible route. The spacing between planks on the bridge exceeds ½ inch, which does not comply with ABAAS 302.3.
- The 5-foot wide stone sidewalk connecting between the Alley Hollow Creek Footbridge and the ramp to the Mill does not meet requirements for an accessible route. The mortared stone surface of the walkway is in poor condition and fails to provide a firm, stable surface complying with ABAAS 302.1. The slope of the walkway exceeds the maximum 1:20 (5%) at both the north and south ends of the route, failing to comply with ABAAS 403.3.
- Accessibility assessments for the ramp and Mill building are provided in Chapter 4.

[334] According to the 2010 ADA standards, firm and compacted gravel is an acceptable surface; however, the parking area does not meet these requirements.

Accessibility Assessment: Trail around the Mill Pond

The trail around the Mill Pond is a contributing route constructed by the CCC in 1934 and provides access to significant views of the Mill and Mill Pond. Prior to 2017, the trail formed a short loop that incorporated the now-missing footbridge south of the Mill. A footbridge is slated to be rebuilt in this location by 2020. Universal access is limited by steep slopes along portions of the trail, the gravel trail surface, and contributing trail structures including stone retaining walls, edges, and stairs. Due to the limited number of accessible trails within the park, NPS has expressed interest in modifying this trail to provide access to more visitors with limited mobility. The assessment provided below evaluates the trail based on the requirements for several levels of accessibility.

	Accessible Route	**Outdoor Recreational Access Route (ORAR)**	**Trail Complying with FSTAG Accessibility Guidelines (Level 4)**
Walking Surface	Gravel surface is not firm, stable, or slip resistant.	Gravel surface is not firm and stable.	The guidelines allow for native material with borrowed fill for a trail surface with minor roughness. The existing trail complies.
Slope	The standards specify a maximum slope of 1:20 (5%). Existing conditions exceed this maximum in several areas. Stairs are not acceptable on an accessible route.	The standards allow running slopes of up to 10% for short distances. Existing conditions exceed this maximum in several areas. Stairs are not acceptable on an ORAR.	The guidelines allow for short segments of trail up to 15% slope. The trail meets this guideline. Stairs are not acceptable on a Level 4 trail.
Clear Width	The trail meets the requirement for minimum 36 inches of clear width.	The trail meets the requirement for minimum 36 inches of clear width.	The trail meets the requirement for minimum 36 inches of clear width.
Passing Spaces	The average width of the trail is 4 feet with a maximum width of 5.5 feet, which allows for passing spaces.	The average width of the trail is 4 feet with a maximum width of 5.5 feet, which allows for periodic passing spaces.	The average width of the trail is 4 feet with a maximum width of 5.5 feet, which allows for periodic passing spaces.
Obstacles	Accessible routes do not allow obstacles within the route. The existing trail does not meet this standard.	Obstacles along an ORAR must not exceed 1 inch. The existing trail has numerous roots and rocks that exceed this maximum.	Class 4 trails allow for tread obstacles less than 3 inches. The existing trail has some roots and rocks that exceed this maximum.

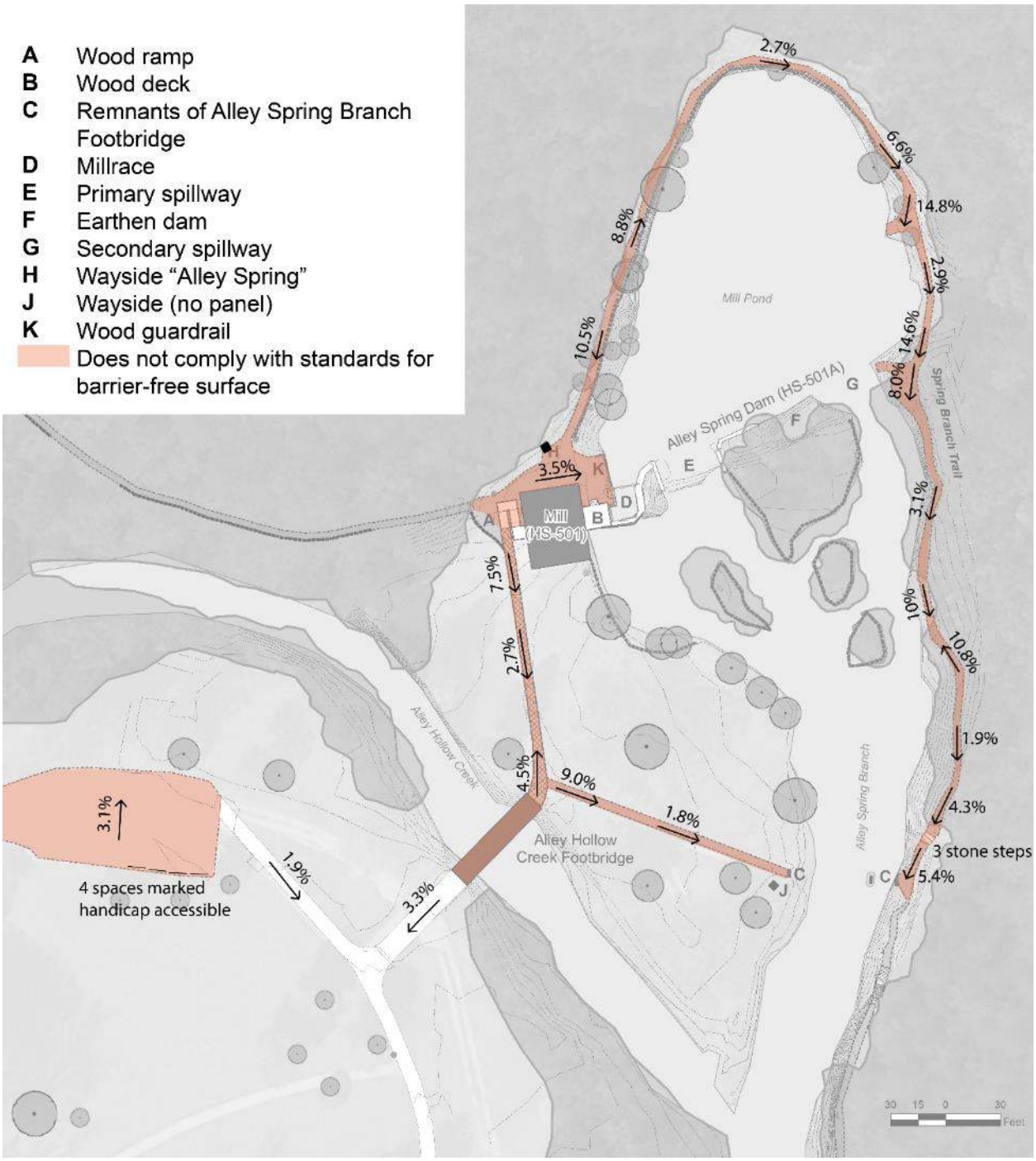


Figure 3.37. Slope and surface assessment of Mill Area.

Buildings and Structures

The Alley Spring Roller Mill (HS-501) is an outstanding example of a rural turn-of-the-century commercial mill. The two-and-a-half story building sits on the west side of the Mill Pond on a foundation of rough-cut limestone blocks and is painted a distinctive shade of red that contrasts sharply with the surrounding landscape. The Alley Spring Roller Mill is described in detail in Chapter 4.

Stone edges are located periodically along the Spring Branch Trail. The stone edges have been displaced in some locations by trees or erosion.

Retaining walls are located along the Mill Pond and Alley Spring Branch. Around the Mill Pond, stone revetment walls form a five-foot-tall retaining wall that supports the Spring Branch Trail (Figure 3.38). The wall is impacted by extensive woody vegetation. Low stone walls form revetments along the east and west sides of the Alley Spring Branch channel downstream from the dam, as well as around the small islands within the channel (Figure 3.39). Due to the velocity of the water heading downstream, the channel revetments are typically in poor condition. Around the small islands, rocks are partially submerged and overgrown with woody vegetation. Immediately south of the Mill, significant erosion of the channel banks has displaced the stone edge and impacted trees growing along the bank (Figure 3.40).



Figure 3.38. Dry laid stone forms revetment wall along Mill Pond. (QEA 2018, IMG_4484)



Figure 3.39. Channel revetments downstream of mill dam. (QEA 2018, IMG_7226)



Figure 3.40. Erosion of channel bank south of the Mill from high-velocity water has displaced the stone revetments. (QEA 2018, IMG_7149)

Constructed Water Features

Constructed water features within the Mill Area are the Alley Spring Roller Mill exterior hydraulic structures. The primary exterior hydraulic structures that make up the Alley Spring Roller Mill include the millrace, turbine pit, dam, and spillways. These elements are illustrated in Figures 3.41 through 3.43.

Alley Spring Roller Mill was designed to be powered using the water discharged from Alley Spring. The Alley Spring Dam (HS-501A) is a critical component of the mill system located immediately east of the Mill building. The dam stretches approximately 170 feet east-west, ponding Alley Spring to form the Mill Pond. The Mill Pond is just over an acre in area and drains through two eroded spillways on opposite ends of the dam. The primary spillway is located on the western end of the dam and is constructed of native rough-cut stone and concrete. According to a 2012 structural evaluation of the dam, the spillway has been modified from its historic condition. It no longer includes control gates or flashboards. At the time of the previous structural evaluation, portions of the concrete walls along the east side of the spillway were failing by tilting due to the growth of tree roots. The 2012 report also identified water passing underneath the dam (or "piping") as a structural concern.[335] The secondary spillway is located at the eastern end of the dam and is constructed of native stone and rubble (Figure 3.43). Approximately 20 feet of the secondary spillway is breached, and at the time of the 2012 structural evaluation, there were indications that the remaining west side was continuing to erode and progressively fail.[336] Between the two spillways is the earth dam, which showed little sign of piping or other failures at the time of structural evaluation. The dam is vulnerable to overtopping during flood events, and its stability and integrity are dependent on the other elements in the system.[337]

The original dam dates to 1894, when the Mill was first constructed. The dam has been reconstructed many times, and its current appearance does not reflect the period of time when the Mill was operational. When the CCC reconstructed the dam in 1934, the design emphasized naturalistic landscaping. Large stones visually meld the structure to the natural topography. Following the CCC repair work, it was possible to walk across the top of the dam. Structural deterioration makes this impossible today.

The millrace is located adjacent to the Mill building and is composed of concrete structures that channel the water to power the Mill. The millrace includes two wooden control gates to manage the flow of water through the race.

[335] Thomas R. Fitzpatrick, *Design Alternatives for Restoration of Earth-Fill Dam and Hydraulic Structures at Alley Roller Mill* (National Park Service, Ozark National Scenic Riverways, 2012), 22-25.
[336] Fitzpatrick, *Design Alternatives for Restoration of Earth-Fill Dam and Hydraulic Structures at Alley Roller Mill,* 25.
[337] Fitzpatrick, *Design Alternatives for Restoration of Earth-Fill Dam and Hydraulic Structures at Alley Roller Mill,* 26.

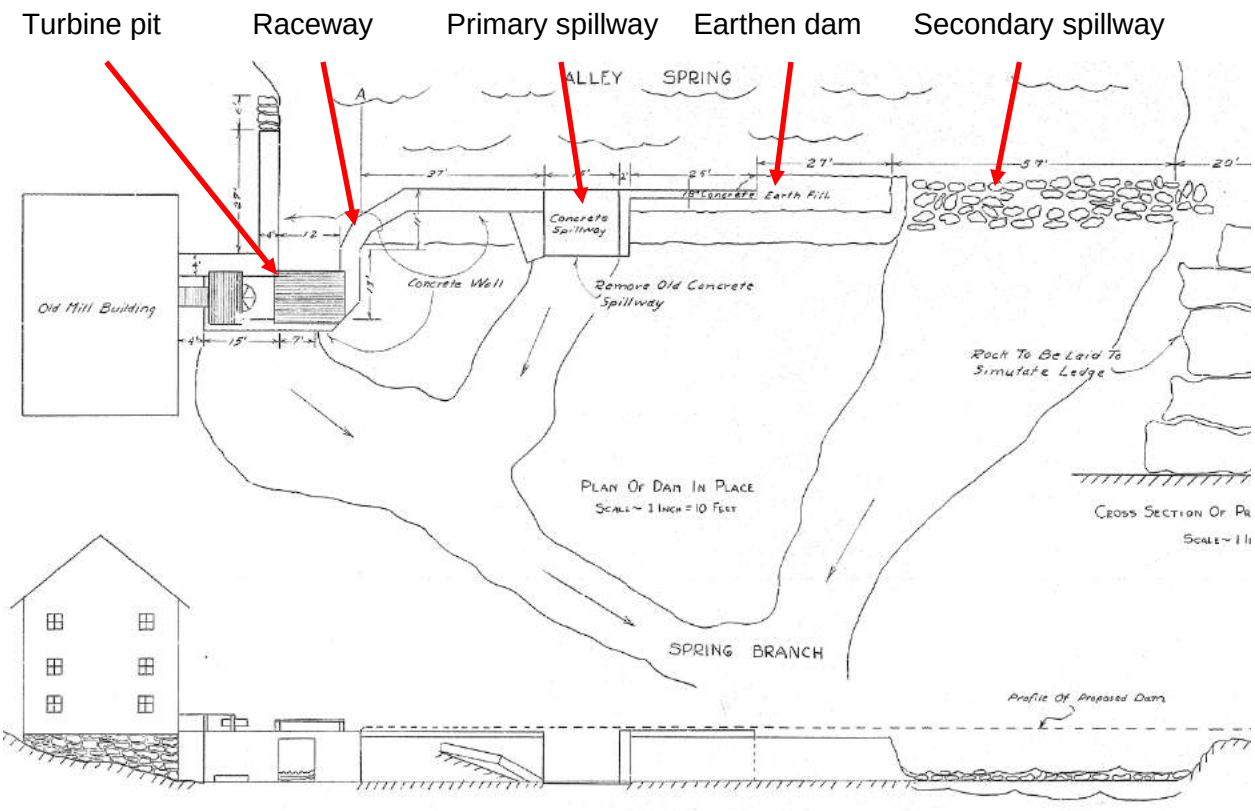


Figure 3.41. Diagram of the dam, showing dam components and the three-gate spillway added ca. 1914. (OZAR 614-41974. Base drawing by CCC, 1934; notes added by QEA, 2018)

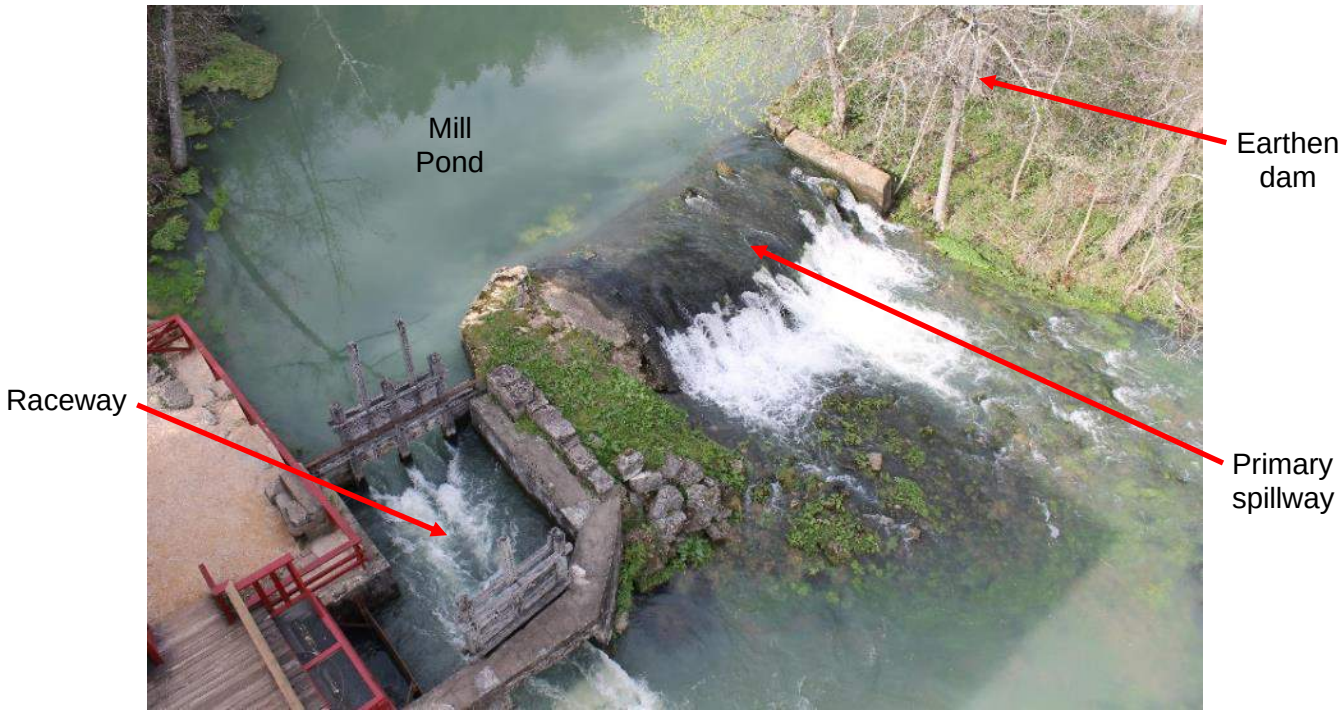


Figure 3.42. Millrace (left) and primary spillway (right). (QEA 2018, IMG_7205)



Figure 3.43. Secondary spillway. (QEA 2018, IMG_4481)

Views

Views within the Mill Area are centered on the Mill and Mill Pond. The Mill is prominently visible from the lawn areas and the trail around the Mill Pond, although successional vegetation partially obscures views in some locations.

Vegetation

Vegetation within the Mill Area is characterized by turf interspersed with individual trees, typically large sycamores and elms. The character area is surrounded by upland forest, which dominates the sloped ridges to the north and east. Constructed islands within Alley Spring Branch are thickly wooded with bottomlands forest species. Small woody vegetation is impacting the dry stacked revetment walls that define the Mill Pond and Spring Branch islands.

Small-scale features

Small-scale features within the character area include three wayfinding signs, two interpretive waysides, and a wood fence. A wayside interpreting the town of Alley Spring is mounted on a mortared stone base immediately north of the Mill building (Figure 3.44). Another low-profile metal wayside with no interpretive panel is located along the gravel walkway near the remnants of the Alley Spring Footbridge.

A post and rail wood fence is located along the water's edge on the east side of the Mill (Figure 3.45). The fence is 35 to 37 inches tall and does not meet the International Building Code guardrail requirement of 42 inches. In addition, the wide spacing of vertical elements does not meet the requirement for 4" maximum openings in guardrails.



Figure 3.44. Wayside with stone base at rear of Mill. (QEA 2018, IMG_4365)



Figure 3.45. Wood fence along Mill Pond. (QEA 2018, IMG_4371)

Mill Area Analysis

Table 3.1 provides a list of contributing and non-contributing features within the Mill Area.

Table 3.1. Mill Area Contributing and Non-contributing Features.

Feature	Contributing Status	Rationale
Circulation		
Stone walkway	Route contributing	Although a bare earth path was present in this location during the period of significance, the stone walkway itself has been determined ineligible for the National Register. It was constructed circa 1975-1983, likely coinciding with either the initial construction of the adjacent pedestrian bridge (1975) or the later bridge reconstruction (1983). It replaced an earlier state park-era stone walkway.
Gravel paved area on north side of Mill	Contributing	Constructed in 1934 by CCC work crews.
Spring Branch Trail	Contributing	Constructed in 1934 by CCC work crews.
Gravel walkway to missing Alley Spring Branch Footbridge	Route contributing	A route was present in this location during the period of significance, connecting between the two footbridges. The walkway surface is a modern addition and does not contribute.
Buildings and Structures		
Alley Spring Roller Mill (HS-501)	Contributing	Constructed in 1894.
Remnants of Alley Spring Branch Footbridge	Non-contributing	Constructed in 1975 in the location of earlier CCC-era footbridge.
Alley Hollow Creek Footbridge	Non-contributing	Constructed in 1975 and reconstructed in 1983 in the location of and earlier CCC-era footbridge.
Stone channel revetment walls	Contributing	Constructed in 1934 by CCC work crews.
Constructed Water Features		
Alley Spring Dam (HS-501)	Contributing	Constructed as part of original mill system in 1894 and reconstructed in 1934 by CCC work crews.
Millrace	Contributing	Constructed as part of original mill system in 1894 and reconstructed in 1934 by CCC work crews.
Vegetation		
Mown grass	Contributing	Consistent with mown grass present during the period of significance.
Floodplain forest	Portions contributing	Although some bottomlands forest was present along the streams during the

Feature	Contributing Status	Rationale
Circulation		
		period of significance, the encroachment of successional vegetation that blocks views to the streams has occurred since the end of the period of significance and is non-contributing.
Small-Scale Features		
Wayfinding signs (3)	Non-contributing	Modern feature added by NPS.
Waysides (2)	Non-contributing	Modern feature added by NPS.
Wood fence (1)	Non-contributing	Modern feature added by NPS.

Alley Spring Picnic Area

The Alley Spring Picnic Area is located immediately east of State Route 106 between the highway and Alley Spring Branch. It includes many of the visitor services provided at the site, including the General Store and Blacksmith Shop, the Alley Spring Picnic Shelter, picnic areas, and parking areas, and a gravel parking area along Alley Hollow Branch which is intended to provide barrier-free parking for the Mill. Immediately to the north of the Alley Spring Picnic Area is the site of the former Alley Schoolhouse, which was demolished in 2015. The spatial organization of the area was altered with the addition of the Storys Creek Schoolhouse and Blacksmith Shop. Changes to vegetation also impact the historically significant visual relationship between Alley Mill, the Spring Branch, and the Alley Spring Picnic Shelter.

The existing condition of the Alley Spring Picnic Area is illustrated on drawing EC-3. Table 3.2 identifies contributing and non-contributing features within the Alley Spring Picnic Area.

Existing Condition

Topography

The Alley Spring Picnic Area is oriented along Alley Hollow, a narrow valley formed by the drainages of Alley Hollow Creek and Alley Spring Branch. It includes both the floodplain associated with the two streams as well as a natural terrace approximately 20 feet above the streams. Similar to other low-lying areas within the study area, the picnic areas, parking areas, and Storys Creek Schoolhouse are subject to periodic flooding following major storm events.

Circulation

This section describes the existing condition of circulation features in the Alley Spring Picnic Area. It is followed by an accessibility assessment of routes to primary features within the character area.

The Alley Spring Picnic Area is accessed via County Road 106-308 and County Road 305. The primary parking area for Alley Mill is the 3,500 square-foot asphalt paved parking area located south of the Alley Spring Picnic Shelter (Figure 3.46). The parking area provides 56 standard parking spaces, which are arranged diagonally. The diagonal parking spaces allow for one bus or trailered vehicle to park across two connecting spaces. The parking area is accessed from CR 106-308. South of CR 106-308, there is a smaller asphalt paved parking area that accommodates 10 standard vehicles.

The north parking area provides secondary parking near the footbridge that crosses to the Mill. The parking area is gravel paved and provides four standard parking spaces and four spaces that are marked handicap accessible (Figure 3.47). A parking area has been located in approximately this location since 1934. Historically, the parking area was accessed via the former road along the spring branch, which is now a sidewalk.

A small gravel pull-out is located to the west of the Alley Spring Picnic Shelter along State Route 106 (Figure 3.48). The parking area provides space for approximately two vehicles. The gravel

surface is not accessible, and there is no connecting pedestrian route to the Picnic Shelter or comfort station.

An additional 14 parking spaces are provided along County Road 305 adjacent to the General Store (Figure 3.49). The parking area has an asphalt surface and connects to a concrete sloped walk that accesses the General Store.

A network of pedestrian sidewalks extends south from the Alley Hollow Creek parking area, connecting to the Storys Creek Schoolhouse, the Alley Spring Picnic Shelter, and the primary parking area (Figure 3.50). The sidewalks are concrete or asphalt and range from 5 feet to 8 feet wide. On the east side of the Alley Spring Picnic Shelter is a 16-foot wide concrete pad that contains picnic tables, grills, and a drinking fountain. Overall, the sidewalks are in fair condition. Cracks and areas of spalling are typically present. A 4-foot wide gravel walkway connects Storys Creek Schoolhouse to the General Store. A stone staircase ascends the steep slope between the two buildings (Figure 3.51).



Figure 3.46. Alley Spring Parking Area, located south of the Alley Spring Picnic Shelter, provides parking for 56 cars. (QEA 2018, IMG_7691)



Figure 3.47. Alley Hollow Creek Parking Area includes four parking spaces marked handicap accessible. The gravel surface of this parking area is not an acceptable surface for an accessible parking lot. (QEA 2018, IMG_7529)



Figure 3.48. Small parking area on east side of State Route 106 near Alley Spring Picnic Shelter. There is no formal route from the parking area to the shelter. (QEA 2018, IMG_7653)



Figure 3.49. Parking spaces adjacent to General Store along CR 305. (QEA 2018, IMG_7576)



Figure 3.50. Sidewalk system on east side of Alley Spring Branch. (QEA 2018, IMG_7179)



Figure 3.51. Gravel trail and stone steps (HS-511A) to General Store. Wood water bars direct runoff away from the steps. (QEA 2018, IMG_7542)

Accessibility Assessment: Route from Parking Area to General Store

There is no accessible route from the General Store parking area into the interior of the General Store. Access is limited by a vertical change in elevation at the General Store doorway and a lack of designated accessible parking spaces within the parking area.

- The surface of the General Store parking area is asphalt, which complies with the requirement for a firm, stable surface in ABAAS 302.1.
- There are no marked car or van accessible parking spaces in the General Store parking area.
- There is a five-foot-wide concrete walkway connecting the General Store Parking Area to the concrete porch on the front of the building, complying with ABAAS 403.5.1.
- There is a 5/8-inch difference in elevation between the concrete porch and the door to the General Store, which exceeds the acceptable 1/2-inch tolerance specified by ABAAS 303.2.
- The width of the door to the General Store is 35.5 inches, which complies with the 32-inch minimum required by ABAAS 404.2.3.

Route from Parking Area to Alley Spring Picnic Shelter

There is no accessible route connecting accessible parking spaces to the Alley Spring Picnic Shelter. The primary barrier to access in this location is the steep slope between the parking area and the Picnic Shelter, which is located on a topographic bench approximately 20 feet higher in elevation.

- The surface of the Alley Spring parking area is asphalt, which complies with the requirement for a firm, stable surface in ABAAS 302.1.
- There are no designated car or van accessible parking spaces in the Alley Spring parking area.
- There is no accessible route from the parking area to the picnic shelter. The walkway connecting from the parking area to the shelter has an acceptable width of 5.5 feet. However, the slope of the walkway exceeds 1:20 (5%), and the asphalt surface is irregular, failing to comply with ABAAS 302.1 and 403.3.
- Two additional parking spaces are located to the west of the Alley Spring Picnic Shelter off of State Route 106. The parking area is gravel, which does not comply with ABAAS 302.1, and there is no accessible route connecting the parking spaces to the shelter.
- Visitors enter the Picnic Shelter from a concrete walkway located on the east side of the structure. There is a 5-inch gap between the concrete walkway and the interior of the Picnic Shelter, which exceeds the acceptable 1/2-inch vertical clearance specified by ABAAS 303.2 (Figure 3.52).
- A small, uncovered picnic area is connected to the east side of the parking area with an accessible route (Figure 3.53). The walkway has a firm, stable concrete surface, a width of 5 feet, and low slope complying with ABAAS 302.1, 403.3, 403.5.1 and 403.5.3. The picnic area is comprised of a 12-foot by 16-foot concrete slab with one picnic table and one grill. The picnic table does not comply with ABAAS 011, which requires a clear ground space of 36 inches all usable sides of the table.



Figure 3.52. Concrete sidewalk on the east side of the Alley Spring Picnic Shelter. There is a 5-inch gap between the concrete patio and the interior of the shelter. (QEA 2018, IMG_7678)



Figure 3.53. Accessible route to picnic table. (QEA 2018, IMG_7723.

Buildings and Structures

The Alley Spring Picnic Shelter (HS-503) is a large stone and wood frame T-plan structure topped with a wood-shingled hipped roof (Figure 3.54). It is located on a terrace overlooking Alley Spring Branch and was constructed by the CCC in 1934. The main section of the building measures 50 feet by 26 feet, while the cross section measures 20 feet by 29 feet. The roof has extensive vegetative growth and is in poor condition. The superstructure is supported by wide stone corner columns of uncoursed rough stone; interior supports are timber. The western portion of the building features skirt walls constructed of smooth cut stone. Above the skirt walls are large rectangular openings with wood sills and wood frame columns. The floor of the eastern portion of the building is stone, which extends outside of the columns to form a walkway around the perimeter of the structure. The floor of the western portion, which was originally designed to support concessions, is poured concrete.

Immediately to the northwest of the Alley Spring Picnic Shelter is a modern, noncontributing comfort station (Figure 3.55). The wood frame structure measures 23.5 feet by 12 feet and rests on a concrete slab foundation. It has board-and-batten siding and a shingle-covered gable roof. The building is split into two halves, both of which are accessed from the east side of the structure. At the time of field investigations in April 2018, the building was closed due to damage to the Jacks Fork Pedestrian Bridge, which disrupted access to water and sewer utilities.

The Storys Creek Schoolhouse (HS-520) is a one-room schoolhouse located in the floodplain to the east of the Alley Spring Ranger Station (General Store) (Figure 3.56). It is a wood frame structure measuring 20’-3” by 32’ with lap siding, a brick chimney, and a small porch located at

the entrance on the east side. The interior is clad in tongue-and-groove bead board. The Storys Creek Schoolhouse was originally constructed in 1896 in the nearby hamlet of Storys Creek. It was moved to Alley Spring in 1971 and is a noncontributing structure. The building has been elevated on concrete and stone piers to avoid flooding.

The Alley Spring Ranger Station (HS-511) is located on the east side of County Road 305 and is now used by NPS as the General Store and contact station for the site (Figure 3.57). It was originally constructed ca. 1939 as a park administrative building and was remodeled in 2003 to 2004 to serve its current function. The building is a one-story frame structure resting on a stone foundation and topped with an asphalt-shingled gable roof. It has an interior brick chimney. Windows are the original one-over-one wood sash with exterior metal storm windows. The main (west) façade has a full-width continuous gable roof porch supported by wood posts and cross-beams with a poured concrete floor. On the south elevation is a shed roof wing that was formerly used as a garage; it is now an enclosed screen porch. A small shed roof wing is located at the back (northeast) corner of the north elevation. An entrance on this corner has been enclosed with siding.

The Alley Spring Blacksmith Shop is a modern, noncontributing structure located south of the Alley Spring Ranger Station (General Store). It is a wood frame structure with a wood shingled gable roof and a deep porch on the north side supported by large wood posts (Figure 3.58). The rustic character of the structure is meant to emulate a historic Ozark Blacksmith Shop. It is used for interpretive programs.

Near the County Road 106-308 Vehicular Bridge, a dry stacked stone revetment wall fortifies the stream bank along the west side of the Alley Spring Branch (Figure 3.59). The wall is in poor condition.



Figure 3.54. Alley Spring Picnic Shelter. (QEA 2018, IMG_7673)



Figure 3.55. Modern comfort station at Alley Spring Picnic Area. (QEA 2018, IMG_7631)



Figure 3.56. Storys Creek Schoolhouse. (QEA 2018, IMG_7544)



Figure 3.57. Alley Spring Ranger Station (HS-511) (General Store). (QEA 2018, IMG_7582)



Figure 3.58. Blacksmith Shop. (QEA 2018, IMG_7573)



Figure 3.59. Dry laid stone retaining wall forms channel revetment along the stream near the Alley Spring Branch Vehicular Bridge. (QEA 2018, IMG_7751)

Constructed Water Features

Due to the position of the Alley Spring Picnic Area within a valley, numerous constructed water features have been added to address water draining toward Alley Spring Branch. Culverts and drainageways route water from under State Route 106 and the primary parking area to Alley Spring Branch through hardened and vegetated swales (Figure 3.60). Along the southern side of the General Store, rapidly draining water has eroded the gravel trail extending to the stone steps (Figure 3.61). A series of wood water bars directs water to the south side of the steps, where the ground surface is highly eroded (Figure 3.51).



Figure 3.60. Culvert drains water from the west under State Route 106 into a vegetated drainage swale that extends to the north of the picnic shelter. (QEA 2018, IMG_7640)



Figure 3.61. At the southwest corner of the General Store, the gravel trail is eroded by runoff from the parking area. (QEA 2018, IMG_7596)

Views

Views within the Alley Spring Picnic Area typically extend north and south along the length of the Hollow. Due to the encroachment of woody vegetation, portions of this area have become visually separated from nearby features. The Spring Branch and Mill are no longer visible from the Picnic Shelter, although they would have been visible from this location historically. The General Store and Blacksmith Shop have also become visually separated from the rest of the hollow by woody vegetation to the east and south.

Vegetation

Vegetation within this area is primarily mown lawn interspersed with individual trees, resulting in a parklike character consistent with the picnic areas and open grounds. Typical tree species include black walnut, white oak, red oak, sycamore, red maple, black pine, boxelder, cedar, hackberry, black cherry, and cottonwood. Individual trees range in size from 6” to over 36” diameter at breast height (DBH). Immediately adjacent to the Alley Spring Picnic Shelter are one white oak, one sugar maple, and two cedar trees that are documented in historic photographs and date to the period of significance. Hazard trees, which are trees in poor condition and in close proximity to a historic feature or visitor amenity that may be damaged if the tree dropped branches or fell, are identified on drawing EC-3. The extent of mown lawn within the Alley Spring Picnic Area has been reduced since the period of significance. Dense areas of woody growth have developed along steep slopes and other areas that are not used by visitors, including between the comfort station and the General Store.

Along the stream banks, the vegetation is composed of the dense riparian species characteristic of bottomland forest. Views of the Alley Mill and Alley Spring Branch are obscured by vegetation, particularly when trees are leafed out in the summer.

Small-scale features

Small-scale features include the bulletin kiosk, picnic tables, grills, trash receptacles, a school bell at the Storys Creek Schoolhouse, and wayfinding (Figure 3.62 and Figure 3.63). These features are all contemporary additions to the site that serve active recreational use and wayfinding.

There are two flagpoles: a rough wood pole located at the Storys Creek Schoolhouse and a metal flagpole located at the southwest corner of the General Store. The flagpole at the Schoolhouse is a contemporary addition. The flagpole at the General Store is the only contributing small-scale feature within the character area. It was constructed in 1939 and is in good condition (Figure 3.64).

Numerous utility features are located throughout the character area. The primary water and sewer lines servicing Alley Mill pass through the floodplain roughly parallel to the north-south sidewalk that connects from the Mill to the primary parking area. Along this alignment are water and sewer access panels, manholes, and ventilation pipes (Figure 3.65). Electric boxes and a propane tank surrounded by a wood security fence are located near the General Store. These utility features are widespread throughout the area, but also typically unobtrusive.



Figure 3.62. Small-scale features including picnic tables, grills, trash receptacles, and drinking fountain at the Alley Mill Picnic Shelter. (QEA 2018, IMG_7681)



Figure 3.63. Bulletin kiosk east of Alley Spring Picnic Shelter. (QEA 2018, IMG_7696)



Figure 3.64. Flagpole at southeast corner of General Store. (QEA 2018, IMG_7582)



Figure 3.65. Sewer utilities in lawn south of CR 106-308. (QEA 2018, IMG_7881)

Alley Spring Picnic Area Analysis

Table 3.2 provides a list of contributing and non-contributing features within the Alley Spring Picnic Area.

Table 3.2. Alley Picnic Area Contributing and Non-contributing Features

Feature	Contributing Status	Rationale
Circulation		
North Parking Area	Location contributing	A parking area has been in this location since 1927.
Main Parking Area	Non-contributing	Constructed in 1973.
Parking Area off State Route 106	Non-contributing	Modern feature added by NPS.
Parking Area at General Store	Route contributing	The building and associated parking are oriented to County Road 305. Parking has taken place off the road to the west of the building since its construction in 1939.
Sidewalks	Partial contributing	The north-south route extending between County Road 106-308 and the north parking area follows the route of a road present by 1915. Other sidewalks do not follow contributing routes. Concrete and asphalt sidewalk surfaces are non-contributing.
Steps to Ranger Station (General Store) (HS-511A)	Contributing	Constructed in 1930.
Buildings and Structures		
Alley Spring Picnic Shelter	Contributing	Constructed in 1934 by CCC.
Alley Spring Ranger Station	Contributing	Constructed in 1939.
Alley Spring Blacksmith Shop	Non-contributing	Modern feature added by NPS.
Storys Creek Schoolhouse	Non-contributing	Moved to site in 1971.
Modern comfort station	Non-contributing	Modern feature added by NPS.
Stone channel revetment	Contributing	Constructed in 1934 by CCC.
Constructed Water Features		
Culverts and swales	Non-contributing	Modern features added by NPS.
Vegetation		
Mown lawn	Contributing	Mown lawn is consistent with the vegetation present in the hollow during the period of significance; however, the extent of mown lawn in this area has been reduced since 1969.
Individual trees	Partial contributing	Cedar, maple, and oak trees near the Alley Spring Picnic Shelter date to the period of significance. These trees are visible on 1933 photographs of site work as well as the 1943 aerial photograph.

Feature	Contributing Status	Rationale
		The character of shade trees present in the open lawn is consistent with the historic period, although numerous trees have been added since the end of the period of significance.
Successional Grassland	Non-contributing	Since 2012, successional grassland has encroached on select areas that were mown in the historic period and is non-contributing.
Forest	Non-contributing	Although some bottomlands forest was present along the streams during the period of significance, the encroachment of successional vegetation that blocks views to the streams has occurred since the end of the period of significance and is non-contributing.
Small-Scale Features		
Flagpole at Storys Creek Schoolhouse	Non-contributing	Modern feature added by NPS.
Flagpole at Ranger Station (General Store)	Contributing	Constructed in 1939.
Bulletin kiosk	Non-contributing	Modern feature added by NPS.
Bollards (5)	Non-contributing	Modern feature added by NPS.
Picnic tables (10)	Non-contributing	Modern feature added by NPS.
Grills (9)	Non-contributing	Modern feature added by NPS.
Waste receptacles (4)	Non-contributing	Modern feature added by NPS.
Water fountain (1)	Non-contributing	Modern feature added by NPS.
Road signs	Non-contributing	Modern feature added by NPS.
Wayfinding signs	Non-contributing	Modern feature added by NPS.
Interpretive wayside (1)	Non-contributing	Modern feature added by NPS.
Propane tank	Non-contributing	Modern feature added by NPS.
Fence	Non-contributing	Modern feature added by NPS.
Guardrail	Non-contributing	Modern feature added by NPS.
Utilities	Non-contributing	Modern addition to site.

Burr Oak Picnic Area

The Burr Oak Picnic Area is located in the southern portion of the study area east of State Route 106 and south of Alley Spring Branch. The character area is along the north bank of the Jacks Fork River and is located entirely within the river floodplain. It contains picnic facilities including the Burr Oak Picnic Structure, a modern comfort station, and a broad area of mown grass containing picnic tables, grills, and playground equipment. The existing condition of the Burr Oak Picnic Area is illustrated on drawing EC-3. Table 3.3 identifies contributing and non-contributing features within the Burr Oak Picnic Area.

Existing Condition

Topography

Due to its location in the floodplain, the topography within this character area is typically flat and is highly susceptible to flooding from the Jacks Fork River. Near Alley Spring Branch, a low rise of approximately four to six feet elevates a portion of the picnic area above the surrounding topography (Figure 3.66).

A major flood event in 2017 deposited several feet of gravel within the southern portion of the character area, primarily at the parking area, picnic shelter, and part of the picnic area (Figure 3.67). At the time of the April 2018 field investigations, gravel removal was ongoing. Major flood events are likely to occur with increased frequency in the future.

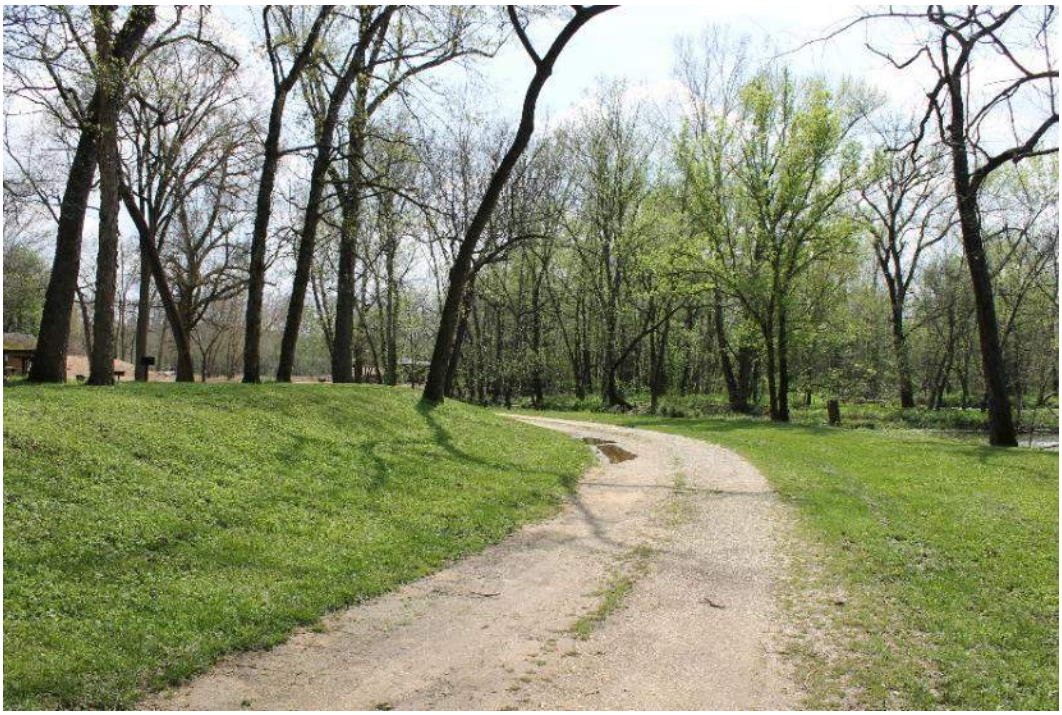


Figure 3.66. Portions of the Burr Oak Picnic Area are elevated 4-6 feet above the surrounding floodplain. (QEA 2018, IMG_7831)



Figure 3.67. Gravel deposited by the 2017 flooding east of Burr Oak Picnic Shelter.
(QEA 218, DSC09185)

Circulation

The Burr Oak Picnic Area is accessed via a two-lane gravel road that extends south from CR 106-308 (Figure 3.68). Parking is located east of the Burr Oak Picnic Shelter, near the edge of the Jacks Fork River. The gravel parking area provides designated spaces for 17 cars. To the northeast of the parking area, a network of single-lane gravel road loops provides shared vehicular and pedestrian circulation within the picnic area.

Due to changes in the morphology of the river and damage to the Jacks Fork pedestrian bridge, the kayak and canoe vending location on the south side of the river near the Alley Mill Campground is no longer practical. The park plans to provide interim access to the river from the Burr Oak parking area for boat rental concessioner until a new long-term location can be established.

Nearly all circulation routes within this area are gravel paved, limiting access for visitors who require universally accessible routes. There is no universally accessible route to the picnic shelter, comfort station, or individual picnic sites.



Figure 3.68. Burr Oak Picnic Area is accessed via a two-lane gravel entrance road. The picnic area is visually separated from the Alley Spring Picnic Area by a swath of floodplain forest. (QEA 2018, IMG_7875)

Buildings and Structures

The Burr Oak Picnic Shelter is a modern wood frame structure topped by a hipped roof shingled in wood shakes (Figure 3.69). The structure rests on a concrete slab foundation and features a central brick chimney with two fireplaces on opposing sides. It was constructed in 1989 by the Mingo Jobs Corps Center. The picnic shelter is frequently subject to flooding and gravel deposition.

There is a modern comfort station located immediately to the east of the Burr Oak Picnic Shelter. The wood clad structure measures 23.5 feet by 12 feet and is situated on a concrete foundation on top of a small topographic rise and topped with a simple gable roof (Figure 3.70). A four-foot-wide concrete sidewalk surrounds the modern comfort station.



Figure 3.69. Burr Oak Picnic Shelter. (source: QEA 2018, DSC09197)



Figure 3.70. Modern comfort station at Burr Oak Picnic Area. (QEA 2018, IMG_7861)

Vegetation

The picnic tables and grills within this character area are located within a parklike area of mown grass interspersed with limbed-up individual trees. Typical tree species include black walnut, burr oak, white oak, red maple, sycamore, osage orange, elm, and cottonwood. Individual trees range in size from 6” to over 36” DBH (Figure 3.71). Since 2012, the extent of the mown grass at Burr Oak Picnic Area has been reduced. Portions of the mown grass along the southeastern edge of the picnic area have been abandoned to ruderal grasses and shrubs (Figure 3.72). These areas will continue to become grown in with successional vegetation unless mowing is resumed. The mown picnic area is surrounded by bottomlands forest characteristic of the river floodplain, which forms a dense vegetative enclosure that blocks visual connections to other portions of the study area. Where present, woody vegetation partially blocks or slows gravel deposition due to flooding. Riverfront shrubland and gravel bar vegetation grow along the coarse gravel banks of the Jacks Fork River.



Figure 3.71. Open, parklike character of mown lawn with limbed-up individual trees at Burr Oak Picnic Area. (QEA 2018, IMG_7852)



Figure 3.72. Mowing has been reduced in a portion of the picnic area, which is now becoming colonized by ruderal grasses and woody vegetation. (QEA 2018, IMG_7854)

Views

Although the character area is located in close proximity to the Jacks Fork River, views to the river are typically controlled by the dense bottomlands forest, and it is only visible from a location south of the parking area. The picnic area has a strong visual connection to the Alley Spring Branch, which arcs to the north of the picnic tables and grills. The mown edge of the picnic area extends to the stream.

Small-Scale Features

Small-scale features within the Burr Oak Picnic Area are modern additions that do not contribute to the significance of the cultural landscape. The character area provides picnic tables, grills, trash receptacles, and playground equipment to support recreational use (Figure 3.73). A spigot is located outside the modern comfort station. Bollards and parking blocks define the extent of the parking area.



Figure 3.73. Playground equipment at Burr Oak Picnic Area. (QEA 2018, IMG_7847)

Burr Oak Picnic Area Analysis

Table 3.3 provides a list of contributing and non-contributing features within the Burr Oak Picnic Area.

Table 3.3. Burr Oak Picnic Area Contributing and Non-contributing Features.

Feature	Contributing Status	Rationale
Circulation		
Burr Oak Picnic Area Entrance Road	Contributing	Present by 1933.
Burr Oak Picnic Area Loop Roads	Non-contributing	Although loop roads were present in this location during the period of significance, the location of historic roads does not appear to be consistent with the existing road patterns.
Burr Oak Parking Area	Non-contributing	Modern feature added by NPS.
Concrete sidewalk	Non-contributing	Modern feature added by NPS.
Buildings and Structures		
Burr Oak Picnic Shelter	Non-contributing	Constructed in 1989.
Privy	Non-contributing	Modern feature added by NPS.
Vegetation		
Bottomlands Forest	Contributing	Consistent with bottomlands forest present in floodplain of Jacks Fork River throughout the period of significance.
Mown grass	Contributing	Consistent with mown grass in picnic and camping areas present during the period of significance.
Riverfront Shrubland and Gravel Bar Vegetation	Contributing	Consistent with riverfront vegetation present throughout the period of significance.
Small-Scale Features		
Playground equipment (2)	Non-contributing	Modern feature added by NPS.
Picnic tables (17)	Non-contributing	Modern feature added by NPS.
Grills (14)	Non-contributing	Modern feature added by NPS.
Trash receptacle (1)	Non-contributing	Modern feature added by NPS.
Bollards (7)	Non-contributing	Modern feature added by NPS.
Water spigot (1)	Non-contributing	Modern feature added by NPS.

East Trail Area

The East Trail Area encompasses the northeastern portion of the study area from the Alley Spring Branch to the historic district boundary. The southeastern portion of the character area is bounded by the Jacks Fork River. The character area contains the Overlook Trail, Spring Branch Trail, and County Road 106-308 (River Road). The existing condition of the East Trail Area is illustrated on drawing EC-3. Table 3.4 identifies contributing and non-contributing features within the East Trail Area.

Existing Condition

Circulation

This character area contains the primary components of the Alley Mill Spring Trail System East (HS-501H), which is composed of two 1934 CCC-built trails known as the Spring Branch Trail and the Overlook Trail.

The Spring Branch Trail begins on the north side of the Mill, routes around the Alley Spring Pond, and runs between the bluff face and Alley Spring Branch until it meets County Road 106-308. The trail is 0.3 miles in total length. It is typically three to four feet wide and paved in gravel (Figure 3.74 and Figure 3.75). Rock outcrops form the basis of the trail grade and provide interest along the trail. Throughout the trail grade, tree roots and small rocks puncture the gravel surface of the trail, forming frequent trip hazards. NPS maintenance staff currently treats these conditions by grinding down tree roots or filling with additional gravel. In limited locations, water draining from the top of the bluff causes portions of the trail to be soft and muddy. The trail features extensive rustic stonework, including one set of stone steps as well as stone edges and retaining walls on the stream side of the trail (Figure 3.76). One set of wood steps navigates a steep portion of the trail. Refer to the Alley Mill character area for a detailed description of the portion of the trail around the Mill Pond.

Approximately midway along the Spring Branch Trail is a rustic secondary trail that runs parallel to the Spring Branch Trail along the top of the rock outcrops. This footpath passes native rock outcrops, stone edging along the trail grade, and stone steps carved into native rock (Figure 3.77). The footpath has not been maintained by NPS for several decades, due to safety concerns and potential resource impacts. The trail grade is bare earth, and portions of the stone steps and stone edge are dislodged, missing, or buried.

The Overlook Trail is a 1.5-mile trail beginning northwest of the Mill. The trail climbs the ridge north of the Mill through a series of switchbacks, runs south along the ridge to access the Alley Mill Overlook, and descends the slope through another series of switchbacks to connect with CR 106-308 to the east of the Spring Branch Trail. The trail is typically four to five feet wide and gravel paved, with minor variations in width and surface due to the slope of the trail or washout of the gravel (Figure 3.78). The trail features extensive rustic stonework including dry-stacked native stone retaining walls and edges, and in some locations also incorporates the natural rock formations along the slope. Stone steps are located at both ends of the trail (Figure 3.79). The Overlook Trail was constructed in 1934 by the CCC as a bridle trail that continued to the west

along County Road 305. Horseback riding is now restricted to County Road 106-308, and the Overlook Trail is designated as a pedestrian route.

Erosion of the Overlook Trail surface is most apparent along switchbacks at the north and south ends of the trails, where the trail traverses the steep slopes on the face of the bluff. In some locations, gullies have formed in the highly erodible soils on steep slopes. Wood railroad ties have been installed across the width of the trail in steep areas to direct runoff from the trail surface and prevent gravel loss. Where an intermittent stream crosses the northern portion of the trail, mortared stone channels, weirs, and culverts have been constructed along the slope to control the flow of water and protect the trail (Figure 3.80 and Figure 3.81).

A remnant trail grade that originally connected to County Road 305 is visible to the west of the Overlook Trail. The grade extends southwest from the existing trail toward Alley Hollow Branch, where the remnants of the bridge abutment remain in place on the north side of the stream. A dry-laid stone retaining wall in poor condition defines the south side of the road grade. The surface is impacted by woody vegetation (Figure 3.82).



Figure 3.74. Spring Branch Trail weaves amongst rock outcrops between the base of the slope and Alley Spring Branch. (QEA 2018, IMG_4459)



Figure 3.75. Gravel surface of Spring Branch Trail. (QEA 2018, IMG_8504)



Figure 3.76. Stone steps with wood railing along Spring Branch Trail. (QEA 2018, IMG_8498)



Figure 3.77. Rough stone steps and stone edge along footpath along Spring Branch Trail. (QEA 2018, IMG_8067)



Figure 3.78. Gravel paved Overlook Trail with stone edge. (QEA 2018, IMG_7046)



Figure 3.79. Stone steps at south end of Overlook Trail, where the trail meets County Road 106-308 (River Road). (QEA 2018, IMG_7098)



Figure 3.80. Wood railroad tie used as a water bar and mortared channel at location of intermittent stream crossing along East Trail. (QEA 2018, IMG_6919.



Figure 3.81. An intermittent stream is directed under the East Trail. Stacked stone weirs are visible in the upper right portion of the image to slow the flow of water before it reaches the trail.
(QEA 2018, IMG_6891)



Figure 3.82. Trail grade extending west from East Trail toward Alley Hollow Creek.
(QEA 2018, IMG_6899)

Buildings and Structures

The Alley Mill Spring Scenic Overlook (HS501I) is a stone structure located along the Overlook Trail at the top of the limestone bluff above Alley Spring. The overlook was constructed in 1934 by CCC workers. It was originally designed as one of two shelters along the Overlook Trail. However, faced with time constraints, the structure was left as an uncovered viewing platform and the second structure was never built. The overlook is constructed on a 20-foot square mortared rubble base. The height of the rubble base varies from 6 to 8.5 feet above the ground level. The rubble base is in good condition, with the exception of a dead tree impacting the southwest corner of the base (Figure 3.83). The top three feet of the rubble wall taper inward to meet the top of the overlook. The interior of the overlook is defined by a stone floor framed by a 12-foot square mortared stone wall that stands three feet tall. The mortared stone wall is severely deteriorated and requires immediate stabilization. It is missing many of the stones that form the wall, and in some places, there are large holes (Figure 3.84). A wayside, damaged by vandalism, is centered on the overlook platform. The slopes around the overlook are damaged by social trails.

A five-foot by three-foot rectangular mortared stone base is located near the south end of the Spring Branch Trail (Figure 3.85). The structure is missing several stones and is in poor condition. It is associated with a moonshine-making demonstration area built ca. 1975 and was used to support a still.

Stone edges and retaining walls along the Overlook Trail are typically in fair condition. In limited locations, stones are displaced or missing from the structures, particularly where erosion impacts the trail. The stone edges on the footpath above the Spring Branch Trail are in poor condition and are not contiguous or missing in several locations.



Figure 3.83. Alley Mill Spring Scenic Overlook. Dead tree impacting southwest corner of rubble foundation of Alley Mill Spring Scenic Overlook. (QEA 2018, IMG_6970)



Figure 3.84. Poor condition mortared stone wall at Alley Mill Spring Scenic Overlook. (QEA 2018, IMG_6978)



Figure 3.85. Remnants of a stone base used for a demonstration moonshine still are near the south end of Spring Branch Trail. (QEA 2018, IMG_7973)

Views

Views along the Overlook Trail are typically enclosed by the upland forest vegetation, with the exception of the Overlook itself, which looks out over the Alley Mill, Mill Pond, and Alley Hollow. Due to its close proximity to the Spring Branch, the stream is visually prominent along the length of the Spring Branch Trail. Views are described in detail in the Study Area Views section in this chapter.

Vegetation

Vegetation within the East Trail area is predominantly forest. Along Alley Hollow Creek and Alley Spring Branch are bottomland forest species, and the dense understory encloses views along the trails.

At higher elevations, the forest transitions to drier upland species dominated by mature pines, and the understory becomes more open.

Small-scale features

Small-scale features within the East Trail area are modern additions that serve the recreational functions of the trails. A wood bench is located at one of the switchbacks on the northern end of the Overlook Trail (Figure 3.86). It has some graffiti carved into the surface and is in fair condition. The bench is not located at a viewpoint, and no other seating areas are provided along the trail, including at the overlook itself. There are no benches along the Spring Branch Trail.

Three sets of wood hitching posts are located in a small clearing along CR 106-308 near the entrance to the Spring Branch Trail (Figure 3.87). The hitching posts are a non-contributing feature intended to provide a designated area for horses away from the primary historic resources at Alley Mill. The hitching posts are in fair condition, with some visible wear. Horseback riding is only allowed on the county road, and not on NPS trails.

Metal wayfinding signs are located at both ends of the Spring Branch Trail and Overlook Trail. The signs are in good condition.



Figure 3.86. Wood bench along western portion of East Trail at switchback. (QEA 2018, IMG_6935)



Figure 3.87. Hitching post located east of Alley Spring Branch Vehicular Bridge. (QEA 2018, IMG_7943)

East Trail Area Analysis

Table 3.4 provides a list of contributing and non-contributing features within the East Trail Area.

Table 3.4. East Trail Area Contributing and Non-contributing Features.

Feature	Contributing Status	Rationale
Circulation		
Overlook Trail (HS-501H)	Contributing	Constructed by the CCC in 1934.
Spring Branch Trail (HS-501H)	Contributing	Constructed by the CCC in 1934.
Secondary trail above Spring Branch Trail	Contributing	Constructed by the CCC in 1934.
Remnant Trail Grade	Contributing	Constructed by the CCC in 1934.
Buildings and Structures		
Alley Mill Spring Scenic Overlook (HS-501I)	Contributing	Constructed by the CCC in 1934.
Mortared stone still base	Non-contributing	Associated with ca. 1975 moonshine demonstration area.
Vegetation		
Upland forest	Contributing	Consistent with location of forest on east ridge throughout the period of significance.
Small-Scale Features		
Wood bench (1)	Non-contributing	Modern feature added by NPS.
Hitching posts (3)	Non-contributing	Modern feature added by NPS.
Wayfinding signs (2)	Non-contributing	Modern feature added by NPS.
Picnic tables (2)	Non-contributing	Modern feature added by NPS.
Waste receptacles (2)	Non-contributing	Modern feature added by NPS.

West Trail Area

The West Trail Area comprises the portion of the study area west and south of State Route 106. The primary resources within this area are a cluster of CCC buildings associated with the former keeper's residence and maintenance shop, two seasonal cabins, and the remnants of a trail system that extended 1.5 miles along the bluffs rising above Jacks Fork River. The West Trail area occupies the densely forested ridge on the west side of Alley Hollow. Remnants of the West Trail system are located along the top of the ridge and along the slope over the Jacks Fork River. Buildings and roads that remain in use by NPS are clustered along the east slope of the ridge near State Route 106.

The Alley Spring District Maintenance Shop (HS-502), Alley Spring Park Keeper's Residence (HS-504), and Alley Spring Pump House (HS-507) are located in a small mown clearing immediately to the west of State Route 106 across from the Alley Spring Picnic Shelter referred to in this document as the Maintenance Area. The buildings are accessed from the Maintenance Road. The Maintenance Shop and Keeper's Residence are arranged at a similar elevation below the Pump House. A poorly defined gravel driveway serves both buildings. The remainder of the open area between the buildings is used for storage of maintenance materials. The Alley Spring Pump House (HS-507) is located uphill from the Maintenance Shop and Keeper's Residence within the same clearing. A separate steep gravel two-track driveway provides access to the building from the Maintenance Road.

The two seasonal cabins (HS-505 and HS-506) are located in a small mown clearing approximately 500 feet south of the maintenance area immediately to the west of State Route 106. The buildings are perched at similar elevations on the side of the bluff slope, overlooking Alley Hollow to the east. The buildings are accessed via a gravel driveway off State Route 106.

Table 3.4 and drawing EC-6 provide descriptions and locations of contributing and non-contributing features within the West Trail Area.

Existing Condition

Topography

The West Trail area is situated on the ridge to the west of Alley Hollow. The slopes of the ridge are steep with grades up to 50%, particularly on the southern aspect where the ridge overlooks the Jacks Fork River. To navigate the steep terrain, road and trail grades within this area traverse the ridge through a series of switchbacks.

Circulation

Existing circulation features within this character area include the maintenance road, driveways and sidewalks accessing the maintenance area and seasonal cabins, and remnants of the abandoned West Trail system.

The maintenance road is a single-lane asphalt-paved road extending from State Route 106 up the ridge to the Water Tower (Figure 3.88). At its western terminus, the road forms a circular

drive around the Water Tower. The asphalt surface of the road is deteriorating. The road was constructed in 1934 to provide access to the West Trail system. At the time it was constructed, the road ended at a parking area partway up the slope (now marked by piles of debris) that accessed the trailhead. The portion of paved road that continues up the ridge follows the original path of the West Trail.

The West Trail was constructed by the CCC in 1934 as part of the broad network of trails within the study area (Figure 3.89 through Figure 3.94). As originally built, it began at the trailhead near the crest of the ridge west of the Keeper's Residence. The trail extended along the ridge to near the westernmost boundary of the historic district, then looped eastward, traversing the steep slope above the Jacks Fork River, and exiting the treeline near the two Seasonal Cabins (HS-505 and HS-506). A short segment of trail continued to the north from this point, connecting the Seasonal Cabins to the Park Keeper's Residence.

Today, extant features associated with the West Trail include the trail grade and extensive stone retaining walls along sections of the route. Between the Maintenance complex and the Water Tower, the trail follows the route of the existing Maintenance Road. Between the Water Tower and the apex of the ridge (approximately 250 yards), the trail route is not apparent. At the high point of the ridge, the trail has a gravel surface and is lined with stones. Dry stacked stone retaining walls support the grade, becoming more extensive as the trail proceeds along steeper slopes, ranging in height from two to six feet. At a point along the Jacks Fork River on the lower portion of the trail, a stacked stone wall extends from a rock outcrop to form a small enclave (Figure 3.91). A drawing of 1934 CCC projects identifies two short trail segments along the southern portion of the trail connecting to the Jacks Fork Slough; one of these trail segments remains extant as a grade supported by a short retaining wall.

The trail is not currently maintained. It is not known when the trail was abandoned. It is depicted on a 1941 plan, indicating it was still maintained at that time. Portions of the trail at higher elevations are in fair to good condition, with little displacement of the dry stacked stones and only limited vegetative growth and fallen trees within the trail grade. As the trail continues down the slope toward the Jacks Fork River, vegetative growth becomes denser, and impacts to the stonework and trail grade are more apparent. The most difficult section of the trail to traverse is in the southeast corner of the study area, where the trail passes to the south of the seasonal cabins. Erosion along the steep terrain of the ridge has washed out portions of the trail in this area, and the remaining grade is heavily overgrown. Between the Seasonal Cabins and maintenance area, the trail intermittently appears as a deteriorating stone edge extending northward from the cabins to the Keeper's Residence. Portions of the grade and stone edge are impacted by the growth of large trees, and some of the stones associated with the edge are missing, buried, or dislodged.

The seasonal cabins are accessed via a short gravel drive from State Route 106. A set of five concrete steps with cheek walls connects the gravel drive to remnants of a gravel walkway. A stone edge extends between the two cabins (Figure 3.95). The northern cabin, HS-505, is accessed by a set of mortared stone steps terminating in an irregular stone patio adjacent to the

front porch (Figure 3.96). The top portion of the steps has a stone cheek wall. The southern cabin, HS-506, is accessed via a 23-foot-long mortared stone walkway that meets a set of six stone steps leading to an irregular stone patio adjacent to the front porch (Figure 3.97). Stone features at the Seasonal Cabins are typically in fair to poor condition. Portions of the stonework at both cabins are degraded, with missing stones, deteriorated mortar, and extensive chipping and spalling.

Circulation features within the Maintenance Area include two segments of gravel road and short concrete sidewalks that access the Keeper's Residence and Maintenance Shop. One gravel road extends from the Maintenance Road to the Maintenance Shop, ending in an open gravel-paged area that is used for materials storage. The other gravel road is a two-track forming a loop drive that accesses the Pump House (Figure 3.98). The concrete sidewalks at the Maintenance Shop and Keeper's Residence are typically three feet wide and in fair condition.



Figure 3.88. Asphalt maintenance road, facing east near top of the slope. This is the approximate location of the 1934 trailhead. (QEA 2018, IMG_7509)



Figure 3.89. Trail grade along upper portion of West Trail route. In this area, the grade is less overgrown, and the retaining wall is in fair condition. (QEA 2018, IMG_7414)



Figure 3.90. Dry laid stone retaining wall and trail grade along upper portion of West Trail route in good condition. (QEA 2018, IMG_7489)



Figure 3.91. Dry stacked stone wall located in grotto along lower portion of West Trail route. (QEA 2018, IMG_7350 and IMG_7370)



Figure 3.92. Overgrown trail grade along lower portion of West Trail route near Jacks Fork River. The trail is bounded on the river side (south side) by a deteriorated stone edge. (QEA 2018, IMG_7306)



Figure 3.93. Two retaining walls support trail grades above the Jacks Fork River. A secondary trail grade leads down toward the water. (QEA 2018, IMG_7394)



Figure 3.94. Stone edge along trail alignment between Alley Spring Keeper's Residence and seasonal cabins. The grade is apparent, although the trail and stone edge are impacted by tree growth. (QEA 2018, DSC09124)



Figure 3.95. Concrete steps from gravel drive to seasonal cabins. The northern cabin (HS-505) is in the background. (QEA 2018, DSC09135)



Figure 3.96. Stone steps with cheek wall at Seasonal Cabin HS-505. (QEA 2018, DSC09138)



Figure 3.97. Irregular stone patio and stone steps at southeast corner of Seasonal Cabin HS-506. (QEA 2018, IMG_4510)



Figure 3.98. Two-track gravel driveway to Alley Spring Pump House (HS-507). The Maintenance Shop (HS-502) is visible in the background of the photo, downhill from the Pump House (HS-507). (QEA 2018, DSC09117)

Buildings and Structures

The Alley Spring District Maintenance Shop (HS-502) is a two-story wood frame building constructed by the CCC in 1934 (Figure 3.99). The structure measures 25'-3" by 50'-3" and rests a concrete slab foundation. It is covered by a gambrel roof with wood shingles and is clad in wood shiplap siding. The building features an interior stone chimney. The northeast elevation, which faces State Route 106, contains three garage bays with ca. 1980 paired hinged flush wood doors and a large two-light metal sliding glass window. The northwest elevation provides a one-story shed-roof entry with a ca. 1970 single-light glass and wood door. The second story of this elevation provides another entrance via a set of wooden stairs. The southeast elevation, which faces the Keeper's Residence, also provides a second-story entrance accessed by wooden stairs. Over each of the second story entrances on the side elevations are gable roof canopies supported with knee brace brackets that extend from the roofline.[338] The southwest elevation faces the slope and includes three windows but no entrance.

The Alley Spring Park Keeper's Residence (HS-504) is a single-story, Craftsman-style house constructed into the slope of the hill (Figure 3.100). It measures 34'-6" by 36'. The wood-framed structure sits on a rubble foundation and is clad in exterior weatherboard siding, with a gabled

[338] *Alley Spring Cultural Landscape Inventory*. 46.

asphalt-shingled roof. The house has a stone exterior chimney. The main entrance is a gable roof entry porch with square wood posts and a poured concrete floor located on the west side of the structure. The rear (east) first-floor entry has a small entry porch accessed via a set of wood steps. Windows on the first floor of the dwelling are one-over-one wood sash, and basement windows are a six-light fixed wood and glass design. The Keeper's Residence was originally constructed in the 1920s in the approximate location of the Alley Spring Picnic Shelter. In 1934, the CCC constructed a new foundation and moved the building to its present location. To facilitate the move, "it was necessary to take down the flue, fireplace, and porches before moving the house and to rebuild them according to the new plans."[339] A concrete swale directs stormwater away from the west (uphill) side of the structure and down the slope. Erosion damage is visible on the ground surface of the slope along the north and south sides of the house.

The Alley Spring Pump House (HS-507) is a 20' by 12'-6", single-story building constructed of mortared uncut river stone set on a concrete slab foundation (Figure 3.101). It is topped with a gabled roof clad in asphalt shingles with exposed rafters at the eaves. The building is accessed through a vertical board door on the north side of the structure with a large stone threshold step. The doors and windows are set in segmental arch openings, and it retains its original paired four-light casement windows with stone sills. It was constructed in 1934 by the CCC.

The two Alley Spring Seasonal Cabins (HS-505 and HS-506) are located approximately 500 feet south of the Keeper's Residence on the west side of State Route 106 (Figure 3.102). The cabins were constructed in 1934 by the CCC. Each of the cabins measures 24'-4" by 22'-4." They are located approximately 75 feet apart on a steep east-facing slope. The cabins are single-story, three-room frame structures constructed on concrete slab foundations. The cabins have gable roofs with asphalt shingles and exposed rafter tails. On the rear of each cabin is a kitchen with shed roof extending the width of the entire cabin. The windows are 6-light casement windows. Each cabin has a similarly-sized front porch with a gabled roof supported by square wood posts. The cabins are set into the hillside with a tall stone retaining wall separating the rear of each structure from the hillside (Figure 3.103). Both cabins feature small stone patios at the foot of the steps to the front porch, as well as narrow stone walkways around the rear of the structure between the retaining wall and the kitchen. Although previous documents have indicated that the structures are identical, there are several differences between HS-505 and HS-506. The foundation and front porch of the southern cabin (HS-506) are faced with mortared square-cut stone, and the porch features five stone steps, while the exterior of the foundation and front porch of the northern cabin (HS-505) are poured concrete. HS-506 also includes an exterior stone chimney; there is no chimney at HS-505.

A water storage tank is located on the crest of the ridge at the end of the Maintenance Road (Figure 3.104). It is painted green and sits on grade. A barricaded access ladder is located on the south side of the tank.

[339] *Alley Spring Cultural Landscape Inventory*. 46.



Figure 3.99. Alley Spring District Maintenance Shop (HS-502). (QEA 2018, DSC09086)



Figure 3.100. Alley Spring Park Keeper's Residence (HS-504). (QEA 2018, DSC09096)



Figure 3.101. Alley Spring Pump House (HS-507), located to the west and uphill from the Keeper's Residence (HS-504) and Maintenance Shop (HS-502). (QEA 2018, DSC09112)



Figure 3.102. Seasonal Cabin HS-506. (QEA 2018, IMG_4508)



Figure 3.103. Retaining wall surrounding the uphill (west) side of Seasonal Cabin HS-506. A similar retaining wall is located at the rear of HS-505. (QEA 2018, DSC09152)



Figure 3.104. Water Tower located at the terminus of the maintenance road at the top of the slope. (QEA 2018, IMG_7261)

Views

Views within the West Trail area are typically restrained by the dense upland forest. The Jacks Fork River is visible along portions of the trail grade, although partially obscured by vegetation. CCC-era documentation of this trail does not identify constructed viewpoints. However, the presence of tall dry-laid stone walls, rock grottoes, and secondary trail grades along the southern portion of the route hints at locations where the trail experience was intended to provide views, resting points, and river access.

Vegetation

Vegetation is dominated by upland forest, which cloaks the ridge and steep slopes. Common species include Chinquapin oak, sugar maple, white oak, northern red oak, black oak, scarlet oak, shagbark hickory, pignut hickory, white ash, and eastern redcedar, with typical understory species including paw paw, honeysuckle, spicebush, and young maples. Along the Jacks Fork River, the vegetation community transitions to bottomlands forest.

The Maintenance Area and seasonal cabins are both situated in small clearings maintained with mown lawn. An informal iris bed is located along the eastern edge of the clearing near the Keeper's Residence, likely a remnant domestic planting associated with occupation of this building during the state park period (Figure 3.105). The iris bed measures approximately 30 feet long and 5 feet wide and is not actively maintained.



Figure 3.105. Iris bed near the northeast corner of the Alley Spring Park Keeper's Residence (HS-504). (QEA 2018, DSC09104).

Small-scale features

Small-scale features within the West Trail Area include stored maintenance materials, grills, picnic tables, and clothes drying lines associated with domestic use, collected debris on the eastern slope of the ridge, and a concrete benchmark.

Materials to support maintenance operations and events at Alley Spring are organized outside of the Maintenance Shop in an open gravel area (Figure 3.106). These features are modern and non-contributing. Similarly, the domestic features associated with the Seasonal Cabins and Keeper's Residence are modern additions to the site.

Wood and metal debris are scattered over a small area on the eastern slope of the ridge, near the former trailhead for the West Trail (Figure 3.107). Although the materials in this location appear to be modern, they are located near the potential archeological site associated with the trailhead, CCC-era Water Tower, and CCC camp location. It is not known if any of the debris in this location is associated with the archeological site.

A concrete marker carved with the letters "RW," is located to the south of Seasonal Cabin HS-505 along the West Trail (Figure 3.108). The marker is consistent with early Missouri Department of Transportation highway survey markers that represent the original position of the right-of-way. It was likely installed at the time of highway construction in 1940.[340]



Figure 3.106. Maintenance storage area located adjacent to the Alley Spring District Maintenance Shop (HS-502) and Alley Spring Park Keeper's Residence (HS-504). (QEA 2018, DSC09087)

[340] Mike Gossett, National Park Service Biological Technician, email correspondence with author, April 15, 2019.



Figure 3.107. Abandoned wood and metal materials located south of the maintenance road near the top of the slope. (QEA 2018, IMG_7511)



Figure 3.108. Concrete benchmark near the approximate location of the West Trail south of the seasonal cabins (HS-505 and HS-506). (QEA 2018, IMG_7285)

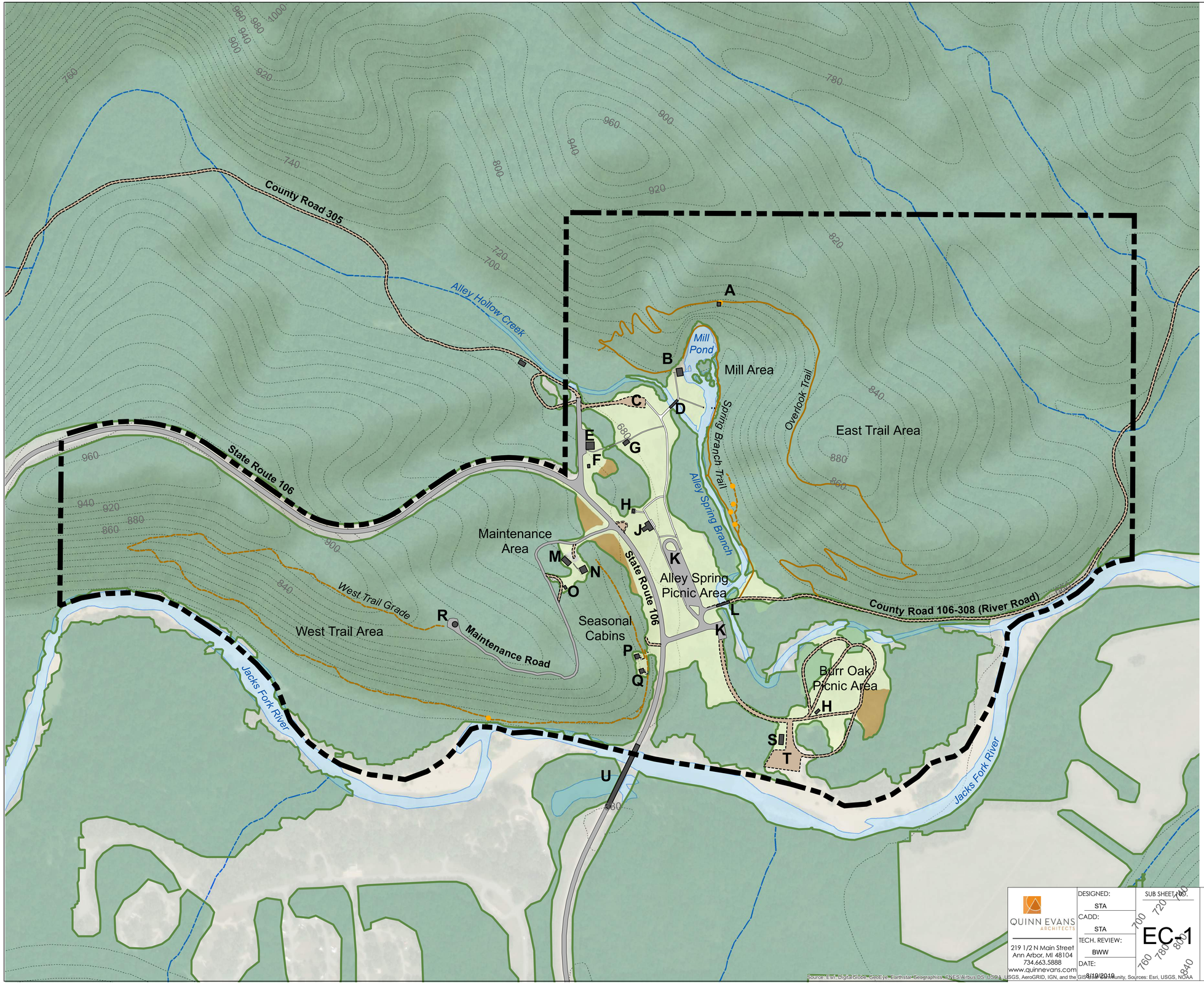
West Trail Area Analysis

Table 3.5 provides a list of contributing and non-contributing features within the West Trail Area.

Table 3.5. West Trail Area Contributing and Non-contributing Features.

Feature	Contributing Status	Rationale
Circulation		
Maintenance Road	Contributing	Follows the route of original West Trail system constructed in 1934 by the CCC.
West Trail Remnants (HS-501J)	Contributing	Constructed in 1934 by the CCC.
Gravel driveways accessing Maintenance Shop, Keeper's Residence, and Pump House	Contributing	Constructed in 1934 by the CCC.
Concrete sidewalk at Keeper's Residence	Undetermined	Date of construction has not been determined for this feature.
Concrete sidewalk at Maintenance Shop	Undetermined	Date of construction has not been determined for this feature.
Gravel driveway accessing Seasonal Cabins	Contributing	A driveway appears in this location on the 1943 and 1955 aerial photographs.
Stone steps and pathways at seasonal cabins (HS-504B)	Contributing	Constructed in 1934 by the CCC.
Buildings and Structures		
Alley Spring District Maintenance Shop (HS-502)	Contributing	Constructed by the CCC in 1934.
Alley Spring Park Keeper's Residence (HS-504)	Contributing	Moved to its present location in 1934.
Alley Spring Pump House (HS-507)	Contributing	Constructed by the CCC in 1934.
Alley Spring Seasonal Cabin (HS-505)	Contributing	Constructed by the CCC in 1934.
Alley Spring Seasonal Cabin (HS-506)	Contributing	Constructed by the CCC in 1934.
Water Storage Tank	Non-contributing	Constructed by NPS after the end of the period of significance.
Stone retaining wall at seasonal cabin HS-505	Contributing	Constructed by the CCC in 1934.
Stone retaining wall at seasonal cabin HS-506	Contributing	Constructed by the CCC in 1934.
Rustic stone retaining walls associated with West Trail remnants	Contributing	Constructed by the CCC in 1934.

Feature	Contributing Status	Rationale
Vegetation		
Upland forest	Contributing	Consistent with location of forest on west ridge throughout the period of significance.
Mown clearings at Maintenance Area and Seasonal Cabins	Contributing	Consistent with small clearings present at the Maintenance Area and seasonal cabins following construction by the CCC in 1934.
Iris at Keeper's Dwelling	Undetermined	Date of planting unknown. Due to the domestic nature of the planting beds, it is likely that the iris were added when the Keeper's Residence was in use by the park superintendent during the period of significance.
Small-Scale Features		
Maintenance materials	Non-contributing	Modern feature added by NPS.
Grill (1)	Non-contributing	Modern feature added by NPS.
Picnic table (1)	Non-contributing	Modern feature added by NPS.
Clothes drying line (1)	Non-contributing	Modern feature added by NPS.
Concrete benchmark (1)	Contributing	Associated with 1940 highway construction.
Propane tank (1)	Non-contributing	Modern addition to site.
Fire suppression utilities (1)	Non-contributing	Modern addition to site.
Archeological Sites		
CCC Camp SP-6 site	Contributing	Constructed in 1933 by the CCC.
CCC Camp water storage tank site	Contributing	Constructed in 1933 by the CCC.
Scattered debris along West Trail	Potentially contributing	Potentially associated with CCC-era developments.



Legend

- CLR Study Area
- Building
- Asphalt Route
- Gravel Road
- Pedestrian Hiking Trail
- Trail grade
- Walkway
- Viewpoint
- Forest
- Waterbody
- Mown grass
- Successional grassland
- Stream
- 20 foot contour

Key

A	Scenic Overlook (HS-501I)
B	Alley Spring Roller Mill (HS-501)
C	Alley Hollow Creek Parking Area
D	Alley Hollow Creek Footbridge
E	General Store (HS-511)
F	Blacksmith Shop
G	Storys Creek Schoolhouse
H	Modern Comfort Station
J	Alley Picnic Shelter (HS-503)
K	Alley Spring Picnic Parking Area
L	Alley Spring Branch Vehicular Bridge
M	Maintenance Shop (HS-502)
N	Keeper's Residence (HS-504)
O	Pump House (HS-507)
P	Seasonal Cabin (HS-505)
Q	Seasonal Cabin (HS-506)
R	Water Storage Tank
S	Burr Oak Picnic Shelter
T	Burr Oak Picnic Shelter Parking Area
U	Jacks Fork Vehicular Bridge

Notes and Sources

1. OZAR Data Archives: roads and trails (updated), Alley Mill State Park Historic District boundary, vegetation.
2. USGS National Map: contours, water bodies (updated), streams (updated).
3. Williams and Austin, field investigations, 2018.

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TECH. REVIEW: BWW
DATE: 8/19/2019

SUB SHEET NO. EC-1

TITLE OF SHEET
EXISTING CONDITION DRAWINGS
STUDY AREA LANDSCAPE

ALLEY SPRING
OZARK NATIONAL SCENIC RIVERWAYS

DRAWING NO. 614 / 146386
PMIS/PKG NO. 204762
SHEET 01 OF 06

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Sources: Esri, USGS, NOAA

Key

- **A** Wood ramp
- **B** Wood deck
- **C** Remnants of Alley Spring Branch Footbridge
- **D** Millrace
- **E** Primary spillway
- **F** Earthen dam
- **G** Secondary spillway
- **H** Wayside "Alley Spring"
- **J** Wayside (no panel)
- **K** Wood guardrail
- **L** Stone steps (3)



Legend

- Mill Area
- Building or Structure
- Stone edge, retaining wall, or channel revetment
- Sign
- Wayside
- Wood guardrail
- Forest
- Wood deck or ramp
- 1 foot contours
- Gravel Trail/Walkway/Parking Area
- Stone walkway
- Waterbody
- Mown lawn
- Individual Tree

Notes and Sources

1. OZAR Data Archives: roads and trails (updated), Alley Mill State Park Historic District boundary, vegetation.
2. USGS National Map: contours, water bodies (updated), streams (updated).
3. Williams and Austin, field investigations, 2018.

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SUB SHEET NO. EC-2

Sources: Esri, USGS, NOAA

TITLE OF SHEET
EXISTING CONDITION DRAWINGS
MILL CHARACTER AREA

ALLEY SPRING
OZARK NATIONAL SCENIC RIVERWAYS

DRAWING NO. 614 / 146386
PMIS/PKG NO. 204762
SHEET 02 OF 06



Key

- **A** Alley Hollow Creek Parking Area
- **B** Alley Hollow Creek Footbridge
- **C** General Store parking area
- **D** General Store
- **E** Blacksmith Shop
- **F** Historic flagpole
- **G** Stone steps
- **H** Storys Creek Schoolhouse
- **J** Gravel parking area
- **K** Modern comfort station
- **L** Alley Picnic Shelter
- **M** Alley Spring Picnic Parking Areas
- **N** Alley Spring Branch Vehicular Bridge
- **O** Kiosk

Legend

- Alley Mill Picnic Area
- CLR Study Area
- Buildings
- Bollard
- Flagpole
- Water Fountain
- Electric box
- Picnic Table
- Grill
- Sign
- Utility feature
- Wayside
- Stone retaining wall
- Pedestrian Hiking Trail
- Trail grade
- Forest
- Asphalt route
- Gravel route
- Concrete walkway
- Waterbody
- Mown grass
- Successional grassland
- 20 foot contour
- Stream
- Individual tree
- Oak, maple, or red cedar tree present during period of significance
- Hazard tree

Notes and Sources

1. OZAR Data Archives: roads and trails (updated), Alley Mill State Park Historic District boundary, vegetation.
2. USGS National Map: contours, water bodies (updated), streams (updated).
3. Williams and Austin, field investigations, 2018.

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SUB SHEET NO. EC-3

TITLE OF SHEET
EXISTING CONDITION DRAWINGS
ALLEY SPRING
PICNIC AREA
ALLEY SPRING
OZARK NATIONAL SCENIC RIVERWAYS

DRAWING NO. 614 / 146386
PMIS/PKG NO. 204762
SHEET 03 OF 06



Legend

- Burr Oak Picnic Area
- CLR Study Area
- Buildings
- Bollard
- Picnic Table
- Grill
- Utility feature
- Playground
- Forest
- Asphalt Route
- Gravel
- Waterbody
- Mown grass
- Successional grassland
- 20 foot contour
- Individual Tree

Notes and Sources

1. OZAR Data Archives: roads and trails (updated), Alley Mill State Park Historic District boundary, vegetation.
2. USGS National Map: contours, water bodies (updated), streams (updated).
3. Williams and Austin, field investigations, 2018.

80 40 0 80 160 240 Feet

N

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DESIGNED: STA
CADD: STA
TECH. REVIEW: BWW
DATE: 8/19/2019

SUB SHEET NO. EC-4

TITLE OF SHEET
EXISTING CONDITION DRAWINGS
BURR OAK
PICNIC AREA

ALLEY SPRING
OZARK NATIONAL SCENIC RIVERWAYS

DRAWING NO. 614 / 146386
PMIS/PKG NO. 204762
SHEET 04 OF 06

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Sources: Esri, USGS, NOAA



Legend

- East Trail Area
- CLR Study Area
- Buildings
- Viewpoints
- Bench
- Picnic Table
- Sign
- Erosion
- Stone edge or retaining wall
- Hitching post
- Pedestrian Hiking Trail
- Trail grade
- Forest
- Gravel route
- Waterbody
- Mown grass
- 20 foot contour
- Stream

Key

A	Alley Mill Spring Scenic Overlook (HS501I)
B	Wood Bench
C	Remnant Trail Grade
D	Remnant Bridge Foundation
E	Stone Steps
F	Mortared Stone Foundation
G	Hitching Posts

Notes and Sources

1. OZAR Data Archives: roads and trails (updated), Alley Mill State Park Historic District boundary, vegetation.
2. USGS National Map: contours, water bodies (updated), streams (updated).
3. Williams and Austin, field investigations, 2018.

100 50 0 100 200 300 Feet

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SUB SHEET NO. EC-5

TITLE OF SHEET
EXISTING CONDITION DRAWINGS
EAST TRAIL AREA

ALLEY SPRING
OZARK NATIONAL SCENIC RIVERWAYS

DRAWING NO. 614 / 146386
PMIS/PKG NO. 204762
SHEET 05 OF 06



Legend

- West Trail Area
- CLR Study Area
- Buildings
- Viewpoints
- CCC Camp Archeological Site
- Debris scatter
- Concrete remnant
- Pedestrian Hiking Trail
- Trail grade
- Retaining wall
- Asphalt Route
- Gravel
- Forest
- Waterbody
- Mown grass
- Successional grassland
- Planting bed
- 20 foot contour

Key

- **A** Alley Spring District Maintenance Shop (HS-502)
- **B** Alley Spring Park Keeper's House (HS-504)
- **C** Alley Spring Pump House (HS-507)
- **D** Water Storage Tank
- **E** Building Foundation Remnants
- **F** Alley Spring Seasonal Cabin (HS-505)
- **G** Alley Spring Seasonal Cabin (HS-506)
- **H** Tall Stone Retaining Wall and Viewpoint
- **J** Concrete benchmark
- **K** Iris bed

Notes and Sources

1. OZAR Data Archives: roads and trails (updated), Alley Mill State Park Historic District boundary, vegetation.
2. USGS National Map: contours, water bodies (updated), streams (updated).
3. Williams and Austin, field investigations, 2018.

150 75 0 150 300 450 Feet

N

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DATE: 8/19/2019

SUB SHEET NO. EC-6

TITLE OF SHEET
EXISTING CONDITION DRAWINGS
WEST TRAIL AREA

ALLEY SPRING
OZARK NATIONAL SCENIC RIVERWAYS

DRAWING NO. 614 / 146386
PMIS/PKG NO. 204762
SHEET 06 OF 06

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Sources: Esri, USGS, NOAA



CCC-Era Alley Mill, view looking northeast, May 1934. (CCC Month Progress Report - May 1934)

4 MILL EXISTING CONDITIONS AND ANALYSIS

Chapter 4 - Alley Mill Existing Conditions and Analysis



Figure 4.1. Alley Mill, looking northwest. (STRATA 2018)

Introduction

The Alley Roller Mill (HS-501) has survived, much as it would have appeared when it was originally constructed in 1894 (Figure 4.1). Numerous rehabilitations of the mill building have transpired through the years undertaken by the several private owners, Missouri State Parks, the CCC, and the NPS, but these modifications are relatively minor and do not detract from the historical authenticity of the mill. The building has retained most of its original building materials and therefore has a high level of historic integrity. Because most of the original mill machinery remains, this building is a relatively intact representation of a vernacular 19th-century roller mill. The fact that the machinery escaped metal scrapping during World War II is paramount, as the presence of the equipment has allowed for its continual interpretation as a working mill. And despite devastating floods, failing dam structures, decreased water head, and multiple rehabilitations, the old 'Red Mill' has prevailed as one of Missouri's most recognizable landmarks.

The mill was largely finished with production by the 1920s. Subsequent owners - including Missouri State Parks - utilized the mill as a pastoral backdrop to recreational opportunities,

leaving the interior and machinery basically intact. The restoration of historic mills became popular in the 1930s with the romanticism of the wooden water wheels. When the CCC became involved in the improvements for the Alley Spring State Park in 1933 and 1934, they recognized the mill as a local landmark, and they proceeded cautiously as they began preserving the mill and dam, given the monetary and time limitations. There is very little documentation found to date regarding how Missouri State Parks interpreted the interior of the mill during their ownership. An article published in 1934 suggests the state had planned to install an 'Ozark Museum' in the mill, but the extent of this installation or interpretation is unknown.[341] In 1965, structural engineer, Robert L. Elgin, prepared restoration plans and specifications for the dam and spillway, but it does not appear his suggestions were undertaken due to funding limitations.[342] In this correspondence, he suggested the mill had been in operation the season prior. The mill interiors and equipment likely saw no attention until the property was purchased by the National Park Service in 1969 when studies of the mill and its operations were one of the focuses of the new park. The NPS was interested in interpreting an operating mill and went straight to work to get the mill works up and running for demonstrations on a very limited basis for demonstrations.

The National Park Service quickly undertook documentation, maintenance, and rehabilitation of the mill and dam when they acquired the property. Two early Historic Structure Reports were written, one by the National Park Service, Denver Service Center, published in 1973, and a second, intended as a supplement to the 1973 report, written by consultant Wm. J. Wagner of Wagner Marquart Wetherell Architects, published in 1977. Both of these reports were thorough in their research and interpretation of the mill and machinery and continue to be relevant in the understanding and interpretation of the mill. Copies of drawings prepared in conjunction with the second report may be found in Appendix D.

Records from the Missouri State Park's' ownership are very limited and focus on historical photograph files. The Ozark National Scenic Riverways archives have provided some information with regards to the State Park ownership, CCC-era projects, and later the NPS rehabilitation and maintenance. Records are sporadic and not comprehensive. Limited photographic documentation of the maintenance and rehabilitation work has been located. Many projects were not well documented, or the files could not be located.

The period of significance for the historic mill begins with its initial construction in 1894 and ends in 1969 when the Alley Spring State Park came under federal ownership as part of the Ozark National Scenic Riverways. Many alterations to the mill building and adjacent dam structures have been made during and after the period of significance. The dam and spillway were not evaluated as part of this report, as these were addressed in a previous 2013 report, "Design Alternatives for Restoration of Earth-Fill Dam and Hydraulic Structures at Alley Roller Mill" by Fitzpatrick Structural Engineering.

[341] Ricardo Torres-Reyes and Vance L. Kaminski. "Missouri's State Parks in the Making," *Missouri*, Feb. 1934, Vol. 6, No. 9, p 5-8.
[342] OZAR Files.

Architectural Existing Conditions

The Alley Roller Mill, constructed adjacent to the Alley Spring, is in good overall condition for its 124 years, requiring routine maintenance typical for a building its age. This chapter of the report addresses the architectural components of the mill (including its overall construction methodology, layout, and building materials), identifies original remaining fabric and major alterations, and evaluates the existing conditions of the exterior and interior of the building. These observations provide a basis for the maintenance and long term treatment recommendations which are addressed in Chapter 6. This chapter is formatted with the Introduction, followed by the Architectural Existing Conditions, Structural Existing Conditions, Code and Life Safety Review, and Accessibility Review. The review of the milling equipment and mechanical and electrical systems is not included in this study.

The architectural existing condition drawings of the Mill building follow this section of the report. The hazardous materials investigation completed in April 2018, which addressed sampling and testing for lead-based paint and suspected asbestos-containing materials, may be found in Appendix H. Wood species testing for the structural assessment may be found in Appendix F.

The footprint of the mill is approximately 42’-3” (north/south) by 32’-3” (east/west) with 1,359 gross square feet per floor. The building is three stories high plus a basement, for a total of 5,436 gross square feet on all four levels combined. The mill is approximately 38’-6” in height from the basement to the underside of the roof ridge. The main entrance is on the first floor level. A stair along the north wall accesses the second and third floors. A hatch in the floor along the south wall provides access to the basement. The building is balloon-framed with 2x6 native pine. The interior of the mill retains its open plan on all three floors, with only a single enclosed room for the miller’s office in the northeast corner of the first floor.

Mill Construction

The Alley Spring received its current name sometime around 1894; it had previously been known as Mammoth Spring and later as Barksdale Spring. The first gristmill was constructed prior to 1879 and was generally located within the footprint of the existing mill, adjacent to the spring. The existing Alley Roller Mill was constructed between 1894-1895 by George Washington McCaskill in the same location as the previous mill.

George McCaskill and his brother Jerry likely worked with the Richmond City Mill Works on the design and construction methodology for the new mills at Alley and nearby Summersville. The design of the Alley Roller Mill represents a typical vernacular mill building style, adapted for the vertical nature of milling manufacturing works and driven by function and utility. The mill structure was designed to accommodate the loading demands of the mill machinery which vibrates and oscillates. While the timber and stone were locally sourced, the mill works machinery would have been shipped from Richmond, Indiana. An 1895 copy of *Milling: An Illustrated Magazine,* notes “The Richmond City Mill Works….catalogue…contains various plans of small mills and various tables for ascertaining horse powers of transmission of machinery,

tables showing number of fee in bill of lumber, etc."[343] They are listed in the magazine as Mill Builders and Contractors with standard machines 'In Every State in the Union.' There is no doubt that the Richmond City Mill Works would have worked with McCaskill to layout the machinery in the most efficient manner, which drove the design of the building. It is very likely that Jerome Thurkill was a contractor for Richmond City Mill Works and was sent here to oversee the construction of the mill and install the equipment. McCaskill advertised that he had "erected a large new three-story building mill of 50 barrels capacity…[to] solicit patronage from all parts of the county.[344]



Figure 4.2. *Milling: An Illustrated Magazine*, vol. 4, Jan. 1895, p 494, Google Books, Accessed, Nov. 15, 2018.

McCaskill soon sold the mill to A.B. Boyd in 1895. Boyd constructed the sawmill attached to the south side of the roller mill building. Boyd traded the mill and site in 1900, and it changed ownership in 1901 and again in 1902 when it was purchased by John Knotts. Knotts improved the flood resistance of the mill and dam by utilizing poured concrete. Many of these dam walls remain today. The property was sold to the Crystal Spring Town-site company in 1912. The use of the mill building during this time period is not well documented. It may have served as more of a pastoral backdrop to recreation. The Missouri State Park Commission purchased the mill and adjacent site in 1924, with recreation at the forefront of the park development. The National

[343] *Milling: An Illustrated Magazine*, Vol. 4, January 1895, 429.
[344] *Eminence Current Wave*, January 3, 1893.

Park Service has owned the Alley Mill and site since 1969, with several campaigns of preservation and rehabilitation over the last 49 years.



Figure 4.3. Alley Mill, west elevation. (SEA 2018)

Exterior Existing Conditions

The three-story wood-framed Alley Roller Mill building is situated with the long side on the north/south axis. The building is constructed into a sloping site, with the northwest corner of the stone foundation mostly in grade and the southeast corner above grade. The facades are vertically symmetrical.

The main entrance is on the west façade, which faces the parking lot across the Alley Branch. This elevation contains three bays of windows on three floors, with the entry door within the central bay on the first floor (Figure 4.3). Currently, a temporary wooden ramp is installed to provide an accessible entrance into the first floor of the mill.

The most photographed elevation is the east (spring) side of the building, which faces the spring, dam, and spillway (Figure 4.5). The fenestration matches that of the west façade, with three bays of windows on three floors and an entry door within the central bay on the first floor. This east-facing entry door is open only when the mill is staffed for tours and provides access to a wooden observation deck constructed over the turbine.

The south (gable) elevation of the mill is highly visible from the pedestrian bridge that leads to the spring area (Figure 4.4). There are two bays of windows on three floors. The grade slopes to the east, exposing the full stone foundation at the southeast corner. A large rectangular opening

in the foundation once provided access for the mill's shaft and pulley system to a sawmill that sat directly south of the mill. The north elevation of the building is only visible from the trail leading to the spring and the fenestration matches the south elevation (Figure 4.6). The grade along the foundation on this side of the building is within inches of the bottom of the siding and slopes towards the building foundation.

The condition of the exterior is very good, as the structure is well maintained by the park staff. The major exterior components include the stone foundation, siding, windows, doors, west porch, east turbine deck, and the roof. Critical items associated with the assessment of the mill structure include the overall condition of these materials, identification and chronology of significant historic features, and addressing ABA accessibility into and around the building.



Figure 4.4. Alley Mill, south elevation. (STRATA 2018)



Figure 4.5. Alley Mill, east elevation. (STRATA 2018)



Figure 4.6. Alley Mill, north elevation. (STRATA 2018)

Stone Foundation

The foundation stone for the Alley Roller Mill was quarried locally by Robert Brock, hired by the new owner, George McCaskill, as published in the local paper.[345] The stones of the existing foundation are a sedimentary rock, either limestone or sandstone. Some oral histories suggest that the portions of the stone foundation of the existing mill may have come from the earlier Barksdale or Kelpzig mill, but that is unlikely. “According to George W. McCaskills’ son, when his father moved to the farm across the Spring the [first] grist mill had the appearance of a dilapidated place. ‘Part of the dam was washed out, the old shed was about to fall down, and everything looked run-down and neglected. I remember seeing the wooden shaft which was pulled out and left on the ground.’”[346]

The stone footing is visible along the base of the east side of the exposed foundation wall (Figure 4.7). These stones are wider than the stone foundation walls and are sometimes visible just above or below the waterline, depending upon the height and flow of the spring. Stone post bases are also found within the mill, which support vertical posts for the building and the mill machinery.

The foundation walls are constructed of native stones, approximately two wythes thick. The stones on the exterior of the building are more ‘dressed’ with flat or flush faces, while the pattern of the inner wythe of stones is random (Figures 4.8). The walls were originally constructed with lime putty mortar with fine river sand and limestone inclusions. This type of mortar is very soft, but it is self-healing. When it becomes damp or wet, it tends to fill in its own small cracks. There

[345] *Eminence Current Wave*, February 9, 1893.
[346] Ricardo Torres-Reyes and Vance L. Kaminski, 14. McCaskill, op. cit., *The Ozarks Mountaineer*, Vol. 7, No. 2, Feb. 1959, p. 11; Missouri State Historical Society, Shannon County Historical Site File.

are several campaigns of mortar visible in the basement walls. Mortar in the southeast corner where the stone wall was reconstructed in only a single-wythe thickness has a very gray mortar, which likely contains a gray Portland cement. Mortar is missing throughout the foundation walls. Mortar used by the NPS for more recent repairs appears to be consistent with the historic mortar. Mortar samples and testing were not included in this study.

Repairs to the stone foundation have likely been ongoing since the mill's construction. Therefore, it is difficult to ascertain what is original and what has been rebuilt. Sections of the wall that are single-wythe are likely reconstructed areas. This is discussed further in the Basement section of this chapter. There is quite a bit of red paint splattered on the exterior surfaces of the stones, especially on the south wall.



Figure 4.7. Alley Mill, stone foundation spread footing stones at the southeast corner, visible below the vegetation when the water level is low. (STRATA 2018)



Figure 4.8. Alley Mill, stone foundation crack detail, south wall, east corner. (STRATA 2018)

Wood Siding, Trim, and Exterior Paint

The lapped wood siding installed on the exterior of the mill is one of the character-defining features of the building. Much of this siding appears to be original to the construction in 1894, although sections have been replaced over time. The siding is applied directly to the vertical wood balloon-framed building with wire-cut nails. The siding appears to be pine and is taper-sawn, 5 ½-inches with a 7/16-inch butt. The exposure is approximately 4 ½-inches.

Siding and exterior trim which have been replaced by the NPS in recent years are imprinted with metal stamps with the year of replacement, 'NPS 02.' Several of these stamps are visible on the exterior siding and trim. These were likely intended to be stamped on the back side of the replaced materials, so as not to be visible. Most of the siding appears to be in good overall condition. There are a few areas that may require periodic inspection to ensure the clapboards remain watertight. One example is on the south elevation, between the third floor windows. A wall patch on the interior of the south wall indicates there is or has been an issue in this area (Figure 4.9). The siding here is bowed, and it appears that there may be a piece of replacement siding, as well. Bowing of the boards is not uncommon on this building, due to the long boards with no room for expansion. When the long boards bow and begin to buckle slightly, the overlap can be compromised, allowing water and pests (such as bats) to infiltrate the wall system. There are areas where paint is peeling, but it appears to be sporadic.

Graffiti is prevalent on the north side of the mill, with hundreds of names and dates carved into the wood (Figure 4.10). Some of these appear to be quite old. Several rows of newer replacement siding near the base of the building have no signs of graffiti. Graffiti is mostly concentrated on the north elevation of the building because this side of the mill is not highly visible and it is difficult for park staff to monitor.



Figure 4.9. South elevation siding that is showing signs of buckling and bowing. (STRATA 2018).



Figure 4.10. Graffiti names carved into the siding of the north wall. (STRATA 2018)

The Alley Mill, also known as the Red Mill, has been painted red since at least the late 1920s or early 1930s. When the mill was initially constructed in 1894, it may have been unpainted. The first black and white postcard of the mill indicates it was likely unpainted or painted all white (Figure 4.11). Photographs dating from ca. 1915-1925 show that the mill is white with a darker (possibly green) trim (Figures 4.12 and 4.13). The earliest known photograph of the red mill is from the State Park Archives and was taken ca. 1930 (Figure 4.14). The CCC first references the red paint color in a 1933 monthly report stating the mill had "been known as 'The Old Red Mill for years."[347]



Figure 4.11. Mill appears white or unpainted, possibly with slightly darker trim, ca. 1911. (OZAR 1391)

[347] *Monthly Progress Report, Camp No. SP-6* (Alley Spring State Park: Department of the Interior, National Park Service State Park Emergency Conservation Work, January 1934,) 1.



Figure 4.12. Mill appears white with darker trim, ca. 1915, image cropped. (OZAR 24043)

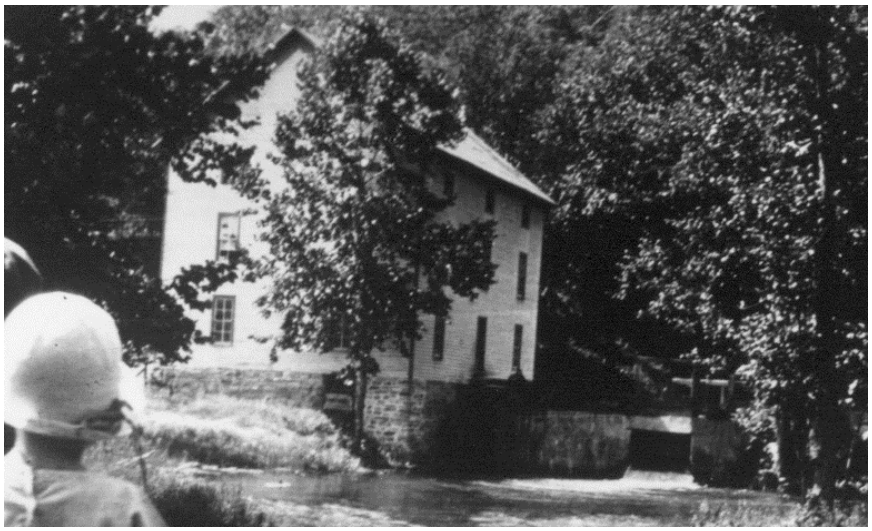


Figure 4.13. Mill appears white with darker trim, ca. 1925, image cropped. (OZAR 2878)



Figure 4.14. Image of Alley Spring and Mill, ca. 1930. This may be one of the earliest known photographs of the red paint on the mill, image cropped. (Missouri State Parks Archives, arc1320050013)



Figure 4.15. Vintage red paint can stored on the third floor. (STRATA 2018).



Figure 4.16. Left: Salvaged siding with green top coat and white paint below, found stored on the third floor. Right: Salvaged siding with red top coat, green, and then white paint, found stored in east roof truss. (STRATA 2018)

The mill's exterior paint chronology is further discussed in Chapter 2. A vintage, opened paint can is stored on the third floor (Figure 4.15). The text on the can is difficult to read, but the red paint is consistent with other paint colors that were tested and may date to an early episode of painting. Salvaged historic painted wood siding is stored on the third floor which further complicates the story of the mill's color chronology. Rows of salvaged siding are stored on the floor near the west wall; these rows match the existing mill siding in dimension and appear to be similar in age (Paint Sample # 13) (Figure 4.16 left). These are painted a faded green color with a base layer of white. Another large piece of salvaged siding is stored in the east roof truss (Paint Sample #12) (Figure 4.16 right). This piece has several colors, including a base layer of white, then green, and topped with red. This further confused the situation, as there was no mention of green siding in any of the previous histories. The only mention of green is that of the mill being painted white with green trim. Former NPS historic carpenter, Doug Conway, toured the site with the team in 2018. He could not recall where the green siding came from but said it was possibly salvaged from another similarly-aged building. These architectural features and paint can require further evaluation by the museum curator/collection advisory committee to determine if they should be added to the museum collection.

The mill may have originally been unpainted and then painted all white. Later, the mill appears to have been painted white with green trim. It is possible that the mill was then painted all green before it was painted red. However, there is no documentation found during this study that would indicate that the mill has ever been painted green.

To research the historic paint chronology further, a total of 13 paint samples were taken from the interior and exterior of the building by STRATA Architecture during the April 2018 site visit. These samples were sent for analysis to David Arbogast, Architectural Conservator, in Davenport, Iowa. Mr. Arbogast produced a paint analysis report in November 2018, which may be found in Appendix G. The findings in the report support the known paint chronology, but with a few surprises:

- The mill may have been originally unfinished or unpainted for some time. There was a lot of wear to the surface of the wood, which indicates that it may not have initially been painted, or it may have been whitewashed, which washed away quickly. A layer of varnish, which was used as a primer, was found on almost all samples.

- There was an early light brown color found in several of the samples. Light brown was found on the Samples #1 rake, #2 siding, #3 soffit, and #4 trim, on the south and west elevations, but brown does not appear in the remaining samples.

- Dark green was found as the second layer in #1 rake and #3 soffit. Dark green was also found in #4 window trim, but it followed several other colors.

- Off-white was found in Sample #3 soffit Sample #4 Window 305 as the base layer.

- Four samples of siding paint were provided. Sample #2, Sample #6, and Sample #7 indicate the lowest finish layers showed varnish topped with red paint. Sample #8 showed a layer of varnish and then a layer of off-white paint. More samples from varied elevations and locations could be provided for additional testing to more conclusively determine the siding colors.

- Sample #9 Window 205 trim shows a layer of varnish with a layer of off-white paint and then green paint.

- Sample #10 Window 302 sash appears to be an original sash from lower floors. This sash interior was white, rose, brown, maroon, rose, orange-red and then the red that is seen today.

- Sample #11 was from a paint can found on the third floor (Figure 4.15). The paint quality was not great. Variations of red were found within the sample, indicating the paint was likely not well mixed before it dried.

- Sample #12 was from siding stored in the roof truss (Figure 4.16 right). This sample tested for green paint and dark maroon paint. These are not consistent with other colors found on the exterior. This board is likely not originally from the mill.

- Sample #13 was from siding stored on the third floor (Figure 4.16 left). This sample tested for two colors of green, gray and then white paint. None of these colors align with colors found on the exterior. Doug Conway's recollection that these may have been salvaged from another location may be correct.

- The existing red paint on the exterior of the mill is high gloss. Historically, semi-gloss oil paint with a high lead content would eventually chalk over and turn to a matte finish.

Further sampling should be undertaken to test the paint chronology theories outlined above to determine: if the mill originally unpainted; if the mill was whitewashed; or if the mill may have been painted a light brown color. Additional samples could be tested to better clarify the accuracy of the information provided to date. These samples may include: approximately 4-8 more exterior siding samples; a corner board sample; a sample from the rake on the north elevation; a sample from the soffit on the north elevation; a sample of the soffit on the west elevation; several samples of the window trim; and a couple of samples of the sashes.

It is clear there have been numerous red colors used over the years. The earliest red colors, as matched to the Munsell Color Chart, include the Red 10R 3/8, Orange-red 10R 4/8, 5R 6/8, or 10R 3/6. Mr. Arbogast has provided color matches to contemporary paint manufacturers. Because the older paint colors had become faded over time, the Munsell color matches to contemporary colors have yielded colors that lean towards the brown or terra cotta coloring, which would likely not be acceptable colors for matching. Mr. Arbogast suggests that since the original sampled red colors were so faded, the park should select a deep red color to match historic lead-based red paints, such as a Benjamin Moore 2088-10, aptly named Red Oxide. Red paint for barn, outbuildings, and manufacturing building was a popular 18th and 19th paint color. Iron oxide was an inexpensive pigment mixed with lead to create a very durable paint finish to protect exterior wood surfaces. This practice of red-painted outbuildings became widely used and has maintained its place through today.

West Entry Hood and Porch

The existing west door serves as the primary entry into the first floor of the mill (Figures 4.17 and 4.18). In 2014, a temporary wooden ramp was installed to provide ABA accessibility to the first floor. The wooden ramp landing now covers the existing stone steps.

- The earliest known photograph of the west elevation of the mill dates to ca. 1910.[348] In this photograph, the mill is showing some wear, but there is no protective hood over the

[348] OZAR 1394.

west entry. The wood-framed porch has two or three wooden steps visible on the south side of the porch, facing the sawmill (Figure 4.19).

- A ca. 1912-1926 photograph of the west elevation clearly shows the hood had been installed by this time (Figure 4.20). It is difficult to see any detail. This photograph was taken after the sawmill was demolished.

- Another photograph of the hood dates to ca. 1922 (Figure 4.21). This photograph clearly shows the hood and wood porch with steps.

- The first stone porch and steps were constructed in 1933-34 by the CCC (Figure 4.22). These were reportedly salvaged and rebuilt by the NPS in the 1990s during a foundation stabilization project.

- The date of the existing hood framing is unknown, but it appears to match the construction of the historic hood; therefore, some of the framing components may be original to its construction.

- 1964, The mill's west entrance porch was replaced.[349]

- 1980s, Files indicate work had been done to modify the stone porch by the NPS.

- 1992-93, A phased rehabilitation project included replacing the west porch to the historic CCC-era configuration. The scope of work notes that the west stone porch will need to be removed for foundation repair and that a portion of the existing porch was added by the park in the 1980s. The porch was to be photographed, stones cleaned and numbered, and reinstalled in their original locations.[350]



Figure 4.17. West entry hood with wooden ramp and stone porch and steps below. (STRATA 2018)

[349] Perry, 8.3. (The author believes this may be a typo. Documentation of rebuilding of the east porch has been located, but nothing mentioning the west porch. Unfortunately, this referenced material in the National Register Nomination is no longer available at the State Park Archives.)
[350] OZAR Files, Assessment of Actions Having an Effect on Cultural Resources Originating Office, ca. 1992.



Figure 4.18. Stone porch and steps below wood entry ramp. (STRATA 2018)



Figure 4.19. West entry with no hood, and wood-framed porch and steps, ca. 1910, image cropped. (OZAR 1394)



Figure 4.20. First known photograph of the west entry hood, ca. 1912-26, taken after the sawmill was demolished, image cropped. (State Park Archives, Arc1320110007)



Figure 4.21. Hood over west entry with wood porch and steps, ca. 1922. (OZAR 24044)

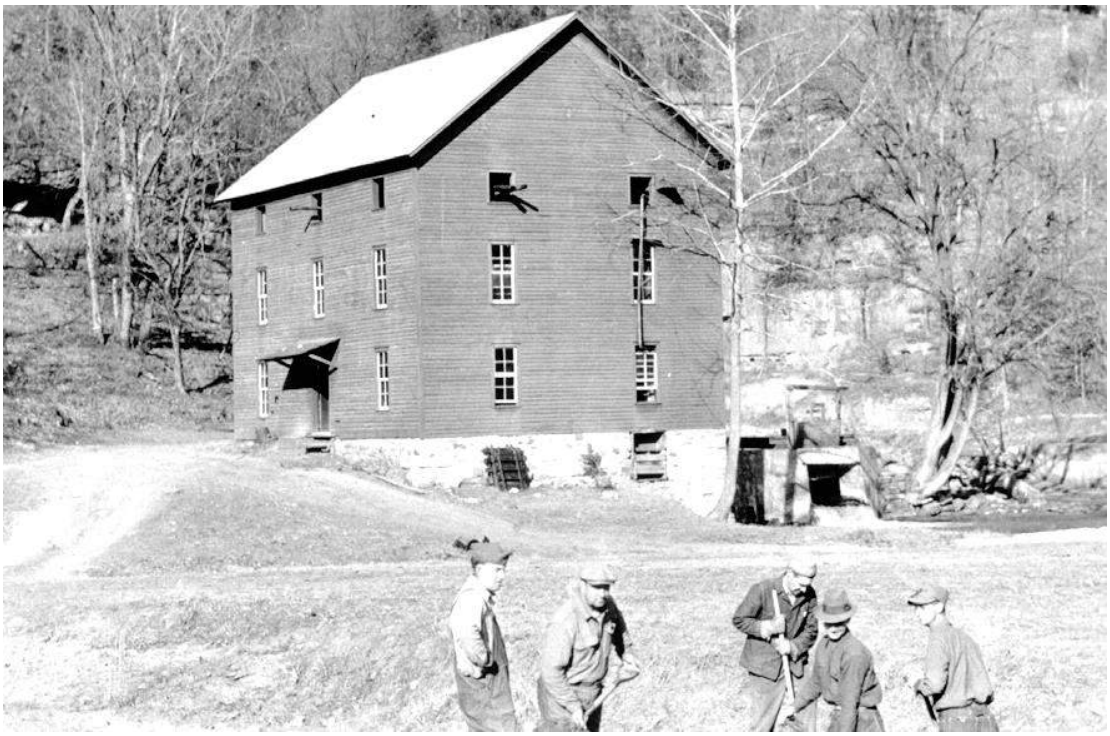


Figure 4.22. West entry with hood and wood-framed porch and steps before the CCC had finalized renovations, ca. 1933, image cropped. Note the young Sycamore tree near the southeast corner. (OZAR 1394)



Figure 4.23. West entry with hood and new stone porch and steps, CCC, May 1934, image cropped. Note the solid board along the bottom of the west siding. (OZAR 1394)



Figure 4.24. West entry ca. 1964-68. (Dan Jackson Files, ca. 1964-68)

Fenestration

Original 1894 Windows, Doors, and Openings

The windows in the original construction of the mill were 4/4 double-hung windows on the first and second floors. Square window openings on the third floor appear to have been used to promote ventilation when the mill was in operation. They appear to have been 'open' with no sashes seen in the historic photographs, except for window opening 307 (Figure 4.25), which may be either a window sash or a screen sash. Another photograph of openings on the south elevation, third floor, shows a vertical line on the inside of both window openings, suggesting that there may be a casement type of sash or another similar type of covering that is in the open position (Figure 4.26). An early photograph of the north elevation shows a solid cover over the third floor west window opening 308 (Figure 4.27) which is located over the current staircase. Unfortunately, there is no evidence remaining on the third floor interior at the window framing that provides an understanding of what type of coverings may have been used for these openings. All historic photographs since construction lean towards these being open to the third floor with no permanent or fixed coverings.

The west entry door is wider in historic photographs than other standard doors. However, the door opening is in shadow in the photographs, making it too dark to determine the door panel style. Likewise, the east door appears in nearly all early photographs, but it too is very dark, so its style cannot be determined.

The windows and doors throughout the building have a very simple, flat trim, which is directly applied to the window frames. This means that there is no wall sheathing behind the window and door trim, just like there is no wall sheathing behind the siding boards. Therefore, the face of the trim sits nearly flush with the siding. The windows and doors are topped with a wood drip cap.

Alterations and Current Fenestration

A 1934 CCC repair memo mentions work completed on the mill included, "All broken window glass, decayed window frames, sash, and other items, repaired or replaced as required."[351] The methodology for the CCC renovation work is unknown. It is likely that the original 4/4 double-hung sashes were in poor condition. The CCC installed all new 2/2 double-hung window sashes in the first and second floor openings, which remain today. It appears that they salvaged a handful of the first or second floor 4-lite upper sashes and installed these in a majority of the third floor openings. Repairs to these salvaged sashes were made, and in some cases, muntins were repaired or partially replaced (Figure 4.29). These original 'top' sashes are hung upside down in the third floor openings and are inoperable (Figure 4.28). In the 1934 CCC photographs of the mill, the sashes appeared to be painted white. It is unclear if this was the final treatment. If so, they were later painted red by Missouri State Parks.

[351] Harry E. Curtis to Wilbur C. Buford, *Justification of Repair Work on Old Mill* (Alley Spring State Park: Department of the Interior, National Park Service State Park Emergency Conservation Work, February 28, 1934).

The window sashes are in fair to good condition, but almost all require new glazing putty be installed. The CCC-constructed windows tested positive for asbestos in the glazing putty, so it should be assumed that all of the window glazing putty contains asbestos. All windows also tested positive for lead paint. Windows went through at least two rounds of additional rehabilitations in the 1960s and again in 1993.

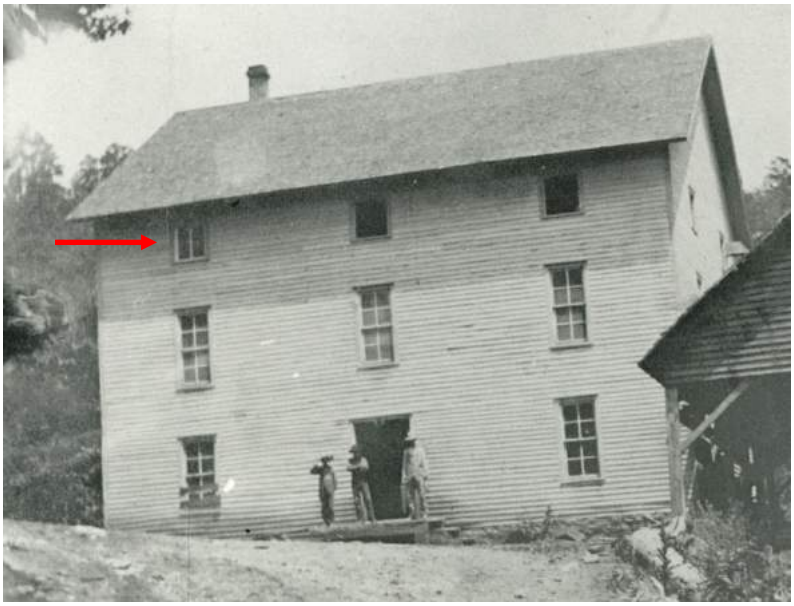


Figure 4.25. West elevation, ca. 1910s. Note the upper left window opening on the third floor appears to have some type of 2-lite sash or screen installed. (OZAR 1394)

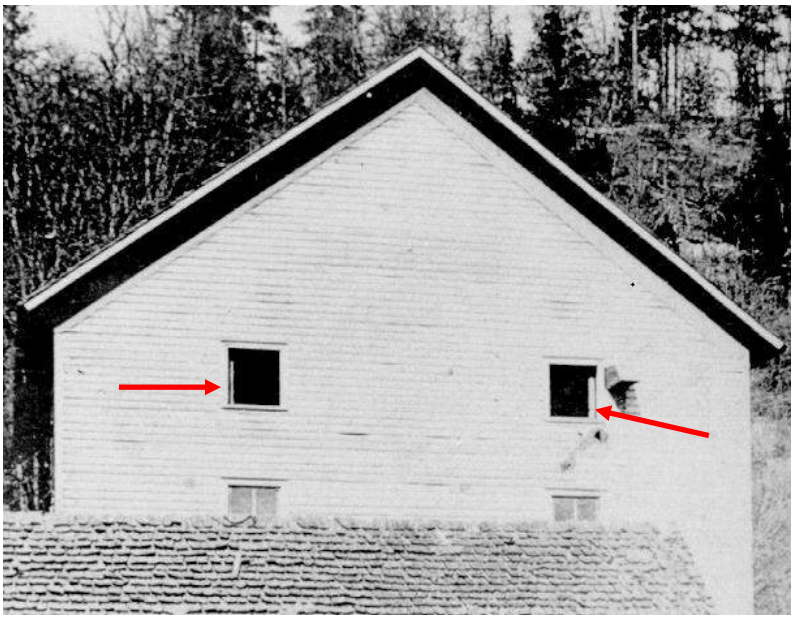


Figure 4.26. Shadows in the third floor window openings may indicate the presence of in-swing sashes, image cropped. (OZAR 1384)



Figure 4.27. Note the third floor west window 308 on the north elevation has a solid covering on the inside. (OZAR 24029)



Figure 4.28. Example of third floor window opening with historic sash inserted. Note this is an upper sash from an original double-hung window from either the first or second floor, which has been installed in this opening upside down. The third floor sashes are inoperable and are covered on the exterior with wood-framed screens. (STRATA 2018)



Figure 4.29. Example of historic sash muntin repair with old meeting new at third floor. (STRATA 2018).

Protective window bars were installed over several of the first floor windows and are painted red to match the mill. These bars were constructed of saplings and fastened with iron straps that appear to have been made from wagon wheel iron (Figure 4.30). These protective window bars were installed by Missouri State Parks sometime prior to the mid-1960s, when they first appear in photographs of the mill being painted (Figure 4.31). There may have been a major renovation project around 1964 which included re-roofing, replacing deteriorated siding, painting, and eventually replacing the turbine deck to the current configuration. The bars were installed as part of this larger project. The 'rustic' bars are not appropriate for the interpretation of a vernacular 19th-century roller mill. Their presence also makes it difficult to maintain the windows. The lower bar is missing from Window 105.

Painted wood screen sashes are installed on all window openings (Figure 4.32). The large mesh size on the screens is visually intrusive. They likely serve as a combination insect screen and window protector. The date these wood screen sashes were installed is unknown.



Figure 4.30. Example of sapling bars with metal straps on the first floor windows. (STRATA 2018).



Figure 4.31. Mill under renovation by Missouri State Parks. Note the building is being roofed and painted. The window sashes are removed and may have undergone restoration at that time. The sapling bars are installed on some of the first floor and basement window openings (matching the current installation methodology). The turbine deck has not yet been constructed at the time of this photograph. Assumed this is ca. 1964. (Scans from Dan Jackson, MO State Parks records, photo by Hadley Irwin).



Figure 4.32. Example of screened sashes with painted wood frames. These are installed on the exterior of all windows. The opening size of the screening is not historically accurate. (STRATA 2018).

The east and west entry doors are board and batten reproduction doors which were likely replaced ca. 1990 with new doors to 'match historic integrity,' per the proposal package (Figures 4.33 – 4.34).[352] There is no clear documentation for the original door styles. The style of the existing doors was conceived by the CCC and appears to be appropriate in their design and installation. Hardware on the doors could be explored further, as the face-mounted hinges on the doors are not in keeping with mortised hinges used on the Miller's Office door. The door knobs and operating hardware do not meet ABA (Architectural Barriers Act) standards, although the door remains open when the mill is staffed and open for tours. The west door threshold has some areas of wood rot.

The west door has some unusual trim on the interior, with narrow trim on the south side and very wide trim on the north side (Figure 4.33). The wall boards south of the door have been manipulated, as there is a clear seam in the boards. Without the removal of the door trim and boards, it is impossible to assess whether the door opening size has been altered.

Interior trim at the doors and windows is painted, but based on the rest of the interior historic finishes, it was likely originally unfinished.

The 1977 HSR mentions that the east entry door may have been a window that was formerly converted into a door (Figure 4.34). There is no evidence of this. The only anomaly for this opening is the methodology for the exterior trim installation; there are two layers of trim at the east door, the original or early trim and a top layer of later trim. If this top layer of trim is removed during future maintenance or repairs, an inspection of the lower layer of trim may help to solidify the original opening design. The wood siding and trim on the east side of the building is subject to a significant amount of moisture from the spring and dam. It is not surprising that the door trim may have deteriorated, and—in lieu of full replacement—it may have been clad with another layer of trim. The multiple layers of trim give the door the appearance that the opening or the surround has been modified. But, the overall measurements and early photographic evidence suggest that this is indeed an original door opening.

Compliance documentation dated 1992 indicates the east door frame required in-kind replacement, as the bottom ends of the frame were deteriorated.[353] The door threshold in its current configuration is not ABA accessible, and the turbine deck is set approximately 1 ½-inches below the top of the sloped threshold.

[352] Development/Study Package Proposal, Package #238B, April 6, 1990.
[353] OZAR Files, 1992 Compliance.



Figure 4.33. Existing west entry door. Trim has been replaced over time, and the width may be changed, as well. (STRATA 2018)



Figure 4.34. Existing east entry door opening trim detail. Note the historic trim is behind the more contemporary trim. (STRATA 2018)

Roofing and Lightning Protection

The existing roof, installed in 2014, is 100% end grain, clear, heartwood taper-sawn cedar shingles in 16-inch lengths with 5/16-inch butt and 5-inch exposure over 1x spaced sheathing, materials which seems to be consistent with the early black and white photographs of the mill (Figure 4.35). During roofing installation, a zinc strip was mounted along the ridge cap to prevent algae from growing on the roof, which has been an ongoing issue throughout the park on all of the cedar roofs. D-ring roof anchors were also installed on both sides of the ridge for fall safety for future roof repairs or replacement. The roof is in good condition, but there are a few areas where daylight can be seen.



Figure 4.35. Image of mill roof. It is difficult to see, but there are lightning rods installed along the roof ridge. (STRATA 2018)

The building appears to have always had wood shingle roofing, except for a brief period in the early 20th century. A 1934 CCC work description mentions that work required to the mill included "Replace existing unsightly corrugated metal roofing, used 1" pine sheating [sic] over entire roof and over it with cedar shingles."[354]

There have never been gutters or downspouts installed on the building. Due to the height of the eaves, gutters would have been difficult to maintain and keep clean, especially on the spring side of the building. Gutters have not been added in modern times, as the mill sits in a hollow with trees, and park staff is concerned about access.

[354] Harry E. Curtis to Wilbur C. Buford, *Justification of Repair Work on Old Mill* (Alley Spring State Park: Department of the Interior, National Park Service State Park Emergency Conservation Work, February 28, 1934).

Lightning protection was installed along the ridge during the 2014 re-roofing project. The system is grounded on the south side of the building, near the basement opening and in the northeast corner.



Figure 4.36. Current wood turbine observation deck (yellow arrow) and concrete millrace structure (blue arrow). (STRATA 2018)

Turbine Deck and Overlook

The current configuration of the turbine pit deck and overlook was first designed and constructed by Missouri State Parks sometime in the mid- to late-1960s (Figure 4.36). Before, there were many renditions of the design and construction of the turbine pit and decking. These variations are shown in historic photographs below.

- When constructed in 1894, the turbine was set within a timber frame structure with a wood deck (Figure 4.37).

- When the concrete turbine pit and millrace were constructed, a wooden structure was built over the turbine pit. In later years, the pit was sometimes covered with decking, and sometimes it was not. There were also a series of short ramps or walkways to the building (Figures 4.38 – 4.39).

- In 1934, the CCC constructed a new platform over the turbine pit and connected this platform to the mill (Figures 4.40 – 4.42).

- For a period in the mid-century, there was no connection from the turbine deck to the mill, which can be seen in several photographs and postcards (Figures 4.43 – 4.44). The connection between the turbine deck and the mill may have deteriorated since it had been constructed by the CCC around 1934.

- Railings were not introduced to the deck design until the current configuration was constructed in the mid-1960s (Figures 4.45 – 4.46). The design of the existing deck layout may be attributed to Combs & Elgin Architects, Engineers & Surveyors. Robert Elgin had been hired by the state to provide a plan for the turbine and spillway repairs. Two sheets of drawings by his firm were issued in May 1965.[355] These drawings reflect the current design methodology of the wooden deck structure, including the existing railing layout. It is unclear how much of this design was executed, as this design also included a wooden footbridge over the millrace (not constructed) and reconfiguration of the stone steps that remain in the observation area (not reconstructed). The 1973 Historic American Buildings Survey (HABS) drawings of the mill and dam structures indicate that only the deck and perhaps some of the millrace scope of work were completed.[356] Both sets of these drawings can be found in Appendix D of this report for reference.

- The NPS has continued to maintain the late 1960s deck design and construction in its nearly original form.



Figure 4.37. The turbine deck and headrace ca. 1896. Note that the deck extends to the east door of the mill and that there are no railings on the north side. A very low horizontal board runs along the south side, which may represent a type of guard. All of the turbine and race components are wood, as this photograph was taken prior to the installation of the concrete turbine and race structures, image cropped. (OZAR 24029)

[355] NPS eTic, OZAR_614_4190_[id166831].

[356] NPS eTic, OZAR_614_80056_[id233408]. Of note, the HABS documentation was never formally filed with the Historic American Buildings Survey. The only copies remain with the NPS.

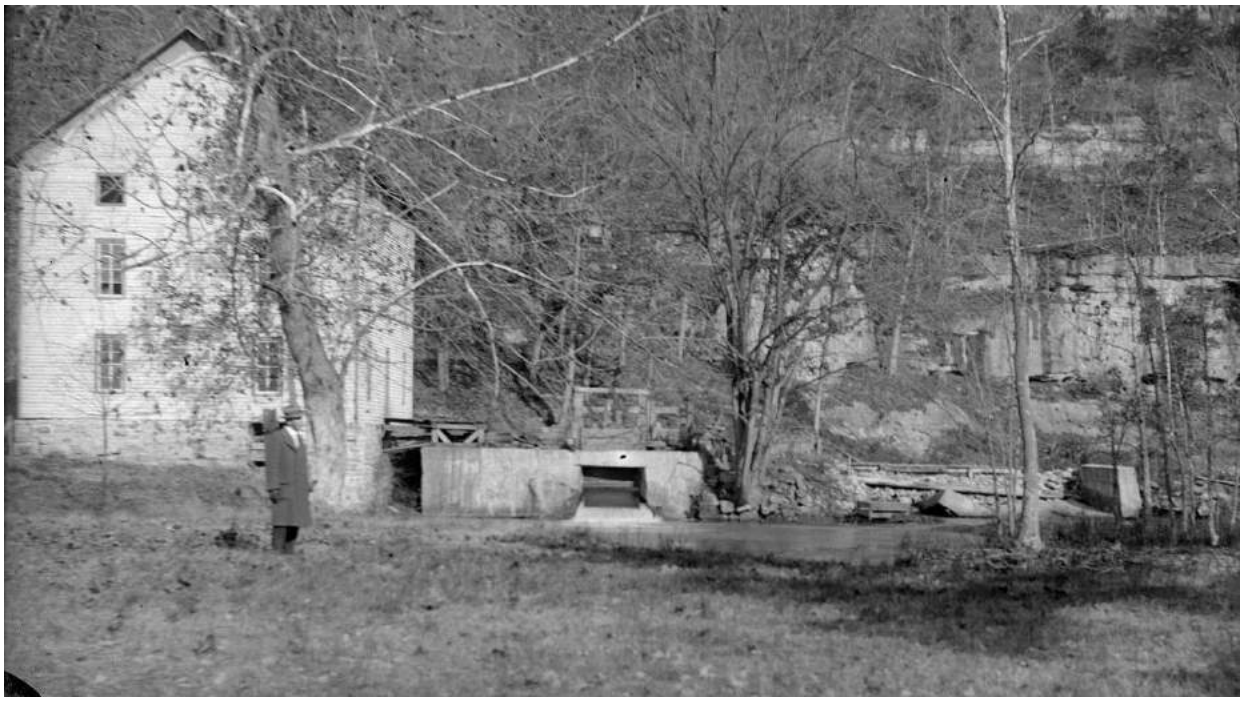


Figure 4.38. The concrete turbine pit is topped with a wood-framed structure, image cropped. There is a small wood ramp to the east mill door. There are no railings.
(Eric Daniels Files, OZAR, Missouri State Archives, ca. 1924)

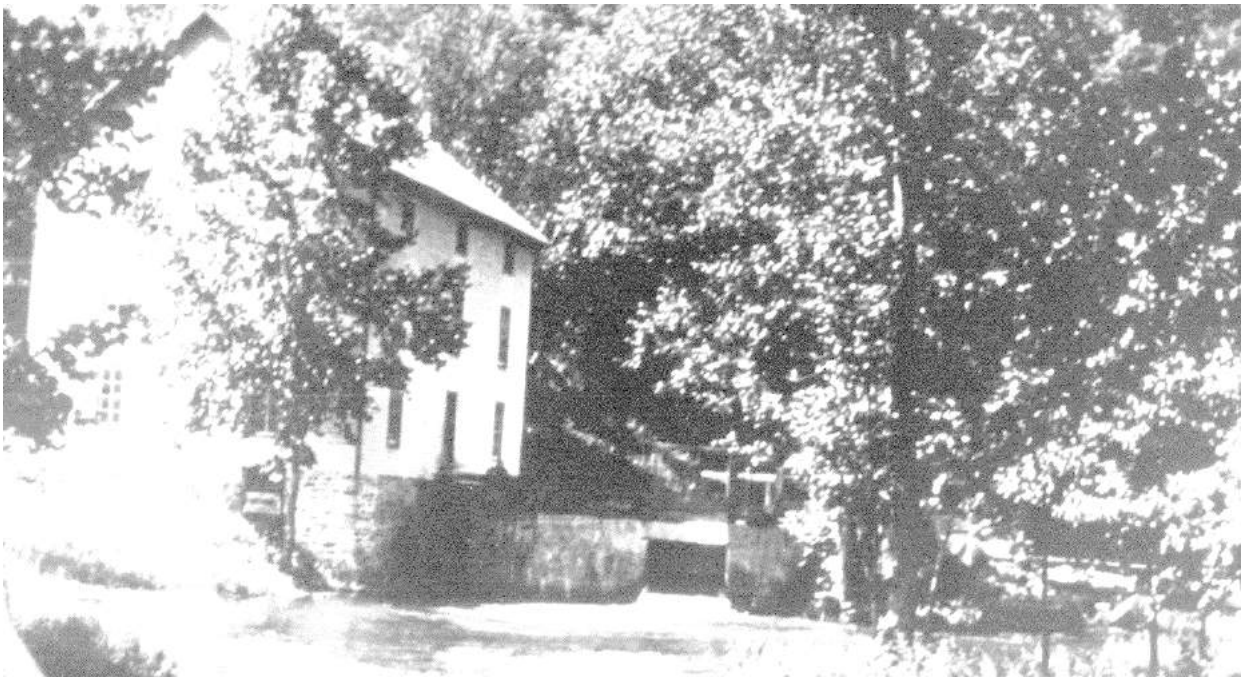


Figure 4.39. Although in shadow, the original photograph can be lightened and enlarged to see that the concrete turbine pit is topped with a wood frame structure and platform. The platform seems to ramp up towards the east mill door. Again, there are no railings. Ca. 1925, image cropped. (OZAR 2878)



Figure 4.40. Although in shadow, the original photograph can be lightened and enlarged to see that the concrete turbine pit is topped with a wood frame structure and platform. The platform ramps up towards the east mill door. There are no railings. CCC, 1933-34, image cropped. (OZAR 24057).

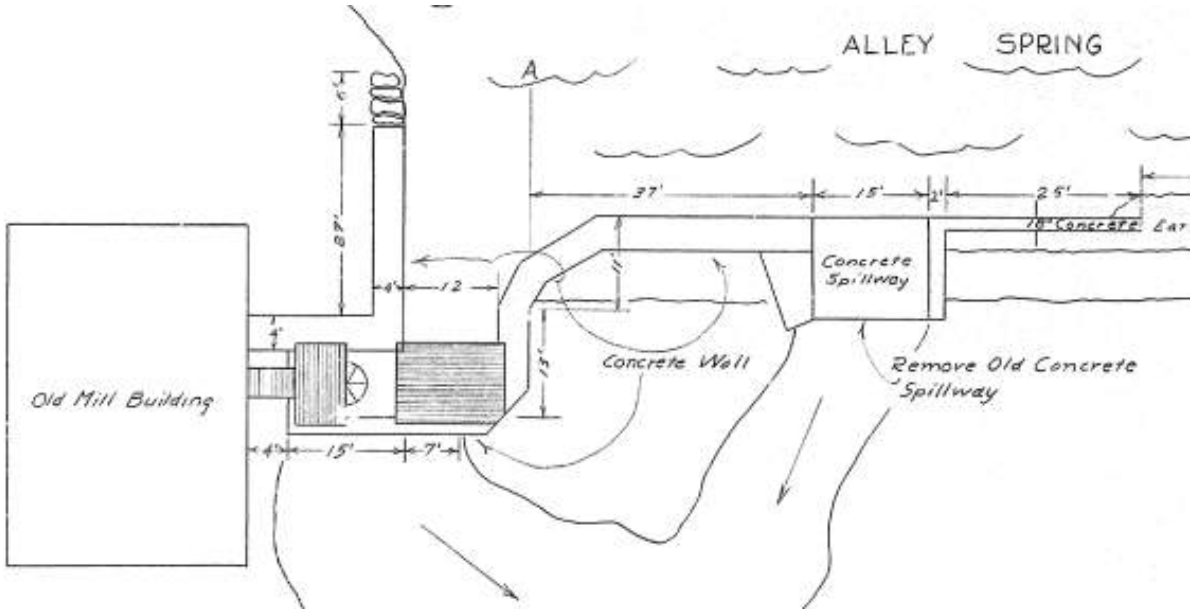


Figure 4.41. CCC drawing traced by Missouri State Park Board in 1962 regarding the scope of CCC work. Note the turbine deck design and ramp to east mill door. (OZAR 614-41974).



Figure 4.42. The concrete turbine pit is topped with a wood frame structure and platform. The platform offsets and ramps up towards the east mill door. There are no railings. CCC, June 1934, image cropped. (OZAR 24032)

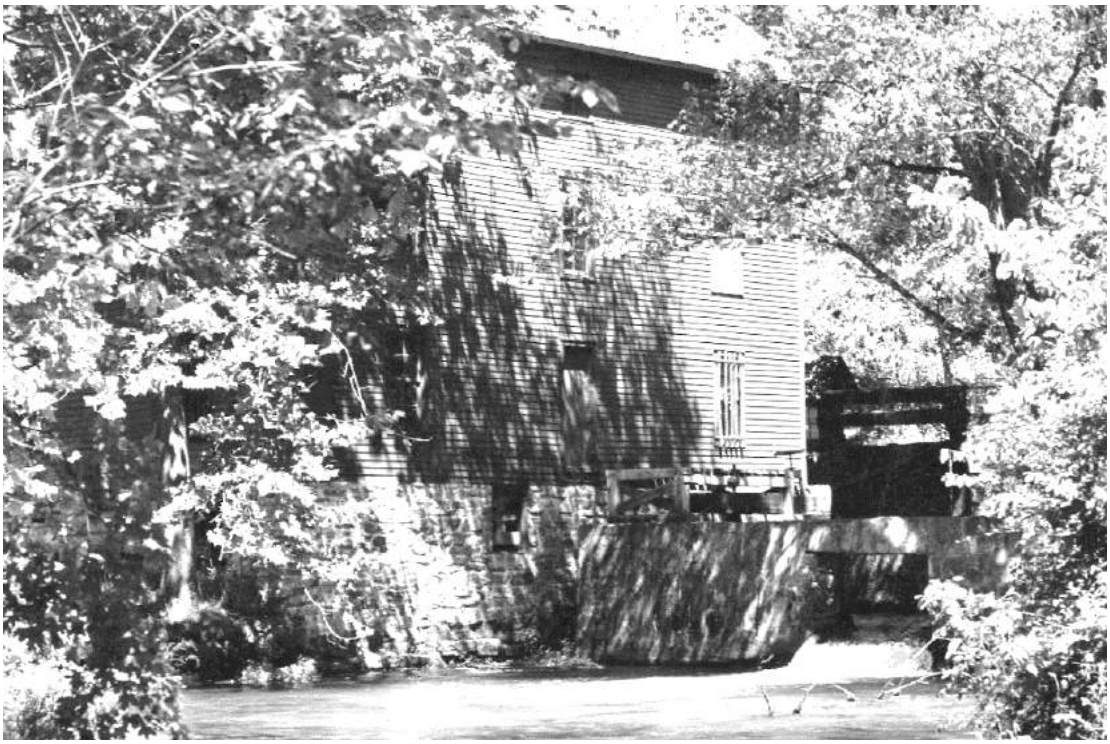


Figure 4.43. Although in shadow, the original photograph can be lightened and enlarged to note that there does not seem to be any type of connection between the wood framing above the turbine pit and the east entry door, c. 1960s. (Gerald Massie, Missouri State Parks, Arc1320120010)

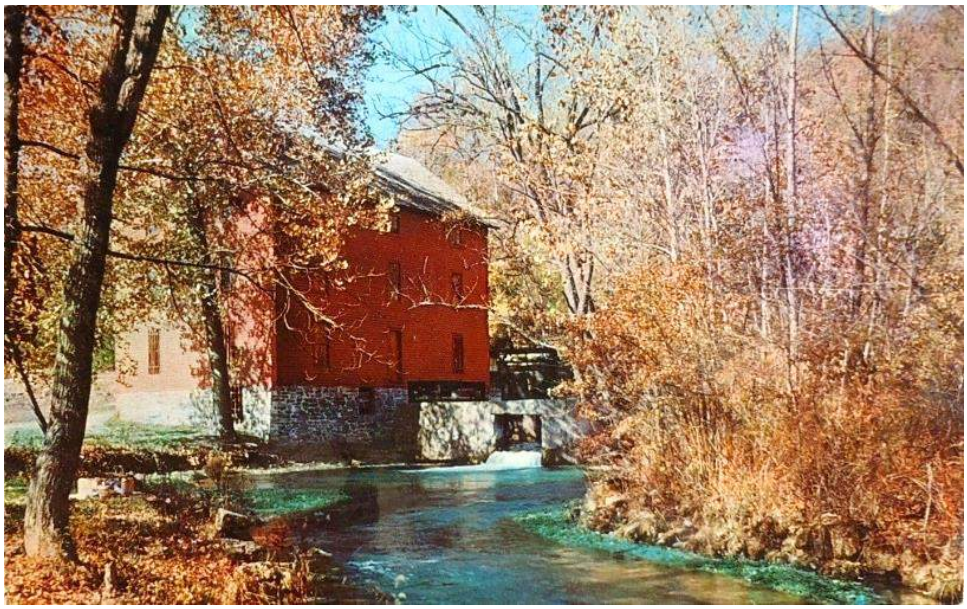


Figure 4.44. 1960s postcard of the mill. Note there is no connection between the turbine deck and the mill. (Dan Jackson File, scan, 1964)



Figure 4.45. This represents the first known image of the current turbine deck configuration, c. 1960s, image cropped. (Gerald Massie, Missouri State Parks, Arc1320120010)



Figure 4.46. Ca. 1964-68 photograph of the turbine deck which reflects the current design and configuration. Note that there are no handrails on the stairs, image cropped.
(Dan Jackson files, ca. 1964 -1968)

The condition of the existing turbine observation deck is poor (Figures 4.47 – 4.51). The guard railings on the deck and adjacent Mill Pond observation area by the spring show signs of decay, although since the initial investigation in April 2018, some of this has been repaired or temporarily blocked off from access.

There are multiple campaigns of construction visible for the turbine deck structure. It appears that the goal has been to preserve existing timber framing while supplementing with new, replica framing adjacent or over the old. Technically, this observation deck structure may date to the period of significance, but it is very late in the period, just before the park was transferred to the National Park Service.

The wood structure and adjacent wood railings have been a constant source of maintenance for park staff. Deterioration of the railing systems and structure of this platform is not only an aesthetic issue; it can pose a serious safety hazard if the structures are not fully stable. All of the platform and observation area railings have large, horizontal openings, which do not meet the current code for guardrails. The railings are not sturdy, with a significant amount of movement when force is applied. In addition, a set of stone steps rests against the railing, with no guard above the steps to prevent a fall into the fast-moving water in the millrace (Figure 4.47).

Guardrail building code requirements include:

- Guards shall provide adequate strength and attachment.
- 42-inches in height.

- Openings shall not pass a 4-inch sphere (4.375-inches above 36-inches to 42-inches in height).
- ailings must be able to resist 50-pounds per linear foot and 200-pound concentrated loads applied along the top in any direction.

These basic requirements are to assist in preventing small children from getting into harm's way. The structural deterioration of the deck is further discussed in the structural section of this report.



Figure 4.47. Current turbine deck and Mill Pond observation area. The yellow area is pointing to the stone steps which lead to the railing at the millrace. (STRATA 2018)



Figure 4.48. Current turbine deck with multiple episodes of structural framing and further deterioration. (STRATA 2018)



Figure 4.49. Current turbine deck with multiple episodes of structural framing and further deterioration. (STRATA 2018)



Figure 4.50. Deterioration at turbine deck stair railings. (STRATA 2018)



Figure 4.51. Existing chicken wire installed on deck for safety, installed prior to September 2018 site visit. (STRATA 2018)

Site Drainage

Drainage along the north and west sides of the mill building have been a constant challenge. The current grade along portions of these exterior walls is too high. The end of the main (north/south) support beam for the mill building should be visible within the stone foundation along the north elevation, as it is on the south elevation. The grade is too high on the north side, which has led to the end of the beam being covered. A metal plate was installed to cover the beam. Surface water flows down the north hillside towards the mill building. The trail surface absorbs some water, some water is carried away by the underground foundation drain, and some water is absorbed into the soils around the mill foundation. Water infiltration is an ongoing issue in the basement, especially along the west wall of the mill. The stone steps at the main west entry (currently obscured by the wood deck) act as a barrier to the water. When the water hits this stone barrier, the water backs up and infiltrates the stone foundation wall and into the basement area. Even light rains can result in water in the basement along this west wall. Water infiltration is further discussed in the basement section in this chapter, while site drainage overall is discussed further in Chapter 3.

A partial system of sub-surface foundation drains may have been installed during the foundation work that occurred in the early 1990s. A PVC pipe that daylights under the turbine deck likely dates to this period. No documentation of this work has been located.

Sub-surface foundation drains were installed along the west half of the north side of the building and the north half of the west side of the building in 2014. The foundation drain was installed to address water infiltration in the basement through the stone walls. The pipe daylights to the west of the mill, into the Alley Branch.

Grade in contact with the end of the main beam is an issue that requires resolution. Even though the beam is covered with a metal plate, water can infiltrate behind the plate and exacerbate the deterioration of the wood beam.

Utilities

Utility services to the section of the park on the north side of the Jacks Fork River are installed underground. Due to damage from the flood in April 2017, the pedestrian bridge crossing the Jacks Fork River—which also carries the piping for the wastewater for the north side of the park—has been closed. Therefore, wastewater from the north side of the river is currently held and pumped on a regular basis. Potable well water is accessed from the pump house up to the water tower and distributed through the project area, so the flood did not impact the water supply for the area north of the river. Electrical, telephone, and water fire suppression lines to the mill are buried.

Interior Architectural Existing Conditions

Refer to the architectural existing conditions floor plans found at the end of this chapter.

Basement

Due to the amount of equipment in the basement, it is difficult to take overall photographs of the space, so there are several photographs of the tight areas included in the description.

The basement is accessed by an internal staircase with a trap door in the southwest corner of the first floor (Figures 4.52 – 4.54). The narrow, 20-inch wide stair is steep and runs parallel to the south wall. The risers of the stairs are approximately 9.5-inches with 10.5-inch deep treads. The head height clearance at the base of the stair from the dirt floor is tight at approximately 65-inches, as there is a sprinkler line at the base of the stairs, adjacent to the main beam supporting the first floor.



Figure 4.52. Basement stair trap door in the first floor. (STRATA 2018)



Figure 4.53. Basement stair in the basement, looking south. (STRATA 2018)

The trap door to the basement is set flush within the wood flooring of the first floor, measuring approximately 20 ½-inches by 84-inches, and is awkward and cumbersome to lift (Figure 4.54). The handle is missing, so the only way to lift the door is to pry fingers into a hole in the hatch near the east end. When fully opened, the door lays tight against the south wall. This trap door is quite heavy and is difficult for a single person to operate. Also, when the door is open, the opening in the floor presents a fall hazard for visitors and staff. When closed, the trap door becomes part of the first floor wood flooring system, and visitors and staff walk across the surface. The hinges have been moved from a previous location to the current location, as witnessed by the remaining holes in the floor and the door. The screws used to secure the hinges are Philips type, which are not appropriate for the period of significance of the mill. There are outlines of a previous slide bolt on the top side of the door. The door is not well-leveled or grounded and when walked upon has some 'give.' This creates a disconcerting feeling, leading a person to believe the hatch door is giving way. During one site visit, the team witnessed a visitor walk across the hatch and trip because of the sensation of the door giving way.

The basement staircase is in fair to poor condition. The bases of the stringers are buried in eroded soil, there is a cracked tread, and the stringer connection at the top of the stairs is insufficient. There is no handrail on the stairs. The light switch for the basement is near the back of the opening on the south side of the stairs, making it difficult to switch on the lights before entering the basement or to switch them off on the way back up the stairs. Together, these issues present an unsafe condition for visitors and staff. The existing condition of the stairs is further discussed in the structural section of this report.

The provenance of the hatch door likely dates to the CCC renovation, as it appears to be at least partially constructed with the same floorboards used in the main first floor space. If the top layer of flooring is removed in this area of the first floor, the original floorboards may yield additional information regarding the earlier treatment and operation of this stair opening.



Figure 4.54. Basement stair floor hatch, first floor, looking south. (STRATA 2018)

The basement area is one large open space with a small enclosed room built into the center of the west side (Figures 4.55 – 4.73). The overall square footage of the basement space, inside the foundation walls, is approximately 1,163 square feet, while the excavated portion of the basement is approximately 560 square feet. The mill was built into a rocky slope, so the foundation walls on the northern end of the building are shallow, while the south side is fully exposed on the exterior with full height stone foundation walls. The basement floor is dirt, and the floor elevation of the dirt varies from the southeast corner height of approximately 5'-6" to the underside of the joists to almost no clearance in the northwest corner. The southeast and the central portions of the basement are excavated, while the remainder of the area along the northern third and portions along the west wall are unexcavated and have sloped crawlspace areas. The small room along the west wall was excavated into the grade. During the last major flood of 2017, the entire basement was submerged.

The small equipment room centered along the west side was constructed ca. 1983 to provide a room for the new fire suppression and fire alarm equipment (Figure 4.73). The fire alarm panel was later moved to the first floor miller's office in 2014. The room is constructed with a partial-height concrete masonry block wall and wood frame wall system with a finished ceiling. There is a space heater inside this area. The floor appears to be a combination of dirt and a partial concrete pad.

A drain pipe from the fire suppression system and a condensate pipe from a dehumidifier in the room exit the east wall and run along the basement floor (Figure 4.58). The pipes daylight through a hole in the east stone wall, directly into the Spring Branch.



Figure 4.55. Basement, looking east at the grain bin and stairs on the right. (STRATA 2018)



Figure 4.56. Basement, looking south at the stairs and fire suppression equipment. (STRATA 2018)



Figure 4.57. Basement, looking west at the foundation wall and fire suppression equipment room on the right. (STRATA 2018)



Figure 4.58. Basement, looking north with the fire suppression equipment room on the left. Note the room is built slightly into the grade. White insulation board covers the concrete masonry block foundation. (STRATA 2018)



Figure 4.59. Basement, looking north. The abandoned gristmill pulley and chute are in the distance. The electrical junction box is hanging precariously from the floor joist. (STRATA 2018)



Figure 4.60. Basement, looking north. The west foundation wall is the left with the concrete strip footing poured on the inside face. In the distance, it appears a concrete footing is poured under the north wall, as well. (STRATA 2018)



Figure 4.61. Basement, looking north at one of the center posts and beam and the grain elevator. (STRATA 2018)



Figure 4.62. Basement, looking southeast towards the elevators and pulleys beyond. The grain storage bin is on the right. (STRATA 2018)



Figure 4.63. Basement, looking north into the unexcavated crawl space. The red arrow points to the old bracketed chimney foundation pad. In the distance, concrete underpinning is visible below the north foundation wall. (STRATA 2018)



Figure 4.64. Basement, looking into the northeast corner crawl space. Note there are several campaigns of concrete footings visible in this photograph; inner footings to support temporary shoring and underpinning under the exterior stone walls. (STRATA 2018)



Figure 4.65. Basement, looking at the east foundation wall. The opening on the right is for the turbine braking system, which is operated from a wheel on the first floor. Note, the foundation wall was reconstructed in this northeast area and appears to only be a single wythe of stone thick. (STRATA 2018)



Figure 4.66. Basement, looking south in the center of the pulley and elevator equipment. (STRATA 2018)



Figure 4.67. Basement, looking north through the turbine belt and pulley system. The opening on the right is for the turbine belts. (STRATA 2018)



Figure 4.68. Basement, looking north toward the turbine pulleys. (STRATA 2018)



Figure 4.69. Basement, looking toward the east foundation wall with the large opening south of the turbine pit. This opening is further discussed below. (STRATA 2018)



Figure 4.70. Basement, looking east at the hole through the base of the wall. The posts are from an earlier stabilization project. (STRATA 2018)



Figure 4.71. Basement, looking south toward the southeast corner of the room. (STRATA 2018)



Figure 4.72. Basement, looking south at the shoring on the left and the opening in the south wall. (STRATA 2018)



Figure 4.73. Basement, looking west into the fire suppression equipment room. (STRATA 2018)

The excavated portion of the basement contains the main pulley and power system from the turbine, as well as a storage bin and elevators. An abandoned pulley for the old gristmill and a wooden chute are found in the crawlspace area in the northwest corner. Refer to the diagram drawn by Wagner in the 1977 HSR (Figure 4.74). Based on this diagram—along with the 1973 HABS drawings—it appears that the southern-most of the posts and pads from the abandoned gristmill are missing (Figures 4.75 – 4.76). Evidence shows that the pulley beam is longer than shown in the diagram and that there was a third post and a pad to the north of the pully that are also missing. This system warrants further investigation by an experienced millwright.

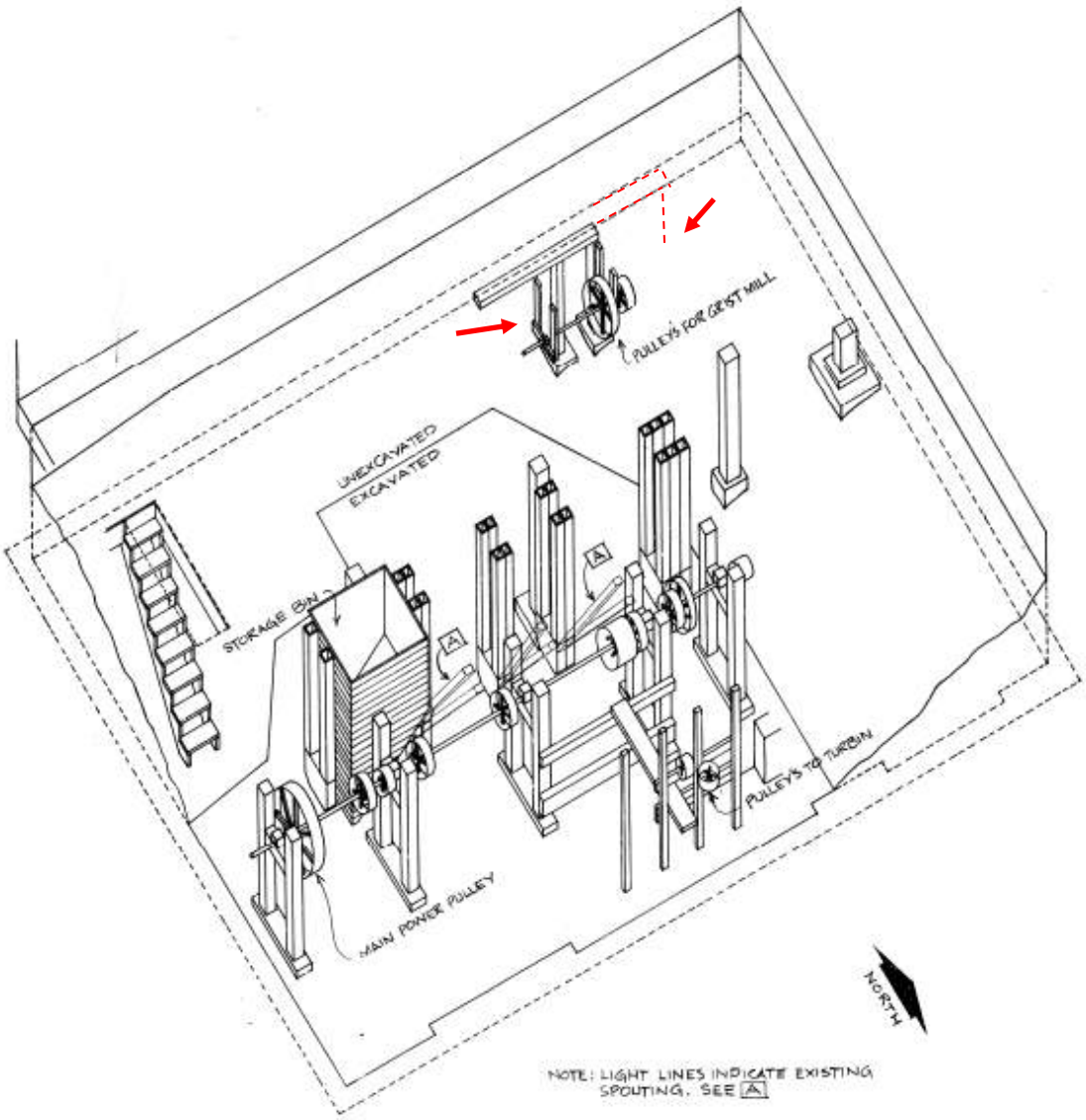


Figure 4.74. Basement isometric plan by Wagner for the 1977 HSR. With regards to the overall mill works equipment, this diagram remains valid today. The left red arrow points to the currently-missing post and pad, while the arrow on the right points to missing post and pad and a longer beam than what is shown in the diagram. Also, the very large wood chute from the first floor gristmill to the basement elevators is not shown. (Wagner, 1977 HSR)



Figure 4.75. Abandoned gristmill location. The beam is currently supported by a single post and pad. The red dashed lines in the photograph indicate where posts and pads on both ends are missing. (STRATA 2018)

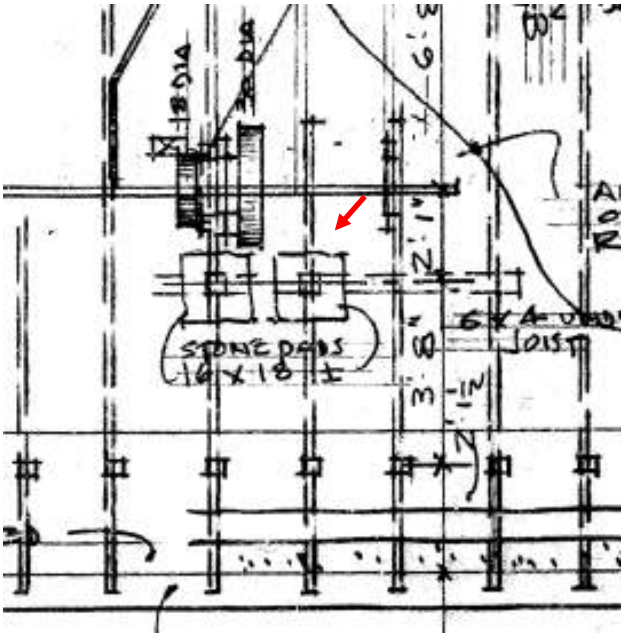


Figure 4.76. Detail of the 1973 HSR basement floor plan. (1973 HSR)

The basement foundation and first floor wood framing have undergone multiple restoration and stabilization projects since the mill was constructed. Evidence of these multiple projects can be seen throughout the basement. An outline of the known projects is listed below.

1934 CCC report mentions they repaired the stone foundation facing the spring, as well as making repairs to the chimney post foundation.[357] Their renovation work in the basement is not documented.

[357] Harry E. Curtis to Wilbur C. Buford, 1934. Also, OZAR 614_41935_[id155125].

Mid-1960s Missouri State Parks undertook an extensive renovation of the mill in the mid-1960s, but very little documentation of the scope of work is known. Drawings produced by Coombs & Elgin appear to concentrate mostly on the dam structures. There is documentation that the mill was painted, windows restored, and there was likely other associated work with the mill structure. These drawings are found in Appendix D.

1973 First phase of NPS foundation stabilization underway. The exact scope of work is unknown. It appears some of the interior concrete strip footings - poured along the west, north, and east walls - were installed at this time to provide a base for temporary floor framing supports and for jacking the building. Also, several new floor joists were installed, as well as some new support posts for the pulley equipment.[358] Most of these wooden 'wedged' supports (or knee walls) (Figures 4.77 – 4.78) were in place to support the construction in 1973; however, some of these remained into the 1990s and the timber shoring in the southeast corner of the basement remains today.

1977 NPS produced a set of drawings in coordination with Wagner that suggests some of the work shown on the 1973 drawings was not completed. An expanded scope of work is indicated on these drawings, including the installation of concrete under the elevators and grain bin. A floor drain is noted in the southeast corner. A majority of the work shown in these drawings does not appear to have been executed. Refer to Appendix D.

1983 Second phase of foundation stabilization underway. New concrete footing proposed to be installed along the south foundation wall for support during construction.[359] Exact scope unknown.

1992 - 1993 Repairs by the NPS were undertaken again in 1992-93 (note that these scopes are from written documents found in OZAR files and visible evidence found in the field, not all work can be verified as being completed).[360]

- Repairs were again required in the southeast corner of the foundation, due to settlement, upheaval, and resultant cracking. These issues were stemming from the Sycamore tree growing near the southeast corner of the foundation.

[358] OZAR 614_80056_[id233408].
[359] OZAR Compliance Files, May 1983.
[360] OZAR Compliance Files, 1992.

- The building was braced above the existing bracing in the basement. The building was jacked to lift walls back to the correct height and allow for new sills to be installed.
- Sections of the foundation were also excavated, underpinned in small sections, and repaired, including the northeast corner, west wall, and the southwest corner. Entire sections of the stone foundation were documented and reconstructed.
- Because these sections of the foundation had settled, the sill beams had deteriorated, causing the front (west) and north end wall to move down and pull away from the floor, threatening the stability of the structure. The sill beams along these walls were replaced in kind with hewn timber, as well as along portions of the east wall. A barrier copper shield was installed between the sills and the stone foundation. This also required several rows of siding to be replaced near the base of the building.
- Approximately 24 joists were repaired, with intricate detail, along the west wall which included installation of reinforced metal plates or straps to prevent joints from pulling apart. Approximately 30 first floor wall studs required bottom end repairs. These were spliced.
- New footings were supposedly installed underneath the west wall, which necessitated the removal and reinstallation of the stone steps at the west entry for access.

2014 A young sycamore tree seen in CCC-era photographs had grown into a very large diameter, 105-foot high tree by 2014. The tree roots had encroached under the mill's stone foundation and under the concrete turbine pit. The roots were causing damage to these walls, and the NPS had the tree removed.[361] The tree stump was cut to be flush with grade and treated with herbicide. The tree stump and large root system will eventually go through a slow decomposition, which may further damage the stone foundation. This is addressed more in the structural section of this chapter.

It is unclear when some of the foundation repair work in the basement was undertaken. For instance, the origins of the concrete pad and curbing under the elevators and under the shaft of the old sawmill are unknown. The date the north wall concrete underpinning was installed is unclear, as is the amount of stone wall reconstruction associated with all of the CCC, Missouri State Parks, and NPS stone foundation stabilization and repair projects.

[361] OZAR Files, Project PMIS 175832, 2014.



Figure 4.77. Details of the west wall with concrete footings installed by the NPS ca. 1979 and what they referred to as 'wedged' support in place. [362]
(Polaroid photos taken ca. 1983, OZAR Compliance Files)

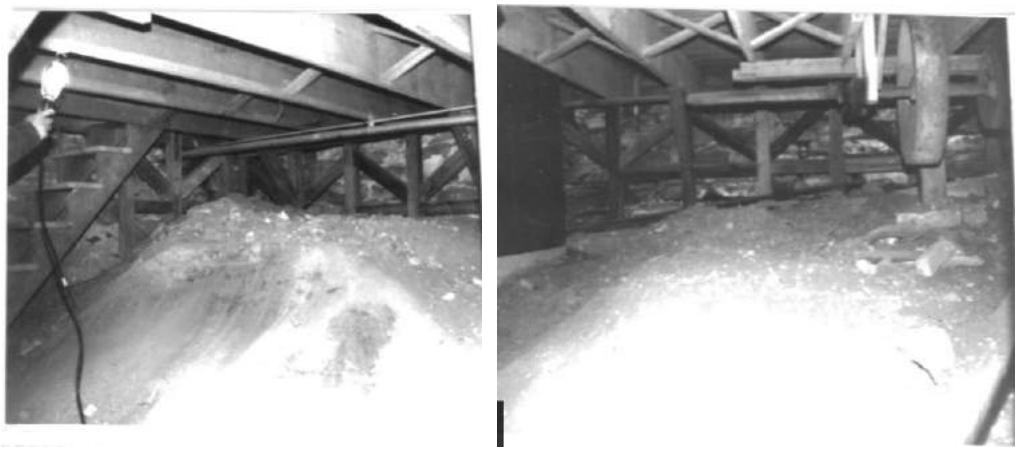


Figure 4.78. Details of the southwest corner and west wall with concrete footings installed by the NPS ca. 1979 and what they referred to as 'wedged' support in place. [363] These are no longer present after the 1992 stabilization project. (Doug Conway Files, ca. 1991)

Sections of the stone foundations walls have been previously reconstructed with a single-wythe thickness (east wall near the north end and the southeast corner). These alterations may have been initiated with the CCC renovations and were maintained through subsequent foundation repairs. The sections of visibly thinner walls can be seen detailed on the 1973 HABS drawings. The mill foundations should be a double-wythe thickness, and these sections are not providing adequate structural support. There are also several stones missing, deteriorated, or displaced in the west wall.

[362] OZAR Compliance Files, May 1983.
[363] Doug Conway Files, 1991.

The southeast corner of the stone foundation remains cracked and requires repairs where the sycamore tree was removed. This section of the foundation has only a single wythe of stone, and the park staff have therefore left the old interior shoring in place to provide additional framing support (Figure 4.71 – 4.72). The reconstruction of these areas is covered more in-depth in the structural section of this chapter.

The exposed soil within the crawlspace and basement areas is stable, in that these areas have remained relatively unexcavated since the construction of the mill. A small survey pit was excavated in the 1990s near the south wall—and several at the exterior perimeter of the foundation—during the foundation repair project.[364] No other known excavations have taken place on the interior. However, the water infiltration along the west foundation wall has carried soil from the northwest and west portions of the basement areas into the excavated areas, causing erosion within the crawlspaces (Figure 4.79). This soil has continued to build up around the milling equipment and structural posts for the building, which will further deteriorate these components.



Figure 4.79. Water infiltration along the basement floor surrounding the sprinkler equipment room. The pipes exiting the room are from the sprinkler and a condensate line from a dehumidifier and drain to the exterior of the building through the east wall. (STRATA 2018)

There are four openings through the basement foundation walls: three in the east wall and one in the south wall. The northernmost Opening 001 in the east wall is for the turbine brake or gate operating system (Figure 4.65), the second, larger Opening 002 is for the turbine belt (Figure 4.69). These openings are not covered, although some attempt has previously been made to install some boards across the belt opening to make the overall size of the opening smaller. These boards are deteriorated.

[364] Mark J. Lynott, James E. Price, and Roger Saucier, “The Alley Mill Site & Early Prehistory of the Current River Valley, Southeast Missouri,” *The Missouri Archaeologist: Journal of the Missouri Archaeological Society*, Vol. 67, December 2006.

The larger Opening 003 appears to be a window type of opening, although it may have previously had an alternate use (Figure 4.69 and 4.80). Evidence in the mortar on the south side of the jamb suggests there was once an internal frame, similar to what is seen in the larger southern opening. The function of this opening is unknown. It may have been constructed to provide visibility to the headrace gate. In the earliest turbine and dam configuration, which was constructed of wood timbers, there was a larger deck, which may have extended in front of this opening (Figure 4.81). It is possible that this opening originally had some function related to the turbine before the newer concrete turbine pit was constructed. Documentation of this area is sparse, as it is frequently in shadow in historic photographs.



Figure 4.80. Opening 003 in the east foundation wall. This masonry opening has clearly been altered. An impression of a wood jamb remains on the south side of the opening. The function of this opening is unknown. (STRATA 2018)



Figure 4.81. Early photograph, ca. 1902-1911 of the timber frame dam structures. Note that the north face of this earlier structure was forward several more feet than the current headrace configuration. Therefore, foundation Opening 003 may have had another purpose related to the turbine operation. (OZAR 1378)

The National Register Nomination mentions that there was another opening in the south foundation, similar to the remaining Opening 004. The nomination states that this was also used in 1900 for a shaft to the sawmill and that it had been infilled and mortared. This opening does not appear in any of the historic photographs found to date. The grade on the interior is high, and no evidence has been identified in the stone wall to support this claim.

Two small openings near the base of the east stone foundation wall are open to the exterior. The northernmost penetration (Figure 4.69) is used to drain the fire suppression system and condensate line from the dehumidifier. The hole is open with no mortar between the piping and the stone. The southernmost hole has a galvanized pipe extending through the opening which terminates below the water line outside of the mill (Figure 4.70). Park staff suggested that there had once been a sink in this location and this pipe was the drain or that this had been connected to a pump to provide water. The 1977 NPS drawings suggest there were pipes and a compressor near this location and that the openings were to be infilled with masonry as required.[365] There is no other documentation known for this area. The hole surrounding the pipe is quite large and is open.

Mildew in the basement is an ongoing issue. Because this space is not conditioned, the proximity of the building to the spring, the basement is relatively open to the out-of-doors, and the basement has a dirt floor with water infiltration issues, it is nearly impossible to keep humidity levels in this space in check. Mildew is present on the wood floor structure, chutes, elevators, and mill works equipment.

The center structural beam that runs north/south projects through the stone foundation walls. On the south elevation, it is visible and painted red. On the north side, it is covered by a metal plate and buried partially below grade. This presents an issue, as the beam ends should not be covered or subjected to below-grade moisture, as the end-grain of wood is quite porous and will become quickly deteriorated.

[365] NPS eTic, 614_80057_[85236].

First Floor

The first floor serves as the main entry into the mill, with the west door serving as the primary visitor entrance. A second entry to the east deck is only open during operating hours. Currently, the first and second floors, except the Miller's Office on the first floor, are open to the public. The first floor consists of one large, rectangular, open room with the enclosed Miller's Office in the northeast corner. The second floor structure is exposed. A series of three large square posts support a central beam, running north/south. The first floor is 1,358 gross square feet and measures 41'-1" north/south and 30'-11" east/west. The Miller's Office in the northeast corner is 128 square feet. Clearance to the underside of the exposed floor joists is 8'-9 ½-inches.

This first floor of the mill was originally utilized for production. Today, many of the original roller mills are lined up in the east bay, and other milling equipment is on display throughout the room (Figures 4.82 – 4.90). The stair to the second floor is located along the west side of the north wall. The stair to the basement is located along the west side of the south wall. The construction of the stair to the basement and the trap door are discussed in the Basement section of this chapter.



Figure 4.82. First floor, looking northeast from near the front entry. (STRATA 2018)



Figure 4.83. First floor, looking south in the west bay near the stairs. (STRATA 2018)



Figure 4.84. First floor, looking southeast from the east bay near the front door. (STRATA 2018)



Figure 4.85. First floor, looking north in the west bay. The staff counter is on the left side of the photograph. (STRATA 2018)



Figure 4.86. First floor, looking north in the east bay. The door to the turbine deck is open. (STRATA 2018)



Figure 4.87. First floor, looking south in the east bay. (STRATA 2018)



Figure 4.88. First floor, looking south in the east bay. (STRATA 2018)



Figure 4.89. First floor, looking east toward the door to the turbine deck. Note the wheel is the braking system for the turbine. (STRATA 2018)

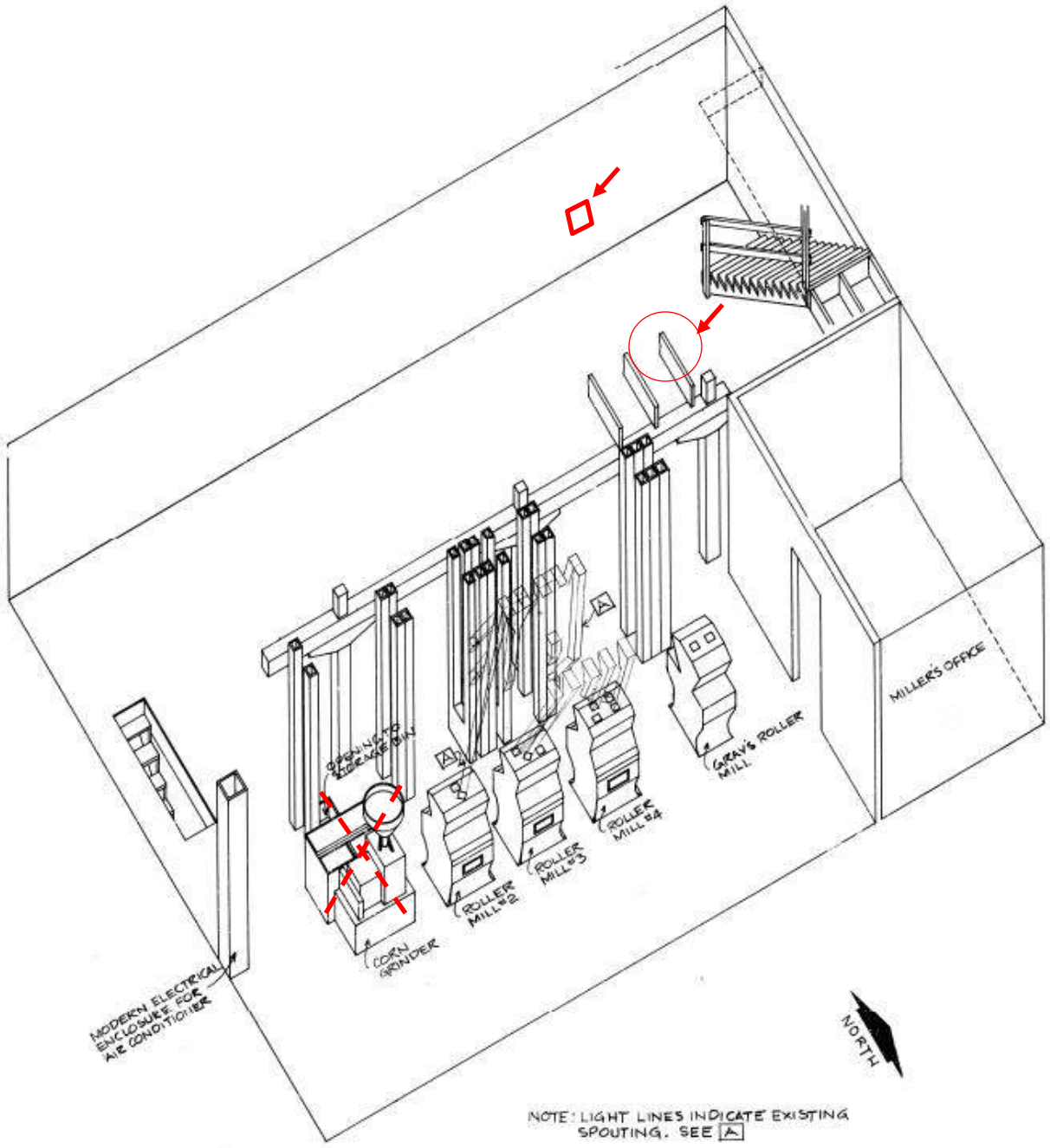


Figure 4.90. First floor isometric plan by Wagner for the 1977 HSR. With regards to the overall mill works equipment, this diagram remains valid today. The top red arrow points to the spout location for the gristmill through the wall that can be seen in some early photographs. The bottom arrow points to the general location of the gristmill. The dashed red lines cover the non-original corn grinder which has since been removed. (Wagner, 1977 HSR)

The top layer of tongue and groove pine flooring on the first floor dates to the CCC or NPS renovations and is ¾-inch thick by 5 ¼-inch wide. The lower layer of wood flooring, which is a combination of the original flooring and salvaged flooring from the third floor, is 7/8-inch thick and 3 ½-inches in width. There are areas where holes have been drilled through the floor where belts are installed to power machinery. There are also several holes remaining from where grain elevators have been relocated or where equipment has been moved. Several areas are covered with unfinished sheet metal patches. There are no baseboards.

The interior walls are clad with 1-inch thick by 7 ½-inch wide sawn boards, directly over the wall studs. These boards are rough and unfinished. The ledger boards which run along the east and west walls support the second floor joists, and the face of the ledger boards ais set flush with the wall boards. The walls are uninsulated. The wall boards help to tell the story of the first floor. There are holes drilled through the boards where equipment had been installed. Thin wood nailers are installed in the east bay on the south wall that have lettering inked into them that likely date to when the generator was installed. Some of the wall boards may have been salvaged from the third floor and installed on this level by the CCC. It should not be assumed that all of the boards are original to their existing locations.

The second floor structure and underside of second floor wood flooring is visible throughout the large room. There is some wood bridging between the second floor joists.

The fire suppression riser is installed near the center of the south wall (Figure 4.91). The distribution piping is installed tight to the ceiling and is painted a dark brown to closely resemble the color of the old joists and floor sheathing.



Figure 4.91. First floor, at fire suppression system along the ceiling. (STRATA 2018)

Staining on the exposed second floor joists is from previous water infiltration, mud dauber and similar insect nests, spots of paint, and oil staining (Figure 4.92). There are areas showing signs of older insect damage and wood rot deterioration. The wood rot is prevalent along the tops of the joists, which is expected because water can seep between the upper floorboards and rest on the tops of the joists. The mill roof has previously leaked for extended periods of time. There are short nailer boards installed on the sides of the floor joists to cover damage and provide a nailing surface for the second floor flooring boards (Figure 4.93). The CCC drawings show that they replaced the center posts and many floor joists. Many of the second floor joists, sections of the center beam, and portions of the first floor wall studs were replaced or repaired in the 1990s by the NPS. The existing condition of the second floor joists is discussed in the structural section of this chapter.



Figure 4.92. First floor, looking up at the ceiling. Note holes through the ceiling, remnants of older mill equipment, and electrical conduit. (STRATA 2018)



Figure 4.93. First floor, looking at the ceiling. The varied boards are likely salvaged from other locations from within the mill (potentially the third floor). (STRATA 2018)



Figure 4.94. First floor, looking west at the milling equipment and the chutes and elevators leading to the second floor and basement. (STRATA 2018)

The 1973 drawings suggest the notches in the floor joists were for 2x's that were used to anchor the generator above. The undersides of the floorboards exposed along the second floor ceiling in the southeast corner are soiled with oil from this potential generator with jackshaft and pulley system which produced electricity for the mill and the surrounding area (Figure 4.95).



Figure 4.95. First floor, looking at the ceiling in the southeast corner of the first floor. (STRATA 2018)

This generator was installed early, prior to the Missouri State Parks purchasing the building. Electrical lines from the building can be seen in Figure 2.28, which dates to ca. 1920s. There are a few knob and tube porcelain insulators mounted to the underside of the floor joists from the electrical distribution system throughout all of the levels of the building.
There is some contemporary galvanized electrical conduit running along the east side of the center beam to provide electrical receptacles, which may have been required for exhibits or earlier equipment. The receptacles are not currently utilized.

The windows on the first floor are double-hung. The window adjacent to the stairs has a metal mesh protective screening on the interior. This is likely to prevent breakage.

The Miller's Office, located in the northeast corner of the first floor, is the only room with refined finishes (Figures 4.96 – 4.101). The walls and ceiling are covered in a double, beaded-board 3 ¼-inch by 5/8-inch thick. There is an existing hole in the west side of the ceiling and west wall where the original brick chimney was located. This was a bracketed chimney, which meant that it was fully supported with a stout wooden frame, supporting a wood shelf. The brick flue sat atop the wood shelf. The wood frame was supported with a large wood post and stone footing in the crawlspace area below. The wood framing of this chimney support is clad with beaded board, similar to the remainder of the room, and is painted. The brick chimney would have measured approximately 12-inches by 18-inches and would have had a single, unlined flue opening with a stovepipe thimble through the east face. The room would have been heated with a small potbelly type of stove.

Electrical conduit is installed over the ceiling in multiple locations. The room is lit with a contemporary fluorescent fixture. The electrical panel and fire alarm panel for the building are installed on the west wall.



Figure 4.96. First floor, Miller's Office, looking north. (STRATA 2018)



Figure 4.97. First floor, Miller's Office, looking southeast. (STRATA 2018)



Figure 4.98. First floor, Miller's Office, looking south. (STRATA 2018)



Figure 4.99. First floor, Miller's Office, looking south. Graffiti from 1913. (STRATA 2018)



Figure 4.100. First floor, Miller's Office beaded board ceiling. (STRATA 2018)



Figure 4.101. First floor, Miller's Office, looking west. Detail of wood-framed bracketed chimney support. Note the patched holes in the wall ceiling where the chimney was installed. (STRATA 2018)

The door to the Miller's Office is not original; it appears to date to the CCC era or later. The door has face-applied hinges that are not appropriate for this location (the original door had butt hinges) and has no functioning latching system (Figures 4.102 and 4.103). The original door to the office is stored on the third floor on top of one of the mill machines (Figure 4.104). That door is paneled with vertical boards on one side and is missing the original hinges. Based on the hinge mortise, the door and would have swung into the office as a right-hand door. The 1977 NPS drawings suggest that the original hinges are currently installed on the corn bin.



Figure 4.102. First floor, Miller's Office door. (STRATA 2018)



Figures 4.103 and 4.104. Left: First floor, Miller's Office door jamb with old butt hinge mortise locations. Rgiht: Miller's Office door, stored on the third floor. Note the butt hinges and hardware are missing. (STRATA 2018)

A contemporary, chase is located in the east bay along the south wall (Figure 4.105). The chase was constructed by the State Parks or the NPS to conceal refrigerant lines for an air conditioning unit that was once installed on the second floor. The chase was noted on the 1973 drawings and was also scheduled to be removed in the 1977 NPS drawings. A project description in 1994 describes the removal of the air conditioner, which had not been used in at least three years. The project was supposed to remove all the pipes and pump from the basement and piping and wood screen on the first floor, and the holes in the flooring were to be filled. This work did not occur, as a visit in 1994 by NPS Historical Architect, Al O'Bright recommends removal of this second floor air conditioner, as it was dripping condensate. The air conditioner and equipment were eventually removed, but the wood chase on the first floor, the plywood covering the second floor, and the holes drilled through the floors to run the piping remain.



Figure 4.105. Chase for air conditioning piping, installation dates to the late 1960s or early 1970s. (STRATA 2018)

Interior Staircases

The interior wooden staircases likely date the 1933-34 CCC renovation of the building, although the CCC drawings note for them to be "repaired, so there is a possibility they are older."[366] The stair stringers at the top of the stair from the first to the second floor are not attached properly and may pose a safety hazard. This is further discussed in the structural section of this chapter.

The existing stairs from the first to second floor do not meet current building code (Figures 4.106). The risers vary from 7 ½- to 8-inches with open risers. The treads are 9 ½-inches by 2-inches thick with virtually no nosing. The stairs measure 35 ½-inches between the handrails. The hand railings are 1 ½-inches x 3 ½-inches (2x4) oriented with the small side up.

There are no balusters or guardrail on the staircase, so the staircase cannot meet the 4-inch maximum diameter opening code requirement. The stair to the third floor is similar. The treads, risers, and handrails are also non-conforming with regards to dimensions, graspability, and required extensions.



Figure 4.106. Left: Stairs from the first to second floors. Right: Second floor view of the stacked stairs to first and third floors. (STRATA 2018)

[366] NPS eTic, OZAR 614_41935_[id155125].

The existing stairs from the second to the third floor do not meet current building code (Figures 4.107 – 4.108). The risers vary from 8 1/2- to 9 1/4-inches with open risers. The treads are approximately 11-inches by 2-inches thick with virtually no nosing. The hand railings are 1 ½-inches x 3 ½-inches (2x4) oriented with the wide side up and is interrupted part of the way up the stairs with horizontal blocking. Wire mesh screening is installed on the underside of the stairs.

There are no balusters or guardrail on the staircase, so the staircase cannot meet the 4-inch diameter opening code requirements. The treads, risers, and handrails are also non-conforming with regards to dimensions, graspability, and required extensions. The guardrail at the third floor is too low and does not have balusters.



Figure 4.107. Stairs from the second to third floors. (STRATA 2018)



Figure 4.108. Stairs from the third to second floors. (STRATA 2018)

Second Floor

The second floor is accessed from the stair along the north wall. This space serves as an interpretive exhibit area for visitors and consists of one large, rectangular, open room (Figures 4.109 – 4.115). There is no ceiling, so the third floor structure above is visible. A series of three large square posts support a central beam, running north/south. The overall square footage of the second floor is 1,358 gross square feet. The longest interior dimension is 41'-1" north/south and 30'-11" east/west. Clearance to the underside of the exposed floor joists is approximately 7'-9."

This second floor was originally utilized as one of the mill's production floors, with the milling equipment lined up in the east bay and grain elevators and chutes throughout the floor. The stair to the third floor is located along the west side of the north wall atop the stair to the first floor. The third floor stair is enclosed with a wood-framed and wire mesh cage. The third floor is not open to the public, so the door to the stairs remains locked. A built-in cabinet is installed at the base of the stairs to the third floor. This cabinet may date to CCC-period or later. The hinges match those installed on the first floor doors and are not antique.

This room is outfitted with a combination of original machinery and ca. 1970 exhibits. The exhibits are free-standing and are positioned throughout the second floor. In the northeast corner of the floor, a video on a small screen is shown to visitors. A furred chase clad in wood boards is located along the north wall in this corner for feeding electrical conduit to the third floor from the first floor panel (Figure 4.116). This chase may have been added ca. 1970.

The second floor shares many of the same characteristics as the first floor. The upper layer of pine flooring on the second floor dates to the CCC or NPS renovations and is ¾-inch thick by 5 ¼-inch wide (Figure 4.117). The lower layer of flooring, which is a combination of the original flooring and re-laid original flooring from the third floor, is 7/8-inch thick and 3 ½-inches in width. The upper layer of flooring is installed around the machinery (Figure 4.118). There are areas where holes have been drilled through the floor and where belts are installed to power machinery. There are also several holes remaining where grain elevators have been relocated or where equipment has been moved. Several areas are covered with unfinished sheet metal patches. A small baseboard is installed along the west wall of the room. It is a rough-sawn board, matching the wall boards. Its purpose is unknown, as it is the only baseboard on this level; there is baseboard on the third floor that is similar. It may have been installed to cover a gap.

The interior walls are clad with 1-inch thick by 7 ½-inch wide sawn boards, directly over the wall studs. These boards are rough and unfinished. The ledger board that is supporting third floor joists runs along the east and west walls and its face is flush with the wall studs. The walls are uninsulated. Some of the boards may have been salvaged from the third floor and installed on this level by the CCC. It should not be assumed that all of the boards are original to their existing locations.



Figure 4.109. Second floor, looking southwest. (STRATA 2018)



Figure 4.110. Second floor, looking west at the stairs. (STRATA 2018)



Figure 4.111. Second floor, looking southeast at center posts in the west bay. (STRATA 2018)



Figure 4.112. Second floor, looking south in the west bay. (STRATA 2018)



Figure 4.113. Second floor, looking north in the west bay. (STRATA 2018)



Figure 4.114. Second floor, looking north in the west bay. (STRATA 2018)

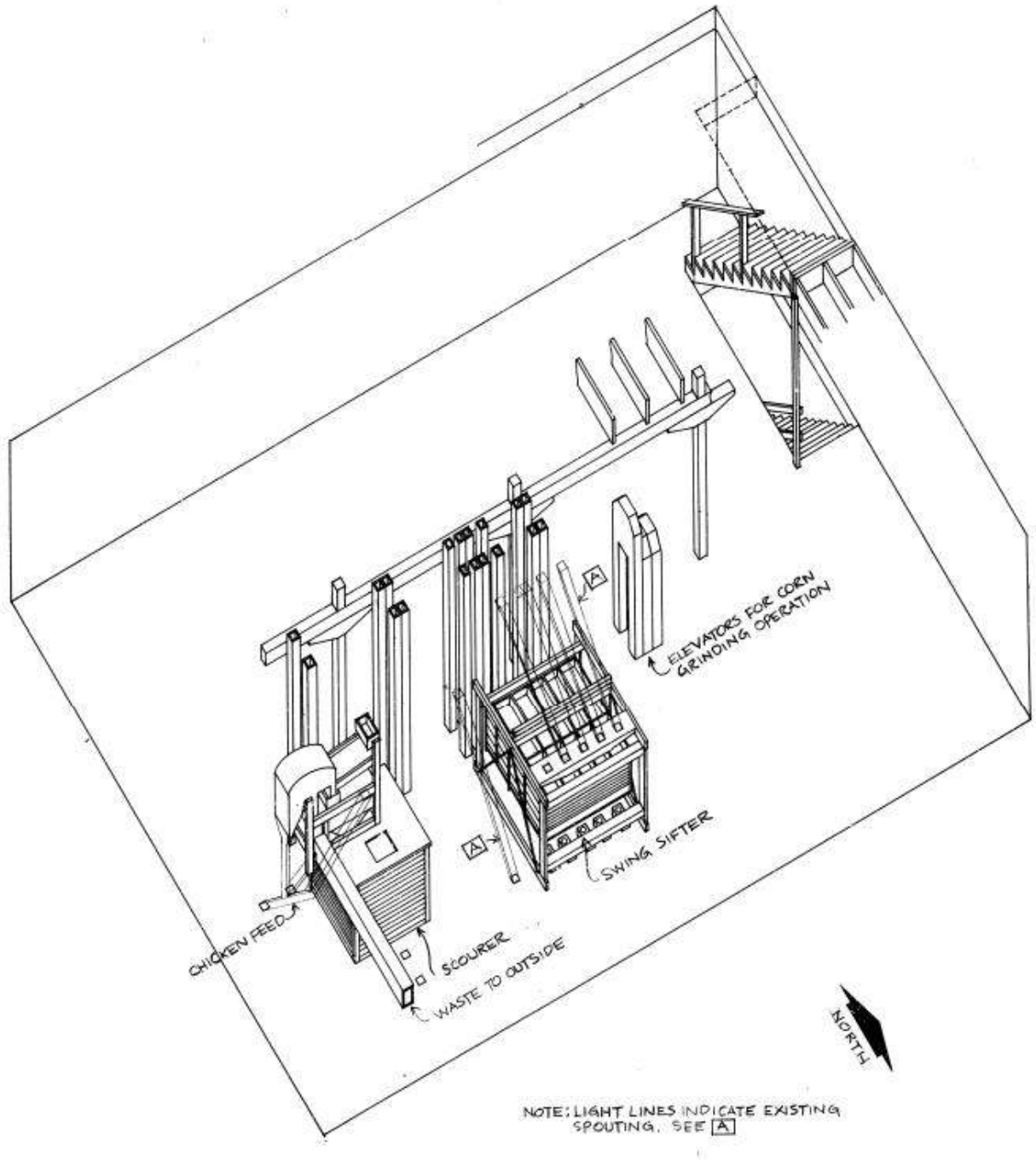


Figure 4.115. Second floor isometric plan by Wagner for the 1977 HSR. With regards to the overall mill works equipment, this diagram remains valid today. Outdated equipment remains (not drawn in the diagram) on the east side of the third floor and is not shown. (Wagner, 1977 HSR)



Figure 4.116. Second floor, northeast corner with electrical conduit chase. (STRATA 2018)



Figure 4.117. Second floor, showing two layers of flooring – the original flooring below and the CCC-era flooring above. (STRATA 2018)



Figure 4.118. Second floor, flooring installed around the swing sifter machine. The original layer of flooring is visible below the machine. (STRATA 2018)

The third floor structure and underside of the third floor wood flooring is visible throughout the large room (Figure 4.119). There is some wood bridging between the third floor joists.

Staining on the exposed third floor joists is from previous water infiltration, mud dauber and similar insect nests, spots of paint, and oil staining. There is some older insect damage and wood rot deterioration. The wood rot is prevalent along the tops of the joists, which is expected because water can seep between the upper floor boards and rest on the tops of the joists. The mill has had extended periods of time when the roof has leaked. The CCC drawings show that they replaced the center post and floor joists. Many of the third floor joists have repairs, which were done in the 1990s by the NPS. The conditions of the third floor joists are discussed in the structural section of this chapter.

The fire suppression riser is installed near the center of the south wall (Figure 4.120). The distribution piping is installed tight to the ceiling and is painted a dark brown to closely resemble the color of the old joists and floor sheathing. Contemporary lighting is installed with exposed conduit throughout the third floor (Figure 4.119).

An air conditioning unit that serviced the second floor was once installed on top of the plywood sheet that currently rests on the floor in the center of the south wall (Figure 4.120). The plywood was called out to be removed in the 1977 NPS rehabilitation drawings, along with the air conditioner and all of the piping. Holes were supposed to be filled. The unit was finally removed in 2002.



Figure 4.119. Second floor, looking at the east wall. Note the exposed and stained third floor joists. The underside of the third floor flooring is visible. This flooring dates to the CCC renovation. Contemporary lighting with exposed conduit and sprinkler lines are exposed throughout the third floor. (STRATA 2018)



Figure 4.120. Second floor, plywood sheet covering floor where air conditioning unit was previously located. Holes through the floor to the east of the plywood were used to run the condensate and refrigerant lines. (STRATA 2018)

The 1973 drawings indicate there was once a generator installed in the southeast corner of the second floor, while the 1977 drawings also suggest there was a jackshaft associated with the generator in this location (Figures 4.121- 4.122). The 1977 drawings note to remove the upper layer of flooring for more research to investigate for markings on the lower level of flooring which may yield evidence of the earlier equipment layout.

There are several porcelain insulators mounted to the south wall and to the underside of the floor joists in the southeast corner and throughout the building that were associated with the early knob and tube wiring. Nailers on the walls indicate there was once another function in this corner. There are several holes in the ceiling of the first floor through the original lower layer of flooring that can be seen from below. There is also a significant amount of oil or grease that has seeped through the floor in this location and onto the underside of the lower layer of floorboards and onto the joists. The upper layer of flooring does not show evidence of earlier equipment in this area.



Figure 4.121. Second floor, east into the southeast corner. (STRATA 2018)



Figure 4.122. Second floor, looking west from the southeast corner. Note there are porcelain insulators on the left wall and on the ceiling joists. (STRATA 2018)

Third Floor

The third floor is accessed from the stair along the north wall. This space serves as light storage for the park staff and is not open to the public. The floor consists of one large, rectangular, open room (Figures 4.123 – 4.132). The overall square footage of the third floor is 1,358 gross square feet. The longest dimension is 41'-1" north/south and 30'-11" east/west. Clearance to the underside of the exposed attic truss joists is approximately 6'-1."

The third floor shares many of the same characteristics as the first and second floors. The single-thick layer of tongue and groove pine wood flooring on the third floor dates to the CCC renovations and is ¾-inch thick by 5 ¼-inch. The 1977 HSR states that the original third floor flooring was salvaged and used to patch the first and second floors.

This third floor was originally utilized as one of the mill's production floors, with the milling equipment lined up primarily in the east bay and grain elevators and chutes throughout the floor (Figure 4.134). Much of this early milling equipment remains, including the smut chute that expels out the south wall. This chute is open to the exterior with no screening (Figures 4.129-4.130). It is likely that the equipment on the third floor was moved from its original location while the new flooring was installed. The 1977 HSR suggests that if some of the flooring is temporarily removed around the equipment, it may be possible to see evidence of anchor bolts in the top of the floor joists. This may assist in determining the original locations of some of the equipment on the third floor.

When the existing flooring was installed by the CCC, there was a base sill plate that was removed from under the posts that support the shafting on the third floor. This plate was not replaced, resulting in four unsupported posts. Evidence of this remains, as the posts have tenons that would have mortised into the plate (Figure 4.133). The shaft and pulley system is attached to the roof truss system and is hanging in the air. This equipment represents quite a load on the roof trusses, and they have bowed from the weight.

The interior walls were originally clad with 1-inch thick sawn boards like the first and second floors. Most of the boards have been salvaged for reuse on the lower floors. Only a handful of boards remain in the northeast and southeast corners. These boards are rough and unfinished. Because the wall boards are missing, the wall studs and back of the wood clapboard siding are mostly visible throughout the third floor. Similar to the second floor east wall, a small baseboard is installed along the east wall of the room. It is a rough-sawn board, matching the wall boards.

The windows on this level are 4-lite and are inoperable. Several of these windows were salvaged by the CCC from the historic windows openings on the first and second floors and reused to infill these openings. The windows have undergone multiple restorations since, including several frame replacements and wood repairs during the 1993 rehabilitation project. Replacement parts are stamped with 'NPS' and the date.

The third floor stair has a frame railing. There is one wood-framed screen that appears to hinge over the stair enclosure at the west end (Figure 4.123). Horizontal boards were laid along the opening to receive this framed screen. Another framed screen is stored against the railing which may fit the remainder of the stair opening. The entire third floor stair construction is separated from the second story with wire mesh screening. The purpose may be to keep bats, birds, or other pests from entering the second floor. Since the smut chute in the south wall is open, it is likely any of the above can easily gain entry into the third floor.



Figure 4.123. Third floor, west bay, looking north. (STRATA 2018)



Figure 4.124. Third floor, west bay, looking south. (STRATA 2018)



Figure 4.125. Third floor, west bay, looking southeast. (STRATA 2018)



Figure 4.126. Third floor, west bay, looking east into the east bay. (STRATA 2018)



Figure 4.127. Third floor, east bay, looking south. (STRATA 2018)



Figure 4.128. Third floor, west bay, looking east towards the southeast corner. (STRATA 2018)



Figure 4.129. Third floor, east bay, looking south into the southeast corner at the smut chute. (STRATA 2018)



Figure 4.130. Third floor, detail of chute on third floor, southeast corner. Note this is open to daylight outside with no screening. Bats live in the wall between the chute and the window. Bat droppings cover the floor in this area. (STRATA 2018)



Figure 4.131. Third floor, east bay, looking north. (STRATA 2018)



Figure 4.132. Third floor, east bay, looking north. (STRATA 2018)



Figure 4.133. Third floor, detail of unsupported shaft post. The base plate is missing. (STRATA 2018)

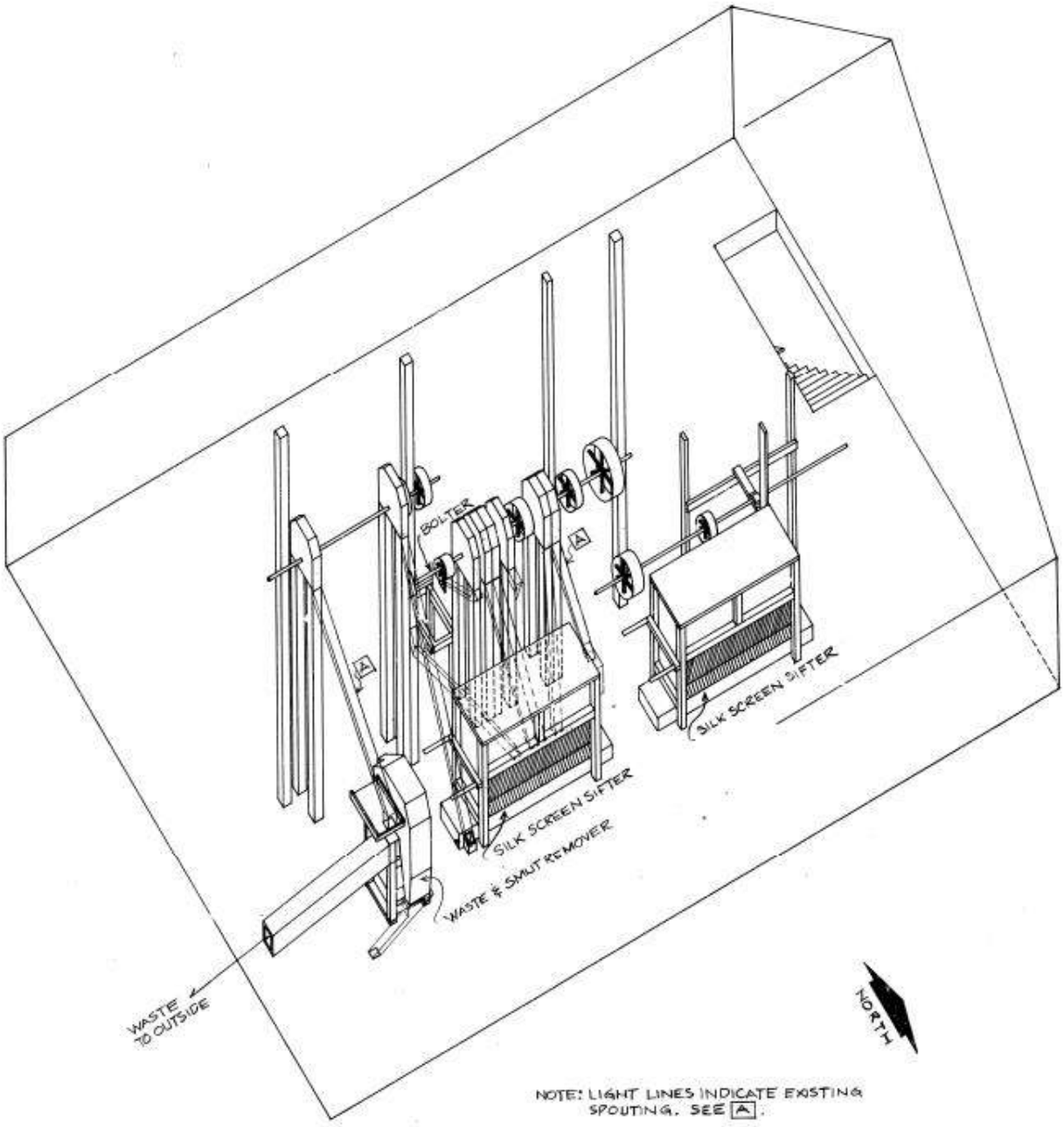


Figure 4.134. Third floor isometric plan by Wagner for the 1977 HSR. With regards to the overall mill works equipment, this diagram remains valid today. Outdated equipment remains on the east side of the third floor and is not shown. (Wagner, 1977 HSR)

From the third floor, the roof appears to be in good condition (Figure 4.135). There are several spots throughout where daylight can be seen. These areas may leak during rain. There is some mildew on the upper roof trusses and rafters, especially near the north end of the building. Repairs to the wall and roof framing are evident throughout the third floor (Figures 4.136-4.137).

A patched area near the center of the through the south wall may indicate issues with the clapboard siding (Figure 4.138). From the exterior, the siding appears to be bowing slightly.

The entire floor is filled with stored items (Figures 4.138 - 4.139). Some of the items 'belong' to the mill, including grain elevators, pulleys, shafts, a door, miscellaneous parts, and framing materials. In addition, other items not related to the mill are stored here, such as the antique school desks in the northeast corner of the room. The entire third floor does not appear to have been cleaned in years, with dead insects, mud dauber nests, bat droppings, and thick layers of dust on everything. Items are stored atop the attic joists, as well.

Two sections of wooden platforms are stored along the south wall (Figures 4.140). Their purpose is unknown. The size of the boards they are constructed from closely matches the original wood flooring. The boards are unfinished. The larger of the two platforms is stored in the center of the space, while the second has items stored atop it. The construction of the platforms includes 2x framing with tongue and groove boards nailed across. They are quite large and very heavy. The first speculation for their use was some type of hatch over the stairs, as they are similar in size to that opening, but the size does not match the stair opening, and they would be very heavy to operate.

Electrical conduit and junction boxes line the floor and present tripping hazards throughout the entire area. The conduit provides lighting and electrical, as well as fire alarm service to the second floor.



Figure 4.135. Third floor, view of the exposed roof trusses and underside of the roof. (STRATA 2018)



Figure 4.136. Third floor, stud repair along the middle of the west wall. (STRATA 2018)



Figure 4.137. Third floor, typical roof truss joist repair by NPS in 1993. (STRATA 2018)



Figure 4.138. Third floor, stored items it the west bay, looking west. (STRATA 2018)



Figure 4.139. Third floor, stored items it the east bay, looking east. (STRATA 2018)



Figure 4.140. Third floor, looking at the south wall. Note the patch and board on the wall that may be providing support to the clapboard siding. There are two platforms stored on the south side of this floor. Their function is unknown. (STRATA 2018)

Systems

Electrical, Lighting and Fire Alarm

The main underground electrical service enters the mill through the west foundation wall. The electrical panel is located on the west wall of the first floor Miller's Office. The panel is a Square D, type NOO, and is rated for 200 amps, 120/240 volts, single-phase, 3-wire. The panel is dated and is beginning to rust. A sub-panel is located in the fire suppression equipment room in the basement.

- Electrical distribution is provided in the basement and upper floors through exposed galvanized conduit to lights and receptacles.
- Lighting in the basement is provided by a few fixtures. A fluorescent fixture is mounted to the west side of the beam, facing the sprinkler equipment room. Other basement lighting is provided by exposed bulbs on electrical boxes (Figure 4.141). These exposed bulbs are unsafe, as there are no cages on the bulbs, and the ceiling heights are low.
- The basement light switch is located on the hatch door frame. This is difficult to operate in this location and presents a safety hazard.
- Lighting throughout the first floor is typically by reproduction lanterns. A single fluorescent fixture is mounted on the ceiling in the Miller's Office.
- Lighting throughout the second floor is typically through contemporary adjustable lights. These are white and very visible.
- There are no lights installed on the third floor.
- An existing electrical junction box in the basement, attached to the ceiling outside of the fire suppression room, appears to be in a precarious situation and should be reviewed by an electrician to verify its installation meets current code where connected to the electrical service. The taped connection is showing signs of wear.

The park staff suggests the lighting for the first and second floors does not meet their needs for visitor interpretation. The current lighting produces a significant amount of heat. Lighting in the basement and third floors is inadequate for staff for ongoing maintenance. It is not known if there are emergency lights tied to the system. There is no lighted exit signage.

The potential impacts of the lighting on the museum collections on display and to the building should also be addressed. The lighting is to be addressed in an upcoming interpretation and exhibit design project.



Figure 4.141. Typical basement light. (STRATA 2018)



Figure 4.142. Typical first floor lighted lanterns. (STRATA 2018)



Figure 4.143. Typical second floor lighting. (STRATA 2018)



Figure 4.144. Typical first floor lighted lanterns. (STRATA 2018)

Ventilation

There is currently no mechanical air conditioning, heating, or ventilation of any type in the building. The building is very warm and humid in the summer and cold in the winter. Occasionally, park staff temporarily install a portable air conditioning unit near the first floor transaction counter (Figure 4.145). With the cool spring water and windows on all three floors, the building has the ability to pull cooler air through the building for natural ventilation.

Ventilation in the basement is very poor. There is mildew on some of the wood framing and equipment in the basement. There are no roof vents in the third floor, so it may get quite warm during the summer months. A few small insect screens in painted wood frames are stored on the third floor. These appear to fit into the double-hung windows on the lower levels.



Figure 4.145. Temporary portable air conditioning unit installed in first floor window. (STRATA 2018)

Fire Suppression System

The current fire suppression system was updated in 2017. The equipment room is in the basement in a room constructed for the original system that was installed in 1983. The system was installed in a very respectful manner and blends well within the mill's interior. The pipes are painted brown, in a similar shade to the beams and joists. The riser along the south wall has low visibility. The installation in the basement aims to maintain the head height available under the center beam. The fire alarm panel is installed on the west wall of the miller's office on the first floor. The fire suppression system is served by underground water service.

Pests

Bats are nesting between the siding boards and have access to the mill building in several locations. The smut chutes that exit the building at the second and third floors are open to the outside with no screening (Figure 4.146). There are also gaps between the siding and the smut chute at the third floor south wall, where there are large numbers of bats nesting. Bats are also nesting under the overhang at the west door, behind the framing and flashing. Bat droppings can be found concentrated in some of these areas. This presents a health hazard to staff and visitors.

Snakes are present in the basement and occasionally are found on the first floor level. Because of the dirt flooring in most of the basement and large holes through the foundation walls, this will likely continue to be an issue. Snake skins in excess of three feet in length were found in the basement during the September 2018 assessment visit, and park staff mentioned they had a snake removed from the first floor level the week prior.



Figure 4.146. Photographic detail of the smut chute through the south wall. The red arrow is pointing to the bat droppings on the floor directly below the opening in the bottom of the spout. There is no screening to the outside. (STRATA 2018)

Pack rats have collected miscellaneous trash and building debris and have hoarded these items inside the historic mill machinery. This is not only unsanitary to have them nesting inside the equipment with urine and debris, but this is also not appropriate for the preservation of the historic machinery. They can create a lot of damage as they can chew on the equipment and harvest parts of the equipment to use in their nests. One piece of equipment on the third floor - which is loaded with nest debris contains a rat carcass (Figure 4.147).
Powder post beetles in the mill were an issue that was noted in a 1986 report.[367] Regular treatment has been provided by the park. Asian beetles have also infested the third floor, and their carcasses have not been cleaned in several years. These beetles emit a chemical that can cause spotting on the surfaces where they land.

The park has an Integrated Pest Management Plan (IPMP) to address many of these issues.



Figure 4.147. Detail of third historic floor equipment filled with pack rat debris. (STRATA 2018)

Mill Equipment

Original mill machinery - including independent structural supports, shafts, pulleys, belts, elevators, roller mills, separators, sifters, smut machines, and chutes - can be found inside the building from the basement and in all three floors of the mill. The original ca. 1894 water-driven Leffel Turbine is below the east wood deck. While the assessment of the equipment and mill operation is not part of this study, it should be noted that the mill works equipment inside the building are dirty. Diagrams for the equipment locations that were drawn by William Wagner for the 1977 HSR were included for each floor of the mill in earlier sections for reference.

Machinery and elevators throughout the mill appear to be in good order. There is more than one generation of mill machinery extant within the building: the machinery used when the mill originally opened, and the equipment used after the swing sifter was installed. The equipment

[367] OZAR Building File #501.

rendered obsolete after the installation of the swing sifter remained within the building, but not in their original locations.

The mill was no longer functioning on a regular basis by the mid-1920s, but it was running to various degrees up through the 1960s. In 1971, there was a grand reopening for the repair and running of the Alley Mill equipment. At that time, the NPS was operating a small portion of the mill, as the dam was partially washed away and had no control or flood gates. The 1973 NPS HSR mentions, "the water level in the mill race and turbine chamber is just high enough to provide power for the operation of corn grinder used in demonstration."[368] The HSR recommended restoring the dam to the original height to raise the water level enough to be able to operate all of the equipment or to provide another solution to increase the water force of the water.

A temporary steel plate was installed across the opening into the concrete turbine pit to limit water pressure from the spring in 2014. This was necessary to decrease the water pressure on the deteriorated concrete pit. The pit has cracks and is leaking water (Figure 4.148). If the concrete pit fails, it could immediately cause significant damage to the east stone foundation wall of the mill. The goal is for this steel plate to remain in place until a design and construction project can be undertaken to restore the entire concrete millrace, including the turbine pit.[369]

In the basement, the large wood structural posts that support the mill and separate posts that support the mill shaft and pulley equipment are resting on stone or concrete footings. The soil floor has eroded from continuous water infiltration and has deposited soil around the base of many of these posts (Figure 4.149). A concrete curb has been poured around some of the basement equipment, likely to prevent water and soil from resting at the base of the equipment. The curbing is no longer effective, as the soil outside is essentially flush with the top of the curb, and the curb has been breached along the west and east sides, allowing water and soil to flow through (Figure 4.150). Attempts to create a wood dam along the north side of the equipment has also failed at keeping soil away from the equipment (Figure 4.155, right). Soil in contact with the wood will increase the likelihood of its deterioration and may lead to stability issues within the mill works and the building, and therefore requiring replacement or costly repairs. In the west crawlspace near the stairs, unused pulleys and shafts are resting on the ground. Mold, mildew, and rust are present on some of the basement equipment (Figure 4.151), which will increase their rate of deterioration.

Both carved and inked graffiti names are present on the smut chute and several elevators on the third floor. Since this area is not open to the public, this graffiti may be very old.

The preservation of all original wooden and steel mill works components is a priority.

[368] Torres-Reyes and Kaminski, 2.
[369] OZAR files, PMIS 175832, 2013.



Figure 4.148. Original ca. 1894 Leffel Turbine with deteriorated concrete pit drained, ca. 2014. The turbine must stay submerged for its preservation, otherwise, it will rust. The pit was temporarily drained to install a steel plate to limit pressure on the concrete walls and to inspect the pit. (OZAR files, 3430.jpg)



Figure 4.149. View of basement mill works, looking east. Note the pulley and shafts resting on the dirt floor and the wood mill works components with soil surrounding them. A concrete curb was likely poured to prevent water and soil from contacting the equipment, but it has been breached and is ineffective. (STRATA 2018)



Figure 4.150. View of wet soil and wood plates in contact with the soil. (STRATA 2018)



Figure 4.151. View of basement mill works, looking north at the abandoned gristmill equipment. Note the mold on the wood and the rust on the steel. (STRATA 2018)

Evidence within the building suggests that there was once a gristmill with stone burrs and a corn sheller working in the northwest portion of the first floor of the mill. Some of this related accessory equipment remains in the basement below (Figure 4.152). There was a chute out of the west wall, which can be seen below in Figure 4.153, ca. 1922. This is the first photograph where this chute can be seen. An earlier ca. 1910 photograph, when the sawmill was in place, clearly does not show a chute in this location. As the CCC was beginning work in 1933, the hole through the west wall remained. As part of their work, they toothed in new siding in this area, so that the hole through the wall was no longer visible from the outside; however, this opening is still visible from the interior (Figure 4.154). A wood board with a hole in the center is installed on the ceiling of the first floor: this was reportedly where the derrick was installed to lift the stone burrs (Figure 4.155). The stone burrs used in this portion of the mill were said to have been salvaged from the earlier mill on the site. This is discussed in greater detail in the 1977 HSR.[370] No documentation of the gristmill equipment on the first floor has been located.

In the 1960s, a Missouri State Parks employee was operating a gristmill in the southeast corner of the first floor to demonstrate corn grinding. This machinery was not original to the mill and was installed in the location of one of the original roller mills. This machinery can be seen in the 1977 HSR equipment diagram (Figure 4.90). The NPS terminated this demonstration in 1993, and the gristmill was removed in 1994.[371]



Figure 4.152. Left: Photographic detail in the basement of the pulley and chute associated with the old gristmill that was once located in the northwest corner of the first floor. Right: The related elevator. (STRATA 2018)

[370] Wagner, William. J., Alley Spring Roller Mill: Architectural Data Section Historic Structure Report, April 1977, 10.
[371] Draft Interpretive Plan, 1994, 64.

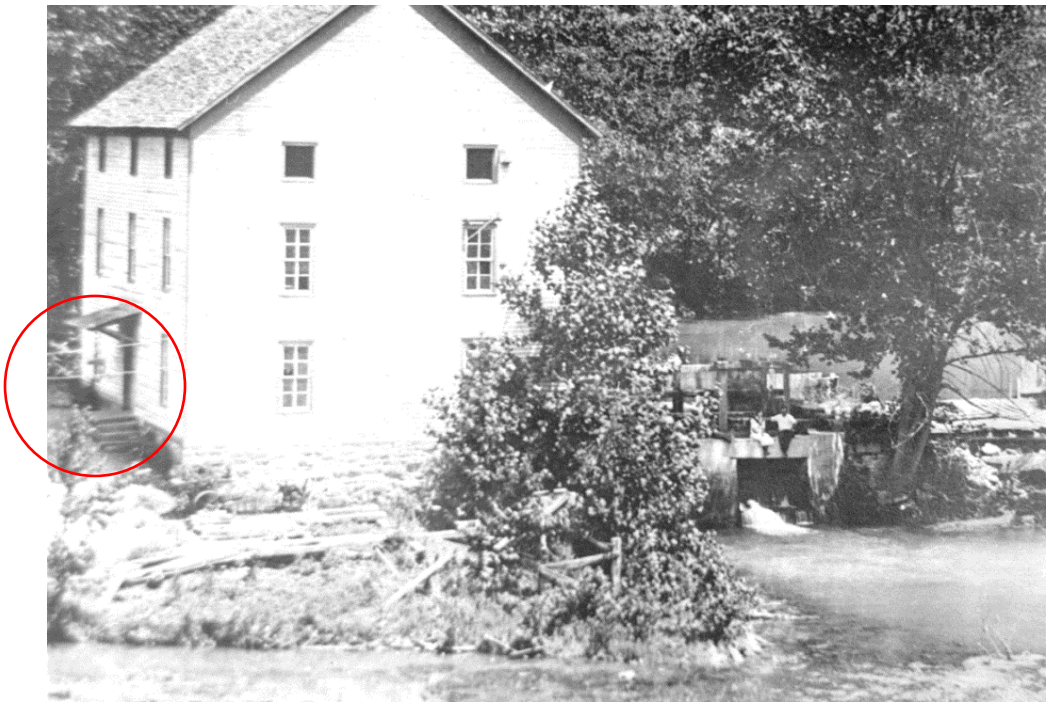


Figure 4.153. The red circle indicates where the corn sheller expelled through the west wall, ca. 1922. (OZAR 24044)

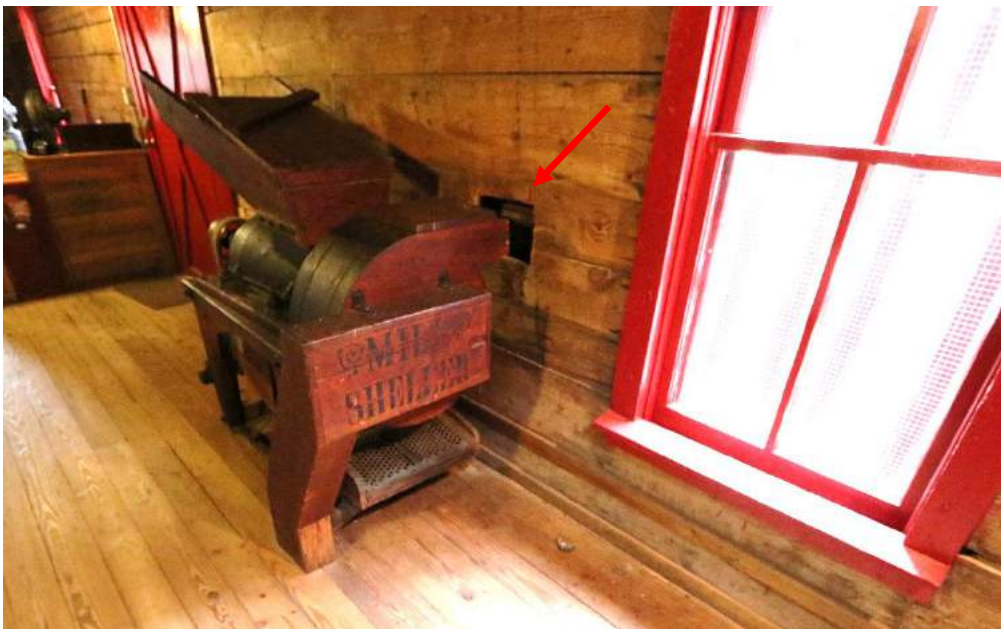


Figure 4.154. The red arrow points to where the corn sheller expelled through the west wall. (STRATA 2018)



Figure 4.155. Photographic detail of the pivot board attached to the ceiling joists above where the stone burrs for the gristmill were located in the northwest corner of the first floor. Its age and origin are unknown. (STRATA 2018)

There are numerous loose elevators, shafts, and pulleys stored in the third floor and basement areas that require close study to determine original locations. It is understood that the CCC re-worked a lot of the equipment and elevators during the mill renovation and floor replacement and that they did not replace everything in their original locations.

Asbestos, Lead-Based Paint, and Dripline Soil Sampling Survey and Report

Summary from the Terracon Report, dated June 12, 2018

Asbestos, lead-based paint, and dripline soil sampling surveys were conducted for the Alley Roller Mill building by Terracon Consultants, Inc., from St. Louis, Missouri on April 25, 2018. The sampling and analysis report for this survey is found in Appendix H for reference. Based on the analysis of the materials surveyed, the presence of asbestos-containing materials (ACM) and lead-based paint (LBP) within the mill building and lead in the soil were identified. The sampling and testing were conducted to provide relevant information for future contractors or maintenance staff involved in renovations to reduce potential exposure to personnel. Photographs of each sample location were taken, and the samples were also recorded on floor plans and exterior elevation drawings.

Interior and exterior building components and soil were visually surveyed for lead and homogenous areas of suspect ACM. Once identified and documented, small samples of suspect materials were taken. Inaccessible spaces were not tested, nor was any destructive removal of materials done to achieve access to concealed areas. This report presents a representative sampling of materials but was not comprehensive in nature. Areas identified as ACM or containing lead, for instance, may result in the need for further testing of similar and/or adjacent materials, in order to further understand the breadth of the presence and required scope of remediation.

ACM Summary

Mill Building

- Glazing putty Window 209 Sash (Second Floor North Window, East Side) – Testing of the glazing putty found asbestos. It should be assumed that all window sash glazing putty contains asbestos. This is typical for the time frame these were installed.

Lead in Soil Summary

Soil around the Mill building was tested for lead. Lead was detected in each sample. The sample on the southeast side of the building was the highest, exceeding HUD hazard level for play areas.

Lead-Based Paint

Lead was detected in 14 of the 18 LBP sampled collected from the building. Based on the bulk sample testing, a summary of the LBP detected includes:

Exceeding EPA limit for LBP:

- Exterior red-painted exposed foundation beam, south elevation
- White paint on interior walls of the first floor storage room

Lead Concentrations Greater than Laboratory Detection, but Below EPA Threshold (Will still trigger OSHA Lead in Construction Standard if disturbed):

- Metal bars on windows
- Wood vertical bars on windows
- Exterior window sash (interior and exterior)
- Red paint on overhang by west entrance
- Red paint on basement window frame
- Red paint on exterior east deck post
- Red paint on exterior smut box (third floor south wall)
- Black paint on basement equipment.
- Green paint on walls of the first floor storage
- Red paint on interior window frames
- Red paint from old paint can on third floor

Only a single sample of red-painted siding was taken, which tested below required detection levels. This may be due to previous paint deterioration in this area or potential siding replacement. It should be assumed that all siding has lead-based paint, as all other red-painted surfaces contain lead. Further testing should be conducted to verify this theory.

All materials identified as ACM should be removed by a State of Missouri certified asbestos abatement contractor prior to disturbance. In the Mill building, only the glazing putty window sashes were found to contain asbestos.

The requirements of the OSHA Lead in Construction Standard (CFR 1926.62) must be implemented by an employer whose employees' duties require disturbing lead-containing paint surfaces and other surfaces that contain lead. OSHA considers any paint containing a detectable concentration of lead to be covered under this standard, which includes employee training, personal protective equipment (including respiratory protection), hygiene facilities, and other health and safety precautions.

If renovation activities as defined by the USEPA that would disturb more than 6 square feet of interior paint or 20 square feet of exterior paint would be subject to the USEPA renovation, repair, and painting (RRP) regulation. In the state of Missouri, compliance with the RRP regulation requires: use of a MO lead certified firm; use of a MO certified lead renovator; use of lead safe work practices; and cleaning verification or dust clearance examination at the completion of renovation projects.

Future window and door restoration should be conducted by a licensed lead and asbestos abatement contractor. Most historic wood window contractors meet these licensing requirements.

Chlordane treatment of other historic structures at Alley Spring has been documented, but the Alley Mill has not been identified in those documents.

Building Code and Life Safety

The Alley Roller Mill building (HS-501) is currently utilized as a building museum.

References:
International Existing Building Code (IEBC) 2012
International Building Code (IBC) 2012
Architectural Barriers Act Accessibility Standard (ABAAS or ABA)

Current Use or B (Museum)
No Change of Use Proposed

Fire Alarm with Smoke Detection throughout
Fully Sprinklered

- The fire suppression and alarm system first installed in 1983 and upgraded in 2017.[372]

Gross Square Footage

Basement	1,358 sf (Occupiable space approx. 700 sf)
First Floor	1,358 sf
Second Floor	1,358 sf
Third Floor	1,358 sf
Total	5,432 sf

Occupant load for the building, per IBC –

Basement (Building Services)	sf / 300 sf	= 2 person
First Floor	sf / 30 sf	= 45 persons
Second Floor	sf / 30 sf	= 45 persons (must be limited to 29)
Third Floor (Accessory)	sf / 300 sf	= 5 persons*

*Not Accessible – Per 508.2, the third floor is an Accessory space to the 'B' occupancy portion of the building. This allows for up to 10% of the floor area or less for storage.

Means of Egress – Per IEBC Table 1012.4, the use group is equal or less hazard, therefore the means of egress can stay the same.

Single Exit Building – Section 1021.2 (2), Allows for up to 29 people on the second floor (Figure 4.156 next page).

Exit Signage is not required for spaces requiring only one exit, but it is recommended to post Exit signage at the first and second floor levels, per Section 1011.

[372] Building files, HS 501.

Provide fire extinguishers within seventy-five feet of all parts of the building.

The building is currently only partially ABAAS accessible. Per 1104.4, Exception 1, the building is not required to have an accessible route to upper levels, due to the small size of the floorplate, being less than 3,000 square feet.

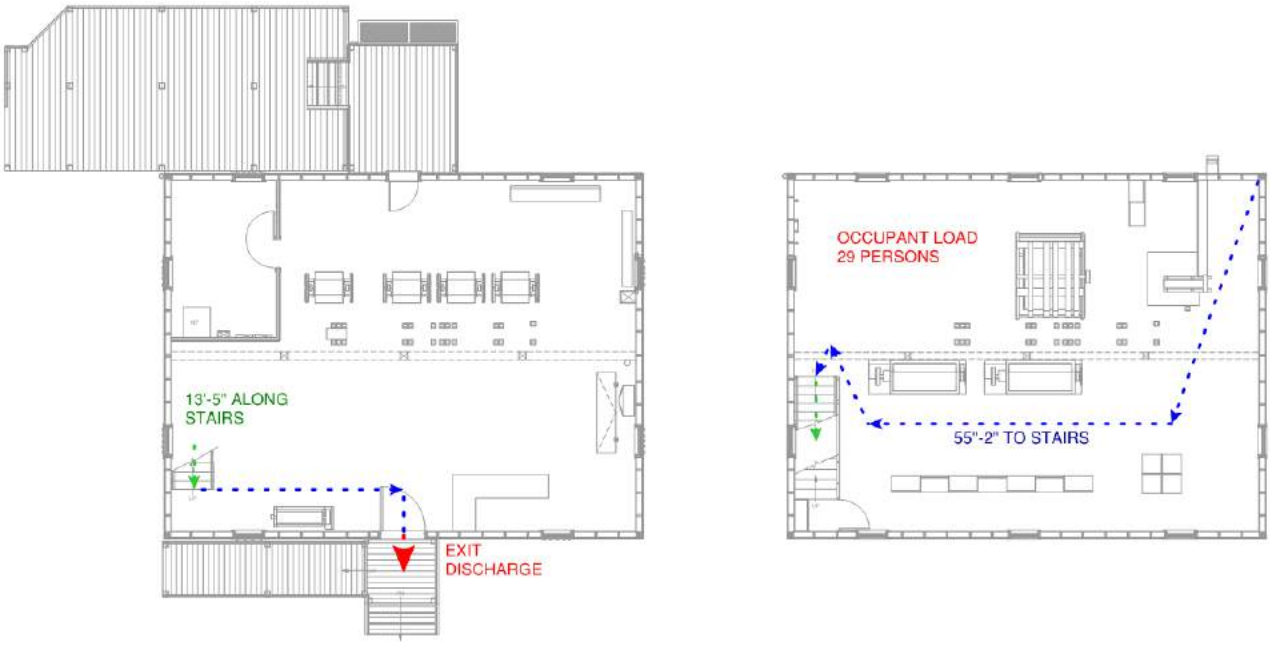


Figure 4.156. Exit egress path of travel.

Accessibility

Accessibility for the general public and federal employees is addressed in this section of the report. This study includes an assessment of the existing accessibility conditions as access to the mill, entrance into the structure, and within the structure. Accessibility of exhibits and interpretive elements within the mill are not addressed in this scope of work.

The Alley Mill was constructed in 1894 as a factory and business building. As the center of the community, the building was likely bustling with activity. The building was designed and constructed specifically to function as a mill, requiring multiple levels for distribution of the raw grains through the milling process. Little care was taken to provide access for the general public between floor levels of the mill. The entire three-story structure with a partial basement was utilized as a part of the milling operation, with grains traveling on conveying mechanisms and through chutes between all four levels of the building.

When the mill closed, a majority of the equipment remained. The mill was eventually opened by the Missouri State Parks as a historic site to allow visitors to witness the early milling techniques and history. Very little was done to make the mill accessible to the public. When the Civilian Conservation Corps conducted their rehabilitation on the mill in the 1930s, their primary goal was stabilization and visitor interpretation.

The first known accessible ramp was installed on the east side of the building by the NPS in 2010 to provide visitors with mobility disabilities access to the first floor of the mill (Figures 4.157-4.159). This ramp provided access to the viewing platform located over the historic turbine, with a good view of the spring and dam, as well as access through the east mill door. This door served as the accessible entrance into the mill but was not the primary entrance for mill visitors. The floor level change at this door is too high and the door width itself is not wide enough to serve as a truly accessible building entrance. The dripline from the roof above caused continuous damage to the ramp and splashing onto the mill siding, resulting in continuous maintenance issues and eventual closure of the ramp.

The wood ramp located on the east side was deteriorated and a decision was made to relocate the ramp to the main west entry. The ramp was demolished, and a temporary pressure-treated wood ramp was constructed on the west side of the building in 2014. This switchback ramp is currently utilized for access to the first floor. The new ramp was sensitively designed and constructed to miss the stone steps at the west entry and is resting on concrete pads. The ramp has some minor issues, including an uneven surface at the transition between the sidewalk and the ramp, which is higher than allowed by ABA and lack of compatible handrails.

Because the ramp on the east side has been removed, there is no longer an accessible route to the platform located above the turbine. This lack of accessibility lessens the ability to view the dam and spillway from a vantage point which other more mobile visitors can utilize. Also, the

surface of the observation area between the spillway and the mill building is not an accessible surface (Figure 4.160).



Figure 4.157. Existing wood ramp at west entry. (STRATA 2018)



Figure 4.158. Ramp at east entry, demolished 2014. (Dan Jackson, 2006)



Figure 4.159. Ramp at east entry, demolished 2014. (OZAR files, Eric Daniels, not dated)

Context of Accessibility Design within Historic Properties

The following information is available from the Access Board's website.

Historic properties are not exempt from federal accessibility requirements. The National Park Service (NPS) utilizes the ABA Accessibility Standards (ABAAS) that have been adopted by the General Services Administration (GSA) and apply to all facilities, as well as trails, picnic and camping areas, viewing areas, and beach access routes.

The current standards are to apply to facilities designed, built, altered, or leased with federal funds. These standards were developed and passed into law in 1968 and apply to national parks. For guidance on specific standards, assistance is provided by the United States Access

Board https://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-aba-standards/guide-to-the-aba-standards, which includes diagrams and animations.
The Rehabilitation Act of 1973 (Section 504) is another law that requires compliance with access standards with a broader scope than ABA's. Compliance with access standards is required even for facilities undergoing alteration or retrofitting existing facilities.

The ABA guidelines do provide some exceptions specific to existing facilities. The standards apply directly to the altered areas and additions. There are no retrofit mandates. However, Section 504, which addresses access to federally funded programs may necessitate retrofits even where no alterations are planned. This act also requires accommodations for employees with disabilities in the federal sector. Waivers or modifications can be granted in unique circumstances if compliance is exceptionally problematic. Facilities that met the standards that were in effect at the time of its construction or rehabilitation are not required to be brought into compliance with the latest edition of the ABA. However, any new alterations or additions must comply with current ABA Standards.[373]

Alterations to Qualified Historic Facilities, per F202.5, provides specific provisions for qualified facilities that are "listed in or eligible for listing in the National Register of Historic Places." The mill is listed on the National Register and therefore, these provisions apply. The normal requirements for alterations apply for historic buildings, with several exceptions where compliance with the ABAAS standards would threaten or destroy the historic integrity or significance of the building, as determined by the State Historic Preservation Office or Advisory Council on Historic Preservation. These exceptions generally apply to accessible routes, entrances, and toilet rooms.

- **Vertical Access**: Access to stories above or below the accessible story is not required (F206.2.3, Ex. 7)
- **Accessible Route**: One route is required from a site arrival point to an accessible entrance (F206.2.1, Ex. 1)
- **Public Entrance:** One public entrance is required to be accessible (if that would also threaten the historic significance, access can be provided to a non-public entrance, but a notification or remote monitoring system is required for locked entrances) (F206.4, Ex. 2).

Current Use

The mill is currently open to visitors on a schedule that is determined by the park interpretive staff. Visitors to the mill site access the building by the stone walkway to the east of the building. The analysis of the accessible approach from the parking lot to the building is addressed in the Landscape Existing Conditions section of this report. Contrary to previous beliefs, the existing stone walkway was installed by the NPS and is outside of the period of significance. To gain

[373] https://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-aba-standards/guide-to-the-aba-standards/chapter-1-using-the-ada-standards-2, accessed 9/23/2018.

access to the building, visitors are required to utilize the existing temporary ramp installed at the west entry. This ramp was constructed in 2014 to provide accessibility until a long-term solution could be designed, approved through the appropriate channels, and constructed.
The mill building is historic and interpreted as a part of the historic cultural landscape. It serves as a museum to interpret milling and the Alley Spring community.

Interpretation

- An information desk with handouts is located on the first floor near the entry. Exhibits include original and supplemental milling equipment, free-standing exhibits, and an audiovisual program. The interior mill tour can be guided or self-guided and includes only the first and second floors of the mill. The basement and third floor are not accessible by the public. The building is occasionally used for special events.

Equitable Use

- Because only the first floor is accessible, the experience of disabled visitors is different than those who can experience the second floor mill space and exhibits. The audiovisual presentation is only available on the second floor.

Approach and Use

- The layout of the first floor appears to be appropriate with regards to size and space provided for approach, reach, manipulation, and use regardless of the user's body size, posture, or mobility. There is adequate space provided for the use of personal assistance devices. Clearances between existing milling equipment are limited.

Integrated Pedestrian Routes

- Currently, all users enter the mill through the west door and follow the same route through the first floor. However, the second floor is not accessible to persons with disabilities.

Entrances

West Entrance Door 1/100

- The west entrance door is partially covered, however, the walkway is not covered or protected from rain or weather.

- The entry door is more than 200 feet from the parking lot, and a partially-accessible route is provided. This sidewalk is addressed in the Landscape portion of this report.

- The wood ramp is only a 4-5-degree slope, but the transition from the sidewalk onto the ramp is cement grout, which is approximately a 3- to 5-inch rise within one foot of length, far exceeding accessibility standards.

- The entry door does not have accessible-compliant hardware and is not equipped with a power assist door opener.

- The clear floor space at the exterior side of the entry door meets ABAAS Figure 404.2.4.1, but falls short on the interior pull side, which is required to measure 18-inches and is currently only 5-inches.

- The entry door width complies with ABAAS 404.

- Threshold – the existing wood threshold is nearly flush with the ramp landing with a slight slope of 4.5% The top of the threshold to the interior finished floor varies from 1/8-inch to 5/8-inch.

East Entrance Door 2/100

- The east entrance door once served as the primary accessible entrance into the mill. This location has several issues.
    - The threshold is approximately 1/2-inch above the finished floor and slopes 7% to the exterior. The top of the threshold to the finish floor of the exterior landing is nearly 1 ½-inches with a finished difference at the lip of the threshold of well over 1/2-inch (Figure 4.160).
    - The door clearance is only 29 3/4-inches in width at the door stops and 31 1/4-inches at the jambs.
    - The wood deck slopes to the east at a 2% slope, dropping approximately 2- to 3-inches.

Exception

- One floor in the multi-story building is accessible. Per ABAAS F202.5 for qualified historic buildings, an accessible route shall not be required to stories located above or below the accessible story. However, programmatic access is required for all programs provided on all floors.

Fire Alarm Systems

- F215.2 Public and Common Use Areas – Alarms in public use areas and common use areas have permanently installed audible and visible alarms complying with ABAAS 702.
- F215.3 Employee Work Areas – Where employee work areas have audible alarm coverage, the wiring system is designed so that visible alarms can be integrated into the system.

Signage

- No signage, per ABAAS requirements, is currently installed.

Stairs 504

- Stairs are considered part of the required means of egress and must meet the Standards.

- Risers – Open risers prohibited, Current rise is 7 ½- to 8-inches. The code is 7-inches max.
- Treads – 11” max – Current treads are 9 1/4-inches with no detectable nosings.
- No visual detection at nosings.
- Nosing 1 ½” max – Current no detectable nosings.
- Stairs not part of a means of egress are not required to meet the standards (basement).

Handrails 504.6 505

- Railing height 34-46” – Current is 33”
- Top extension 12” min
- Bottom extension – 1 tread depth – must return to wall – Current no extension.
- Current Handrails are 1 1/2-inches by 3 1/2-inches

Handrail clearance 505.5 and 505.7

- Round - 1.25” To 2” diameter with 1.5” clearance to wall
- Non-circular – 4” to 6.25” perimeter
- Current handrail does not meet the 1.5-inch clearance where it crosses the window and second floor flooring.

Interior Door Clearance

- Currently, the Millwright’s Office in the northeast corner of the first floor is not open for tours. The clearance in front of the door is only 37-inches to the equipment. This is well below the required ABA wheelchair approach. The door is also only 29 1/4-inches clear between the door stops and 29 3/4-inches between the jambs, which does not meet door width requirements for access.



Figure 4.160. Existing threshold at east entry Door 2/100 to turbine deck. (STRATA 2018)



Figure 4.161. Existing observation area between the spring and the mill. The deck and observation areas are currently not accessible. (STRATA 2018)

Structural Assessment

The Alley Spring Roller Mill (Figure S.1) is a three-story wood-framed structure. The building is rectangular in plan and features a cedar-shingled gable roof, painted clapboard siding, and a partially-exposed basement with stone masonry foundation walls. The north and south elevations are the gable ends. The main entrance is on the west elevation with a contemporary wooden access ramp and deck. The east elevation faces the spring and the dam with a wooden porch that projects over the historic turbine pit. Constructed in 1894, the structure contains several pieces of large equipment and conveying systems for grain milling from when the structure was actively in use as a mill.

The scope of this structural assessment included a visual observation of the mill structure and porches but did not include the dam or spillway structures. Locations of deterioration or distress in the structural members were documented. Wood samples from different joists and beams were obtained and sent for wood identification, in order to better understand and assess the strength of the members. Structural calculations were also performed to determine an appropriate loading capacity of each of the building levels and are found in Appendix E. The wood testing information may be found in Appendix F.

Two site visits were performed for the assessment. The first, in late April of 2018, included the visual observation and wood samples. An aerial lift was also used to observe the exterior and roof of the mill, where accessible. The second visit, in late September of 2018, included a more in-depth observation of existing joist quality and condition, as well as repair options.



Figure S.1. Mill structure, east and north elevations. (SEA 2018)



Figure S.2. Mill structure, west and south elevations. (SEA 2018)

Foundation

The foundation walls are constructed of stone masonry in a sort of coursed, multi-wythe rubblework pattern. The native stone appears to be a type of sandstone or limestone. The structure is built on an uneven site, which slopes down toward the spring, and the height of the foundation walls varies corresponding to the exterior grade. On the north half of the structure, a short portion of the stone masonry foundation wall is visible above grade from the exterior, approximately 1-foot 2-inches of foundation is visible at the northeast corner of the structure and approximately 2-inches of foundation is visible at the northwest corner. The south half of the structure has taller portions of foundation walls visible from the exterior; approximately 3-feet 6-inches at the southwest corner and approximately 7-feet 8-inches at the southeast corner.

The turbine and dam are situated approximately in the center of the east elevation of the mill. The grade around the northern portion of the mill and adjacent to the spring pool has been filled in with dirt to make the area more level. Downstream from the dam and turbine, on the east elevation of the mill, the base of the stone foundation is in direct contact with the water.

Several campaigns of structural repairs have been performed to the overall building. According to NPS personnel, the most recent stabilization work for the stone foundation walls was

completed in 1993. The scope involved reconstructing portions of the foundation wall as well as repairs to some of the wood framing for the first floor. The mill structure was flooded above the first level flooring in 2017. The foundation has not undergone any signification repair following the flooding.

The thickness of the stone masonry foundation walls varies from approximately 14-inches thick to less than 10-inches thick. Where the walls have been visibly reconstructed in places, the replacement walls are single-wythe rather than the thicker, double-wythe original foundation walls (Figure S.3).



Figure S.3. Foundation wall, reconstructed, at the north side of the east elevation. (SEA 2018)

The basement floor is primarily dirt, with a concrete strip along the perimeter of the foundation wall and concrete in places for walking paths and milling equipment supports. The south portion of the basement is full height. The exposed soil grading follows the natural site grading and rises towards the north portion of the basement to within a couple of feet of the first floor joists. Along the north and east sides, the basement is like a crawl space.

In some places where the foundation walls were reconstructed, they are bearing on contemporary concrete strip footings. In other areas, the concrete along the inside perimeter of the foundation walls does not appear to support the portions of original, double-wythe foundation walls. The interface of the concrete and foundation wall was probed, and the concrete does not appear to extend beneath the wall (Figure S.4). These interior concrete strips were installed to support temporary first floor shoring during previous rehabilitation projects.



Figure S.4. Screwdriver probing beneath stone foundation wall at the interface with concrete at the north portion of the west wall. (SEA 2018)

On the exterior of the east elevation, the stone base of the foundation wall is visible near the waterline (Figure S.5). It appears that the stone wall there may have a wide strip footing of stone masonry, based on the lowest visible course of stone projecting past the edge of the wall. The depth and other measurements of the footings below grade could not be made, as no excavations were performed for this report.



Figure S.5. Base of foundation at the middle of the east elevation. (SEA 2018)

The mortar joints in the masonry foundation walls are open in multiple locations. These open joints extend below grade on the exterior and go through the width of the masonry wall. Mortar washout is visible in the basement. Damp conditions along the foundation walls indicate active moisture intrusion (Figure S.6).



Figure S.6. Foundation wall, west elevation. (SEA 2018)

At the southeast corner of the structure, the foundation wall is the tallest, and has been down-stacked and relaid. The corner shows cracking through the mortar joints, in a pattern indicating rotation and outward movement of the east wall, at both the top and bottom of the wall (Figure S.7).



Figure S.7. Southeast corner of the foundation. (SEA 2018)

A very large tree stump is in close proximity to the southeast corner of the structure. The approximate trunk diameter at the base was 3-feet 8-inches, and the center of the trunk was approximately 5-feet 6-inches from the face of the south foundation wall. The root system for the tree is visibly in contact with the foundation wall, and roots projecting from under the foundation wall along the east elevation are believed to be from the same tree. The tree was removed by the NPS, and a slice of the tree was preserved in the museum collection.[374]

Exterior Walls

The mill structure is constructed using balloon framing. The wall studs extend from the first floor beyond the second and third floor framing joists to support the gable roof. The floor framing joists are supported by the studs and by a ledger board spanning across the studs. This configuration is in contrast to modern platform framing, where the studs are not continuous, but only extend from floor to floor (Figure S.8).

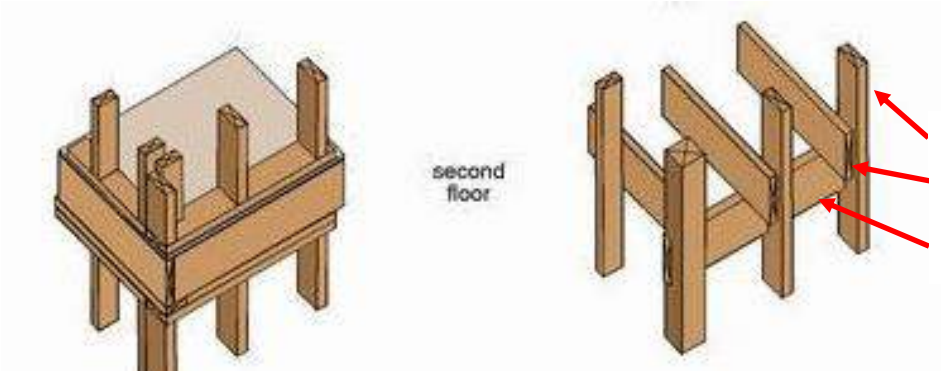


Figure S.8. Platform framing (left) vs. balloon framing (right). (Google 2018)

The exterior wall studs are nominally 2-inch by 6-inch, spaced at 2-feet on center. Diagonal bracing members of similar size are in plane with the studs. The diagonal bracing is not made up of continuous, notched members, but rather short segments between the studs.

The ledger board for the joist framing was measured to be 1-inch by 11 ½-inches and the studs have been notched so the ledger board sits flush with the face of the studs. The joists are also notched 1-inch square to fit over the ledger, but the joists were not consistently bearing on the ledger where observed. The joists are also directly nailed to the studs (Figure S.9).

[374] PEPC, 52746.

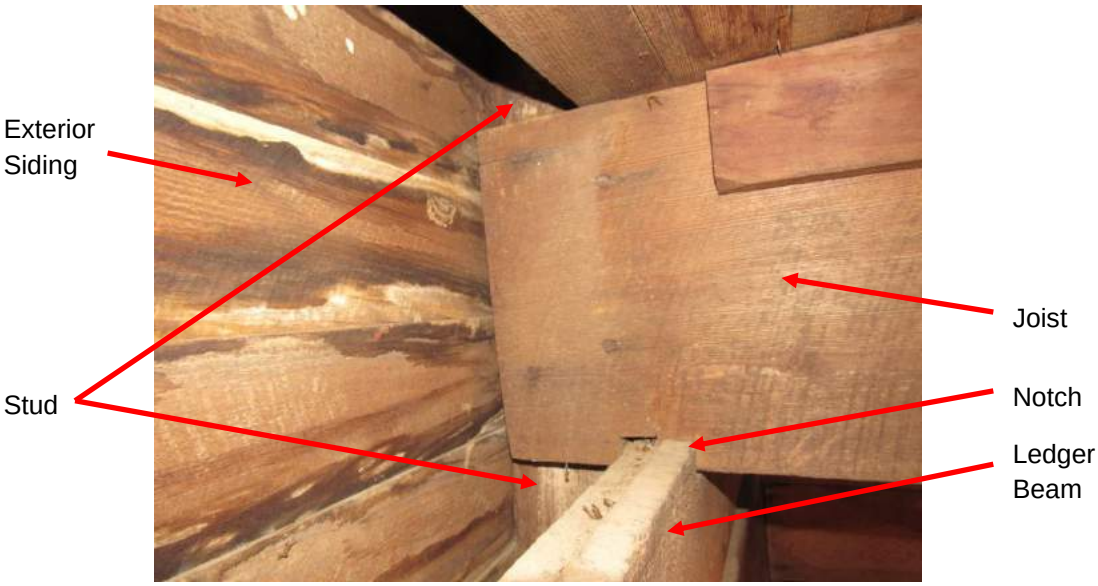


Figure S.9. Balloon framing connection at north end of west wall, second level framing joists. (SEA 2018)

The condition of the studs could not be directly observed in most places due to the interior wall sheathing. The interior wall sheathing is made up of horizontal 1-inch wide boards, of varying depth, nailed to each stud. The studs were visible through small gaps in the sheathing members and in a couple locations where short pieces of sheathing between floor joists had been removed. The studs are visible at the third floor, where the extant sheathing is minimal.

The studs on the gable ends are spliced at the third floor, below the roof framing. The lap length of the splices vary from stud to stud, the longest being 36-inches and the shortest being 9-inches. All of the splice connections observed utilize two nails (Figure S.10).



Figure S.10. Stud splices at third floor. (SEA 2018)

Along the west wall, where the third floor framing meets the studs, ten studs have had repairs performed. These repairs replaced portions of the studs with newer pieces of wood (Figure S.11).



Figure S.11. Stud repair at third floor, center of the west wall. (SEA 2018)

The siding on the exterior is nailed directly to the studs. No other exterior layer of sheathing, waterproofing, or insulation is present in the wall construction.

Daylight is visible through gaps in the siding, especially looking down between the studs from the third floor.

Water staining is visible on the interior face of the siding at the third floor, especially on the south gable end (Figure S.12).



Figure S.12. Moisture staining on the inside of the south gable. (SEA 2018)

First Floor Framing

The joists supporting the first floor are nominally 2-inch by 12-inch pine spaced at 2-feet on center, running east and west. The actual joist measurements vary; widths range from 1 ¾-inch to 2 ¼-inch and depths range from 11 ½-inch to 12 ¼-inch.

A small sample of joist was retrieved for species identification. The wood identification report, contained in Appendix F, states that the joists "are a species of western yellow pine and would include Lodgepole and Ponderosa pine". This statement is contrary to information provided by a park employee and also mentioned by the informational displays in the mill. Those sources indicate that the lumber for the mill was the native Shortleaf Yellow Pine.

Some softwood species can appear identical under the microscope and cannot be distinguished without further testing. The two pines mentioned are most different in density, which could not be accurately measured without retrieving a larger wood sample. The engineering properties of the two species are further discussed in the treatment recommendations section of this report.

According to current standard grading rules for softwood species (WCLIB and SPIB), the general quality of the original lumber is high. The slope of the grain is very low, typically less than 1 in 12. Knots are small and well-spaced, and the growth rings are dense, averaging more than 10 per inch. Other grade-limiting defects are minimal, and most joists would be considered "Select Structural" or "No. 1". The exception would be for localized deterioration, modifications, and some joists with large or unsound knots.

The first floor joists are supported on the east and west sides of the structure by wood sill beams bearing on the foundation walls (Figure S.13) and at the center of the structure by a central wood beam. The joists are not continuous over the central beam but are notched to bear on the central beam and extend past, lapping the joist for the adjacent span (Figure S.14).



Figure S.13. Joists are pocketed into the sill beam on the west foundation wall. (SEA 2018)



Figure S.14. Joists are notched and extend past the central beam, west side, looking north. (SEA 2018)

The joists appear original to the structure, but several have been repaired or modified. Multiple joists have had portions at the end bearing replaced. The older portions of joists are connected to the newer portions using a nibbed scarf joint, reinforced with steel plates (Figure S.15). The glue in most of these connections is visibly cracked, and the members have separated slightly.



Figure S.15. Previous joist repairs, west side, looking north. (SEA 2018)

Other repairs to the first floor framing joists have replaced smaller portions of the joist member, where notches or damaged areas have been filled in with newer wood pieces.

No severe signs of distress or rot of the joists were visible where observed. The joists exhibited some insect damage and signs of water staining, but the depth of damage was determined to

be minimal (Figure S.16). No signs of active infestation, such as frass pilings, were present in the basement. The structure had reportedly undergone a boring insect treatment in 2014.



Figure S.16. Possible termite damage on the joist, near the northwest corner of the mill. (SEA 2018)

The sill beams supporting the joists bear directly on the stone masonry are approximately 9-inches square and are slotted to accept the joists. The joists are notched to approximately 6-inches deep at bearing. Portions of the east sill beam were reportedly replaced in 1993.

The central beam is approximately 9 ½-inches square and is a species in the white oak group. It is supported at the north and south by the stone foundation wall and intermittently by four wood posts. Where the beam is bearing on the masonry, the connections are lacking adequate grout. The beam is spliced in two places along its length. These splices occur over posts.

Interior support posts for the mill structure bear on stone footings in the basement. Four posts supporting a central beam for the structure each have a single stone footing on the dirt basement floor (Figure S.17). Other posts supporting mill equipment bear on small concrete footings or directly on the dirt.



Figure S.17. Stone footing for southernmost interior basement post. (SEA 2018)

Three of the four wood posts for the central beam have wood capitals. The posts are similar in size to the central beam, and also species in the white oak group. They vary in height; the two southern posts are taller and the northern two get progressively shorter towards the north wall. Soil erosion has caused some stone footings to be covered, resulting in soil contact at the base of some wood posts. The second post from the north has deterioration on one side, likely due in part to prolonged contact with the surrounding dirt (Figure S.18).



Figure S.18. Second post from the north. (SEA 2018)

The northernmost post is in partial bearing on a stone footing (Figure S.19).



Figure S.19. Northernmost post with partial bearing. (SEA 2018)

Some mill equipment is also present in the basement. Steel shafts and wheels for belts are supported by wood framing with large posts similar to the posts for the central beam. The posts for the equipment extend to and are connected to the joists for the first floor framing. Some portions of the wood framing have visibly been replaced, as splice joints can be seen in places. Some of the framing is bearing on or in direct contact with the dirt floor and is deteriorating (Figure S.20).



Figure S.20. Screwdriver penetration into equipment support post, second from north. (SEA 2018)

The first floor flooring is ¾-inch by 3-inch tongue and groove under ¾-inch by 5 ¼-inch tongue and groove, all spanning north and south. The first floor framing supports some large mill equipment and other mill-related furnishings. Four roller mills on the east half of the level are situated over the posts for the mill equipment in the basement (Figure S.21).



Figure S.21. Four roller mills on the east half of the first level. (SEA 2018)

The flooring is noticeably uneven in some places. In one particular place on the east side of the structure, a depression in the floor was measured to dip approximately 1 ¼-inches over 4-feet. The dip in the flooring correlates to the locations of equipment support posts under the east half of the first floor framing. The two joists directly under the southernmost roller mill do not have supporting posts, unlike the joists for the other mills that have at least one joist supported by a post.

Second Floor Framing

The second floor joists are nominally 2-inch by 12-inch pine spaced at 2-feet on center, running east and west. The actual joist measurements vary; actual widths range from 1 ¾ to 2 ¼-inches and depths range from 11 ½ to 12 ½-inches.

The second floor joists are exposed and supported by a central beam down the middle of the structure, similar to the first floor joists. The beam, approximately 7 ¾-inches square, is supported on either end by a 6-inch by 10-inch post in the exterior wall, and by three posts along the span. These posts are situated directly in line above posts in the basement and bear on the beam in the basement. The posts are approximately 8-inches square, with wooden capitals, and are a species of pine. The beam for the second floor framing is spliced over the center first floor post (Figure S.22).



Figure S.22. Post, capital, and beam. (SEA 2018)

The second floor flooring is the same as the first; ¾-inch by 3-inch tongue and groove under ¾-inch by 5 ¼-inch tongue and groove, all spanning north and south. The second floor framing supports four major pieces of mill equipment; two silk sifters, a swing sifter, and a scourer-separator. Some large informational and artifact displays are dispersed around the second floor.

Nearly all of the joists have small ledger pieces nailed at the top edge of the joist in various places, covering damage along the top of the joist and providing solid bearing for the flooring above. Most ledger pieces range from about 2-feet to 6-feet long. Damage along the top of the joist is visible in some places adjacent to ledger pieces. The damage may be moisture or insect related, or a combination (Figure S.23).



Figure S.23. Looking up at damage along top of joist, above the west door. (SEA 2018)

The types of damage or deterioration of the wood joists are varied, including visible moisture staining, signs of biological attack such as fungal growth, and insect damage. Dark staining is reportedly from a generator located on the second level that has since been removed (Figure S.24).



Figure S.24. Notches and dark staining on joists near the southeast corner. (SEA 2018)

Some of the fungal growth is visibly consistent with brown rot, more commonly referred to as dry rot. Brown rot can develop in the presence of moisture and can severely damage timber structures. It causes the wood to shrink and become brittle and can be identified by the cuboidal pattern of the wood surface (Figure S.25).



Figure S.25. Possible brown rot on joist, west side near the center beam. (SEA 2018)

Other damage on the wood framing appears consistent with an attack of wood-boring insects, such as powder post beetle, termites, and carpenter bees (Figure S.26).

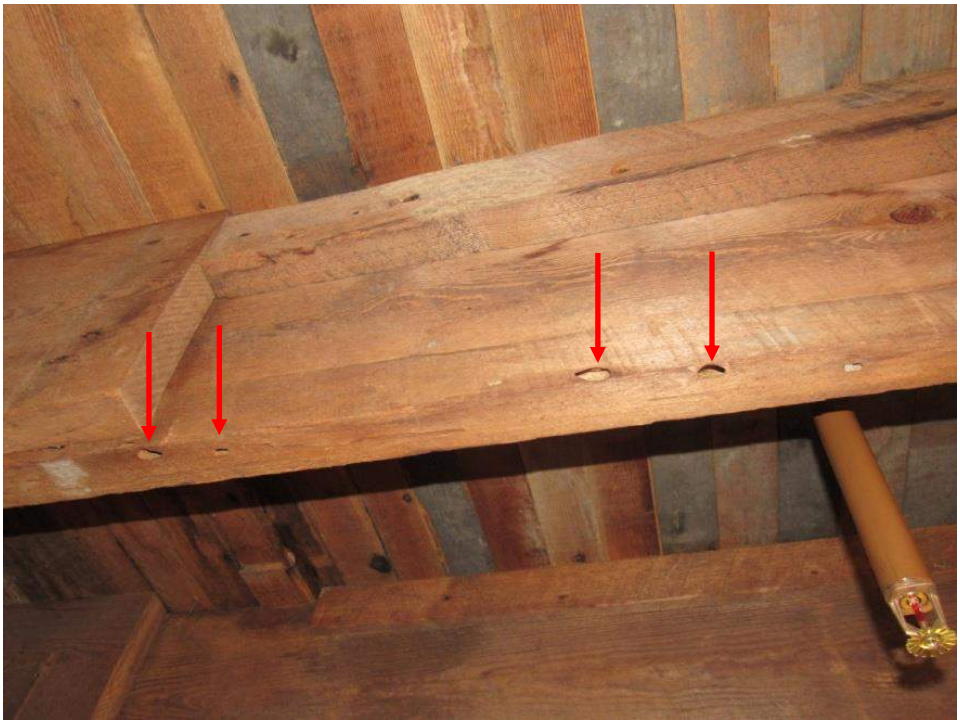


Figure S.26. Insect damage on bottom of joist, west side near the center beam. (SEA 2018)

Some of the joists have localized repairs similar to repairs for joists of the first floor framing. Repairs are typically along the top of the joist, where notches or damaged areas have been filled in with newer wood pieces. The newer pieces are typically about 2-inches tall, in a strip. Some notches and damaged areas have not been filled in.

The condition of the second floor framing joists above the Miller's Office could not be observed due to the beadboard ceiling.

Third Floor Framing

The general layout of the third floor framing is similar to the second floor framing. The joist spacing and supports are similar, as well as the configuration of the central beam and posts. The third floor joists, however, are more varied in size from member to member. Actual joist widths range from 1 ¾ to 2 ¼-inches and depths range from 11 ¼ to 16-inches.

Several of the joists feature small ledger pieces along the top of the member similar to the second floor framing joists. Many joists also have damage along the top of the member, consistent with rot due to moisture (Figure S.27).



Figure S.27. Damage on top of joist. (SEA 2018)

Additionally, a couple of joists have been notched along the bottom, apparently to accommodate mill equipment or conveying systems. The central beam has also been notched in one place (Figure S.28).

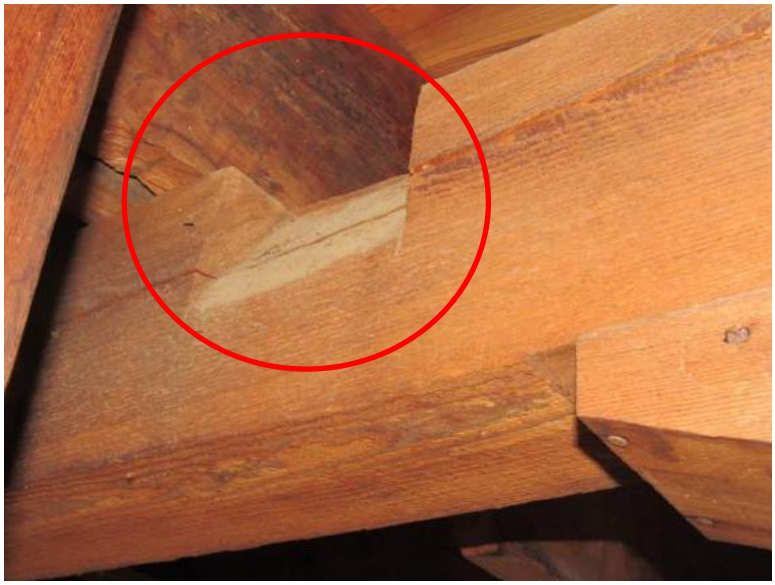


Figure S.28. Notch in central beam. (SEA 2018)

Approximately half of the joists on the west side have had visible repairs performed near the connection with the west wall studs. Most have squared notches cut out from the top of the member that are filled in with newer wood pieces. The joist at the stairs has been spliced with a peculiar geometry (Figure S.29). One 16-inch deep joist has a fracture on the bottom, about 3 to 4-inches long (Figure S.30).



Figure S.29. Spliced joist at the stairs. (SEA 2018)



Figure S.30. Fractured joist, east side, near north post. (SEA 2018)

The third floor framing supports some large mill equipment and other mill-related furnishings. The third floor is also used for storage. Public access to the third floor is restricted. The flooring is ¾-inch by 5 ¼-inch tongue and groove, spanning north and south, without a subfloor. The flooring feels spongy in places, partially due to deteriorated joists below.

Of the three posts supporting the central beam for the third floor framing, one is visibly out of plumb (Figure S.31).



Figure S.31. North post on second level. (SEA 2018)

Roof Framing

The roof framing is exposed above the third floor. The roof frames are king trusses spaced at 2-feet on center, directly above the wall studs. King trusses are so called for the central, vertical “king” post member. The trusses feature a diagonal strut member on either side of the post, spanning from the base of the king post to the middle of the roof rafter.

The joists and rafters for the trusses measure approximately 2-inch by 6-inch. At the exterior walls, the members are nailed to the sill plates on the wall studs. The rafters are birdsmouthed and extend beyond the exterior wall to support the roof overhang. Along the center of the trusses, the joists are lapped and a brace runs north/south along the bottom of the joists, for the length of the structure.

In addition to the truss framing members, other members brace diagonally across the rafters and the joists in the corners (Figure S.32).



Figure S.32. Brace running diagonal along bottom of joists. (SEA 2018)

Some milling equipment, such as drive shafts and large cast iron pulleys and gears, is supported by the trusses and also has some associated wood support framing, including various posts to the third floor flooring. In some cases, this support framing is attached to the trusses.

The condition of the framing members is consistent with that of the other members in the structure. Some joists have been spliced, notched, or have visible deterioration. Rafters have been spliced, sistered, or have ledger pieces added. Insect or fungal damage is typical, which may or may not be active (Figures S.33, S.34, S.35).



Figure S.33. Damage on joist and rafter repair, west side, looking south. (SEA 2018)



Figure S.34. Screwdriver penetration into rotted rafter, southeast quadrant. (SEA 2018)



Figure S.35. Rafter and joist repairs, northwest corner. (SEA 2018)

Milling equipment drive shafts and pulleys are situated on the east side of the third floor, near the center of the trusses. The support condition for this equipment is inadequate. The posts are not secured to or resting on the floor and do not have a solid load path (Figure S.36). The unsupported posts are connected to the roof trusses, resulting in the trusses carrying the equipment loads. Reportedly, a horizontal framing or sill member once ran along the floor to support these posts and distribute the load across the floor joists. This sill was removed by the CCC when the third floor flooring was salvaged and not reinstalled.

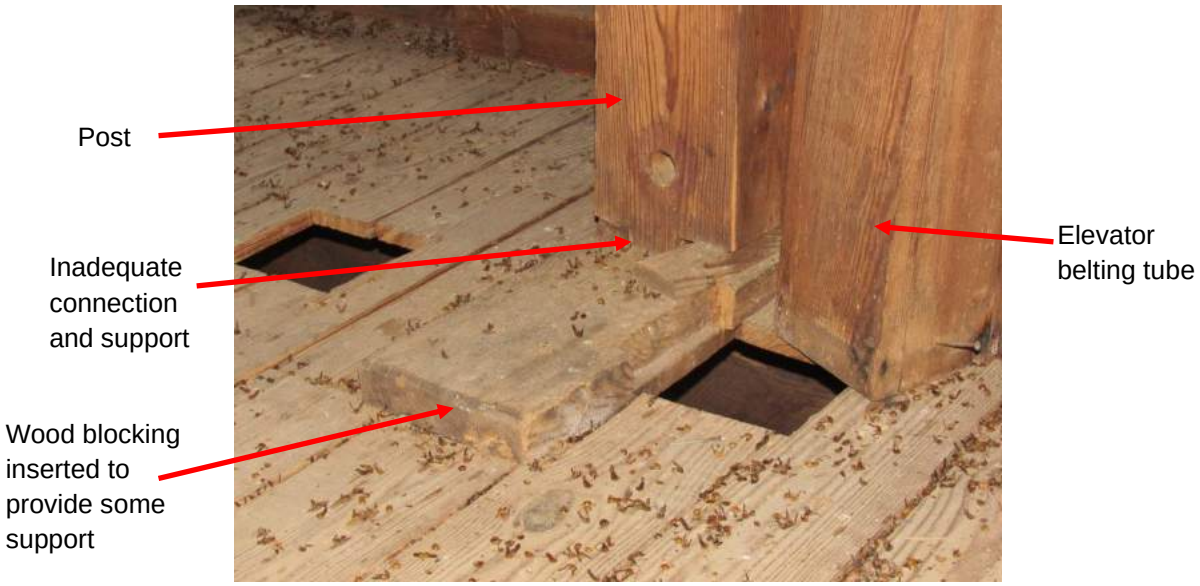


Figure S.36. Southernmost post base at third floor level. (SEA 2018)

Five diagonal strut members on the east side appear to be newer, replacement members. The replacement may be associated with the loading conditions of the trusses (Figure S.37). In conventional truss design, the web members are designed to be either in tension or compression, without any bending loads. With the mill equipment supported by the trusses rather than by the third floor framing, the diagonal struts for these trusses are subjected to a combination of loads that they would not typically be designed for. The deflection in the struts also likely contributes to the sagging of the roof on the east side of the mill, as described in the roof section of this report.



Figure S.37. Looking up at roof framing. (SEA 2018)

The brace running along the center of the trusses, on the bottom of the joists, is pulling down and separating from the trusses (Figure S.38).



Figure S.38. Horizontal brace along the center of the trusses. (SEA 2018)

The roof was reportedly re-roofed in recent years. Some small glints of daylight are visible through the roof shingles.

Interior Stairs

The narrow steps from the basement to the first floor exhibit some deterioration where in contact with the soil and in other places along the stair stringers. These members have visible evidence of boring insect damage and some loss of section (Figure S.39).



Figure S.39. Screwdriver penetration into basement stair stringer. (SEA 2018)

The stairs from the first floor to the second floor are constructed with three 2-inch wide stringers, spaced at 1-foot 5 ½-inches. The configuration at the top of the stringers is problematic; they have been notched to fit under the header board at the joists and do not have adequate section here (Figure S.40).

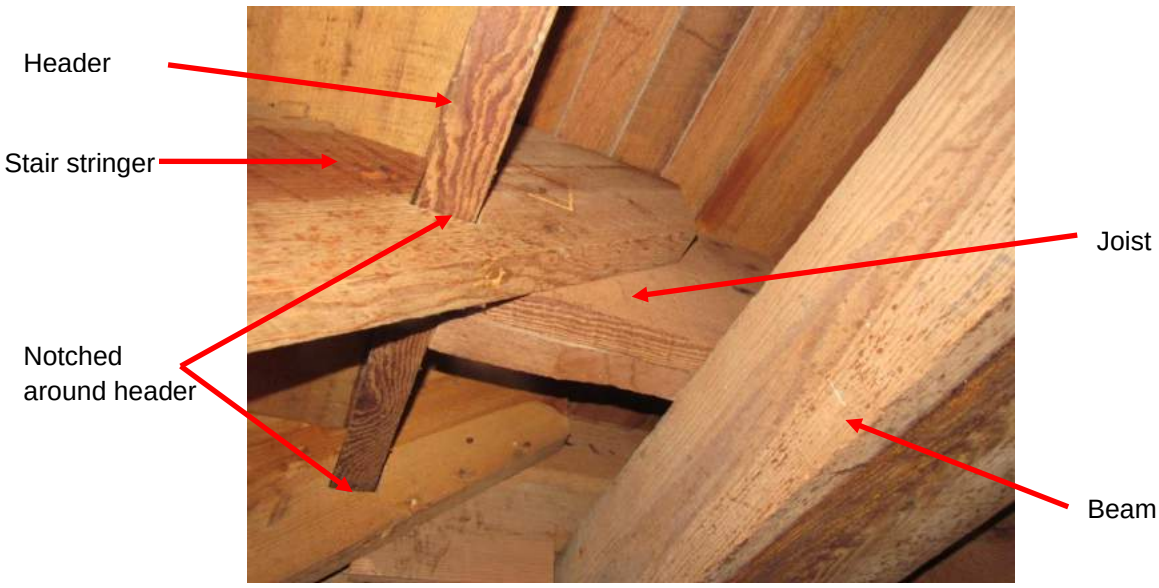


Figure S.40. Looking up at stair stringer connections to second floor framing. (SEA 2018)

The stairs up to the third level are constructed with two stringers spaced 3-feet apart. The top stringer connections here are different than the ones at the lower stairs but also problematic. The stringers are attached to supporting members with a single nail each. Splitting in the adjacent member indicates an improper and unsafe connection (Figure S.41 and S.42).

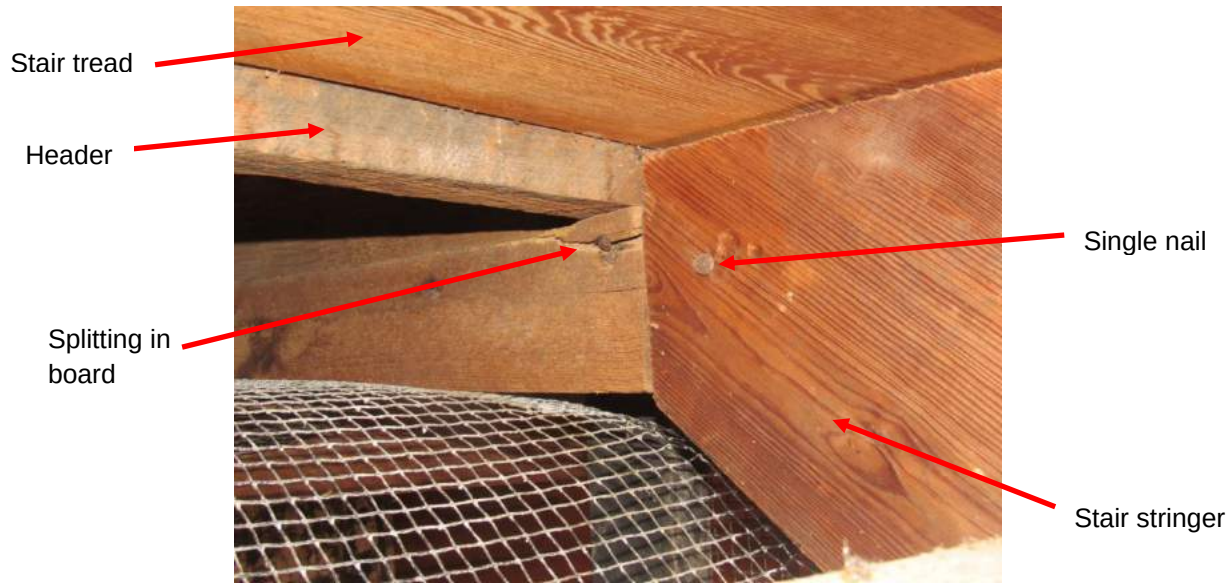


Figure S.41. Stair stringer connection at third level. (SEA 2018)

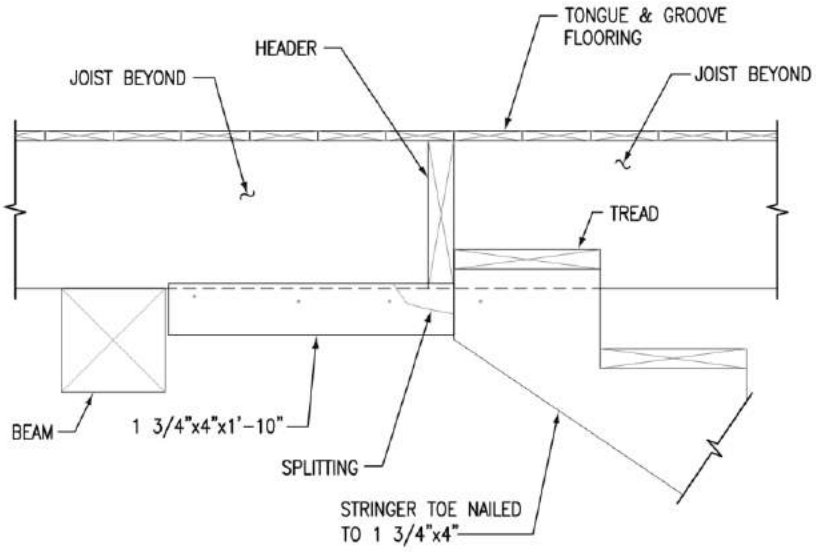


Figure S.42. Sketch of existing stair stringer connection at third level. (SEA 2018)

Exterior

The mill exterior was assessed visually from ground level. Upper portions of the south and west elevations were observed while utilizing a boom lift. Overall, there was minimal damage or deterioration of the wood siding on the whole of the structure. The chute that projects out of the third level has some wood rot visible (Figure S.43).



Figure S.43. Rot on the side of the chute. (SEA 2018)

The ridgeline of the roof appears straight, but the east half of the roof has a slight sag in the middle (Figure S.40). The sagging is consistent with the support of the drive shafts and pulleys by the roof framing on the east side. The eave also looks wavy along the roof edge.



Figure S.44. Apparent sag on the east side of the roof. (SEA 2018)

The west porch is constructed of modern treated lumber, with a stamp for southern pine grade No. 1. The porch is well constructed, except that the support posts bear directly on soil or on the stone path (Figure S.45).



Figure S.45. Porch post bases. (SEA 2018)

The east porch is constructed of larger timbers and appears much older. The porch extends over the turbine assembly and is supported by posts down to the mill foundation and partially by the concrete dam structure.

The east porch has several members that are severely deteriorated (Figure S.46). It appears that some newer, unpainted members have been inserted into the framing below the deck to provide additional support for the structure.



Figure S.46. Severely deteriorated timber at south elevation of east porch. (SEA 2018)

The support posts down to the mill foundation have poor bearing (Figure S.47). The concrete portion of the dam that supports the porch is visibly deteriorated and water flows through cracks in the concrete. The concrete dam structure was not assessed as part of this study.



Figure S.47. Porch post bearing on mill foundation. (SEA 2018)

The handrail of the deck appears unsafe and has deterioration in several members (Figure S.48). The base of the steps has rot where it is in contact with dirt.

A wooden guardrail is adjacent to the water, anchored into concrete. It also appears unsafe and has deterioration in several members. The rail deflects when pushed. Since this assessment was complete additional signage and fencing were installed at the rails (Figure S.49).



Figure S.48. Screwdriver penetration into rotted handrail post. (SEA 2018)



Figure S.49. Signage and wire fencing at railing. (SEA 2018)

Summary of Structural Life Safety Issues

The stair stringer connections for the stairs from the first floor to the second floor and from the second floor to the third floor are insufficient for anticipated loadings.

The support conditions for the east porch on the dam structure and mill footing are suspect and make the porch unsafe for public access. The railings on the east porch are deteriorated and unsafe.

The flooring for the third floor is thin and has several tripping hazards, including several floor penetrations for mill elevators.

Alley Roller Mill Character-Defining Features

The Alley Roller Mill has retained a substantial amount of its original or early building materials and character-defining features from the period of significance, 1925-1969. These features are important, as they exemplify the iconic mill exterior appearance, as well as the workings of the mill interior.

The ongoing maintenance and preservation of these unique and significant features of the building ensure the historic integrity of the mill will survive for future generations to enjoy.

Exterior Character-Defining Features

- Retention of original setting.
- Overall shape/massing of the building, three stories with partially exposed basement, gabled roof, and symmetrical façade.
- Native stone foundation.
- Wood frame structure with painted clapboard siding and wood shingle roof.
- Original 1894 fenestration openings, and window sashes dating to the CCC-era rehabilitation.
- West porch shed roof.
- 'Red' painted exterior.
- Mill works, turbine, and the dam structures adjacent to the mill.
- Wooden chutes protruding through the exterior walls.

Interior Character-Defining Features

- Exposed wood framing.
- Historic wood flooring visible from floors below (first and second floors).
- Interior wall sheathing boards.
- Interior finishes in millwright office with beaded board walls and ceiling and bracketed chimney support.
- Wood staircases.
- Mill works equipment, grain elevators, grain bins, and chutes.

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ALLEY SPRING
CULTURAL LANDSCAPE AND
HISTORIC STRUCTURE REPORT

OZARK NATIONAL SCENIC RIVERWAYS

EMINENCE, MISSOURI

EXISTING CONDITION DRAWINGS



ALLEY SPRING, OZARK NATIONAL SCENIC RIVERWAYS, EMINENCE, MISSOURI



HS-501 MILL (STRATA 2018)

INDEX OF DRAWINGS

00 COVER

HS-501 MILL ARCHITECTURAL

A1 EXISTING BASEMENT FLOOR PLAN AND FIRST FLOOR PLAN
A2 EXISTING SECOND FLOOR PLAN AND THIRD FLOOR PLAN
A3 EXISTING ROOF PLAN
A4 EXISTING WEST ELEVATION
A5 EXISTING SOUTH ELEVATION
A6 EXISTING EAST ELEVATION
A7 EXISTING NORTH ELEVATION
A8 EXISTING BUILDING SECTIONS

CULTURAL LANDSCAPE AND HISTORIC STRUCTURE REPORT

UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
DENVER SERVICE CENTER

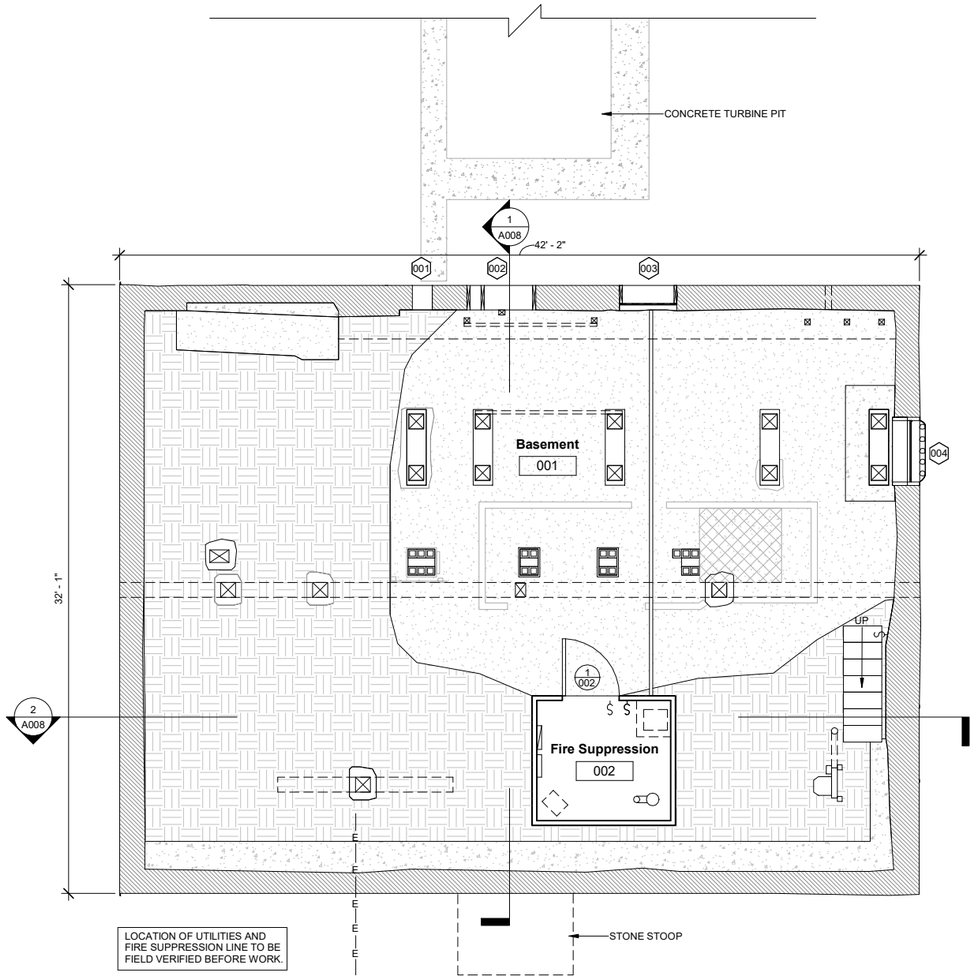
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COVER
ALLEY SPRING
OZARK NATIONAL SCENIC RIVERWAY

REGION MIDWEST | COUNTY SHANNON | STATE MISSOURI

DRAWING NO. 614 / 146385

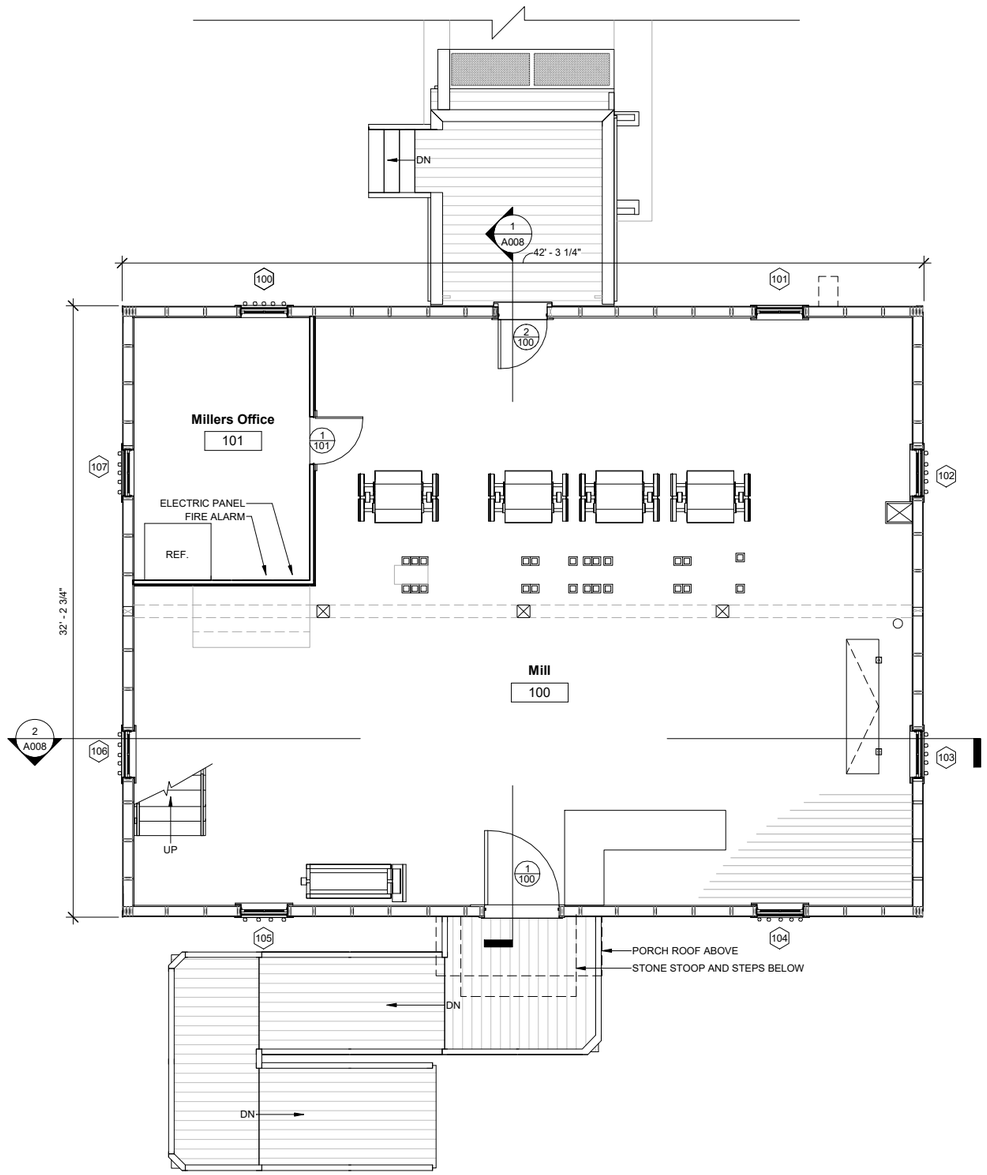
PMIS/PKG NO. 204762

SHEET 1 OF 9



1 Existing Basement Floor Plan

1/4" = 1'-0"



2 Existing First Floor Plan

1/4" = 1'-0"

0' 2' 4' 8' 16'

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DATE:	01-17-2020

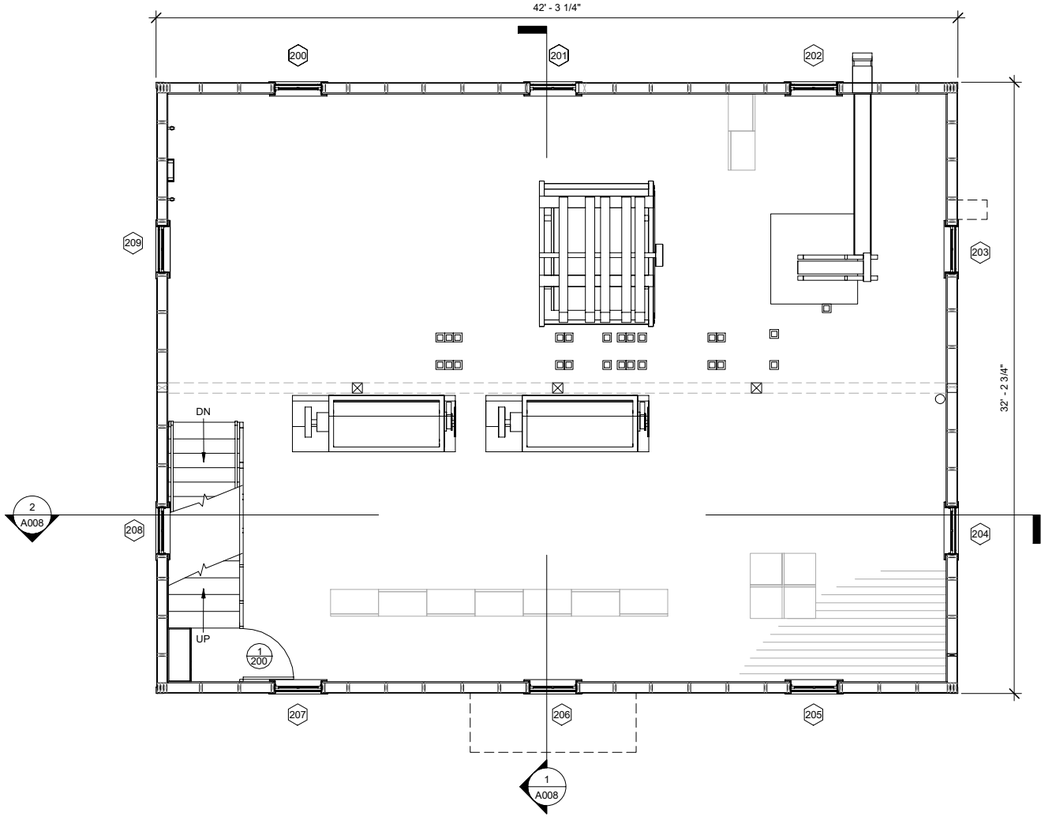
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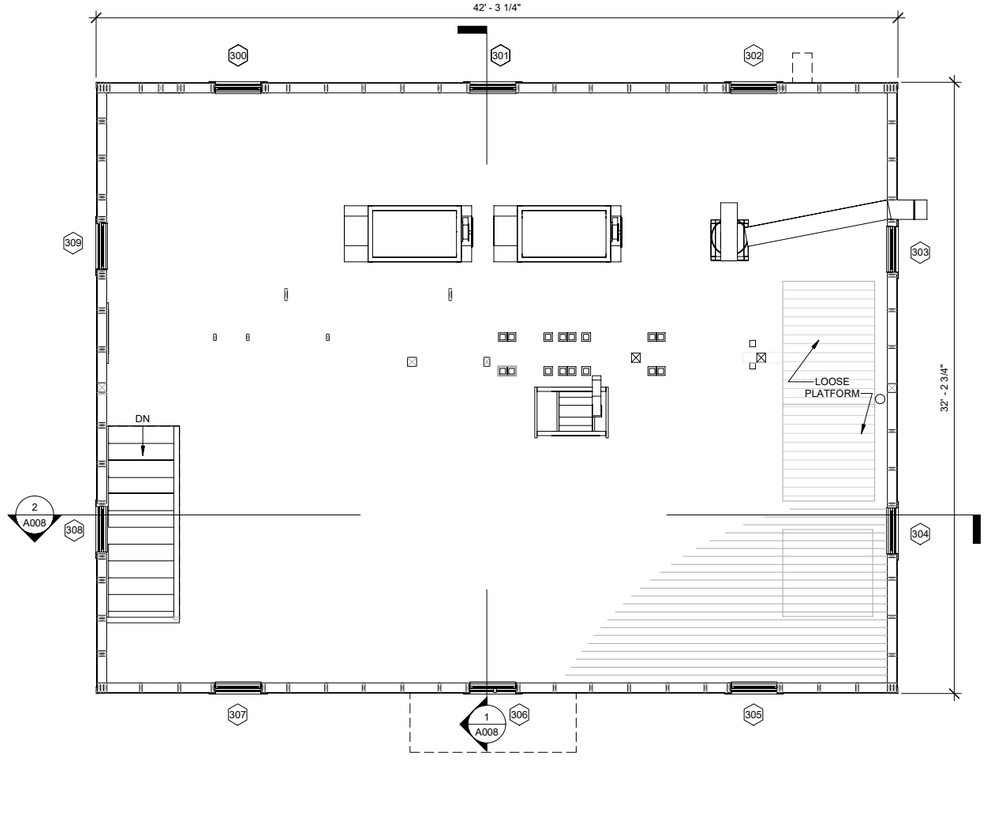
ALLEY SPRING
OZARK NATIONAL SCENIC RIVERWAY

DRAWING NO.	614 / 146385
PMIS/PKG NO.	204762
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1 Existing Second Floor Plan

1/4" = 1'-0"



2 Existing Third Floor Plan

1/4" = 1'-0"

0' 2' 4' 8' 16'

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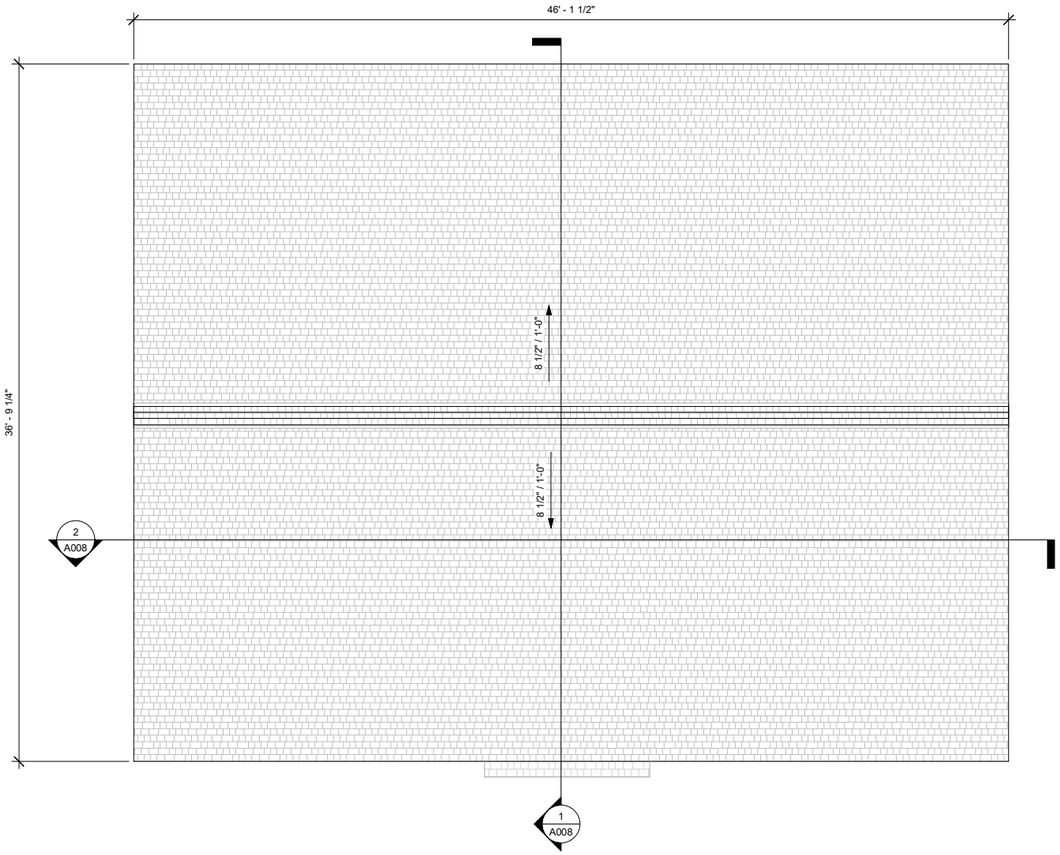
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TITLE OF SHEET
EXISTING CONDITION DRAWINGS

HS-501 MILL

ALLEY SPRING
OZARK NATIONAL SCENIC RIVERWAY

DRAWING NO. 614 146385
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SHEET 3 OF 9



1 Roof

1/4" = 1'-0"

N

0' 2' 4' 8' 16'

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1 Existing West Elevation

1/4" = 1'-0"

0' 2' 4' 8' 16'

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OZARK NATIONAL SCENIC RIVERWAY

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1 Existing South Elevation
1/4" = 1'-0"

0' 2' 4' 8' 16'

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OZARK NATIONAL SCENIC RIVERWAY

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6 OF 9



1 Existing East Elevation

1/4" = 1'-0"

0' 2' 4' 8' 16'

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ALLEY SPRING
OZARK NATIONAL SCENIC RIVERWAY

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SHEET 7 OF 9



1 Existing North Elevation

1/4" = 1'-0"

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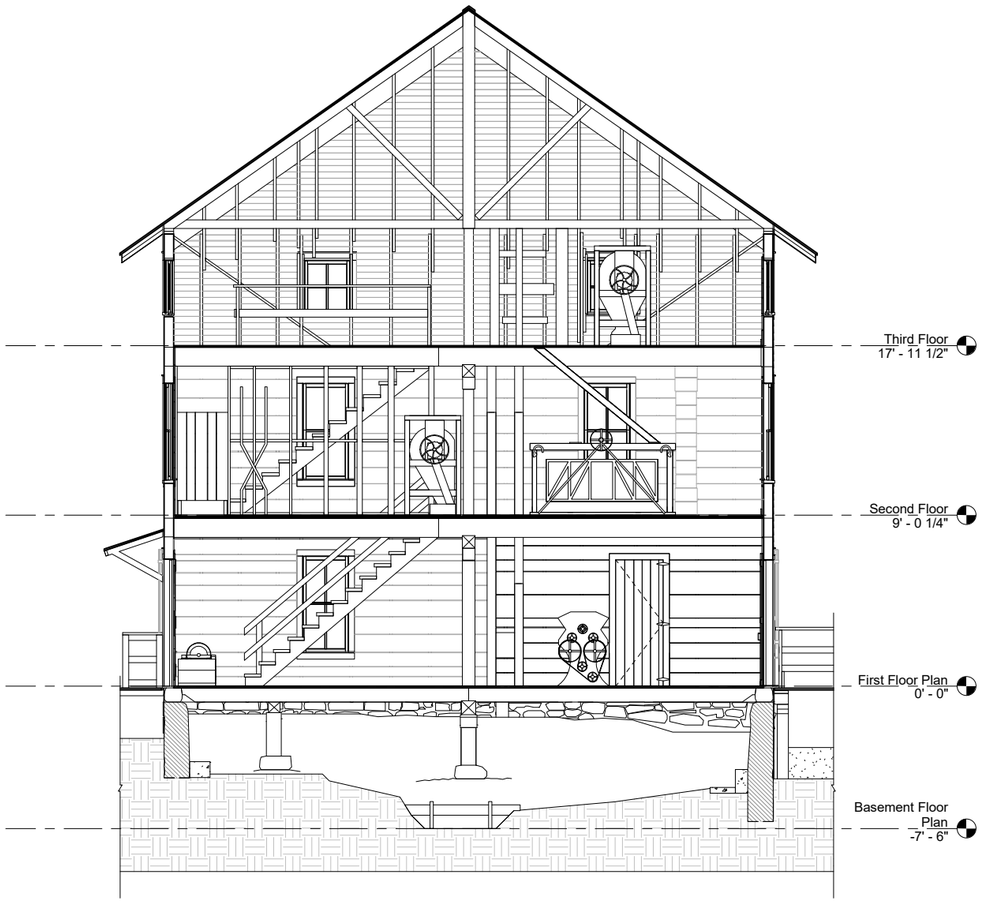
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EXISTING CONDITION DRAWINGS

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ALLEY SPRING
OZARK NATIONAL SCENIC RIVERWAY

DRAWING NO. 614 146385
PMIS/PKG NO. 204762
SHEET 8 OF 9



1 Building Section Looking North
1/4" = 1'-0"



2 Building Section Looking West
1/4" = 1'-0"

0' 2' 4' 8' 16'

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204762

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